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bluetooth pin

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

bluetooth pin *pin*

Syntax Description

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

Command Modes

Interface configuration (config-if)

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.1.1	This command was introduced.

Usage Guidelines

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

Examples

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

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

Related Commands

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

carrier-delay

To modify the default carrier delay time on a main physical interface, use the **carrier-delay** command in interface configuration or template configuration mode. To return to the default carrier delay time, use the **no** form of this command.

carrier-delay { *seconds* | **msec** *milliseconds* }

```
no carrier-delay
```

Syntax Description

seconds	Specifies the carrier transition delay, in seconds. The range is from 0 to 60. The default is 2.
msec *milliseconds*	Specifies the carrier transition delay, in seconds. The range is from 0 to 1000.

Command Default

The default carrier delay is 2 seconds.

Template configuration (config-template)

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced on the Cisco Catalyst 9600 Series Supervisor 1 Module (C9600-SUP-1)
Cisco IOS XE Cupertino 17.7.1	This command was implemented on the Cisco Catalyst 9600 Series Supervisor 2 Module (C9600X-SUP-2)

Usage Guidelines

If a link goes down and comes back before the carrier delay timer expires, the down state is effectively filtered, and the rest of the software on the router is not aware that a link-down event has occurred. Therefore, a large carrier delay timer results in fewer link-up/link-down events being detected. However, setting the carrier delay time to 0 means that *every* link-up/link-down event is detected.

In most environments a lower carrier delay is better than a higher one. The exact value that you choose depends on the nature of the link outages that you expect in your network and how long you expect those outages to last.

If data links in your network are subject to short outages, especially if those outages last less than the time required for your IP routing to converge, you should set a relatively long carrier delay value to prevent these short outages from causing disruptions in your routing tables. If outages in your network tend to be longer, you might want to set a shorter carrier delay so that the outages are detected sooner and the IP route convergence begins and ends sooner.

The Fast Link and Carrier Delay features are mutually exclusive. If you configure one feature on an interface, the other is disabled automatically. Administrative shutdown of an interface will follow carrier delay configuration.

The following example shows how to configure a carrier delay of 5 seconds under the interface:

```
Device(config)# int twe1/0/1
Device(config-if)# carrier-delay 5
```

The following example shows how to configure a carrier delay of 8 seconds:

```
Device(config)# configure terminal
Device(config-if)# template user-template1
Device(config-template)# carrier-delay 8
Device(config)# interface twe1/0/1
Device(config)# source template user-template1
```

debug interface

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

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

Syntax Description

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

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

debug lldp packets

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

debug lldp packets
no debug lldp packets

Syntax Description

This commnd has no arguments or keywords.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

Syntax Description

auto	Enables automatic duplex configuration.
full	Enables full-duplex mode.

Command Default

The default is **auto**.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.1.1	This command was introduced.

Usage Guidelines

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; do not use the **auto** setting on the supported side.

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

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

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

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

Examples

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

```
Device(config)# interface tengigabitethernet5/0/1
Devic(config-if)# duplex full
```

errdisable detect cause

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

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

Syntax Description

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

sfp-config-mismatch	Enables error detection on an SFP configuration mismatch.

Command Default

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

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

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

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

errdisable recovery cause

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

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

Syntax Description

all	Enables the timer to recover from all error-disabled causes.
arp-inspection	Enables the timer to recover from the Address Resolution Protocol (ARP) inspection error-disabled state.
bpduguard	Enables the timer to recover from the bridge protocol data unit (BPDU) guard error-disabled state.
channel-misconfig	Enables the timer to recover from the EtherChannel misconfiguration error-disabled state.
dhcp-rate-limit	Enables the timer to recover from the DHCP snooping error-disabled state.
dtp-flap	Enables the timer to recover from the Dynamic Trunking Protocol (DTP) flap error-disabled state.
gbic-invalid	Enables the timer to recover from an invalid Gigabit Interface Converter (GBIC) module error-disabled state. **Note** This error refers to an invalid small form-factor pluggable (SFP) error-disabled state.
link-flap	Enables the timer to recover from the link-flap error-disabled state.
loopback	Enables the timer to recover from a loopback error-disabled state.
mac-limit	Enables the timer to recover from the mac limit error-disabled state.
pagp-flap	Enables the timer to recover from the Port Aggregation Protocol (PAgP)-flap error-disabled state.
port-mode-failure	Enables the timer to recover from the port mode change failure error-disabled state.
pppoe-ia-rate-limit	Enables the timer to recover from the PPPoE IA rate limit error-disabled state.

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

Command Default

Recovery is disabled for all causes.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

Examples

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

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

errdisable recovery cause

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

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

Syntax Description

all	Enables the timer to recover from all error-disabled causes.
arp-inspection	Enables the timer to recover from the Address Resolution Protocol (ARP) inspection error-disabled state.
bpduguard	Enables the timer to recover from the bridge protocol data unit (BPDU) guard error-disabled state.
channel-misconfig	Enables the timer to recover from the EtherChannel misconfiguration error-disabled state.
dhcp-rate-limit	Enables the timer to recover from the DHCP snooping error-disabled state.
dtp-flap	Enables the timer to recover from the Dynamic Trunking Protocol (DTP) flap error-disabled state.
gbic-invalid	Enables the timer to recover from an invalid Gigabit Interface Converter (GBIC) module error-disabled state. **Note** This error refers to an invalid small form-factor pluggable (SFP) error-disabled state.
link-flap	Enables the timer to recover from the link-flap error-disabled state.
loopback	Enables the timer to recover from a loopback error-disabled state.
mac-limit	Enables the timer to recover from the mac limit error-disabled state.
pagp-flap	Enables the timer to recover from the Port Aggregation Protocol (PAgP)-flap error-disabled state.
port-mode-failure	Enables the timer to recover from the port mode change failure error-disabled state.
pppoe-ia-rate-limit	Enables the timer to recover from the PPPoE IA rate limit error-disabled state.

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

Command Default

Recovery is disabled for all causes.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

Examples

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

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

hw-module beacon

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

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

Syntax Description

rp {**active** | **standby**}	Specifies the active or the standby Supervisor to be controlled.
fan-tray	Specifies the fan tray beacon to be controlled.
slot *slot-number*	Specifies the slot to be controlled.
on	Turns the beacon on.
off	Turns the beacon off.
status	Displays the status of the beacon.

Command Default

This command has no default settings.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

hw-module slot port-group mode

To enable the 400G mode on a port group, use the **hw-module slot** *slot-number* **port-group** *port-group number* **mode 400** command in the Global Configuration mode. To default to the 100G mode on a port group, use the **no** form of the command.

hw-module slot *slot-number* **port-group** *port-group-number* **mode 400**
no hw-module slot *slot-number* **port-group** *port-group-number* **mode 400**

Command Default

By default all the ports operate in the 100G mode.

Command Modes

Global Configuration (config)

Command History

Release	Modification
Cisco IOS XE Cupertino 17.9.1	This command was introduced.

Usage Guidelines

When a port group mode is changed from 100G mode to 400G mode or from 400G mode to 100G mode, all the configurations on the interfaces will revert to the default configurations. In the 400G mode, the inactive ports are locked and their configuration cannot be modified. The inactive ports will not be visible in the running configuration.

The following example shows how to enable the 400G mode on port-group number 1 of slot 1

```
Device> enable
Device# configure terminal
Device(config)#hw-module slot 1 port-group 1 mode 400G
Warning: Ports Hu1/0/25, Hu1/0/26, Hu1/0/28 will be brought down
```

hw-module slot port-group range mode

To enable the 400G mode on both the 400G ports of the two port-groups, use the **hw-module slot** *slot-number* **port-group range** *1-2* **mode 400** command in the Global Configuration mode. To default to the 100G mode on both the 400G ports of the two port-groups , use the **no** form of the command.

hw-module slot *slot-number* **port-group range** *1-2* **mode 400**
no hw-module slot *slot-number* **port-group range** *1-2* **mode 400**

Command Default

By default all the ports operate in the 100G mode.

Command Modes

Global Configuration (config)

Command History

Release	Modification
Cisco IOS XE Cupertino 17.9.1	This command was introduced.

Usage Guidelines

When this command is used, both the 400G capable ports on the line card will enter the 400G mode. In the 400G mode, the inactive ports are locked and their configuration cannot be modified. The inactive ports will not be visible in the running configuration.

The following example shows how to enable the 400G mode on both the port-groups of slot 1

```
Device> enable
Device# configure terminal
Device(config)#hw-module slot 1 port-group range 1-2 mode 400G
```

hw-module slot port-group mode

To enable the 400G mode on a port group, use the **hw-module slot** *slot-number* **port-group** *port-group number* **mode 400** command in the Global Configuration mode. To default to the 100G mode on a port group, use the **no** form of the command.

hw-module slot *slot-number* **port-group** *port-group-number* **mode 400**
no hw-module slot *slot-number* **port-group** *port-group-number* **mode 400**

Command Default

By default all the ports operate in the 100G mode.

Command Modes

Global Configuration (config)

Command History

Release	Modification
Cisco IOS XE Cupertino 17.9.1	This command was introduced.

Usage Guidelines

When a port group mode is changed from 100G mode to 400G mode or from 400G mode to 100G mode, all the configurations on the interfaces will revert to the default configurations. In the 400G mode, the inactive ports are locked and their configuration cannot be modified. The inactive ports will not be visible in the running configuration.

The following example shows how to enable the 400G mode on port-group number 1 of slot 1

```
Device> enable
Device# configure terminal
Device(config)#hw-module slot 1 port-group 1 mode 400G
Warning: Ports Hu1/0/25, Hu1/0/26, Hu1/0/28 will be brought down
```

hw-module slot port-group range mode

To enable the 400G mode on both the 400G ports of the two port-groups, use the **hw-module slot** *slot-number* **port-group range** *1-2* **mode 400** command in the Global Configuration mode. To default to the 100G mode on both the 400G ports of the two port-groups , use the **no** form of the command.

hw-module slot *slot-number* **port-group range** *1-2* **mode 400**
no hw-module slot *slot-number* **port-group range** *1-2* **mode 400**

Command Default

By default all the ports operate in the 100G mode.

Command Modes

Global Configuration (config)

Command History

Release	Modification
Cisco IOS XE Cupertino 17.9.1	This command was introduced.

Usage Guidelines

When this command is used, both the 400G capable ports on the line card will enter the 400G mode. In the 400G mode, the inactive ports are locked and their configuration cannot be modified. The inactive ports will not be visible in the running configuration.

The following example shows how to enable the 400G mode on both the port-groups of slot 1

```
Device> enable
Device# configure terminal
Device(config)#hw-module slot 1 port-group range 1-2 mode 400G
```

interface

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

interface {**AccessTunnel** *interface-number* | **Auto-Template** *interface-number* | **TenGigabitEthernet** *interface number* | **TwentyFiveGigE** *interface number* | **FortyGigabitEthernet** *interface-number* | **HundredGigE** *interface-number* | **Group VI** *Group VI interface number* | **Internal Interface** *Internal Interface number* | **Loopback** *interface-number* **Null** *interface-number* **Port-channel** *interface-number* **Tunnel** *interface-number* **Vlan** *interface-number* }

Syntax Description

AccessTunnel *interface-number*	Enables you to configure an access tunnel interface. The range is from 1 to 2147483647.
Auto-Template *interface-number*	Enables you to configure a auto-template interface. The range is from 1 to 999.
TenGigabitEthernet *interface-number*	Enables you to configure a 10-Gigabit Ethernet IEEE 802.3z interfaces. The range is from 0 to 6.
TwentyFiveGigE *interface-number*	Enables you to configure a range of 25-Gigabit Ethernet IEEE 802.3z interfaces. The range is from 0 to 6.
FortyGigabitEthernet *interface-number*	Enables you to configure a 40-Gigabit Ethernet interface. The range is from 0 to 6.
HundredGigE *interface-number*	Enables you to configure a 100-Gigabit Ethernet interface. The range is from 0 to 6.
Internal Interface Internal Interface	Enables you to configure an internal interface.
Loopback *interface-number*	Enables you to configure a loopback interface. The range is from 0 to 2147483647.
Null *interface-number*	Enables you to configure a null interface. The default value is 0.
Port-channel *interface-number*	Enables you to configure a port-channel interface. The range is from 1 to 128.
Tunnel *interface-number*	Enables you to configure a tunnel interface. The range is from 0 to 2147483647.
Vlan *interface-number*	Enables you to configure a switch VLAN. The range is from 1 to 4094.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Release	Modification
Cisco IOS XE Amsterdam 17.1.1	**TenGigabitEthernet** keyword was introduced.

Usage Guidelines

You cannot use the **no** form of this command.

The following example shows how to configure a tunnel interface:

```
Device# interface Tunnel 15
```

interface range

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

interface range { **TenGigabitEthernet** *interface number* | **TwentyFiveGigE** *interface number* | **FortyGigabitEthernet** *interface number* | **HundredGigE** *interface number* | **Loopback** *interface-number* | **Port-channel** *interface-number* | **Tunnel** *interface-number* | **Vlan** *interface-number* }

Syntax Description

TenGigabitEthernet *interface-number*	Enables you to configure a range of 10-Gigabit Ethernet interfaces.
FortyGigabitEthernet *interface-number*	Enables you to configure a range of 40-Gigabit Ethernet interfaces.
HundredGigE *interface number*	Enables you to configure a range of 100-Gigabit Ethernet interfaces.
Internal Interface Internal Interface	Enables you to configure a range of internal interfaces.
Loopback *interface-number*	Enables you to configure a range of loopback interfaces. The range is from 0 to 2147483647.
Port-channel *interface-number*	Enables you to configure a range of port-channel interface. The range is from 1 to 128.
Tunnel *interface-number*	Enables you to configure a range of tunnel interfaces. The range is from 0 to 2147483647.
Vlan *interface-number*	Enables you to configure a range of VLANs. The range is from 1 to 4094.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.
Cisco IOS XE Amsterdam 17.1.1	**TenGigabitEthernet** keyword was introduced.

