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debug ilpower

To enable debugging of the power controller and Power over Ethernet (PoE) system, use the **debug ilpower** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

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

Syntax Description

cdp	Displays PoE Cisco Discovery Protocol (CDP) debug messages.
event	Displays PoE event debug messages.
ha	Displays PoE high-availability messages.
ipc	Displays PoE Inter-Process Communication (IPC) debug messages.
police	Displays PoE police debug messages.
port	Displays PoE port manager debug messages.
powerman	Displays PoE power management debug messages.
registries	Displays PoE registries debug messages.
scp	Displays PoE SCP debug messages.
sense	Displays PoE sense debug messages.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.
Cisco IOS XE 3.3SE	The **upoe** keyword was added.

Usage Guidelines

This command is supported only on PoE-capable switches.

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

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**} | **states**}
no debug interface {*interface-id* | **counters** {**exceptions** | **protocol memory**} | **states**}

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.
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 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

debug lldp packets

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

debug lldp packets
no debug lldp packets

Syntax Description

This command has no arguments or keywords.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

debug platform poe

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

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

Syntax Description

error	(Optional) Displays PoE-related error debug messages.
info	(Optional) Displays PoE-related information debug messages.
switch *switch-number*	(Optional) Specifies the stack member. This keyword is supported only on stacking-capable switches.

Command Default

Debugging is disabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

debug platform software fed switch active punt packet-capture start

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

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

Syntax Description

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

Command Modes

Privileged EXEC (#)

Command History

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

Usage Guidelines

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

Examples

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

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

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

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

duplex

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

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

Syntax Description

auto	Enables automatic duplex configuration. The port automatically detects whether it should run in full- or half-duplex mode, depending on the attached device mode.
full	Enables full-duplex mode.
half	Enables half-duplex mode (only for interfaces operating at 10 or 100 Mb/s). You cannot configure half-duplex mode for interfaces operating at 1000 or 10,000 Mb/s.

Command Default

The default is **auto** for Gigabit Ethernet ports.

You cannot configure the duplex mode on 10-Gigabit Ethernet ports; it is always **full**.

Duplex options are not supported on the 1000BASE-*x* or 10GBASE-*x* (where -*x* is -BX, -CWDM, -LX, -SX, or -ZX) small form-factor pluggable (SFP) modules.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

For Gigabit Ethernet ports, setting the port to **auto** has the same effect as specifying **full** if the attached device does not autonegotiate the duplex parameter.

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

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

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

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

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

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

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

Examples

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

```
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# duplex full
```

errdisable detect cause

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

errdisable detect cause {**all** | **arp-inspection** | **bpduguard shutdown vlan** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **l2ptguard** | **link-flap** | **loopback** | **pagp-flap** | **pppoe-ia-rate-limit** | **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** | **l2ptguard** | **link-flap** | **loopback** | **pagp-flap** | **pppoe-ia-rate-limit** | **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.
l2ptguard	Enables error detection for a Layer 2 protocol-tunnel error-disabled cause.
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.
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 3.2SE	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.

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

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

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

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

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

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

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

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

errdisable recovery cause

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

errdisable recovery cause {**all** | **arp-inspection** | **bpduguard** | **channel-misconfig** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **l2ptguard** | **link-flap** | **loopback** | **mac-limit** | **pagp-flap** | **port-mode-failure** | **pppoe-ia-rate-limit** | **psecure-violation** | **security-violation** | **sfp-config-mismatch** | **storm-control** | **udld**}
no errdisable recovery cause {**all** | **arp-inspection** | **bpduguard** | **channel-misconfig** | **dhcp-rate-limit** | **dtp-flap** | **gbic-invalid** | **inline-power** | **l2ptguard** | **link-flap** | **loopback** | **mac-limit** | **pagp-flap** | **port-mode-failure** | **pppoe-ia-rate-limit** | **psecure-violation** | **security-violation** | **sfp-config-mismatch** | **storm-control** | **udld**}

Syntax Description

all	Enables the timer to recover from all error-disabled causes.
arp-inspection	Enables the timer to recover from the Address Resolution Protocol (ARP) inspection error-disabled state.
bpduguard	Enables the timer to recover from the bridge protocol data unit (BPDU) guard error-disabled state.
channel-misconfig	Enables the timer to recover from the EtherChannel misconfiguration error-disabled state.
dhcp-rate-limit	Enables the timer to recover from the DHCP snooping error-disabled state.
dtp-flap	Enables the timer to recover from the Dynamic Trunking Protocol (DTP) flap error-disabled state.
gbic-invalid	Enables the timer to recover from an invalid Gigabit Interface Converter (GBIC) module error-disabled state. **Note** This error refers to an invalid small form-factor pluggable (SFP) error-disabled state.
inline-power	Enables the timer to recover from the Power over Ethernet (PoE) error-disabled state. This keyword is supported only on switches with PoE ports.
l2ptguard	Enables the timer to recover from a Layer 2 protocol tunnel 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.
security-violation	Enables the timer to recover from an IEEE 802.1x-violation disabled state.
sfp-config-mismatch	Enables error detection on an SFP configuration mismatch.
storm-control	Enables the timer to recover from a storm control error.
udld	Enables the timer to recover from the UniDirectional Link Detection (UDLD) error-disabled state.

Command Default

Recovery is disabled for all causes.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

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

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

Examples

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

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

errdisable recovery interval

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

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

Syntax Description

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

Command Default

The default recovery interval is 300 seconds.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

Examples

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

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

interface

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

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

Auto-Template *interface-number*	Enables you to configure a auto-template interface. The range is from 1 to 999.
GigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a Gigabit Ethernet IEEE 802.3z interface. The range is from 0 to 9
Group VI *Group VI interface number*	Enables you to configure a Group VI interface. The range is from 0 to 9.
Internal Interface Internal Interface	Enables you to configure an internal interface.
Loopback *interface-number*	Enables you to configure a loopback interface. The range is from 0 to 2147483647.
Null *interface-number*	Enables you to configure a null interface. The default value is 0.
Port-channel *interface-number*	Enables you to configure a port-channel interface. The range is from 1 to 128.
TenGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 10-Gigabit Ethernet interface. • *switch-number* — Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. The range is from 0 to 1. • *port-number* — Port number. The range is from 1 to 24 and 37 to 48 .
Tunnel *interface-number*	Enables you to configure a tunnel interface. The range is from 0 to 2147483647.
Vlan *interface-number*	Enables you to configure a switch VLAN. The range is from 1 to 4094.