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

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

lldp (interface configuration)

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

lldp {**med-tlv-select** *tlv* | **receive** | **tlv-select** {**4-wire-power-management** | **power-management**} | **transmit**}
no lldp {**med-tlv-select** *tlv* | **receive** | **tlv-select** **4-wire-power-management** **power-management** | **transmit**}

Syntax Description

med-tlv-select	Selects an LLDP Media Endpoint Discovery (MED) time-length-value (TLV) element to send.
tlv	String that identifies the TLV element. Valid values are the following: • **inventory-management**— LLDP MED Inventory Management TLV. • **location**— LLDP MED Location TLV. • **network-policy**— LLDP MED Network Policy TLV.
receive	Enables the interface to receive LLDP transmissions.
tlv-select	Selects the LLDP TLVs to send.
4-wire-power-management	Sends the Cisco 4-wire Power Management TLV.
power-management	Sends the LLDP Power Management TLV.
transmit	Enables LLDP transmission on the interface.

Command Default

LLDP is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

This command is supported on 802.1 media types.

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

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

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

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

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# lldp transmit
```

monitoring

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

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

Syntax Description

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

Command Default

The interval time is 600 seconds.

Command Modes

Transceiver type configuration (config-xcvr-type)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

Examples

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

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

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

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

Related Commands

Command	Description
transceiver type all	Enables monitoring on all transceivers.

network-policy

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

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

Syntax Description

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

Command Default

No network-policy profiles are applied.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

network-policy profile (global configuration)

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

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

Syntax Description

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

Command Default

No network-policy profiles are defined.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

platform management-interface

To change the default Ethernet management port of the device, use the **platform management-interface** command in global configuration mode. To switch back to the default Ethernet management port, use the **no** form of this command.

platform management-interface TenGigabitEthernet0/1
no platform management-interface TenGigabitEthernet0/1

Syntax Description

TenGigabitEthernet0/1	Changes the Ethernet management port from GigabitEthernet0/0 to TenGigabitEthernet0/1.

Command Default

GigabitEthernet0/0 is enabled.

Command Modes

Global configuration (config)

Command History

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

Usage Guidelines

You must reboot the device for the Ethernet management port changes to take effect. Use the **show platform management-interface** command to display the active or configured Ethernet management port on the device.

This example shows how to change the default Ethernet management port to TenGigabitEthernet0/1:

```
Device> enable
Device# configure terminal
Device(config)# platform management-interface TenGigabitEthernet0/1
 Changing the Management-interface from GigabitEthernet0/0 to TenGigabitEthernet0/1, changes
 take effect after reload!

Device(config)# end
Device# show platform management-interface
 Management interface is GigabitEthernet0/0.
 Configured management interface is TenGigabitEthernet0/1. Reload to take effect

Device# reload
Proceed with reload? [confirm]

Initializing Hardware...
.
.
.
<output truncated>
Device# show platform management-interface
 Management interface is TenGigabitEthernet0/1
```

platform usb disable

To disable all the USB ports on a device, use the **platform usb disable** command in global configuration mode. To reenable all the USB ports on the device, use the **no platform usb disable** command.

platform usb disable
no platform usb disable

Command Default

All the USB ports are enabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

Usage Guidelines

The **platform usb disable** command disables all the USB ports on both stacked and standalone devices, but not Bluetooth dongles connected to USB ports. This command also disables all USB ports in ROMMON, which can be reenabled by using the **no platform usb disable** command in global configuration mode.

Examples

The following example shows how to disable USB ports on a device:

```
Device> enable
Device# configure terminal
Device(config)# platform usb disable
This config cli may cause data corruption if there is some ongoing operation on usb device.
 Do you want to proceed [confirm]?
y
Device(config)# end
```

Related Commands

Command	Description
show platform usb status	Displays the status of the USB ports on a device.

power supply autoLC shutdown

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

power supply autoLC shutdown
no power supply autoLC shutdown

Syntax Description

This command has no arguments or keywords.

Command Default

Automatic shutdown control on linecards is enabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Examples

This example shows how to enable automatic shutdown on linecards:

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

request tech-support

To generate an archive of tech-support data and online system report files in a report, use the **request tech-support** command in privileged EXEC mode. This report can be generated on demand and is intended to help with troubleshooting issues.

request tech-support

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE 17.13.1	This command was introduced.

Usage Guidelines

The **request tech-support** command generates an archive that is a combination of the tech support file and the online system report files. The command displays the generated file path from where you can access the archive file. The tech support file is the output of the **show tech-support** command. The system report contains files with information about full process core, tracelogs,system process information and bootup logs. The information is stored in separate files which are then archived and compressed into the tar.gz bundle

Examples

The following example shows the output of the **request tech-support** command:

```
Switch# request tech-support21:34:45.856 UTC Mon Oct 23 2023 : Collecting 'show
tech-support'...
21:35:36.563 UTC Mon Oct 23 2023 : 'show tech-support' collected successfully!
21:35:37.986 UTC Mon Oct 23 2023 : Collecting binary traces...
21:35:38.188 UTC Mon Oct 23 2023 : Binary traces collected successfully!
21:35:38.192 UTC Mon Oct 23 2023 : Collecting platform-dependent files...
21:35:38.289 UTC Mon Oct 23 2023 : Platform-dependent files collected successfully!
21:35:38.294 UTC Mon Oct 23 2023 : Generating tech-support bundle...
21:35:45.655 UTC Mon Oct 23 2023 : Tech-support bundle file crashinfo:Switch_1_RP_0-
debug-bundle_1_20230630-030839-UTC.tar.gz [size: 24529 KB]
21:35:45.655 UTC Mon Oct 23 2023 : Tech-support bundle generated successfully!
```

Related Commands

Command	Description
show tech-support	Generates an archive of files in a system report and tech support data.

service high-power-optics-syslog

To enable periodic syslog messages for high-power optics exceeding the power budget, use the **service high-power-optics-syslog** command in global configuration mode. To disable periodic syslog messages, use the **no** form of this command. The syslog appears only if the allocated power budget is violated by at least one port on a line card. The log messages will appear once per line card every 24 hours.

service high-power-optics-syslog
no service high-power-optics-syslog

Command Default

When high-power optics are present, periodic syslog is enabled by default and is not present in the startup or running configuration. However, the no form of the command is saved in the configuration.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE 17.13.x	This command was introduced.

Example

The following example enables periodic syslog for high-power optics:

```
Device> enable
Device# configure terminal
Device(config)# service high-power-optics-syslog
```

The following is an example of the syslog message generated:

```
*Sep 21 07:09:16.441: %IOMD_INFRA-6-HIGH_POWER_OPTICS_PRESENT: C6/0: iomd: The
line card 6 has optic(s) inserted in port(s) that has power limitations. The
optics max power is more than the power recommended. This can lead to operational
and thermal issues for these and neighbouring ports. To identify allocated port
max power, please execute the CLI: show interface transceiver max-power module 6
```

shell trigger

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

shell trigger *identifier description*

no shell trigger *identifier description*

Syntax Description

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

Command Default

System-defined event triggers:

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

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

Example

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

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

show environment

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

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

Syntax Description

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

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

Use the **show environment** EXEC command to display the information for the switch being accessed.

Examples

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

```
Device> show environment all

Sensor List:  Environmental Monitoring
 Sensor           Location          State             Reading
 Temp: UADP_0_0   R1                Normal            52 Celsius
 Temp: UADP_0_1   R1                Normal            50 Celsius
 Temp: UADP_0_2   R1                Normal            50 Celsius
 Temp: UADP_0_3   R1                Normal            52 Celsius
 Temp: UADP_0_4   R1                Normal            51 Celsius
 Temp: UADP_0_5   R1                Normal            52 Celsius
 Temp: UADP_0_6   R1                Normal            63 Celsius
 Temp: UADP_0_7   R1                Normal            54 Celsius
..
<output truncated>
```

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

```
Device> show environment status

Power                                                          Fan States
Supply  Model No              Type  Capacity  Status         1     2
------  --------------------  ----  --------  -------------  ----------
PS1     C9x00-PWR-2KWAC       ac    2000 W    active         good  good
PS4     C9x00-PWR-2KWAC       ac    2000 W    active         good  good

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

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

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

show errdisable detect

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

show errdisable detect

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

You can configure error-disabled detection in these modes:

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

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

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

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

show errdisable recovery

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

show errdisable recovery

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

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

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

show hardware led

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

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

Syntax Description

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

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Command Default

This command has no default settings.

Command Modes

Privileged EXEC (#)

Usage Guidelines

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

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

- GREEN—Indicates the interface is up.
- BLACK—Indicates the interface is down.
- AMBER—Indicates the interface ADMIN is down.

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

- AMBER—Indicates the LC is booting up.
- GREEN—Indicates the LC is up and running.
- RED—Indicates the LC has a problem or is disabled.

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

- BLUE—Indicates the Beacon LED is On.
- BLACK—Indicates the Beacon LED is Off.

Status of SYSTEM LED is indicated by the following colors:

- GREEN—Indicates all components are up and running.
- RED—Indicates that temperature exceeds either the critical temperature or the shutdown threshold; or fantray is either removed or has failed.
- ORANGE—Indicates that temperature exceeds the warning threshold; or fantray experiences partial fails; or active power supply failed.

Sample output of *show hardware led* command

```
Device#show hardware led
SWITCH: 1
SYSTEM: GREEN

Line Card : 1
PORT STATUS: (48) Twe1/0/1:BLACK Twe1/0/2:BLACK Twe1/0/3:BLACK Twe1/0/4:GREEN Twe1/0/5:GREEN
 Twe1/0/6:BLACK Twe1/0/7:BLACK Twe1/0/8:BLACK Twe1/0/9:BLACK Twe1/0/10:BLACK Twe1/0/11:BLACK
 Twe1/0/12:BLACK Twe1/0/13:BLACK Twe1/0/14:BLACK Twe1/0/15:BLACK Twe1/0/16:BLACK
Twe1/0/17:BLACK Twe1/0/18:BLACK Twe1/0/19:BLACK Twe1/0/20:BLACK Twe1/0/21:BLACK
Twe1/0/22:BLACK Twe1/0/23:GREEN Twe1/0/24:GREEN Twe1/0/25:BLACK Twe1/0/26:BLACK
Twe1/0/27:BLACK Twe1/0/28:BLACK Twe1/0/29:BLACK Twe1/0/30:BLACK Twe1/0/31:BLACK
Twe1/0/32:BLACK Twe1/0/33:BLACK Twe1/0/34:BLACK Twe1/0/35:BLACK Twe1/0/36:BLACK
Twe1/0/37:BLACK Twe1/0/38:BLACK Twe1/0/39:BLACK Twe1/0/40:BLACK Twe1/0/41:BLACK
Twe1/0/42:BLACK Twe1/0/43:BLACK Twe1/0/44:BLACK Twe1/0/45:BLACK Twe1/0/46:BLACK
Twe1/0/47:GREEN Twe1/0/48:BLACK
BEACON: BLACK
STATUS: GREEN

MODULE: slot 3
SUPERVISOR: STANDBY
PORT STATUS: (0)
BEACON: BLACK
STATUS: GREEN
SYSTEM: GREEN
ACTIVE: AMBER

MODULE: slot 4
SUPERVISOR: ACTIVE
PORT STATUS: (0)
BEACON: BLACK
STATUS: GREEN
SYSTEM: GREEN
ACTIVE: GREEN

Line Card : 5
PORT STATUS: (48) Fo5/0/1:BLACK Fo5/0/2:BLACK Fo5/0/3:BLACK Fo5/0/4:BLACK Fo5/0/5:BLACK
Fo5/0/6:BLACK Fo5/0/7:BLACK Fo5/0/8:BLACK Fo5/0/9:BLACK Fo5/0/10:BLACK Fo5/0/11:BLACK
Fo5/0/12:BLACK Fo5/0/13:BLACK Fo5/0/14:BLACK Fo5/0/15:BLACK Fo5/0/16:BLACK Fo5/0/17:BLACK
Fo5/0/18:BLACK Fo5/0/19:BLACK Fo5/0/20:BLACK Fo5/0/21:BLACK Fo5/0/22:BLACK Fo5/0/23:BLACK
Fo5/0/24:BLACK Hu5/0/25:GREEN Hu5/0/26:BLACK Hu5/0/27:GREEN Hu5/0/28:BLACK Hu5/0/29:GREEN
Hu5/0/30:BLACK Hu5/0/31:GREEN Hu5/0/32:BLACK Hu5/0/33:GREEN Hu5/0/34:BLACK Hu5/0/35:GREEN
Hu5/0/36:BLACK Hu5/0/37:GREEN Hu5/0/38:BLACK Hu5/0/39:GREEN Hu5/0/40:BLACK Hu5/0/41:GREEN
```

```
Hu5/0/42:BLACK Hu5/0/43:GREEN Hu5/0/44:BLACK Hu5/0/45:GREEN Hu5/0/46:BLACK Hu5/0/47:GREEN
Hu5/0/48:BLACK
BEACON: BLACK
STATUS: GREEN

Line Card : 6
PORT STATUS: (48) Fo6/0/1:BLACK Fo6/0/2:BLACK Fo6/0/3:BLACK Fo6/0/4:GREEN Fo6/0/5:GREEN
Fo6/0/6:BLACK Fo6/0/7:BLACK Fo6/0/8:BLACK Fo6/0/9:BLACK Fo6/0/10:GREEN Fo6/0/11:BLACK
Fo6/0/12:GREEN Fo6/0/13:BLACK Fo6/0/14:BLACK Fo6/0/15:BLACK Fo6/0/16:BLACK Fo6/0/17:BLACK
Fo6/0/18:BLACK Fo6/0/19:BLACK Fo6/0/20:BLACK Fo6/0/21:BLACK Fo6/0/22:GREEN Fo6/0/23:GREEN
Fo6/0/24:BLACK Hu6/0/25:BLACK Hu6/0/26:BLACK Hu6/0/27:BLACK Hu6/0/28:BLACK Hu6/0/29:BLACK
Hu6/0/30:BLACK Hu6/0/31:BLACK Hu6/0/32:BLACK Hu6/0/33:BLACK Hu6/0/34:BLACK Hu6/0/35:BLACK
Hu6/0/36:BLACK Hu6/0/37:BLACK Hu6/0/38:BLACK Hu6/0/39:BLACK Hu6/0/40:BLACK Hu6/0/41:BLACK
Hu6/0/42:BLACK Hu6/0/43:BLACK Hu6/0/44:BLACK Hu6/0/45:BLACK Hu6/0/46:BLACK Hu6/0/47:BLACK
Hu6/0/48:BLACK
BEACON: BLACK
STATUS: GREEN

GigabitEthernet0/0 (MGMT): BLACK

TenGigabitEthernet0/1 (SFP MGMT): GREEN
FANTRAY STATUS: GREEN
FANTRAY BEACON: BLACK
```

show hw-module slot port-group mode

To display the mode of operation of a port-group, use the **show hw-module slot** *slot-number* **port-group mode** command in the privileged EXEC mode.

show hw-module slot *slot-number* **port-group mode**

Syntax Description

slot-number	Defines the slot number. The slot numbers are 1,2,5 and 6.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Cupertino 17.9.1	This command was introduced.