Command Default None

Command Modes Global configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

The following example shows how to configure a tunnel interface:

```
Device# interface Tunnel 15
```

interface range

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

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

Auto-Template *interface-number*	Enables you to configure an auto-template interface. The range is from 1 to 999.
GigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a Gigabit Ethernet IEEE 802.3z interface. • *switch-number*— Switch ID. The range is from 1 to 8. • *slot-number* — Slot number. The range is from 0 to 1. • *port-number* — Port number. The range is from 1 to 48.
Loopback *interface-number*	Enables you to configure a loopback interface. The range is from 0 to 2147483647.
Null *interface-number*	Enables you to configure a null interface. The default value is 0.
Port-channel *interface-number*	Enables you to configure a port-channel interface. The range is from 1 to 128.
TenGigabitEthernet *switch-number/slot-number/port-number*	Enables you to configure a 10-Gigabit Ethernet interface. • *switch-number*— Switch ID. The range is from 1 to 8. • *slot-number*— Slot number. The range is from 0 to 1. • *port-number*— Port number. The range is from 1 to 24 and 37 to 48.
Tunnel *interface-number*	Enables you to configure a tunnel interface. The range is from 0 to 2147483647.
Vlan *interface-number*	Enables you to configure a switch VLAN. The range is from 1 to 4094.

Command Default None

Command Modes Global configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

This example shows how you can configure interface range:

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

ip mtu

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

ip mtu *bytes*
no ip mtu *bytes*

Syntax Description

bytes	MTU size, in bytes. The range is from 68 up to the system MTU value (in bytes).

Command Default

The default IP MTU size for frames received and sent on all switch interfaces is 1500 bytes.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

The upper limit of the IP value is based on the switch or switch stack configuration and refers to the currently applied system MTU value. For more information about setting the MTU sizes, see the **system mtu** global configuration command.

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

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

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

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

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

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

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

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

<output truncated>
```

ipv6 mtu

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

ipv6 mtu *bytes*
no ipv6 mtu *bytes*

Syntax Description

bytes	MTU size, in bytes. The range is from 1280 up to the system MTU value (in bytes).

Command Default

The default IPv6 MTU size for frames received and sent on all switch interfaces is 1500 bytes.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

The upper limit of the IPv6 MTU value is based on the switch or switch stack configuration and refers to the currently applied system MTU value. For more information about setting the MTU sizes, see the **system mtu** global configuration command.

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

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

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

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

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

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

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

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

<output truncated>
```

lldp (interface configuration)

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

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

Syntax Description

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

Command Default

LLDP is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

This command is supported on 802.1 media types.

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

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

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

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

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

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

logging event power-inline-status

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

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

Syntax Description

This command has no arguments or keywords.

Command Default

Logging of PoE events is enabled.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

Examples

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

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

mdix auto

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

mdix auto
no mdix auto

Syntax Description

This command has no arguments or keywords.

Command Default

Auto-MDIX is enabled.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

When auto-MDIX is enabled, the interface automatically detects the required cable connection type (straight-through or crossover) and configures the connection appropriately.

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

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

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

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

mode (power-stack configuration)

To configure power stack mode for the power stack, use the **mode** command in power-stack configuration mode. To return to the default settings, use the **no** form of the command.

mode {**power-shared** | **redundant**} [**strict**]
no mode

Syntax Description

power-shared	Sets the power stack to operate in power-shared mode. This is the default.
redundant	Sets the power stack to operate in redundant mode. The largest power supply is removed from the power pool to be used as backup power in case one of the other power supplies fails.
strict	(Optional) Configures the power stack mode to run a strict power budget. The stack power needs cannot exceed the available power.

Command Default

The default modes are **power-shared** and nonstrict.

Command Modes

Power-stack configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

To access power-stack configuration mode, enter the **stack-power stack** *power stack name* global configuration command.

Entering the **no mode** command sets the switch to the defaults of **power-shared** and non-strict mode.

Note For stack power, available power is the total power available for PoE from all power supplies in the power stack, available power is the power allocated to all powered devices connected to PoE ports in the stack, and consumed power is the actual power consumed by the powered devices.

In **power-shared** mode, all of the input power can be used for loads, and the total available power appears as one large power supply. The power budget includes all power from all supplies. No power is set aside for power supply failures. If a power supply fails, load shedding (shutting down of powered devices or switches) might occur.

In **redundant** mode, the largest power supply is removed from the power pool to use as backup power in case one of the other power supplies fails. The available power budget is the total power minus the largest power supply. This reduces the available power in the pool for switches and powered devices, but in case of a failure or an extreme power load, there is less chance of having to shut down switches or powered devices.

In **strict** mode, when a power supply fails and the available power drops below the budgeted power, the system balances the budget through load shedding of powered devices, even if the actual power is less than the available power. In nonstrict mode, the power stack can run in an over-allocated state and is stable as long as

the actual power does not exceed the available power. In this mode, a powered device drawing more than normal power could cause the power stack to start shedding loads. This is normally not a problem because most devices do not run at full power. The chances of multiple powered devices in the stack requiring maximum power at the same time is small.

In both strict and nonstrict modes, power is denied when there is no power available in the power budget.

This is an example of setting the power stack mode for the stack named power1 to power-shared with strict power budgeting. All power in the stack is shared, but when the total available power is allotted, no more devices are allowed power.

```
Device(config)# stack-power stack power1
Device(config-stackpower)# mode power-shared strict
Device(config-stackpower)# exit
```

This is an example of setting the power stack mode for the stack named power2 to redundant. The largest power supply in the stack is removed from the power pool to provide redundancy in case one of the other supplies fails.

```
Device(config)# stack-power stack power2
Device(config-stackpower)# mode redundant
Device(config-stackpower)# exit
```

network-policy

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

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

Syntax Description

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

Command Default

No network-policy profiles are applied.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

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

network-policy profile (global configuration)

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

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

Syntax Description

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

Command Default

No network-policy profiles are defined.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

power efficient-ethernet auto

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

power efficient-ethernet auto
no power efficient-ethernet auto

Syntax Description

This command has no arguments or keywords.

Command Default

EEE is disabled.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

This command does not require a license.

This example shows how to enable EEE for an interface:

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

This example shows how to disable EEE for an interface:

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

power-priority

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

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

Syntax Description

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

Command Default

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

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

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

Command Modes

Switch stack-power configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

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

Examples

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

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

power inline

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

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

Syntax Description

auto	Enables powered-device detection. If enough power is available, automatically allocates power to the PoE port after device detection. Allocation is first-come, first-serve.
max *max-wattage*	(Optional) Limits the power allowed on the port. The range is 4000 to 30000 mW. If no value is specified, the maximum is allowed.
never	Disables device detection, and disables power to the port.
port	Configures the power priority of the port. The default priority is low.
priority {**high** | **low**}	Sets the power priority of the port. In case of a power supply failure, ports configured as low priority are turned off first and ports configured as high priority are turned off last. The default priority is low.
static	Enables powered-device detection. Pre-allocates (reserves) power for a port before the switch discovers the powered device. This action guarantees that the device connected to the interface receives enough power.

Command Default

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

The maximum wattage is 30,000 mW.

The default port priority is low.

Command Default

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.
Cisco IOS XE 3.3SE	The **four-pair forced** keywords were added.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

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

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

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

Examples

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

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

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

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

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

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

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

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

power inline police

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

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

Syntax Description

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

Command Default

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

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

This command is supported only on the LAN Base image.

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

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

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

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

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

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

If you do not manually configure the cutoff-power value, the device automatically determines it by using CDP power negotiation or the device IEEE classification and LLDP power negotiation. If CDP or LLDP are not enabled, the default value of 30 W is applied. However without CDP or LLDP, the device does not allow devices to consume more than 15.4 W of power because values from 15400 to 30000 mW are only allocated based on CDP or LLDP requests. If a powered device consumes more than 15.4 W without CDP or LLDP

negotiation, the device might be in violation of the maximum current *Imax* limitation and might experience an *Icut* fault for drawing more current than the maximum. The port remains in the fault state for a time before attempting to power on again. If the port continuously draws more than 15.4 W, the cycle repeats.

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

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

- To configure the device to turn off power to the port and put the port in the error-disabled state, use the **power inline police** interface configuration command.
- To configure the device to generate a syslog message while still providing power to the device, use the **power inline police action log** command.

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

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

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

Examples

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

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

power supply

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

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

Syntax Description

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

Command Default

The switch power supply is on.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.
Cisco IOS XE 3.3SE	The **slot** keyword replaced the **frufep** keyword.

Usage Guidelines

The **power supply** command applies to a switch or to a switch stack where all switches are the same platform.

In a switch stack with the same platform switches, you must specify the stack member before entering the **slot** {**A** | **B**} **off** or **on** keywords.

To return to the default setting, use the **power supply** *stack-member-number* **on** command.

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

Examples

This example shows how to set the power supply in slot A to off:

```
Device> power supply 2 slot A off
Disabling Power supply A may result in a power loss to PoE devices and/or switches ...
Continue? (yes/[no]): yes
Device
```

```
Jun 10 04:52:54.389: %PLATFORM_ENV-6-FRU_PS_OIR: FRU Power Supply 1 powered off
Jun 10 04:52:56.717: %PLATFORM_ENV-1-FAN_NOT_PRESENT: Fan is not present
```

This example shows how to set the power supply in slot A to on:

```
Device> power supply 1 slot B on
Jun 10 04:54:39.600: %PLATFORM_ENV-6-FRU_PS_OIR: FRU Power Supply 1 powered on
```

This example shows the output of the show env power command:

```
Device> show env power
SW  PID                 Serial#     Status           Sys Pwr  PoE Pwr  Watts
--  ------------------  ----------  ---------------  -------  -------  -----
1A  PWR-1RUC2-640WAC    DCB1705B05B OK               Good     Good     250/390
1B  Not Present
```

show eee

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

show eee {**capabilities**| **status**} **interface** *interface-id*

Syntax Description

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

Command Default

None

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

```
        Link Partner          :  not enabled
```

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

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

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

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

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

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

Table 1: show eee status Field Descriptions

Field	Description
EEE (efficient-ethernet)	The EEE status for the interface. This field can have any of the following values: • N/A—The port is not capable of EEE. • Disabled—The port EEE is disabled. • Disagreed—The port EEE is not set because a remote link partner might be incompatible with EEE; either it is not EEE capable, or its EEE setting is incompatible. • Operational—The port EEE is enabled and operating. If the interface speed is configured as 10 Mbps, EEE is disabled internally. When the interface speed moves back to auto, 100 Mbps or 1000 Mbps, EEE becomes active again.

Field	Description
Rx/Tx LPI Status	The Low Power Idle (LPI) status for the link partner. These fields can have any of the following values: • N/A—The port is not capable of EEE. • Interrupted—The link partner is in the process of moving to low power mode. • Low Power—The link partner is in low power mode. • None— EEE is disabled or not capable at the link partner side. • Received—The link partner is in low power mode and there is traffic activity. If an interface is configured as half-duplex, the LPI status is None, which means the interface cannot be in low power mode until it is configured as full-duplex.
Wake Error Count	The number of PHY wake-up faults that have occurred. A wake-up fault can occur when EEE is enabled and the connection to the link partner is broken. This information is useful for PHY debugging.

show env

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

show env {**all** | **fan** | **power** [{**all** | **switch** [*stack-member-number*]}] | **stack** [*stack-member-number*] | **temperature** [**status**]}

Syntax Description

all	Displays the fan and temperature environmental status and the status of the internal power supplies.
fan	Displays the switch fan status.
power	Displays the internal power status of the active switch.
all	(Optional) Displays the status of all the internal power supplies in a standalone switch when the command is entered on the switch, or in all the stack members when the command is entered on the active switch.
switch	(Optional) Displays the status of the internal power supplies for each switch in the stack or for the specified switch. This keyword is available only on stacking-capable switches.
stack-member-number	(Optional) Number of the stack member for which to display the status of the internal power supplies or the environmental status. The range is 1 to 9.
stack	Displays all environmental status for each switch in the stack or for the specified switch. This keyword is available only on stacking-capable switches.
temperature	Displays the switch temperature status.
status	(Optional) Displays the switch internal temperature (not the external temperature) and the threshold values.

Command Default

None

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

Use the **show env** EXEC command to display the information for the switch being accessed—a standalone switch or the active switch. Use this command with the **stack** and **switch** keywords to display all information for the stack or for the specified stack member.

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

You can also use the **show env temperature** command to display the switch temperature status. The command output shows the green and yellow states as *OK* and the red state as *FAULTY*. If you enter the **show env all** command, the command output is the same as the **show env temperature status** command output.

Examples

```
Device>show env all
Switch 1 FAN 1 is OK
Switch 1 FAN 2 is OK
Switch 1 FAN 3 is OK
FAN PS-1 is NOT PRESENT
FAN PS-2 is OK
Switch 1: SYSTEM TEMPERATURE is OK
SW  PID                 Serial#     Status           Sys Pwr  PoE Pwr  Watts
--  ------------------  ----------  ---------------  -------  -------  -----
1A  Not Present
1B  PWR-C1-715WAC       LIT150119Z1  OK              Good     Good     715


Device>show env fan
Switch 1 FAN 1 is OK
Switch 1 FAN 2 is OK
Switch 1 FAN 3 is OK
FAN PS-1 is NOT PRESENT
FAN PS-2 is OK
```

This is an example of output from the **show env power** command:

```
Device>show env power
SW  PID                 Serial#     Status           Sys Pwr  PoE Pwr  Watts
--  ------------------  ----------  ---------------  -------  -------  -----
1A  Not Present
1B  PWR-C1-715WAC       LIT150119Z1  OK              Good     Good     715
```