Examples

The following is a sample output from the **show hw-module slot port-group mode** command:

```
Device# show hw-module slot 1 port-group mode

Module    Port-group     Ports            Mode
------------------------------------------------------------
   1        1         Hu1/0/25           inactive
                      Hu1/0/26           inactive
                      Fou1/0/27          400G
                      Hu1/0/28           inactive
   1        2         Hu1/0/29           100G
                      Hu1/0/30           100G
                      Fou1/0/31          100G
                      Hu1/0/32           100G
```

show hw-module subslot port-group mapping

To display the mapping between the port groups and ports on the selected line card, use the **show hw-module subslot** *slot/subslot* **port-groupmapping** command in privileged EXEC mode.

show hw-module subslot *slot/subslot***port-group mapping**

Syntax Description

subslot *slot/subslot*	The slot information. *slot*: The slot number. The range is from 1 to 6. *subslot*: The subslot number. The value is 0.

Command Modes

Privileged Exec(#)

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.3.x	This command was introduced.

Examples

This example shows how to view port and port-group's mapping using the **show hw-module subslot** *module-number/slot-number* **port-group mapping**

```
Device > enable
Device# show hw-module subslot 1/0 port-group mapping
Port-Group      Ports
1               Fo1/0/1, Fo1/0/2, Hu1/0/25
2               Fo1/0/3, Fo1/0/4, Hu1/0/27
3               Fo1/0/5, Fo1/0/6, Hu1/0/29
4               Fo1/0/7, Fo1/0/8, Hu1/0/31
5               Fo1/0/9, Fo1/0/10, Hu1/0/33
6               Fo1/0/11, Fo1/0/12, Hu1/0/35
7               Fo1/0/13, Fo1/0/14, Hu1/0/37
8               Fo1/0/15, Fo1/0/16, Hu1/0/39
9               Fo1/0/17, Fo1/0/18, Hu1/0/41
10              Fo1/0/19, Fo1/0/20, Hu1/0/43
11              Fo1/0/21, Fo1/0/22, Hu1/0/45
12              Fo1/0/23, Fo1/0/24, Hu1/0/47
```

show hw-module slot port-group mode

To display the mode of operation of a port-group, use the **show hw-module slot** *slot-number* **port-group mode** command in the privileged EXEC mode.

show hw-module slot *slot-number* **port-group mode**

Syntax Description

slot-number	Defines the slot number. The slot numbers are 1,2,5 and 6.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Cupertino 17.9.1	This command was introduced.

Examples

The following is a sample output from the **show hw-module slot port-group mode** command:

```
Device# show hw-module slot 1 port-group mode

Module    Port-group     Ports            Mode
------------------------------------------------------------
   1         1         Hu1/0/25           inactive
                       Hu1/0/26           inactive
                       Fou1/0/27          400G
                       Hu1/0/28           inactive
   1         2         Hu1/0/29           100G
                       Hu1/0/30           100G
                       Fou1/0/31          100G
                       Hu1/0/32           100G
```

show hw-module subslot port-group operation-mode

To displays the operating speed of the port groups on the selected line card, use the **show hw-module subslot** *slot/subslot* **port-group operation-mode** command in privileged EXEC mode.

show hw-module subslot *slot/subslot***port-group operation-mode**

Syntax Description

subslot *slot/subslot*	The slot information. *slot*: The slot number. The range is from 1 to 6. *subslot*: The subslot number. The value is 0.

Command Modes

Privileged Exec(#)

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.3.x	This command was introduced.

Examples

This example shows how to view each port-group's operating speed using the **show hw-module subslot** *module-number/slot-number* **port-group operation-mode** command.

```
Device > enable
Device# show hw-module subslot 1/0 port-group operation-mode
Physical Port Mapping for slot 1
Module 1 port group 1 is running in FortyGigabitEthernet mode
Module 1 port group 2 is running in FortyGigabitEthernet mode
Module 1 port group 3 is running in FortyGigabitEthernet mode
Module 1 port group 4 is running in FortyGigabitEthernet mode
Module 1 port group 5 is running in FortyGigabitEthernet mode
Module 1 port group 6 is running in FortyGigabitEthernet mode
Module 1 port group 7 is running in FortyGigabitEthernet mode
Module 1 port group 8 is running in FortyGigabitEthernet mode
Module 1 port group 9 is running in FortyGigabitEthernet mode
Module 1 port group 10 is running in FortyGigabitEthernet mode
Module 1 port group 11 is running in FortyGigabitEthernet mode
Module 1 port group 12 is running in FortyGigabitEthernet mode
```

show hw-module subslot port-group port-numbering

To display the mapping between the physical port and the 100 GE port of the selected line card, use the **show hw-module subslot** *slot/subslot* **port-group port-numbering** command in privileged EXEC mode.

show hw-module subslot *slot/subslot***port-group port-numbering**

Syntax Description

subslot *slot/subslot*	The slot information. *slot*: The slot number. The range is from 1 to 6. *subslot*: The subslot number. The value is 0.

Command Modes

Privileged Exec(#)

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.3.x	This command was introduced.

Examples

This example shows how to view the mapping of the physical port using the **show hw-module subslot** *module-number/slot-number* **port-group port-numbering** command.

```
Device > enable
Device# show hw-module subslot 1/0 port-group port-numbering
Physical Port Mapping for slot 1

Physical-Port    Mapped-Port
1                Hu1/0/25
2                Hu1/0/26
3                Hu1/0/27
4                Hu1/0/28
5                Hu1/0/29
6                Hu1/0/30
7                Hu1/0/31
8                Hu1/0/32
9                Hu1/0/33
10               Hu1/0/34
11               Hu1/0/35
12               Hu1/0/36
13               Hu1/0/37
14               Hu1/0/38
15               Hu1/0/39
16               Hu1/0/40
17               Hu1/0/41
18               Hu1/0/42
19               Hu1/0/43
20               Hu1/0/44
21               Hu1/0/45
22               Hu1/0/46
23               Hu1/0/47
24               Hu1/0/48
```

show idprom fan-tray

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

```
show idprom fan-tray eeprom
```

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

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

```
Device#show idprom fan-tray eeprom
 Product Identifier (PID) : C9606-FAN
 Version Identifier (VID) : V00
 PCB Serial Number        : DCH2232Z0QF
 Top Assy. Revision       : 02
 Hardware Revision        : 0.4
 CLEI Code                : UNDEFINED
```

show idprom tan

To display the Identification Programmable Read-Only Memory (IDPROM) top assembly part number and revision number, use the **show idprom tan** command in privileged EXEC mode.

show idprom tan [**switch** [*switch-num*]]

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Dublin 17.12.1	This command was introduced.

Examples

The following example shows how to display the IDPROM top assembly part number and revision number:

```
Device# show idprom tan switch 1

Switch 01
----------------------------------------------------------------
Top Assembly Part Number and Revision Number for Active Switch
----------------------------------------------------------------
Top Assy. Part Number           : 68-101751-01
Top Assy. Revision Number       : E0
```

show ip interface

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

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

Syntax Description

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

Command Default

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

Examples

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

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

GigabitEthernet1/0/1 is up, line protocol is up
  Internet address is 10.1.1.1/16
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
```

```
  Outgoing access list is not set
  Inbound access list is not set
  Proxy ARP is enabled
  Local Proxy ARP is disabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables are always sent
  ICMP mask replies are never sent
  IP fast switching is enabled
  IP fast switching on the same interface is disabled
  IP Flow switching is disabled
  IP CEF switching is enabled
  IP Feature Fast switching turbo vector
  IP VPN Flow CEF switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast, CEF
  Router Discovery is disabled
  IP output packet accounting is disabled
  IP access violation accounting is disabled
  TCP/IP header compression is disabled
  RTP/IP header compression is disabled
  Policy routing is enabled, using route map PBR
  Network address translation is disabled
  BGP Policy Mapping is disabled
  IP Multi-Processor Forwarding is enabled
     IP Input features, "PBR",
         are not supported by MPF and are IGNORED
     IP Output features, "NetFlow",
         are not supported by MPF and are IGNORED
```

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

```
Device# show ip interface vlan 1

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

```
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Probe proxy name replies are disabled
Policy routing is disabled
Network address translation is disabled
WCCP Redirect outbound is disabled
WCCP Redirect inbound is disabled
WCCP Redirect exclude is disabled
BGP Policy Mapping is disabled
Sampled Netflow is disabled
IP multicast multilayer switching is disabled
Netflow Data Export (hardware) is enabled
```

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

Table 1: show ip interface Field Descriptions

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

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

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

```
Device# show ip interface brief

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

<output truncated>
```

Table 2: show ip interface brief Field Descriptions

Field	Description
Interface	Type of interface.
IP-Address	IP address assigned to the interface.
OK?	"Yes" means that the IP Address is valid. "No" means that the IP Address is not valid.

Field	Description
Method	The Method field has the following possible values: • RARP or SLARP: Reverse Address Resolution Protocol (RARP) or Serial Line Address Resolution Protocol (SLARP) request. • BOOTP: Bootstrap protocol. • TFTP: Configuration file obtained from the TFTP server. • manual: Manually changed by the command-line interface. • NVRAM: Configuration file in NVRAM. • IPCP: **ip address negotiated** command. • DHCP: **ip address dhcp** command. • unset: Unset. • other: Unknown.
Status	Shows the status of the interface. Valid values and their meanings are: • up: Interface is up. • down: Interface is down. • administratively down: Interface is administratively down.
Protocol	Shows the operational status of the routing protocol on this interface.

Related Commands

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

show interfaces

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

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

Syntax Description

interface-id	(Optional) ID of the interface. Valid interfaces include physical ports (including type, stack member for stacking-capable switches, module, and port number) and port channels. The port channel range is 1 to 192. **Note** This command does not report output drops for Catalyst 9600X Series Switches.
vlan *vlan-id*	(Optional) VLAN identification. The range is 1 to 4094.
accounting	(Optional) Displays accounting information on the interface, including active protocols and input and output packets and octets. **Note** The display shows only packets processed in software; hardware-switched packets do not appear.
capabilities	(Optional) Displays the capabilities of all interfaces or the specified interface, including the features and options that you can configure on the interface. Though visible in the command line help, this option is not available for VLAN IDs.
module *number*	(Optional) Displays capabilities of all interfaces on the switch or specified stack member. This option is not available if you entered a specific interface ID.
description	(Optional) Displays the administrative status and description set for interfaces.
etherchannel	(Optional) Displays interface EtherChannel information.
flowcontrol	(Optional) Displays interface flow control information.
link [**module***number*]	(Optional) Displays the up time and down time of the interface.
pruning	(Optional) Displays trunk VTP pruning information for the interface.
stats	(Optional) Displays the input and output packets by switching the path for the interface.

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

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

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.
Cisco IOS XE Gibraltar 16.12.1	The **link** keyword was introduced.

Usage Guidelines

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

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

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

Last Input is not updated by fast-switched traffic.

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

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

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

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

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

Examples

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

```
Device# show interfaces fortyGigabitEthernet6/0/2 description

Interface                      Status         Protocol Description
Fo1/0/2                        up           Connects to Marketing
```

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

```
Device# show interfaces vlan 1 stats

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

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

```
Device# show interfaces status err-disabled

Port      Name       Status         Reason
Fo1/0/2              err-disabled   gbic-invalid
Fo2/0/3              err-disabled   dtp-flap
```

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

```
Device# show interfaces FortyGigabitEthernet6/0/4 pruning

Port Vlans pruned for lack of request by neighbor


Device# show interfaces FortyGigabitEthernet6/0/4 trunk

Port        Mode             Encapsulation  Status        Native vlan
Fo6/0/4     auto             802.1q         not-trunking  1

Port        Vlans allowed on trunk
Fo6/0/4     1

Port        Vlans allowed and active in management domain
Fo6/0/4     1
```

```
Port        Vlans in spanning tree forwarding state and not pruned
Fo6/0/4     1
```

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

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

show interfaces counters

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

show interfaces [*interface-id*] **counters** [**errors** | **etherchannel** | **module** *member-number* | **protocol** **broadcast** **multicast** **unicast** | **trunk**]

Syntax Description

interface-id	(Optional) ID of the physical interface, including type, stack member (stacking-capable switches only) module, and port number.
errors	(Optional) Displays error counters.
etherchannel	(Optional) Displays EtherChannel counters, including octets, broadcast packets, multicast packets, and unicast packets received and sent.
module *member-number*	(Optional) Displays counters for the specified member.
protocol **status**	(Optional) Displays the status of protocols enabled on interfaces.
trunk	(Optional) Displays trunk counters.
broadcast	(Optional) Displays interface broadcast suppression discard counters.
multicast	(Optional) Displays interface multicast suppression discard counters.
unicast	(Optional) Displays interface unicast suppression discard 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 Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

Interface counters will be reset on Stateful Switchover (SSO).

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
Twe1/0/1                  0              0              0              0
Twe1/0/2                  0              0              0              0
```

```
Twe1/0/3                   0              0              0              0
Twe1/0/4            15154614          93495          48506              0
Twe1/0/5            45073736          93516         515933              0
Twe1/0/6                   0              0              0              0
..<output truncated>
```

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

```
Device#show interfaces counter module 6

Port               InOctets    InUcastPkts    InMcastPkts    InBcastPkts
Fo6/0/1                   0              0              0              0
Fo6/0/2                   0              0              0              0
Fo6/0/3                   0              0              0              0
Fo6/0/4            15259724          93480          48505              0
Fo6/0/5            45168180          93500         515838              0
Fo6/0/6                   0              0              0              0
..<output truncated>
```

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

```
Device#show interface counters protocol status
Protocols allocated:
 Vlan1: Other, IP
 GigabitEthernet0/0: Other, IP
 TwentyFiveGigE1/0/1: Other, IP
 TwentyFiveGigE1/0/2: Other, IP
 TwentyFiveGigE1/0/3: Other, IP
 TwentyFiveGigE1/0/4: Other, IP, Spanning Tree, CDP, DTP
 TwentyFiveGigE1/0/5: Other, IP, Spanning Tree, CDP, DTP
 TwentyFiveGigE1/0/6: Other, IP
 TwentyFiveGigE1/0/7: Other, IP
 TwentyFiveGigE1/0/8: Other, IP
 TwentyFiveGigE1/0/9: Other, IP
 TwentyFiveGigE1/0/10: Other, IP


<output truncated>
```

show interfaces switchport

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

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

Syntax Description

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

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

```
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, quad small form-factor pluggable (QSFP) or quad small form-factor pluggable double density (QSFP-DD) module interfaces, use the **show interfaces transceiver** command in EXEC mode.

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

Syntax Description

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

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Examples

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

```
Device# show interfaces transceiver properties

Name : Fif1/0/2
Administrative Speed: 50000
Administrative Duplex: full
Administrative Auto-MDIX: on
Administrative Power Inline: N/A
Operational Speed: 50000
Operational Duplex: full
Operational Auto-MDIX: on
Media Type: SFP-H50GBase-CU1M
Max Allocated Power: 2.5 W
Transceiver Max Power: 1.0 W
```

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

```
Device#show interfaces transceiver
Transceiver monitoring is disabled for all interfaces.

If device is externally calibrated, only calibrated values are printed.
++ : high alarm, +  : high warning, -  : low warning, -- : low alarm.
NA or N/A: not applicable, Tx: transmit, Rx: receive.
```

```
mA: milliamperes, dBm: decibels (milliwatts).

                                                 Optical   Optical
             Temperature  Voltage  Current      Tx Power  Rx Power    Max Power
Port         (Celsius)    (Volts)  (mA)         (dBm)     (dBm)       (Watts)
---------    -----------  -------  --------     --------  --------    ----------
Hu2/0/12     17.9         3.28     6.7         -0.1      -40.0        Max
Hu2/0/14     22.1         3.27     7.4          0.6      -28.8        Max
Fif5/0/1     21.0         3.28     23.0        -0.2      -1.4         2.5W
Fif5/0/3     25.0         3.31     11.0        -5.6      -5.1         2.5W
Fif5/0/5     26.0         3.30     11.0        -5.5      -5.6         2.5W
Fif5/0/7     27.0         3.25     45.0         3.4      -3.0         2.5W
Fif5/0/9     26.0         3.23     46.0         2.7      -3.0         1.5W
Fif5/0/12    17.0         3.25     5.0         -2.1      -2.8         1.5W
```

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

```
Device#show interfaces transceiver detail

mA: milliamperes, dBm: decibels (milliwatts), NA or 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 calibrated.

                      High Alarm  High Warn  Low Warn   Low Alarm
             Temperature  Threshold  Threshold  Threshold  Threshold
Port         (Celsius)     Celsius)  (Celsius)  (Celsius)  (Celsius)
---------    -----------  ---------  ---------  ---------  ---------
Hu2/0/12     17.9            75.0       70.0       0.0        -5.0
Hu2/0/14     22.0            75.0       70.0       0.0        -5.0
Fif5/0/1     21.0            75.0       70.0       0.0        -5.0….….


            Port Maximum      Transceiver
            Allocated Power   Max Power
Port        (Watts)           (Watts)
---------  ---------------   ----------
Hu2/0/12         Max             3.5
Hu2/0/14         Max             3.5
Fif5/0/1         2.5             1.5
Fif5/0/3         2.5             2.0
Fif5/0/5         2.5             2.0
Fif5/0/7         2.5             1.5
Fif5/0/9         1.5             1.5
Fif5/0/12        1.5             1.0
Fif5/0/14        1.5             1.0
Fif5/0/23        1.5             2.0
```

This is an example of output from the **show interfaces transceivermax-power** command:

```
Device# show interfaces transceiver max-power

            Port Maximum      Transceiver
            Allocated Power   Max Power
Port        (Watts)           (Watts)
---------  ---------------   ----------
Fif1/0/1           2.5             1.0
Fif1/0/2           2.5             1.0
Fif1/0/4           2.5             1.0
Fif1/0/5           2.5             1.0
Fif1/0/6           2.5             1.0
Fif1/0/7           2.5             1.0
Fif1/0/8           2.5             1.0
Fif1/0/9           1.5             1.0
```

```
Fif1/0/12           1.5             1.0
Fif1/0/13           1.5             N/A
Fif1/0/14           1.5             1.0
…….
Hu2/0/1             Max             N/A
Hu2/0/5             Max             N/A
Hu2/0/6             Max             N/A
Hu2/0/7             Max             1.5
….
Fif5/0/1            2.5             1.5
Fif5/0/2            2.5             N/A
Fif5/0/3            2.5             2.0
Fif5/0/22           1.5             N/A
Fif5/0/23           1.5             2.0
```

Related Commands

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

show inventory

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

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

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

```
Device# show inventory
NAME: "Chassis", DESCR: "Cisco Catalyst 9600 Series 6 Slot Chassis"
PID: C9606R            , VID: V00  , SN: FXS2231Q32N

NAME: "Slot 2 Linecard", DESCR: "48-Port 10GE / 25GE"
PID: C9600-LC-48YL     , VID: V00  , SN: CAT2232L0NJ

NAME: "TwentyFiveGigE2/0/1", DESCR: "10GE CU5M"
PID: QSFP-4SFP10G-CU5M   , VID: V03  , SN: MDM17350075-CH3

NAME: "TwentyFiveGigE2/0/2", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A0VQ

NAME: "TwentyFiveGigE2/0/3", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A0VQ

NAME: "TwentyFiveGigE2/0/4", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A0LU

NAME: "TwentyFiveGigE2/0/5", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A0LU

NAME: "TwentyFiveGigE2/0/6", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A1H7

NAME: "TwentyFiveGigE2/0/7", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A1H7

NAME: "TwentyFiveGigE2/0/8", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A0VJ

NAME: "TwentyFiveGigE2/0/9", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A0VJ

NAME: "TwentyFiveGigE2/0/10", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A0LY
NAME: "TwentyFiveGigE2/0/23", DESCR: "10GE CU1M"
PID: SFP-H10GB-CU1M      , VID: V03  , SN: TED2143A11X

.
.
output truncated
```

Table 3: show inventory Field Descriptions

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

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

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

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

show memory platform

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

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

Syntax Description

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

Examples

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

```
Switch# show memory platform

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

  Architecture     : mips64
  Memory (kB)
    Physical       : 3976852
    Total          : 3976852
    Used           : 2761276
    Free           : 1215576
    Active         : 2128196
    Inactive       : 1581856
    Inact-dirty    : 0
    Inact-clean    : 0
    Dirty          : 0
    AnonPages      : 1294984
    Bounce         : 0
    Cached         : 1978168
    Commit Limit   : 1988424
    Committed As   : 3343324
    High Total     : 0
    High Free      : 0
    Low Total      : 3976852
    Low Free       : 1215576
    Mapped         : 516316
    NFS Unstable   : 0
    Page Tables    : 17124
    Slab           : 0
    VMmalloc Chunk : 1069542588
```

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

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

 Buffers (kB)    : 437136

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

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

```
Device# show memory platform information

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

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

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

Buffers (kB)     : 438228

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

show module

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

`show module` [*slot-num*]

Syntax Description

slot-num	(Optional) Number of the slot.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

Examples

This example shows how to display information for all the modules on a Cisco Catalyst 9600 Series switch:

```
Device# show module

Chassis Type: C9606R

Mod Ports Card Type                                  Model          Serial No.
---+-----+--------------------------------------+--------------+--------------
2   48   48-Port 10GE / 25GE                      C9600-LC-48YL    CAT2232L0NJ

Mod MAC addresses                    Hw   Fw           Sw                 Status
---+---------------------------------+----+------------+------------------+--------
2   7872.5DEC.6A80 to 7872.5DEC.6AFF 0.5  16.11.1r[FC2] BLD_V1611_THROTTLE ok

Chassis MAC address range: 64 addresses from 6cb2.ae49.6700 to 6cb2.ae49.673f
```

show network-policy profile

To display the network-policy profiles, use the **show network policy profile** command in privileged EXEC mode.

show network-policy profile [*profile-number*] [**detail**]

Syntax Description

profile-number	(Optional) Displays the network-policy profile number. If no profile is entered, all network-policy profiles appear.
detail	(Optional) Displays detailed status and statistics information.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

This is an example of output from the **show network-policy profile** command:

```
Device# show network-policy profile
Network Policy Profile 10
   voice vlan 17 cos 4
  Interface:
   none
Network Policy Profile 30
   voice vlan 30 cos 5
  Interface:
   none
Network Policy Profile 36
   voice vlan 4 cos 3
  Interface:
   Interface_id
```

show platform hardware bluetooth

To display information about Bluetooth interface, use the **show platform hardware bluetooth** command in privileged EXEC mode.

show platform hardware bluetooth

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Amsterdam 17.1.1	This command was introduced.

Usage Guidelines

The **show platform hardware bluetooth** command is to be used when an external USB Bluetooth dongle is connected on the device.

Examples

This example shows how to display the information of the Bluetooth interface using the **show platform hardware bluetooth** command.

```
Device> enable
Device# show platform hardware bluetooth
Controller: 0:1a:7d:da:71:13
Type: Primary
Bus: USB
State: DOWN
Name:
HCI Version:
```

show platform hardware fed switch fwd-asic counters tla

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

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

Syntax Description

switch {*switch_num* | **active** | **standby** }	The switch for which you want to display information. You have the following options : • *switch_num*: ID of the switch. • **active**: Displays information relating to the active switch. • **standby**: Displays information relating to the standby switch, if available.

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

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.
Cisco IOS XE Amsterdam 17.3.1	The command output was modified to be presented in a readable tabular format. The size of the output file was also reduced by not printing fields that had zero values. The **change** keyword was deprecated.

Usage Guidelines

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

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

Example

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

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

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

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

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

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

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

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

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

show platform hardware fed active fwd-asic resource tcam utilization

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

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

Syntax Description

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

Command Modes

Privileged EXEC (#)

Command History

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

Usage Guidelines

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

Example

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

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

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

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

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

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

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

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

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

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

show platform resources

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

show platform resources

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

The output of this command displays the used memory, which is total memory minus the accurate free memory.

Example

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

```
Switch# show platform resources

**State Acronym: H - Healthy, W - Warning, C - Critical

Resource                Usage                Max             Warning         Critical
     State
------------------------------------------------------------------------------------------------

 Control Processor      7.20%                100%            90%             95%
     H
  DRAM                  2701MB(69%)          3883MB          90%             95%
     H
```

show platform software audit

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

show platform software audit {**all** | **summary** | **1** | **2** | **5** |**6** | **F0** | **F1** | **FP** | **RO** | **R1** | **RP**}

Syntax Description

all	Shows the audit log from all the slots.
summary	Shows the audit log summary count from all the slots.
1	Shows the audit log for the SPA-Inter-Processor slot 1.
2	Shows the audit log for the SPA-Inter-Processor slot 2.
5	Shows the audit log for the SPA-Inter-Processor slot 5.
6	Shows the audit log for the SPA-Inter-Processor slot 5.
R0	Shows the audit log for the SPA-Inter-Processor slot 0.
F0	Shows the audit log for the Embedded-Service-Processor slot 0.
F0	Shows the audit log for the Embedded-Service-Processor slot 0.
F1	Shows the audit log for the Embedded-Service-Processor slot 1.
FP	Shows the audit log for the Embedded-Service-Processor.
R0	Shows the audit log for the Route Processor slot 0.
R1	Shows the audit log for the Route Processor slot 1.
RP	Shows the audit log for the Route Processor.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

```
Device# show platform software audit summary
==================================
AUDIT LOG ON ACTIVE
----------------------------------
AVC Denial count: 3
==================================
```

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

```
Device# show platform software audit all
==================================
AUDIT LOG ON ACTIVE
----------------------------------
========== START ============
type=AVC msg=audit(1548740810.855:101): avc:  denied  { create } for  pid=13954
comm="linux_iosd-imag" name="netns" scontext=system_u:system_r:polaris_iosd_t:s0
tcontext=system_u:object_r:etc_t:s0 tclass=dir permissive=1
type=AVC msg=audit(1548740813.604:102): avc:  denied  { create } for  pid=13954
comm="linux_iosd-imag" name="hostname" scontext=system_u:system_r:polaris_iosd_t:s0
tcontext=system_u:object_r:etc_t:s0 tclass=file permissive=1
type=AVC msg=audit(1548740813.604:102): avc:  denied  { write } for  pid=13954
comm="linux_iosd-imag" path="/etc/hostname" dev="rootfs" ino=104105
scontext=system_u:system_r:polaris_iosd_t:s0 tcontext=system_u:object_r:etc_t:s0 tclass=file
 permissive=1
========== END ============
==================================
```

show platform software fed switch punt packet-capture cpu-top-talker

To display the occurrences of an attribute of a packet capture, use the **show platform softwarefed switch punt packet-capture cpu-top-talker** command in privileged EXEC mode.

show platform software fed switch { *switch number* | **active** | **standby** } **punt packet-capture cpu-top-talker** { **cause-code** | **dst_ipv4** | **dst_ipv6** | **dst_l4** | **dst_mac** | **eth_type** | **incoming-interface** | **ipv6_hoplt** | **protocol** | **src_dst_port** | **src_ipv4** | **src_ipv6** | **src_l4** | **src_mac** | **summary** | **ttl** | **vlan** }

Syntax Description

switch{*switch-number* | **active** | **standby**}	Displays information about a switch. You have the following options: • **active** —Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available. **Note** The **standby**keyword is not supported. **Note** The **switch**keyword is not supported on nonstackable devices and on the devices that do not support StackWise Virtual.
cause-code	Displays the occurrences of cause-code.
dst_ipv4	Displays the occurrences on the destination IPv4 interface.
dst_ipv6	Displays the occurrences on the destination IPv6 interface.
dst_l4	Displays the occurrences of the Layer 4 destination port.
dst_mac	Displays the occurrences of the destination MAC address.
eth_type	Displays the occurrences of the Ethernet frame type.
incoming-interface	Displays the occurrences of incoming-interfaces.
ipv6_hoplt	Displays the occurrences of the hop limit on IPv6.
protocol	Displays the occurrences of the Layer 4 protocol.
src_dst_port	Displays the occurrences of the Layer 4 source destination port.
src_ipv4	Displays the occurrences on the source IPv4 interface.
src_ipv6	Displays the occurrences on the source IPv6 interface.
src_l4	Displays the occurrences on the Layer 4 source.

src_mac	Displays the occurrences of the source MAC address.
summary	Displays the summary of the occurrences of all the attributes.
ttl	Displays the occurrences on IPv4 Time to Live (TTL).
vlan	Displays the occurrences of VLAN.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Bengaluru 17.6.1	This command was introduced.