This is an example of output from the **show env power all** command on the active switch:

```
Device# show env power all
SW  PID                 Serial#     Status           Sys Pwr  PoE Pwr  Watts
--  ------------------  ----------  ---------------  -------  -------  -----
1A  Not Present
1B  PWR-C1-715WAC       LIT150119Z1  OK              Good     Good     715


Device> show env stack
SWITCH: 1
Switch 1 FAN 1 is OK
Switch 1 FAN 2 is OK
Switch 1 FAN 3 is OK
FAN PS-1 is NOT PRESENT
FAN PS-2 is OK
Switch 1: SYSTEM TEMPERATURE is OK
Temperature Value: 28 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 41 Degree Celsius
Red Threshold    : 56 Degree Celsius
```

```
Device> show env temperature status
Temperature Value: 33 Degree Celsius
Temperature State: GREEN
Yellow Threshold : 65 Degree Celsius
Red Threshold    : 75 Degree Celsius
```

Table 2: States in the show env temperature status Command Output

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

show errdisable detect

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

show errdisable detect

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	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.

```
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
```

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 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

```
Device> show errdisable recovery
ErrDisable Reason    Timer Status
-----------------    --------------
udld                 Disabled
bpduguard            Disabled
security-violatio    Disabled
channel-misconfig    Disabled
pagp-flap            Disabled
dtp-flap             Disabled
link-flap            Enabled
l2ptguard            Disabled
psecure-violation    Disabled
gbic-invalid         Disabled
dhcp-rate-limit      Disabled
unicast-flood        Disabled
storm-control        Disabled
arp-inspection       Disabled
loopback             Disabled
Timer interval:300 seconds
Interfaces that will be enabled at the next timeout:
Interface    Errdisable reason    Time left(sec)
---------    -----------------    --------------
Gi1/0/2        link-flap             279
```

show interfaces

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

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

Syntax Description

interface-id	(Optional) ID of the interface. Valid interfaces include physical ports (including type, stack member for stacking-capable switches, module, and port number) and port channels. The port channel range is 1 to 48.
vlan *vlan-id*	(Optional) VLAN identification. The range is 1 to 4094.
accounting	(Optional) Displays accounting information on the interface, including active protocols and input and output packets and octets. **Note** The display shows only packets processed in software; hardware-switched packets do not appear.
capabilities	(Optional) Displays the capabilities of all interfaces or the specified interface, including the features and options that you can configure on the interface. Though visible in the command line help, this option is not available for VLAN IDs.
module *number*	(Optional) Displays capabilities of all interfaces on the switch or specified stack member. The range is 1 to 9. This option is not available if you entered a specific interface ID.
debounce	(Optional) Displays port debounce timer information for an interface.
description	(Optional) Displays the administrative status and description set for an interface.
etherchannel	(Optional) Displays interface EtherChannel information.
flowcontrol	(Optional) Displays interface flow control information.
mtu	(Optional) Displays the MTU for each interface or for the specified 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.
inactive	(Optional) Displays interfaces in an inactive state.
trunk	(Optional) Displays interface trunk information. If you do not specify an interface, only information for active trunking ports appears.

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

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

```
Device# show interfaces gigabitethernet3/0/2
GigabitEthernet3/0/2 is down, line protocol is down (notconnect)
  Hardware is Gigabit Ethernet, address is 2037.064d.4381 (bia 2037.064d.4381)
  MTU 1500 bytes, BW 1000000 Kbit/sec, DLY 10 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Auto-duplex, Auto-speed, media type is 10/100/1000BaseTX
  input flow-control is off, output flow-control is unsupported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/2000/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
```

```
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts (0 multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog, 0 multicast, 0 pause input
     0 input packets with dribble condition detected
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
     0 unknown protocol drops
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier, 0 pause output
     0 output buffer failures, 0 output buffers swapped out
```

```
Device# show interfaces gigabitethernet1/0/2 capabilities
GigabitEthernet1/0/2
  Model:                 UA-3850-24-CR
  Type:                  10/100/1000BaseTX
  Speed:                 10,100,1000,auto
  Duplex:                full,half,auto
  Trunk encap. type:     802.1Q
  Trunk mode:            on,off,desirable,nonegotiate
  Channel:               yes
  Fast Start:            yes
  QoS scheduling:        rx-(not configurable on per port basis),
                         tx-(4q3t) (3t: Two configurable values and one fixed.)
  CoS rewrite:           yes
  ToS rewrite:           yes
  UDLD:                  yes
  Inline power:          no
  SPAN:                  source/destination
  PortSecure:            yes
  Dot1x:                 yes
```

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

```
Device# show interfaces gigabitethernet1/0/2 description
Interface                      Status         Protocol Description
Gi1/0/2                        up             down     Connects to Marketing
```

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

```
Device# show interfaces gigabitethernet1/0/2 pruning
Port      Vlans pruned for lack of request by neighbor
Gi1/0/2   3,4

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

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

```
Device# show interfaces vlan 1 stats
Switching path    Pkts In    Chars In    Pkts Out    Chars Out
     Processor    1165354   136205310      570800     91731594
   Route cache          0           0           0            0
         Total    1165354   136205310      570800     91731594
```

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

```
Device# show interfaces gigabitethernet1/0/20 status
Port      Name               Status       Vlan       Duplex  Speed       Type
Gi1/0/20                     notconnect   1            auto   auto 10/100/1000Ba
seTX
```

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

```
Device# show interfaces status err-disabled
Port      Name       Status         Reason
Gi1/0/2              err-disabled   gbic-invalid
Gi2/0/3              err-disabled   dtp-flap
```

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

```
Device# show interfaces gigabitethernet1/0/2 pruning
Port Vlans pruned for lack of request by neighbor


Device# show interfaces gigabitethernet1/0/1 trunk
Port        Mode             Encapsulation  Status        Native vlan
Gi1/0/1     on               802.1q         other         10

Port        Vlans allowed on trunk
Gi1/0/1     none

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

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

show interfaces counters

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

show interfaces [*interface-id*] **counters** [{**errors** | **etherchannel** | **module** *stack-member-number* | **protocol status** | **trunk**}]

Syntax Description

interface-id	(Optional) ID of the physical interface, including type, stack member (stacking-capable switches only) module, and port number.
errors	(Optional) Displays error counters.
etherchannel	(Optional) Displays EtherChannel counters, including octets, broadcast packets, multicast packets, and unicast packets received and sent.
module *stack-member-number*	(Optional) Displays counters for the specified stack member. The range is 1 to 9. **Note** In this command, the **module** keyword refers to the stack member number. The module number that is part of the interface ID is always zero.
protocol status	(Optional) Displays the status of protocols enabled on interfaces.
trunk	(Optional) Displays trunk counters.