Usage Guidelines

Ensure to start and stop debugging of the packets from the active switch to obtain the occurrences of the packet capture attributes.

Examples

The following is a sample out of the **debugplatform software fed switch active punt packet-capture start**command:

```
Device# debug platform software fed active punt packet-capture start
Punt packet capturing started.
Device#
*Jan 28 12:51:14.978: %FED_PUNJECT-6-PKT_CAPTURE_FULL: F0/0: fed: Punject pkt capture buffer
 is full. Use show command to display the punted packets
```

The following is a sample out of the **debugplatform software fed switch active punt packet-capture stop**command:

```
Device# debug platform software fed active punt packet-capture stop

Punt packet capturing stopped. Captured 4096 packet(s)
```

These commands provide a maximum of ten unique values in descending order for each of the attributes.

The following is a sample output of the **show platform software fed switch active punt packet-capture cpu-top-talkercause-code** command:

```
Device# show platform software fed switch active punt packet-capture cpu-top-talker cause-code

Punt packet capturing: disabled. Buffer wrapping: disabled
Total captured so far: 4096 packets. Capture capacity : 4096 packets
Sr.no.    Value/Key Occurrence
1    Layer2 control protocols 4096
```

The following is a sample output of the **show platform software fed switch active punt packet-capture cpu-top-talkerdst_mac** command:

```
Device# show platform software fed switch active punt packet-capture cpu-top-talker dst_mac
Punt packet capturing: disabled. Buffer wrapping: disabled
Total captured so far: 4096 packets. Capture capacity : 4096 packets
Sr.no.    Value/Key Occurrence
1    01:80:c2:00:00:00   4096
```

The following is a sample output of the **show platform software fed switch active punt packet-capture cpu-top-talkerincoming-interface** command:

```
Device# show platform software fed switch active punt packet-capture cpu-top-talker
incoming-interface
Punt packet capturing: disabled. Buffer wrapping: disabled
Total captured so far: 4096 packets. Capture capacity : 4096 packets
Sr.no.    Value/Key Occurrence
1    TwentyFiveGigE1/0/1 1366
2    TwentyFiveGigE1/0/16     1365
3    TwentyFiveGigE1/0/18     1365
```

The following is a sample output of the **show platform software fed switch activepunt packet-capture cpu-top-talkersrc_mac** command:

```
Device# show platform software fed switch active punt packet-capture cpu-top-talker src_mac
Punt packet capturing: disabled. Buffer wrapping: disabled
Total captured so far: 4096 packets. Capture capacity : 4096 packets
Sr.no.    Value/Key Occurrence
1    70:b3:17:1e:9e:8f   1366
2    70:b3:17:1e:9e:90   1365
3    70:b3:17:1e:9e:91   1365
```

The following is a sample output of the **show platform software fed switch activepunt packet-capture cpu-top-talkersummary** command. This command will provide one highest output for each of the attributes.

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

L2 Top Talkers:
1366 Source mac     70:b3:17:1e:9e:8f
4096 Dest mac  01:80:c2:00:00:00

L3 Top Talkers:

L4 Top Talkers:

Internal Top Talkers:
1366 Interface TwentyFiveGigE1/0/1
4096 CPU Queue Layer2 control protocols
```

show platform software memory

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

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

Syntax Description

Syntax Description

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

process

Level that is being set. Options include:

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

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

slot	Hardware slot where the process for which the level is set, is running. Options include: • *number*—Number of the SIP slot of the hardware module where the level is set. For instance, if you want to specify the SIP in SIP slot 2 of the switch, enter 2. • *SIP-slot / SPA-bay*—Number of the SIP switch slot and the number of the shared port adapter (SPA) bay of that SIP. For instance, if you want to specify the SPA in bay 2 of the SIP in switch slot 3, enter 3/2. • **F0**—The Embedded Service Processor slot 0. • **FP active**—The active Embedded Service Processor. • **FP standby**—The standby Embedded Service Processor. • **R0**—The route processor in slot 0. • **RP active**—The active route processor. • **RP standby**—The standby route processor. • **F0**—The Embedded Service Processor in slot 0. • **FP active**—The active Embedded Service Processor. • **FP standby**—The standby Embedded Service Processor.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command

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 { | **1** | **2** | **5** |**6** | **F0** | **F1** | **FP** | **R0** | **R1** | **RP** {**active** | **standby**} [**name** | **process-id** | sort | **summary**]}

Syntax Description

1	Displays information about the shared port adapters (SPA) Interface Processor slot 1.
2	Displays information about the shared port adapters (SPA) Interface Processor slot 2.
5	Displays information about the shared port adapters (SPA) Interface Processor slot 5.
6	Displays information about the shared port adapters (SPA) Interface Processor slot 6.
R0	Shows the audit log for the SPA-Inter-Processor slot 0.
F0	Shows the audit log for the Embedded-Service-Processor slot 0.
F0	Displays information about the Embedded-Service-Processor slot 0.
F1	Displays information about the Embedded-Service-Processor slot 1.
FP	Displays information about the Embedded-Service-Processor.
R0	Displays information about the Route Processor (RP) slot 0.
R1	Displays information about the Route Processor slot 1.
RP	Displays information about the Route Processor .

Command Modes

Privileged EXE (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	The command was introduced.

Examples

The following is sample output from the **show platform software process list RP active sort memory** command:

```
Switch# show platform software process list RP active sort memory
      Name                       Pid    PPid  Group Id  Status    Priority  Size
-------------------------------------------------------------------------------
linux_iosd-imag          13954   13504     13954  S              20  784500
fed main event           27152   26652     27152  S              20  341736
dbm                      17652   17316     17652  S              20  166272
sessmgrd                 14328   13963     14328  S              20  136276
```

```
iomd                17854   17634     17854  S              20  131316
iomd                17083   16864     17083  S              20  130856
iomd                18319   18105     18319  S              20  130356
fman_rp             17040   16800     17040  S              20  117336
fman_fp_image       27754   27186     27754  S              20  94912
smand               14457   14179     14457  S              20  94704
cman_fp             28242   27675     28242  S              20  91928
cli_agent           18340   17803     18340  S              20  86548
repm                14736   14464     14736  S              20  75488
iomd                15820   15584     15820  S              20  75444
cmand               17729   17487     17729  S              20  41760
cmcc                10398    9657     10398  S              20  32808
cmcc                 1442     744      1442  S              20  32364
cmcc                31158   30743     31158  S              20  31772
cmcc                12554   11907     12554  S              20  31772
tms                 15435   15138     15435  S              20  31648
cmcc                 7355    6236      7355  S              20  31612
cmcc                 4385    3332      4385  S              20  30664
python2.7           18642   18636     18636  S              20  29272
psd                 13688   13302     13688  S              20  22272
hman                16791   16571     16791  R              20  22096
stack_mgr           14148   13741     14148  S              20  21744
lman                15808   15614     15808  S              20  21144
btman               19343   17990     19343  S              20  19852
nginx               19948   19837     19948  S              20  19544
hman                 6843    5982      6843  S              20  18428
btman                1907    1211      1907  S              20  18280
btman               10922   10221     10922  S              20  18244
hman                12318   11391     12318  S              20  18236
btman                5083    4021      5083  S              20  18136
hman                31042   30580     31042  S              20  18088
btman                 671   31406       671  S              20  18076
hman                 1082     415      1082  S              20  18044
hman                10074    9166     10074  S              20  18024
btman                8257    7200      8257  S              20  18024
btman               12832   12377     12832  S              20  17980
hman                27420   26872     27420  S              20  17972
btman               28498   27931     28498  S              20  17904
hman                 3946    3044      3946  S              20  17840
nif_mgr             15098   14854     15098  S              20  14724
plogd               14986   14687     14986  S              20  13744
libvirtd             6224    6162      6162  S              20  13316
keyman              16237   15861     16237  S              20  10696
tams_proc           19930   18921     19930  S              20  10568
ncd.sh              15573   15288     15573  S              20  10336
tamd_proc           22615   21450     22615  S              20  10000
auto_upgrade_cl     24613   23980     24613  S              20  9784
tam_svcs_esg_cf     23763   23503     23763  S              20  8568
nginx               20188   19948     19948  S              20  8500
systemd                 1       0         1  S              20  8004
periodic.sh         23420   23188     23420  S              20  7592
pvp.sh              29822       1     29821  S              20  7564
pvp.sh              30735       1     30733  S              20  7496
pvp.sh               8391       1      8390  S              20  7496
pvp.sh               5596       1      5594  S              20  7464
reflector.sh         6161       1      6161  S              20  7448
pvp.sh               2783       1      2782  S              20  7440
rollback_timer.     12615       1     12615  S              20  6996
pvp.sh              12990       1     12989  S              20  6644
droputil.sh          6153       1      6153  S              20  6604
psvp.sh             12934       1     12934  S              20  6576
pvp.sh              25789       1     25788  S              20  6468
chasync.sh          12619       1     12619  S              20  6408
```

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

```
Device# show platform software process list RP active summary
 Total number of processes: 507
  Running          : 1
  Sleeping         : 506
  Disk sleeping    : 0
  Zombies          : 0
  Stopped          : 0
  Paging           : 0

  Up time          : 3253
  Idle time        : 0
  User time        : 55463
  Kernel time      : 37001

  Virtual memory   : 58752544768
  Pages resident   : 963084
  Major page faults: 6232
  Minor page faults: 11211115

  Architecture     : x86_64
  Memory (kB)
    Physical       : 32483324
    Total          : 32483324
    Used           : 3903496
    Free           : 28579828
    Active         : 3251836
    Inactive       : 1258480
    Inact-dirty    : 0
    Inact-clean    : 0
    Dirty          : 140
    AnonPages      : 1306136
    Bounce         : 0
    Cached         : 2821020
    Commit Limit   : 16241660
    Committed As   : 4680476
    High Total     : 0
    High Free      : 0
    Low Total      : 32483324
    Low Free       : 28578860
    Mapped         : 903268
    NFS Unstable   : 0
    Page Tables    : 107612
    Slab           : 234560
    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)     : 383152
```

```
Load Average
  1-Min          : 0.12
  5-Min          : 0.15
  15-Min         : 0.19
```

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

Table 5: 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.
Priority	Displays the negated scheduling priority.
Size	Displays the Resident Set Size (RSS) that shows how much memory is allocated to that process in the RAM.

show platform software process memory

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

show platform process memory
{**RP** | **FP** {**active** | **standby**} {**1** | **2** | **5** | **6** | **F0** | **F1** | **R0** | **R1**} {**all** [**sorted** | **virtual** [**sorted**]] | **name** *process-name* {**maps** | **smaps** [**summary**] } | **process-id** *process-id* {**maps** | **smaps** [**summary**] } }

Syntax Description

RP	Displays information about the Route Processor.
active	Specifies the active instance of the device.
standby	Specifies the standby instance of the device.
1	Specifies the Shared Port Adapter (SPA) Interface Processor slot 1.
2	Specifies the SPA Interface Processor slot 2.
5	Specifies the SPA Interface Processor slot 5.
6	Specifies the SPA Interface Processor slot 6.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
F1	Specifies the ESP slot 1.
FP	Specifies the Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.
R1	Specifies the RP slot 1.
all	Lists all processes.
sorted	(Optional) Sorts the output based on Resident Set Size (RSS).
virtual	(Optional) Specifies virtual memory.
name *process-name*	Specifies a process name.
maps	Specifies the memory maps of a process.
smaps summary	Specifies the smaps summary of a process.
process-id *process-id*	Specifies a process identifier.

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Command Modes Privileged EXEC(#)

Examples:

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

```
Device# show platform software process memory FP active all
```

Pid	RSS	PSS	Heap	Shared	Private	Name
1	7984	5011	1928	3472	4512	systemd
280	4580	1873	132	3700	880	systemd-journal
307	6264	3159	1452	3560	2704	systemd-udevd
374	18572	5012	1352	14944	3628	hman
523	1664	157	132	1520	144	inotifywait
622	4236	1649	1208	2664	1572	pman.sh
712	32516	8104	1684	27928	4588	cmcc
867	3268	516	132	2768	500	rotee
960	2692	581	132	2248	444	auditd
981	1716	307	132	1456	260	audispd
1008	3976	1504	256	2820	1156	dbus-daemon
1099	2004	777	132	1236	768	rpc.idmapd
1326	17952	4951	1296	14360	3592	btman
1964	7556	4880	4436	2712	4844	pvp.sh
2051	4248	1657	1208	2672	1576	pman.sh
2362	3308	521	132	2804	504	rotee
2473	3220	533	132	2704	516	rotee
2525	4224	1655	1208	2656	1568	pman.sh
2821	3312	516	132	2812	500	rotee
2918	1444	150	132	1304	140	inotifywait
2989	19212	5065	1352	15604	3608	hman
3158	4252	1653	1208	2676	1576	pman.sh
3348	31400	7790	1516	27024	4376	cmcc
3410	3144	513	132	2644	500	rotee
4079	17672	4945	1296	14080	3592	btman
4641	1352	123	132	1252	100	sleep
4905	7568	4889	4436	2724	4844	pvp.sh
5539	4292	1658	1208	2716	1576	pman.sh
5580	3328	532	132	2812	516	rotee
5828	3208	521	132	2704	504	rotee
5912	4180	1646	1208	2612	1568	pman.sh
5998	1468	155	132	1324	144	inotifywait
6148	3492	908	660	2616	876	oom.sh
6151	6168	3561	3152	2640	3528	droputil.sh
6152	6264	3627	3224	2668	3596	reflector.sh
6159	3772	1265	132	2768	1004	virtlogd
6163	2840	285	132	2588	252	libvirtd.sh
6168	2156	597	132	1740	416	rpcbind
6206	1996	233	132	1820	176	xinetd
6231	1952	303	132	1668	284	boothelper_evt.
6242	1428	139	132	1300	128	inotifywait
6250	2572	782	132	1864	708	rpc.statd
6256	2144	751	132	1448	696	rpc.mountd
6266	3204	528	252	2692	512	rotee
6310	13464	8593	132	5812	7652	libvirtd
6358	3120	507	132	2628	492	rotee
6443	1292	101	132	1204	88	sleep
6484	18656	5050	1352	14996	3660	hman
6508	2656	1131	948	1540	1116	mcp_smartctl_cm
6578	2868	1118	132	1868	1000	sshd
6618	4228	1648	1208	2656	1572	pman.sh

```
  6753      3268       521       252      2764       504            rotee
  6757      3276       524       252      2768       508            rotee
  6790      1584       168       132      1428       156       inotifywait
  6843     31404      7827      1596     26972      4432             cmcc
  6920      3216       517       132      2716       500            rotee
  6964      1584       180       132      1416       168       inotifywait
  7304      4832      2171      1776      2696      2136          iptbl.sh
  7420      3196       509       132      2704       492            rotee
  7508      3284       513       132      2788       496            rotee
  7587      1528       159       132      1380       148       inotifywait
  7638     18156      5045      1296     14556      3600             btman
  7680      2852       292       132      2592       260   mcp_wdttickle.s
  7820      7520      4878      4436      2676      4844           pvp.sh
  8489      3208       532       132      2692       516            rotee
  8849      4180      1651      1208      2608      1572          pman.sh
  8926      1476       159       132      1328       148       inotifywait
  9250      3124       514       132      2624       500            rotee
  9441      4228      1657      1208      2652      1576          pman.sh
  9791      3188       528       252      2676       512            rotee
  9856      2024       261       132      1820       204           xinetd
  9898     19284      5099      1352     15672      3612             hman
 10171      4284      1650      1208      2712      1572          pman.sh
 10281     32880      8481      1708     28004      4876             cmcc
 10395      3176       516       132      2676       500            rotee
 10664      1360       123       132      1260       100            sleep
 10859     17924      5029      1296     14308      3616             btman
 11030      4324      1655      1208      2752      1572          pman.sh
 11203      1284       118       132      1188        96            sleep
 11230      3124       514       132      2624       500            rotee
 11265      1200       104       132      1108        92            sleep
 11326      4196      1647      1208      2628      1568          pman.sh
 11562      3332       533       252      2816       516            rotee
 11697     19196      5073      1352     15580      3616             hman
.
.
.
```

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

Table 6: show platform software process memory Field Descriptions

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

Field	Description
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.

show platform software process slot

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

show platform software process slot { **1** | **2** | **5** | **6** | **F0** | **F1** | **R0** | **R1** } {**FP** | **RP** } {**active** | **standby**} **monitor** [**cycles** *no-of-times* [**interval** *delay* [**lines** *number*]]]

Syntax Description

slot	Slot number.
active	Specifies the active instance.
standby	Specifies the standby instance.
1 **2** **5** **6**	Specifies the shared port adapter (SPA) interface processor slot 1. Specifies the SPA interface processor slot 2. Specifies the SPA interface processor slot 5. Specifies the SPA interface processor slot 6.
FP **F0** **F1**	Specifies the Embedded Service Processor (ESP) . Specifies the ESP slot 0. Specifies the ESP slot 1.
RP **R0** **R1**	Specifies the Route Processor (RP) slot 0. Specifies the RP slot 0. Specifies the RP slot 1.
monitor	Monitors the running processes.
cycles *no-of-tmes*	(Optional) Sets the number of times to run monitor command. Valid values are from 1 to 4294967295. The default is 5.
interval *delay*	(Optional) Sets a delay after each . Valid values are from 0 to 300. The default is 3.
lines *number*	(Optional) Sets the number of lines of output displayed. Valid values are from 0 to 512. The default is 0.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

The output of the **show platform software process slot** and **show processes cpu platform monitor location** commands display the output of the Linux **top** command. The output of these commands display Free memory and Used memory as displayed by the Linux **top** command. The values displayed for the Free memory and Used memory by these commands do not match the values displayed by the output of other platform-memory related CLIs.

Examples

The following is sample output from the **show platform software process slot monitor** command:

```
Device#show platform software process slot RP active monitor
top - 06:42:13 up 56 min,  0 users,  load average: 0.23, 0.20, 0.20
Tasks: 509 total,   1 running, 508 sleeping,   0 stopped,   0 zombie
%Cpu(s):  1.2 us,  1.1 sy,  0.0 ni, 97.6 id,  0.1 wa,  0.0 hi,  0.1 si,  0.0 st
KiB Mem : 32483324 total, 26947644 free,  2096552 used,  3439128 buff/cache
KiB Swap:        0 total,        0 free,        0 used. 29223544 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
10719 root      20   0   20508   2552   2020 R  21.1  0.0   0:00.05 top
13954 root      20   0 5474168 784764 455880 S  10.5  2.4   5:30.81 linux_iosd+
12832 root      20   0  234296  17980  14660 S   5.3  0.1   0:01.06 btman
27152 root      20   0 5748316 341736  74904 S   5.3  1.1   1:27.19 fed main e+
    1 root      20   0   41884   8004   5232 S   0.0  0.0   0:02.72 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.00 kthreadd
    3 root      20   0       0      0      0 S   0.0  0.0   0:00.15 ksoftirqd/0
    5 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/0:+
    7 root      20   0       0      0      0 S   0.0  0.0   0:06.14 rcu_sched
    8 root      20   0       0      0      0 S   0.0  0.0   0:00.00 rcu_bh
    9 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/0
   10 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/1
   11 root      20   0       0      0      0 S   0.0  0.0   0:00.06 ksoftirqd/1
   12 root      20   0       0      0      0 S   0.0  0.0   0:00.18 kworker/1:0
   13 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/1:+
   14 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/2
   15 root      20   0       0      0      0 S   0.0  0.0   0:00.06 ksoftirqd/2
   17 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/2:+
   18 root      rt   0       0      0      0 S   0.0  0.0   0:00.04 migration/3
   19 root      20   0       0      0      0 S   0.0  0.0   0:00.04 ksoftirqd/3
   20 root      20   0       0      0      0 S   0.0  0.0   0:00.21 kworker/3:0
   21 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/3:+
   22 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/4
   23 root      20   0       0      0      0 S   0.0  0.0   0:00.05 ksoftirqd/4
   25 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/4:+
   26 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/5
   27 root      20   0       0      0      0 S   0.0  0.0   0:00.04 ksoftirqd/5
   29 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/5:+
   30 root      rt   0       0      0      0 S   0.0  0.0   0:00.04 migration/6
   31 root      20   0       0      0      0 S   0.0  0.0   0:00.05 ksoftirqd/6
   33 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/6:+
   34 root      rt   0       0      0      0 S   0.0  0.0   0:00.04 migration/7
   35 root      20   0       0      0      0 S   0.0  0.0   0:00.04 ksoftirqd/7
   37 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/7:+
   38 root      rt   0       0      0      0 S   0.0  0.0   0:00.07 migration/8
   39 root      20   0       0      0      0 S   0.0  0.0   0:00.02 ksoftirqd/8
   41 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/8:+
   42 root      rt   0       0      0      0 S   0.0  0.0   0:00.07 migration/9
   43 root      20   0       0      0      0 S   0.0  0.0   0:00.00 ksoftirqd/9
   45 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/9:+
   46 root      rt   0       0      0      0 S   0.0  0.0   0:00.07 migration/+
   47 root      20   0       0      0      0 S   0.0  0.0   0:00.00 ksoftirqd/+
   49 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/10+
```

Related Commands

Command	Description
show processes cpu platform monitor location	Displays information about the CPU utilization of the IOS-XE processes.

show platform software status control-processor

To display platform software control-processor status, use the **show platform software status control-processor** command in privileged EXEC mode.

show platform software status control-processor [**brief**]

Syntax Description

brief	(Optional) Displays a summary of the platform control-processor status.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Examples

The following is sample output from the **show platform memory software status control-processor** command:

```
Device#show platform software status control-processor
RP0: online, statistics updated 4 seconds ago
Load Average: healthy
  1-Min: 0.21, status: healthy, under 5.00
  5-Min: 0.09, status: healthy, under 5.00
  15-Min: 0.02, status: healthy, under 5.00
Memory (kb): healthy
  Total: 32483272
  Used: 4234204 (13%), status: healthy
  Free: 28249068 (87%)
  Committed: 5026176 (15%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  1.19, System:  1.39, Nice:  0.00, Idle: 97.30
  IRQ:  0.00, SIRQ:  0.09, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  1.10, System:  0.50, Nice:  0.00, Idle: 98.40
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  0.80, System:  0.60, Nice:  0.00, Idle: 98.60
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  0.79, System:  0.69, Nice:  0.00, Idle: 98.50
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU4: CPU Utilization (percentage of time spent)
  User:  0.80, System:  0.70, Nice:  0.00, Idle: 98.50
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU5: CPU Utilization (percentage of time spent)
  User:  0.90, System:  0.40, Nice:  0.00, Idle: 98.70
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU6: CPU Utilization (percentage of time spent)
  User:  0.80, System:  0.60, Nice:  0.00, Idle: 98.50
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU7: CPU Utilization (percentage of time spent)
  User:  0.79, System:  0.69, Nice:  0.00, Idle: 98.50
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU8: CPU Utilization (percentage of time spent)
  User:  0.00, System:  0.10, Nice:  0.00, Idle: 99.89
```

```
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU9: CPU Utilization (percentage of time spent)
  User:  0.09, System:  0.09, Nice:  0.00, Idle: 99.80
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU10: CPU Utilization (percentage of time spent)
  User:  0.10, System:  0.10, Nice:  0.00, Idle: 99.80
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU11: CPU Utilization (percentage of time spent)
  User:  0.00, System:  0.10, Nice:  0.00, Idle: 99.90
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU12: CPU Utilization (percentage of time spent)
  User:  0.09, System:  0.19, Nice:  0.00, Idle: 99.70
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU13: CPU Utilization (percentage of time spent)
  User:  0.10, System:  0.30, Nice:  0.00, Idle: 99.59
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU14: CPU Utilization (percentage of time spent)
  User:  0.19, System:  0.29, Nice:  0.00, Idle: 99.50
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU15: CPU Utilization (percentage of time spent)
  User:  0.09, System:  0.19, Nice:  0.00, Idle: 99.70
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00

RP1: online, statistics updated 2 seconds ago
Load Average: healthy
  1-Min: 0.15, status: healthy, under 5.00
  5-Min: 0.22, status: healthy, under 5.00
  15-Min: 0.25, status: healthy, under 5.00
Memory (kb): healthy
  Total: 32483272
  Used: 4302520 (13%), status: healthy
  Free: 28180752 (87%)
  Committed: 5091112 (16%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  3.39, System:  1.39, Nice:  0.00, Idle: 95.20
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  2.90, System:  1.30, Nice:  0.00, Idle: 95.79
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  3.90, System:  1.30, Nice:  0.00, Idle: 94.80
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  2.90, System:  1.60, Nice:  0.00, Idle: 95.50
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU4: CPU Utilization (percentage of time spent)
  User:  3.90, System:  1.60, Nice:  0.00, Idle: 94.40
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU5: CPU Utilization (percentage of time spent)
  User:  2.89, System:  1.09, Nice:  0.00, Idle: 96.00
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU6: CPU Utilization (percentage of time spent)
  User:  3.00, System:  1.10, Nice:  0.00, Idle: 95.80
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU7: CPU Utilization (percentage of time spent)
  User:  3.40, System:  1.20, Nice:  0.00, Idle: 95.40
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU8: CPU Utilization (percentage of time spent)
  User:  0.70, System:  0.40, Nice:  0.00, Idle: 98.89
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU9: CPU Utilization (percentage of time spent)
  User:  0.20, System:  0.30, Nice:  0.00, Idle: 99.50
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
```