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

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

```
Device# show interfaces counters
Port            InOctets    InUcastPkts    InMcastPkts    InBcastPkts
Gi1/0/1                0              0              0              0
Gi1/0/2                0              0              0              0
Gi1/0/3         95285341          43115        1178430           1950
Gi1/0/4                0              0              0              0
```

```
<output truncated>
```

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

```
Device# show interfaces counters module 2
Port            InOctets    InUcastPkts    InMcastPkts    InBcastPkts
Gi1/0/1              520              2              0              0
Gi1/0/2              520              2              0              0
Gi1/0/3              520              2              0              0
Gi1/0/4              520              2              0              0

<output truncated>
```

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

```
Device# show interfaces counters protocol status
Protocols allocated:
Vlan1: Other, IP
Vlan20: Other, IP, ARP
Vlan30: Other, IP, ARP
Vlan40: Other, IP, ARP
Vlan50: Other, IP, ARP
Vlan60: Other, IP, ARP
Vlan70: Other, IP, ARP
Vlan80: Other, IP, ARP
Vlan90: Other, IP, ARP
Vlan900: Other, IP, ARP
Vlan3000: Other, IP
Vlan3500: Other, IP
GigabitEthernet1/0/1: Other, IP, ARP, CDP
GigabitEthernet1/0/2: Other, IP
GigabitEthernet1/0/3: Other, IP
GigabitEthernet1/0/4: Other, IP
GigabitEthernet1/0/5: Other, IP
GigabitEthernet1/0/6: Other, IP
GigabitEthernet1/0/7: Other, IP
GigabitEthernet1/0/8: Other, IP
GigabitEthernet1/0/9: Other, IP
GigabitEthernet1/0/10: Other, IP, CDP

<output truncated>
```

This is an example of output from the **show interfaces counters trunk** command. It displays trunk counters for all interfaces.

```
Device# show interfaces counters trunk
Port        TrunkFramesTx   TrunkFramesRx   WrongEncap
Gi1/0/1                 0               0            0
Gi1/0/2                 0               0            0
Gi1/0/3             80678               0            0
Gi1/0/4             82320               0            0
Gi1/0/5                 0               0            0

<output truncated>
```

show interfaces switchport

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

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

Syntax Description

interface-id	(Optional) ID of the interface. Valid interfaces include physical ports (including type, stack member for stacking-capable switches, module, and port number) and port channels. The port channel range is 1 to 48.
module *number*	(Optional) Displays switchport configuration of all interfaces on the switch or specified stack member. The range is 1 to 9. This option is not available if you entered a specific interface ID.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

show interfaces transceiver

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

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

Syntax Description

interface-id	(Optional) ID of the physical interface, including type, stack member (stacking-capable switches only) module, and port number.
detail	(Optional) Displays calibration properties, including high and low numbers and any alarm information for any Digital Optical Monitoring (DoM)-capable transceiver if one is installed in the switch.
module *number*	(Optional) Limits display to interfaces on module on the switch. The range is 1 to 9. This option is not available if you entered a specific interface ID.
properties	(Optional) Displays speed, duplex, and inline power settings on an interface.
supported-list	(Optional) Lists all supported transceivers.
threshold-table	(Optional) Displays alarm and warning threshold table.

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Examples

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

```
Device# show interfaces transceiver

If device is externally calibrated, only calibrated values are printed.
++ : high alarm, +  : high warning, -  : low warning, -- : low alarm.
NA or N/A: not applicable, Tx: transmit, Rx: receive.
mA: milliamperes, dBm: decibels (milliwatts).

                                          Optical   Optical
           Temperature  Voltage  Current   Tx Power  Rx Power
Port       (Celsius)    (Volts)  (mA)      (dBm)     (dBm)
---------  -----------  -------  --------  --------  --------
Gi5/1/2      42.9       3.28      22.1      -5.4      -8.1
Te5/1/3      32.0       3.28      19.8       2.4      -4.2


Device# show interfaces gigabitethernet1/1/1 transceiver properties
```

```
  Name : Gi1/1/1
  Administrative Speed: auto
  Operational Speed: auto
  Administrative Duplex: auto
  Administrative Power Inline: enable
  Operational Duplex: auto
  Administrative Auto-MDIX: off
  Operational Auto-MDIX: off
```

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

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

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

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

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

Device# show interfaces transceiver supported-list
Transceiver Type          Cisco p/n min version
                              supporting DOM
------------------       -------------------------

   DWDM GBIC               ALL
   DWDM SFP                ALL
   RX only WDM GBIC        ALL
   DWDM XENPAK             ALL
   DWDM X2                 ALL
   DWDM XFP                ALL
   CWDM GBIC               NONE
   CWDM X2                 ALL
   CWDM XFP                ALL
   XENPAK ZR               ALL
   X2 ZR                   ALL
   XFP ZR                  ALL
   Rx_only_WDM_XENPAK      ALL
   XENPAK_ER               10-1888-04
   X2_ER                   ALL
```

```
   XFP_ER                    ALL
   XENPAK_LR                 10-1838-04
   X2_LR                     ALL
   XFP_LR                    ALL
   XENPAK_LW                 ALL
   X2_LW                     ALL
   XFP_LW                    NONE
   XENPAK SR                 NONE
   X2 SR                     ALL
   XFP SR                    ALL
   XENPAK LX4                NONE
   X2 LX4                    NONE
   XFP LX4                   NONE
   XENPAK CX4                NONE
   X2 CX4                    NONE
   XFP CX4                   NONE
   SX GBIC                   NONE
   LX GBIC                   NONE
   ZX GBIC                   NONE
   CWDM_SFP                  ALL
   Rx_only_WDM_SFP           NONE
   SX_SFP                    ALL
   LX_SFP                    ALL
   ZX_SFP                    ALL
   EX_SFP                    ALL
   SX SFP                    NONE
   LX SFP                    NONE
   ZX SFP                    NONE
   GIgE BX U SFP             NONE
   GigE BX D SFP             ALL
   X2 LRM                    ALL
   SR_SFPP                   ALL
   LR_SFPP                   ALL
   LRM_SFPP                  ALL
   ER_SFPP                   ALL
   ZR_SFPP                   ALL
   DWDM_SFPP                 ALL
   GIgE BX 40U SFP           ALL
   GigE BX 40D SFP           ALL
   GigE BX 40DA SFP          ALL
   GIgE BX 80U SFP           ALL
   GigE BX 80D SFP           ALL
   GIG BXU_SFPP              ALL
   GIG BXD_SFPP              ALL
   GIG BX40U_SFPP            ALL
   GIG BX40D_SFPP            ALL
   GigE Dual Rate LX SFP     ALL
   CWDM_SFPP                 ALL
   CPAK_SR10                 ALL
   CPAK_LR4                  ALL
   QSFP_LR                   ALL
   QSFP_SR                   ALL
```

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

```
Device# show interfaces transceiver threshold-table
             Optical Tx     Optical Rx    Temp     Laser Bias    Voltage
                                                    current
            -------------  -------------  ------   ------------  ---------

 DWDM GBIC
Min1             -4.00        -32.00        -4           N/A          4.65
Min2              0.00        -28.00        0            N/A          4.75
Max2              4.00         -9.00        70           N/A          5.25
```