```
CPU10: CPU Utilization (percentage of time spent)
  User:  0.10, System:  0.20, Nice:  0.00, Idle: 99.70
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU11: CPU Utilization (percentage of time spent)
  User:  0.10, System:  0.30, Nice:  0.00, Idle: 99.60
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU12: CPU Utilization (percentage of time spent)
  User:  0.09, System:  0.19, Nice:  0.00, Idle: 99.70
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU13: CPU Utilization (percentage of time spent)
  User:  0.20, System:  0.40, Nice:  0.00, Idle: 99.39
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU14: CPU Utilization (percentage of time spent)
  User:  0.19, System:  0.69, Nice:  0.00, Idle: 99.10
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU15: CPU Utilization (percentage of time spent)
  User:  0.60, System:  0.30, Nice:  0.00, Idle: 99.10
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
```

The following is sample output from the **show platform memory software status control-processor brief** command:

```
Device#show platform software status control-processor brief
Load Average
 Slot  Status  1-Min  5-Min 15-Min
  RP0 Healthy   0.16   0.07   0.01
  RP1 Healthy   0.43   0.29   0.27

Memory (kB)
 Slot  Status    Total     Used (Pct)     Free (Pct) Committed (Pct)
  RP0 Healthy 32483272  4232468 (13%) 28250804 (87%)   5034392 (15%)
  RP1 Healthy 32483272  4300628 (13%) 28182644 (87%)   5099016 (16%)

CPU Utilization
 Slot  CPU   User System   Nice   Idle    IRQ   SIRQ IOwait
  RP0    0   0.70   0.30   0.00  98.99   0.00   0.00   0.00
         1   0.80   0.70   0.00  98.50   0.00   0.00   0.00
         2   0.90   0.40   0.00  98.69   0.00   0.00   0.00
         3   0.50   0.30   0.00  99.19   0.00   0.00   0.00
         4   0.70   0.30   0.00  98.99   0.00   0.00   0.00
         5   0.90   0.20   0.00  98.90   0.00   0.00   0.00
         6   1.19   0.79   0.00  97.90   0.00   0.09   0.00
         7   1.00   0.60   0.00  98.40   0.00   0.00   0.00
         8   0.10   0.30   0.00  99.60   0.00   0.00   0.00
         9   0.10   0.10   0.00  99.80   0.00   0.00   0.00
        10   0.00   0.10   0.00  99.89   0.00   0.00   0.00
        11   0.00   0.10   0.00  99.90   0.00   0.00   0.00
        12   0.00   0.00   0.00 100.00   0.00   0.00   0.00
        13   0.00   0.10   0.00  99.90   0.00   0.00   0.00
        14   0.00   0.00   0.00 100.00   0.00   0.00   0.00
        15   0.10   0.20   0.00  99.70   0.00   0.00   0.00
  RP1    0   2.59   1.49   0.00  95.90   0.00   0.00   0.00
         1   2.89   1.19   0.00  95.80   0.00   0.09   0.00
         2   2.39   1.19   0.00  96.40   0.00   0.00   0.00
         3   2.99   1.19   0.00  95.70   0.00   0.09   0.00
         4   3.59   1.19   0.00  95.20   0.00   0.00   0.00
         5   3.10   1.10   0.00  95.70   0.00   0.10   0.00
         6   3.49   1.39   0.00  95.10   0.00   0.00   0.00
         7   3.10   1.40   0.00  95.49   0.00   0.00   0.00
         8   0.10   0.10   0.00  99.80   0.00   0.00   0.00
         9   0.10   0.40   0.00  99.50   0.00   0.00   0.00
        10   0.10   0.40   0.00  99.50   0.00   0.00   0.00
```

```
11   0.19   0.49   0.00  99.30   0.00   0.00   0.00
12   0.09   0.29   0.00  99.60   0.00   0.00   0.00
13   0.09   0.29   0.00  99.60   0.00   0.00   0.00
14   0.10   0.20   0.00  99.70   0.00   0.00   0.00
15   0.09   0.29   0.00  99.60   0.00   0.00   0.00
```

show platform usb status

To display the status of the USB ports on a device, use the **show platform usb status** command in Privileged EXEC mode.

show platform usb status

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Bengaluru 17.5.1	This command was introduced.

Examples

The following is a sample output of the **show platform usb status** command:

```
Device> enable
Device# show platform usb status
USB Disabled
```

show processes cpu platform

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

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

Syntax Description

sorted	(Optional) Displays output sorted based on percentage of CPU usage on a platform.
1min	(Optional) Sorts based on 1 minute intervals.
5min	(Optional) Sorts based on 5 minute intervals.
5sec	(Optional) Sorts based on 5 second intervals.
location	Specifies the Field Replaceable Unit (FRU) location.
active	Specifies the active instance of the device.
standby	Specifies the standby instance of the device.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
FP active	Specifies active instances on the Embedded Service Processor (ESP).
R0	Specifies the Route Processor (RP) slot 0.
RP active	Specifies active instances on the Route Processor (RP).
FP standby	Specifies standby instances on the Embedded Service Processor (ESP).
RP standby	Specifies standby instances on the Route Processor (RP).

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Command Modes

Privileged EXEC (#)

Examples:

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

```
Device# show processes cpu platform
CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 0: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  1%
Core 1: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 2: CPU utilization for five seconds:  0%, one minute:  1%, five minutes:  1%
Core 3: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 4: CPU utilization for five seconds:  0%, one minute:  1%, five minutes:  1%
```

```
Core 5: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 6: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 7: CPU utilization for five seconds:  1%, one minute:  1%, five minutes:  1%
Core 8: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 9: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 10: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 11: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 12: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 13: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 14: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 15: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
--------------------------------------------------------------------------------
 32570   32168      0%      0%      0%  S             7620  periodic.sh
 32553       1      0%      0%      0%  S             3232  rotee
 32496       2      0%      0%      0%  S                0  nfsv4.2-svc
 32425   15873      0%      0%      0%  S              268  inotifywait
 32393   18978      0%      0%      0%  S             4388  pman.sh
 32330       1      0%      0%      0%  S             3128  rotee
 32168   18978      0%      0%      0%  S             4336  pman.sh
 31906       2      0%      0%      0%  S                0  SarIosdMond
.. <output truncated>
```

show processes cpu platform history

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

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

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

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Command Modes

Privileged EXEC (#)

Examples:

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

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

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

5 seconds ago, CPU utilization: 0%
10 seconds ago, CPU utilization: 0%
```

```
15 seconds ago, CPU utilization: 0%
20 seconds ago, CPU utilization: 0%
25 seconds ago, CPU utilization: 0%
30 seconds ago, CPU utilization: 0%
35 seconds ago, CPU utilization: 0%
40 seconds ago, CPU utilization: 0%
45 seconds ago, CPU utilization: 0%
50 seconds ago, CPU utilization: 0%
55 seconds ago, CPU utilization: 0%
60 seconds ago, CPU utilization: 0%
65 seconds ago, CPU utilization: 0%
70 seconds ago, CPU utilization: 0%
75 seconds ago, CPU utilization: 0%
80 seconds ago, CPU utilization: 0%
85 seconds ago, CPU utilization: 0%
90 seconds ago, CPU utilization: 0%
95 seconds ago, CPU utilization: 0%
100 seconds ago, CPU utilization: 0%
105 seconds ago, CPU utilization: 0%
110 seconds ago, CPU utilization: 0%
115 seconds ago, CPU utilization: 0%
120 seconds ago, CPU utilization: 0%
125 seconds ago, CPU utilization: 0%
130 seconds ago, CPU utilization: 0%
135 seconds ago, CPU utilization: 0%
140 seconds ago, CPU utilization: 0%
145 seconds ago, CPU utilization: 1%
150 seconds ago, CPU utilization: 0%
155 seconds ago, CPU utilization: 0%
160 seconds ago, CPU utilization: 0%
165 seconds ago, CPU utilization: 0%
170 seconds ago, CPU utilization: 0%
175 seconds ago, CPU utilization: 0%
180 seconds ago, CPU utilization: 0%
185 seconds ago, CPU utilization: 0%
190 seconds ago, CPU utilization: 0%
195 seconds ago, CPU utilization: 0%
200 seconds ago, CPU utilization: 0%
205 seconds ago, CPU utilization: 0%
210 seconds ago, CPU utilization: 0%
215 seconds ago, CPU utilization: 0%
220 seconds ago, CPU utilization: 0%
225 seconds ago, CPU utilization: 0%
230 seconds ago, CPU utilization: 0%
235 seconds ago, CPU utilization: 0%
240 seconds ago, CPU utilization: 0%
245 seconds ago, CPU utilization: 0%
250 seconds ago, CPU utilization: 0%
.
.
.
```

show processes cpu platform monitor

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

show processes cpu platform monitor {**cycles** | **location** | {**1** | **2** | **5** | **6** | **F0** | **F1** | **FP** | **R0** | **R1** | **RP**} | }

Syntax Description

location	Displays information about the Field Replaceable Unit (FRU) location.
active	Specifies the active instance.
standby	Specifies the standby instance.
1	Specifies the shared port adapter (SPA) interface processor slot 1.
F0	Specifies the Embedded Service Processor (ESP) slot 0.
R0	Specifies the Route Processor (RP) slot 0.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

The output of the **show platform software process slot switch** and **show processes cpu platform monitor location** commands display the output of the Linux **top** command. The output of these commands display Free memory and Used memory as displayed by the Linux **top** command. The values displayed for the Free memory and Used memory by these commands do not match the values displayed by the output of other platform-memory related CLIs.

The following is a sample output of show processes cpu platform monitor location RP active

```
Device# show processes cpu platform monitor location RP active
#show processes cpu platform monitor location RP active
top - 06:48:57 up  1:03,  0 users,  load average: 1.06, 0.70, 0.40
Tasks: 513 total,   1 running, 512 sleeping,   0 stopped,   0 zombie
%Cpu(s):  1.2 us,  1.1 sy,  0.0 ni, 97.7 id,  0.0 wa,  0.0 hi,  0.1 si,  0.0 st
KiB Mem : 32483324 total, 26944092 free,  2097908 used,  3441324 buff/cache
KiB Swap:        0 total,        0 free,        0 used. 29220776 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
12292 root      20   0   20508   2572   1976 R  21.1  0.0   0:00.05 top
13954 root      20   0 5474168 784764 455880 S  10.5  2.4   6:10.64 linux_iosd+
17083 root      20   0 4411528 130856  92036 S  10.5  0.4   1:43.13 iomd
    7 root      20   0       0      0      0 S   5.3  0.0   0:06.93 rcu_sched
   23 root      20   0       0      0      0 S   5.3  0.0   0:00.06 ksoftirqd/4
17854 root      20   0 4411548 131316  92364 S   5.3  0.4   1:44.62 iomd
18319 root      20   0 4411508 130356  91524 S   5.3  0.4   1:53.62 iomd
    1 root      20   0   41884   8004   5232 S   0.0  0.0   0:02.73 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.00 kthreadd
    3 root      20   0       0      0      0 S   0.0  0.0   0:00.16 ksoftirqd/0
    5 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/0:+
```

```
  8 root      20   0       0      0      0 S   0.0  0.0   0:00.00 rcu_bh
  9 root      rt   0       0      0      0 S   0.0  0.0   0:00.06 migration/0
 10 root      rt   0       0      0      0 S   0.0  0.0   0:00.06 migration/1
 11 root      20   0       0      0      0 S   0.0  0.0   0:00.07 ksoftirqd/1
 12 root      20   0       0      0      0 S   0.0  0.0   0:00.19 kworker/1:0
 13 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/1:+
 14 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/2
 15 root      20   0       0      0      0 S   0.0  0.0   0:00.07 ksoftirqd/2
 17 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/2:+
 18 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/3
 19 root      20   0       0      0      0 S   0.0  0.0   0:00.05 ksoftirqd/3
 20 root      20   0       0      0      0 S   0.0  0.0   0:00.22 kworker/3:0
 21 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/3:+
 22 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/4
 25 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/4:+
 26 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/5
 27 root      20   0       0      0      0 S   0.0  0.0   0:00.05 ksoftirqd/5
 29 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/5:+
 30 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/6
 31 root      20   0       0      0      0 S   0.0  0.0   0:00.07 ksoftirqd/6
 33 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/6:+
 34 root      rt   0       0      0      0 S   0.0  0.0   0:00.05 migration/7
 35 root      20   0       0      0      0 S   0.0  0.0   0:00.04 ksoftirqd/7
 37 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/7:+
 38 root      rt   0       0      0      0 S   0.0  0.0   0:00.08 migration/8
 39 root      20   0       0      0      0 S   0.0  0.0   0:00.02 ksoftirqd/8
 41 root       0 -20       0      0      0 S   0.0  0.0   0:00.00 kworker/8:+
 42 root      rt   0       0      0      0 S   0.0  0.0   0:00.08 migration/9
```

Related Commands

Command	Description
show platform software process slot switch	Displays platform software process switch information.

show processes memory

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

show processes memory [*process-id* | **sorted** [**allocated** | **getbufs** | **holding**]]

Syntax Description

process-id	(Optional) Process ID (PID) of a specific process. When you specify a process ID, only details for the specified process will be shown.
sorted	(Optional) Displays memory data sorted by the Allocated, Get Buffers, or Holding column. If the **sorted** keyword is used by itself, data is sorted by the Holding column by default.
allocated	(Optional) Displays memory data sorted by the Allocated column.
getbufs	(Optional) Displays memory data sorted by the Getbufs (Get Buffers) column.
holding	(Optional) Displays memory data sorted by the Holding column. This keyword is the default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

The **show processes memory** command and the **show processes memory sorted** command displays a summary of total, used, and free memory, followed by a list of processes and their memory impact.

If the standard **show processes memory** *process-id* command is used, processes are sorted by their PID. If the **show processes memory sorted** command is used, the default sorting is by the Holding value.

Note Holding memory of a particular process can be allocated by other processes also, and so it can be greater than the allocated memory.