```
Max1              7.00          -5.00        74           N/A          5.40
 DWDM SFP
Min1             -4.00         -32.00        -4           N/A          3.00
Min2              0.00         -28.00        0            N/A          3.10
Max2              4.00          -9.00        70           N/A          3.50
Max1              8.00          -5.00        74           N/A          3.60
 RX only WDM GBIC
Min1              N/A           -32.00       -4           N/A          4.65
Min2              N/A           -28.30       0            N/A          4.75
Max2              N/A            -9.00       70           N/A          5.25
Max1              N/A            -5.00       74           N/A          5.40
 DWDM XENPAK
Min1             -5.00         -28.00        -4           N/A          N/A
Min2             -1.00         -24.00        0            N/A          N/A
Max2              3.00          -7.00        70           N/A          N/A
Max1              7.00          -3.00        74           N/A          N/A
 DWDM X2
Min1             -5.00         -28.00        -4           N/A          N/A
Min2             -1.00         -24.00        0            N/A          N/A
Max2              3.00          -7.00        70           N/A          N/A
Max1              7.00          -3.00        74           N/A          N/A
 DWDM XFP
Min1             -5.00         -28.00        -4           N/A          N/A
Min2             -1.00         -24.00        0            N/A          N/A
Max2              3.00          -7.00        70           N/A          N/A
Max1              7.00          -3.00        74           N/A          N/A
 CWDM X2
Min1              N/A            N/A         0            N/A          N/A
Min2              N/A            N/A         0            N/A          N/A
Max2              N/A            N/A         0            N/A          N/A
Max1              N/A            N/A         0            N/A          N/A

<output truncated>
```

Related Commands

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

show 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 Denali 16.1.1	This command was introduced.

Usage Guidelines

Prior to Cisco IOS XE Denali 16.3.1, the Free Memory displayed in the command output was obtained from the underlying Linux kernel. This value was not accurate because some memory chunks that was available for use was not considered as free memory.

In Cisco IOS XE Denali 16.3.1, the free memory is accurately computed and displayed in the Free Memory field of the command output.

Examples

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

```
Switch# show memory platform

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

  Architecture     : mips64
  Memory (kB)
    Physical       : 3976852
    Total          : 3976852
    Used           : 2761276
    Free           : 1215576
    Active         : 2128196
    Inactive       : 1581856
    Inact-dirty    : 0
    Inact-clean    : 0
    Dirty          : 0
    AnonPages      : 1294984
    Bounce         : 0
    Cached         : 1978168
    Commit Limit   : 1988424
    Committed As   : 3343324
    High Total     : 0
    High Free      : 0
```

```
  Low Total      : 3976852
  Low Free       : 1215576
  Mapped         : 516316
  NFS Unstable   : 0
  Page Tables    : 17124
  Slab           : 0
  VMmalloc Chunk : 1069542588
  VMmalloc Total : 1069547512
  VMmalloc Used  : 2588
  Writeback      : 0
  HugePages Total: 0
  HugePages Free : 0
  HugePages Rsvd : 0
  HugePage Size  : 2048

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

 Buffers (kB)    : 437136

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

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

```
Device# show memory platform information

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

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

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

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

Buffers (kB)     : 438228

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

show module

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

```
show module [{switch-num}]
```

Syntax Description

switch-num	(Optional) Number of the switch.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	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 3850 Series switch:

```
Device# show module

Switch  Ports  Model          Serial No.   MAC address      Hw Ver.  Sw Ver.
------  -----  ------------   -----------  --------------   -------  -----------
2       32     WS-C3850-24P   FCW1934D0ZN  3820.56b8.d000   V06      16.01.00xxx
```

show mgmt-infra trace messages ilpower

To display inline power messages within a trace buffer, use the **show mgmt-infra trace messages ilpower** command in privileged EXEC mode.

show mgmt-infra trace messages ilpower [**switch** *stack-member-number*]

Syntax Description

switch *stack-member-number*	(Optional) Specifies the stack member number for which to display inline power messages within a trace buffer.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

This is an output example from the **show mgmt-infra trace messages ilpower** command:

```
Device# show mgmt-infra trace messages ilpower
[10/23/12 14:05:10.984 UTC 1 3] Initialized inline power system configuration fo
r slot 1.
[10/23/12 14:05:10.984 UTC 2 3] Initialized inline power system configuration fo
r slot 2.
[10/23/12 14:05:10.984 UTC 3 3] Initialized inline power system configuration fo
r slot 3.
[10/23/12 14:05:10.984 UTC 4 3] Initialized inline power system configuration fo
r slot 4.
[10/23/12 14:05:10.984 UTC 5 3] Initialized inline power system configuration fo
r slot 5.
[10/23/12 14:05:10.984 UTC 6 3] Initialized inline power system configuration fo
r slot 6.
[10/23/12 14:05:10.984 UTC 7 3] Initialized inline power system configuration fo
r slot 7.
[10/23/12 14:05:10.984 UTC 8 3] Initialized inline power system configuration fo
r slot 8.
[10/23/12 14:05:10.984 UTC 9 3] Initialized inline power system configuration fo
r slot 9.
[10/23/12 14:05:10.984 UTC a 3] Inline power subsystem initialized.
[10/23/12 14:05:18.908 UTC b 264] Create new power pool for slot 1
[10/23/12 14:05:18.909 UTC c 264] Set total inline power to 450 for slot 1
[10/23/12 14:05:20.273 UTC d 3] PoE is not supported on .
[10/23/12 14:05:20.288 UTC e 3] PoE is not supported on .
[10/23/12 14:05:20.299 UTC f 3] PoE is not supported on .
[10/23/12 14:05:20.311 UTC 10 3] PoE is not supported on .
[10/23/12 14:05:20.373 UTC 11 98] Inline power process post for switch 1
[10/23/12 14:05:20.373 UTC 12 98] PoE post passed on switch 1
[10/23/12 14:05:20.379 UTC 13 3] Slot #1: PoE initialization for board id 16387
[10/23/12 14:05:20.379 UTC 14 3] Set total inline power to 450 for slot 1
[10/23/12 14:05:20.379 UTC 15 3] Gi1/0/1 port config Initialized
[10/23/12 14:05:20.379 UTC 16 3] Interface Gi1/0/1 initialization done.
[10/23/12 14:05:20.380 UTC 17 3] Gi1/0/24 port config Initialized
[10/23/12 14:05:20.380 UTC 18 3] Interface Gi1/0/24 initialization done.
[10/23/12 14:05:20.380 UTC 19 3] Slot #1: initialization done.
```

```
[10/23/12 14:05:50.440 UTC 1a 3] Slot #1: PoE initialization for board id 16387
[10/23/12 14:05:50.440 UTC 1b 3] Duplicate init event
```

show mgmt-infra trace messages ilpower-ha

To display inline power high availability messages within a trace buffer, use the **show mgmt-infra trace messages ilpower-ha** command in privileged EXEC mode.

show mgmt-infra trace messages ilpower-ha [**switch** *stack-member-number*]

Syntax Description

switch *stack-member-number*	(Optional) Specifies the stack member number for which to display inline power messages within a trace buffer.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

This is an output example from the **show mgmt-infra trace messages ilpower-ha** command:

```
Device# show mgmt-infra trace messages ilpower-ha
[10/23/12 14:04:48.087 UTC 1 3] NG3K_ILPOWER_HA: Created NGWC ILP CF client succ
essfully.
```

show mgmt-infra trace messages platform-mgr-poe

To display platform manager Power over Ethernet (PoE) messages within a trace buffer, use the **show mgmt-infra trace messages platform-mgr-poe** privileged EXEC command.

show mgmt-infra trace messages platform-mgr-poe [**switch** *stack-member-number*]

Syntax Description

switch *stack-member-number*	(Optional) Specifies the stack member number for which to display messages within a trace buffer.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

This is an example of partial output from the **show mgmt-infra trace messages platform-mgr-poe** command:

```
Device# show mgmt-infra trace messages platform-mgr-poe
[10/23/12 14:04:06.431 UTC 1 5495] PoE Info: get power controller param sent:
[10/23/12 14:04:06.431 UTC 2 5495] PoE Info: POE_SHUT sent for port 1 (0:0)
[10/23/12 14:04:06.431 UTC 3 5495] PoE Info: POE_SHUT sent for port 2 (0:1)
[10/23/12 14:04:06.431 UTC 4 5495] PoE Info: POE_SHUT sent for port 3 (0:2)
[10/23/12 14:04:06.431 UTC 5 5495] PoE Info: POE_SHUT sent for port 4 (0:3)
[10/23/12 14:04:06.431 UTC 6 5495] PoE Info: POE_SHUT sent for port 5 (0:4)
[10/23/12 14:04:06.431 UTC 7 5495] PoE Info: POE_SHUT sent for port 6 (0:5)
[10/23/12 14:04:06.431 UTC 8 5495] PoE Info: POE_SHUT sent for port 7 (0:6)
[10/23/12 14:04:06.431 UTC 9 5495] PoE Info: POE_SHUT sent for port 8 (0:7)
[10/23/12 14:04:06.431 UTC a 5495] PoE Info: POE_SHUT sent for port 9 (0:8)
[10/23/12 14:04:06.431 UTC b 5495] PoE Info: POE_SHUT sent for port 10 (0:9)
[10/23/12 14:04:06.431 UTC c 5495] PoE Info: POE_SHUT sent for port 11 (0:10)
[10/23/12 14:04:06.431 UTC d 5495] PoE Info: POE_SHUT sent for port 12 (0:11)
[10/23/12 14:04:06.431 UTC e 5495] PoE Info: POE_SHUT sent for port 13 (e:0)
[10/23/12 14:04:06.431 UTC f 5495] PoE Info: POE_SHUT sent for port 14 (e:1)
[10/23/12 14:04:06.431 UTC 10 5495] PoE Info: POE_SHUT sent for port 15 (e:2)
[10/23/12 14:04:06.431 UTC 11 5495] PoE Info: POE_SHUT sent for port 16 (e:3)
[10/23/12 14:04:06.431 UTC 12 5495] PoE Info: POE_SHUT sent for port 17 (e:4)
[10/23/12 14:04:06.431 UTC 13 5495] PoE Info: POE_SHUT sent for port 18 (e:5)
[10/23/12 14:04:06.431 UTC 14 5495] PoE Info: POE_SHUT sent for port 19 (e:6)
[10/23/12 14:04:06.431 UTC 15 5495] PoE Info: POE_SHUT sent for port 20 (e:7)
[10/23/12 14:04:06.431 UTC 16 5495] PoE Info: POE_SHUT sent for port 21 (e:8)
[10/23/12 14:04:06.431 UTC 17 5495] PoE Info: POE_SHUT sent for port 22 (e:9)
[10/23/12 14:04:06.431 UTC 18 5495] PoE Info: POE_SHUT sent for port 23 (e:10)
```

show network-policy profile

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

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

Syntax Description

profile-number	(Optional) Displays the network-policy profile number. If no profile is entered, all network-policy profiles appear.

Command Default

None

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	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 60
  Interface:
   none
```

show platform hardware fed switch forward

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

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

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

show platform hardware fed switch {*switch_num* | **active** | **standby**} **forward summary**

Syntax Description

switch {*switch_num* | **active** | **standby** }	The switch for which you want to display information. You have the following options : • *switch_num*—ID of the switch. • **active**—Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available.
forward summary	Displays packet forwarding information. **Note** The keyword **summary** was added in the Cisco IOS XE Denali 16.3.1 release. Support for the keyword **summary** has been discontinued in the Cisco IOS XE Everest 16.6.1 release and later releases.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.
Cisco IOS XE Denali 16.3.1	Support for the keyword **summary** was added.
Cisco IOS XE Everest 16.6.1 and later releases	Supprort for the keyword **summary** was discontinued.

Usage Guidelines

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

Fields displayed in the command output are explained below.

- Station Index : The Station Index is the result of the layer 2 lookup and points to a station descriptor which provides the following:
  - Destination Index : Determines the egress port(s) to which the packets should be sent to. Global Port Number(GPN) can be used as the destination index. A destination index with15 down to 12

bits set indicates the GPN to be used. For example, destination index - 0xF04E corresponds to GPN - 78 (0x4e).

- Rewrite Index : Determines what needs to be done with the packets. For layer 2 switching, this is typically a bridging action
- Flexible Lookup Pipeline Stages(FPS) : Indicates the forwarding decision that was taken for the packet - routing or bridging
- Replication Bit Map : Determines if the packets should be sent to CPU or stack
  - Local Data Copy = 1
  - Remote Data copy = 0
  - Local CPU Copy = 0
  - Remote CPU Copy = 0

Example

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

```
Device#show platform hardware fed switch 1 forward summary
Time: Fri Sep 16 08:25:00 PDT 2016

Incomming Packet Details:

###[ Ethernet ]###
  dst       = 00:51:0f:f2:0e:11
  src       = 00:1d:01:85:ba:22
  type      = ARP
###[ ARP ]###
     hwtype    = 0x1
     ptype     = IPv4
     hwlen     = 6
     plen      = 4
     op        = is-at
     hwsrc     = 00:1d:01:85:ba:22
     psrc      = 10.10.1.33
     hwdst     = 00:51:0f:f2:0e:11
     pdst      = 10.10.1.1

Ingress:
Switch             : 1
Port               : GigabitEthernet1/0/1
Global Port Number : 1
Local Port Number  : 1
Asic Port Number   : 21
ASIC Number        : 0
STP state          :
                     blkLrn31to0: 0xffdfffdf
                     blkFwd31to0: 0xffdfffdf
Vlan               : 1
Station Descriptor : 170
DestIndex          : 0xF009
DestModIndex       : 2
RewriteIndex       : 2
Forwarding Decision: FPS 2A L2 Destination
```

```
Replication Bitmap:
Local CPU copy     : 0
Local Data copy    : 1
Remote CPU copy    : 0
Remote Data copy   : 0

Egress:
Switch             : 1
Outgoing Port      : GigabitEthernet1/0/9
Global Port Number : 9
ASIC Number        : 0
Vlan               : 1
```