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

```
Device# show processes memory

Processor Pool Total:   25954228 Used:    8368640 Free:   17585588
 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0    8629528     689900    6751716          0          0 *Init*
   0   0      24048      12928      24048          0          0 *Sched*
   0   0        260        328         68     350080          0 *Dead*
   1   0          0          0      12928          0          0 Chunk Manager
   2   0        192        192       6928          0          0 Load Meter
   3   0     214664        304     227288          0          0 Exec
   4   0          0          0      12928          0          0 Check heaps
   5   0          0          0      12928          0          0 Pool Manager
   6   0        192        192      12928          0          0 Timers
   7   0        192        192      12928          0          0 Serial Backgroun
```

```
  8   0        192        192      12928          0          0 AAA high-capacit
  9   0          0          0      24928          0          0 Policy Manager
 10   0          0          0      12928          0          0 ARP Input
 11   0        192        192      12928          0          0 DDR Timers
 12   0          0          0      12928          0          0 Entity MIB API
 13   0          0          0      12928          0          0 MPLS HC Counter
 14   0          0          0      12928          0          0 SERIAL A'detect
.
.
.
 78   0          0          0      12992          0          0 DHCPD Timer
 79   0        160          0      13088          0          0 DHCPD Database
                                 8329440 Total
```

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

Table 7: show processes memory Field Descriptions

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

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

```
Device# show processes memory sorted

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

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

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

```
Device# show processes memory 1

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

Device# show processes memory 2

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

Related Commands

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

show processes memory platform

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

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

Syntax Description

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Examples

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

```
device# show processes memory platform

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

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

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

  process                 callsite_ID(bytes)  max_diff_bytes   callsite_ID(calls)
max_diff_calls   tracekey                                  timestamp(UTC)

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

  smand_rp_0              3624155137          172389           3624155138          50
         1#a3e0e4361082c702e5bf1afbd90e6313       2018-09-04 14:23
  linux_iosd-imag_rp_0    3626295305          49188            3624155138          12
         1#545420bd869d25eb5ab826182ee5d9ce       2018-09-04 12:03
  btman_rp_0              3624737792          17080            2953915394          64
         1#d6888bd9564a3c4fcf049c31ba07a036       2018-09-04 22:29
  fman_fp_image_fp_0      3624059905          16960            4027402242          298
         1#921ba4d9df5b0a6e946a3b270bd6592d       2018-09-04 22:55
  fed_main_event_fp_0     3626295305          16396            4027402242          32
         1#27083f7bf3985d892505806cae2bfb0d       2018-09-04 12:03
  dbm_rp_0                3626295305          16396            4027402242          3
         1#2b878f802bd7703c5298d37e7a4e8ac3       2018-09-04 12:02
  tamd_proc_rp_0          3895208962          12632            3624667171          7
         1#5b0ed8f88ef5f873abcaf8a744037a44       2018-09-04 18:47
  btman_fp_0              3624233985          12288            3624737792          9
         1#d6888bd9564a3c4fcf049c31ba07a036       2018-09-04 15:23
  sif_mgr_rp_0            3624059907          8216             4027402242          4
         1#de2a951a8a7bae83ca2c04c56810eb72       2018-09-04 14:21
```

```
  python2.7_fp_0          2954560513          8000             2954560513          1
                                                      2018-09-04 12:16
  nginx_rp_0              3357041665          4608             4027402242          4
         1#32e56bb09e0509c5fa5ac32093631206           2018-09-04 16:18
  rotee_FRU_SLOT_NUM      3624667169          4097             3624667169          1
         1#ff68e5150a698cd59fa259828614995b           2018-09-04 10:43
  hman_rp_0               3893617664          1488             3893617664          1
         1#1c4aadada30083c5d6f66dc8ca8cd4cb           2018-09-04 10:42
  tams_proc_rp_0          3895096320          1024             3895096320          1
         1#a36a3afa9884c8dc4d40af1e80cacd26           2018-09-04 10:42
  stack_mgr_rp_0          4027402242          904              4027402242          4
         1#ca902eab11a18ab056b16554f49871e8           2018-09-04 14:21
  sessmgrd_rp_0           3491618816          848              3624155138          8
         1#720239fc8bddcabc059768c55a1640ed           2018-09-04 14:32
  psd_rp_0                4027402242          696              4027402242          4
         1#98cf04e0ddd78c2400b3ca3b5f298594           2018-09-04 14:21
  lman_rp_0               4027402242          592              4027402242          4
         1#dc8ed9e428d36477a617d56c51d5caf2           2018-09-04 14:21
  bt_logger_rp_0          4027402242          592              4027402242          4
         1#ba882be1ed783e72575e97cc0908e0e8           2018-09-04 14:21
  repm_rp_0               4027402242          592              4027402242          4
         1#ae461a05430efa767427f2ab40aba372           2018-09-04 14:21
  fman_rp_rp_0            4027402242          592              4027402242          3
         1#09def9cc1390911be9e3a7a9c89f4cf7           2018-09-04 12:16
  epc_ws_liaison_fp_0     4027402242          592              4027402242          4
         1#41451626dcce9d1478b22e2ebbbdcf54           2018-09-04 14:21
  cli_agent_rp_0          4027402242          592              4027402242          4
         1#92d3882919daf3a9e210807c61de0552           2018-09-04 14:21
  cmm_rp_0                4027402242          592              4027402242          4
         1#15ed1d79e96874b1e0621c42c3de6166           2018-09-04 14:21
  tms_rp_0                4027402242          352              4027402242          4
         1#5c6efe2e21f15aa16318576d3ec9153c           2018-09-04 12:03
  plogd_rp_0              4027402242          48               4027402242          1
         1#2d7f2ef57206f4fa763d7f2f5400bf1b           2018-09-04 10:43
  cmand_rp_0              3624155137          17               3624155137          1
         1#f1f41f61c44d73014023db5d8a46ecf5           2018-09-04 10:42
!
!
!
```

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

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

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

show processes platform

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

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

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

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Command Modes

Privileged EXEC(#)

Examples:

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

```
Device# show processes platform

CPU utilization for five seconds: 1%, one minute: 2%, five minutes: 1%
   Pid    PPid  Status        Size  Name
-------------------------------------------------------------
     1       0  S             4876  systemd
     2       0  S                0  kthreadd
     3       2  S                0  ksoftirqd/0
     5       2  S                0  kworker/0:0H
     7       2  S                0  rcu_sched
     8       2  S                0  rcu_bh
     9       2  S                0  migration/0
    10       2  S                0  watchdog/0
    11       2  S                0  watchdog/1
    12       2  S                0  migration/1
    13       2  S                0  ksoftirqd/1
    15       2  S                0  kworker/1:0H
    16       2  S                0  watchdog/2
```

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

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

Table 8: show processes platform Field Descriptions

Field	Description
Pid	Displays the process ID.
PPid	Displays the process ID of the parent process.
Status	Displays the process status in human readable form.

Field	Description
Size	Displays the Resident Set Size (in kilobytes (KB)) that shows how much memory is allocated to that process in the RAM.
Name	Displays the command name associated with the process. Different threads in the same process may have different command values.

show system mtu

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

show system mtu

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

For information about the MTU values and the stack configurations that affect the MTU values, see the **system mtu** command.

Examples

This is an example of output from the **show system mtu** command:

```
Device# show system mtu
Global Ethernet MTU is 1500 bytes.
```

show tech-support

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

show tech-support
[**cef** | **cft** | **eigrp** | **evc** | **fnf** | | **ipc** | **ipmulticast** | **ipsec** | **mfib** | **nat** | **nbar** | **onep** | **ospf** | **page** | **password** | **port** | **rsvp** | **subscriber** | **vrrp** | **wccp**

Syntax Description

cef	(Optional) Displays CEF related information.
cft	(Optional) Displays CFT related information.
eigrp	(Optional) Displays EIGRP related information.
evc	(Optional) Displays EVC related information.
fnf	(Optional) Displays flexible netflow related information.
ipc	(Optional) Displays IPC related information.
ipmulticast	(Optional) Displays IP multicast related information.
ipsec	(Optional) Displays IPSEC related information.
mfib	(Optional) Displays MFIB related information.
nat	(Optional) Displays NAT related information.
onep	(Optional) Displays ONEP related information.
ospf	(Optional) Displays OSPF related information.
page	(Optional) Displays the command output on a single page at a time. Use the Return key to display the next line of output or use the space bar to display the next page of information. If not used, the output scrolls (that is, it does not stop for page breaks). Press the **Ctrl-C** keys to stop the command output.
password	(Optional) Leaves passwords and other security information in the output. If not used, passwords and other security-sensitive information in the output are replaced with the label "<removed>".
port	(Optional) Displays all port related information.
subscriber	(Optional) Displays subscriber related information.
vrrp	(Optional) Displays VRRP related information.
wccp	(Optional) Displays WCCP related information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was implemented.

Usage Guidelines

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

You can use one of the following redirection methods:

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

show tech-support diagnostic

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

show tech-support diagnostic

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

- **show logging onboard slot [slot number] poe detail**
- **show logging onboard slot [slot number] status**
- **show logging onboard slot [slot number] temperature detail**
- **show logging onboard slot [slot number] uptime detail**
- **show logging onboard slot [slot number] voltage detail**
- **show logging onboard RP [active | standby] voltage detail**
- **show logging onboard RP [active | standby] clilog detail**
- **show logging onboard RP [active | standby] counter detail**
- **show logging onboard RP [active | standby] environment detail**
- **show logging onboard RP [active | standby] message detail**
- **show logging onboard RP [active | standby] poe detail**
- **show logging onboard RP [active | standby] status**
- **show logging onboard RP [active | standby] temperature detail**
- **show logging onboard RP [active | standby] uptime detail**

speed

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

Note Available configuration options depend on the switch model and transceiver module installed. Options include 10, 100, 1000, 2500, 5000, 10000

speed {**10** | **100** | **1000** | **2500** | **5000** | **10000** | **auto** [**10** | **100** | **1000** | **2500** | **5000** | **10000**]}
no speed

Syntax Description

10	Specifies that the port runs at 10 Mbps.
100	Specifies that the port runs at 100 Mbps.
1000	Specifies that the port runs at 1000 Mbps. This option is valid and visible only on 10/100/1000 Mb/s ports.
2500	Specifies that the port runs at 2500 Mbps. This option is valid and visible only on multi-Gigabit-supported Ethernet ports.
5000	Specifies that the port runs at 5000 Mbps. This option is valid and visible only on multi-Gigabit-supported Ethernet ports.
10000	Specifies that the port runs at 10000 Mbps operation.
auto	Detects the speed at which the port should run, automatically, based on the port at the other end of the link. If you use the **10**, **100**, **1000**, **10000**, **2500**, or **5000** keyword with the **auto** keyword, the port autonegotiates only at the specified speeds.

Command Default

The default is **auto**.

Command Modes

Interface configuration (config-if)

Command History

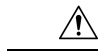
Release	Modification
Cisco IOS XE Amsterdam 17.1.1	This command was introduced.

Usage Guidelines

The keywords, **2500**, **10000**, 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, configure duplex and speed on both interfaces; do not use the **auto** setting on the supported side.



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

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

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

Examples

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

```
Device(config)# interface tengigabitethernet5/0/1
Device(config-if)# speed 100
```

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

```
Device(config)# interface tengigabitethernet5/0/1
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 tengigabitethernet5/0/1
Device(config-if)# speed auto 10 100
```

system mtu

To set the global maximum packet size or MTU size for switched packets on Gigabit Ethernet and 10-Gigabit Ethernet ports, use the **system mtu** command in global configuration mode. To restore the global MTU value to its default value, use the **no** form of this command.

system mtu *bytes*
no system mtu

Syntax Description

bytes	The global MTU size in bytes. The range is 1500 to 9216 bytes; the default is 1500 bytes.

Command Default

The default MTU size for all ports is 1500 bytes.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

The switch does not support the MTU on a per-interface basis.

If you enter a value that is outside the allowed range for the specific type of interface, the value is not accepted.

Examples

This example shows how to set the global system MTU size to 6000 bytes:

```
Device(config)# system mtu 6000
Global Ethernet MTU is set to 6000 bytes.
Note: this is the Ethernet payload size, not the total
Ethernet frame size, which includes the Ethernet
header/trailer and possibly other tags, such as ISL or
802.1q tags.
```

voice-signaling vlan (network-policy configuration)

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

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

Syntax Description

vlan-id	(Optional) The VLAN for voice traffic. The range is 1 to 4094.
cos *cos-value*	(Optional) Specifies the Layer 2 priority class of service (CoS) for the configured VLAN. The range is 0 to 7; the default is 5.
dscp *dscp-value*	(Optional) Specifies the differentiated services code point (DSCP) value for the configured VLAN. The range is 0 to 63; the default is 46.
dot1p	(Optional) Configures the phone to use IEEE 802.1p priority tagging and to use VLAN 0 (the native VLAN).
none	(Optional) Does not instruct the Cisco IP phone about the voice VLAN. The phone uses the configuration from the phone key pad.
untagged	(Optional) Configures the phone to send untagged voice traffic. This is the default for the phone.

Command Default

No network-policy profiles for the voice-signaling application type are defined.

The default CoS value is 5.

The default DSCP value is 46.

The default tagging mode is untagged.

Command Modes

Network-policy profile configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

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

voice vlan (network-policy configuration)

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

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

Syntax Description

vlan-id	(Optional) The VLAN for voice traffic. The range is 1 to 4094.
cos *cos-value*	(Optional) Specifies the Layer 2 priority class of service (CoS) for the configured VLAN. The range is 0 to 7; the default is 5.
dscp *dscp-value*	(Optional) Specifies the differentiated services code point (DSCP) value for the configured VLAN. The range is 0 to 63; the default is 46.
dot1p	(Optional) Configures the phone to use IEEE 802.1p priority tagging and to use VLAN 0 (the native VLAN).
none	(Optional) Does not instruct the Cisco IP phone about the voice VLAN. The phone uses the configuration from the phone key pad.
untagged	(Optional) Configures the phone to send untagged voice traffic. This is the default for the phone.

Command Default

No network-policy profiles for the voice application type are defined.

The default CoS value is 5.

The default DSCP value is 46.

The default tagging mode is untagged.

Command Modes

Network-policy profile configuration

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

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