show platform hardware fed switch forward interface

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

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

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

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

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

Syntax Description

switch { *switch_num* | **active** | **standby** }	The switch on which packet tracing has to be scheduled. The input port should be available on this switch. You have the following options : • *switch_num*—ID of the switch on which the ingress port is present. • **active**—indicates the active switch on which the the ingress port is present. • **standby**—indicates the standby switch on which the ingress port is present. **Note** This keyword is not supported.
interface *interface-type interface-number*	The input interface on which packet trace is simulated.
source-mac-address	The source MAC address of the packet you want to simulate.
destination-mac-address	The MAC address of the destination interface in hexadecimal format.
protocol-number	The number assigned to any L3 protocol.
arp	The Address Resolution Protocol (ARP) parameters.
ipv4	The IPv4 packet parameters.
ipv6	The IPv6 packet parameters.
mpls	The Multiprotocol Label Switching (MPLS) label parameters.

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

Command Modes

Privileged EXEC

Command History

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

Usage Guidelines

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

This command supports the following packet types:

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

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

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

Example

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

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

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

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

Related Commands

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

show platform hardware fed switch forward last summary

To display a summary of packet tracing data from a switch or switches in a stack, use the **show platform hardware fed switch** *switch_number* **forward last summary** command.

The output of the **show platform hardware fed switch** *switch_number* **forward last summary** command displays all the details about the forwarding decision taken for the packet from the last time the **show forward** command was run.

show platform hardware fed switch {*switch_number* | **active** | **standby**} **forward last summary**

Syntax Description

switch {*switch_number* | **active** | **standby** }	The switch on which you want to schedule a packet capture for a port. You have the following options : • *switch_num*—ID of the switch on which the ingress port is present. • **active**—indicates the active switch on which the the ingress port is present. • **standby**—indicates the standby switch on which the ingress port is present. **Note** This keyword is not supported.
forward last summary	Displays packet forwarding information.

Command Modes

Privileged EXEC

Command History

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

Usage Guidelines

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

With Cisco IOS XE Gibraltar 16.10.1, **show platform hardware fed switch forward last summary** command is enhanced to:

- Inject the debug packets from the CPU to simulate the incoming port and packets
- Use the debug packets to trace the packet in hardware data-path to provide forwarding details such as lookup, adjacency, rewrite information, drop decision, outgoing port and so on
- Drop the original packets at egress so as not to transmit the packet to the outgoing port
- Send a copy of all the packets to the CPU and display the details in the packet tracing output

Example

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

```
Device#show platform hardware fed switch active forward last summary
Input Packet Details:
###[ Ethernet ]###
  dst       = 01:00:5e:01:01:02
  src       = 00:00:00:03:00:05
  type      = 0x0
###[ Raw ]###
     load      = '00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00'
Ingress:
   Port                     : GigabitEthernet1/0/11
   Global Port Number       : 11
   Local Port Number        : 11
   Asic Port Number         : 10
   Asic Instance            : 1
   Vlan                     : 20
   Mapped Vlan ID           : 6
   STP Instance             : 4
   BlockForward             : 0
   BlockLearn               : 0
   L3 Interface             : 39
       IPv4 Routing         : enabled
       IPv6 Routing         : enabled
       Vrf Id               : 0
   Adjacency:
       Station Index        : 3      [SI_DIET_L2]
       Destination Index    : 18
       Rewrite Index        : 2
       Replication Bit Map  : 0x15   ['localData', 'remoteData', 'coreData']
   Decision:
       Destination Index    : 24     [DI_DIET_L2]
       Rewrite Index        : 2      [RI_L2]
       Dest Mod Index       : 9      [DMI_IGMP_CTRL_Q]
       CPU Map Index        : 0      [CMI_NULL]
       Forwarding Mode      : 0      [Bridging]
       Replication Bit Map  :        ['localData', 'remoteData', 'coreData']
       Winner               :        L2DESTMACVLAN LOOKUP
       Qos Label            : 65
       SGT                  : 0
       DGTID                : 0
Egress:
   Possible Replication     :
       Port                 : GigabitEthernet1/0/11
       Port                 : GigabitEthernet1/0/22
       Port                 : GigabitEthernet2/0/1
   Output Port Data         :
     Port                   : GigabitEthernet1/0/22
       Global Port Number   : 22
       Local Port Number    : 22
       Asic Port Number     : 21
       Asic Instance        : 0
       Unique RI            : 2
       Rewrite Type         : 1      [L2_BRIDGE]
       Mapped Rewrite Type  : 1      [L2_BRIDGE]
       Vlan                 : 20
       Mapped Vlan ID       : 6
     Port                   : GigabitEthernet2/0/1
       Global Port Number   : 97
       Local Port Number    : 1
       Asic Port Number     : 0
       Asic Instance        : 1
       Unique RI            : 2
```

```
       Rewrite Type          : 1      [L2_BRIDGE]
       Mapped Rewrite Type   : 1      [L2_BRIDGE]
       Vlan                  : 20
       Mapped Vlan ID        : 6

Output Packet Details:
   Port                      : GigabitEthernet1/0/22
###[ Ethernet ]###
  dst       = 01:00:5e:01:01:02
  src       = 00:00:00:03:00:05
  type      = 0x0
###[ Raw ]###
     load      = '00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00'
   Port                      : GigabitEthernet2/0/1
###[ Ethernet ]###
  dst       = 01:00:5e:01:01:02
  src       = 00:00:00:03:00:05
  type      = 0x0
###[ Raw ]###
     load      = '00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00'
*******************************************************************************
```

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 Denali 16.1.1	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 fed switch punt cpuq rates

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

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

Syntax Description

switch{*switch-number* | **active** | **standby**}	Displays information about the switch. You have the following options: • *switch-number.* • **active** —Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available. **Note** This keyword is not supported.
punt	Specifies the punt informtion.
cpuq	Specifies information about CPU receive queue.
rates	Specifies the rate at which the packets are punted.

Command Modes

Privileged EXEC (#)

Command History

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

Usage Guidelines

The output of this command displays the rate in packets per second at intervals of 10 seconds, 1 minute and 5 minutes.

Example

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

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

Punt Rate CPU Q Statistics


Packets per second averaged over 10 seconds, 1 min and 5 mins
================================================================================================
 Q  |          Queue             |  Rx    |  Rx    |  Rx    |  Drop  |  Drop    |  Drop
 no |          Name              |  10s   |  1min  |  5min  |  10s   |  1min    |  5min
================================================================================================
 0  CPU_Q_DOT1X_AUTH                0        0        0        0        0        0
 1  CPU_Q_L2_CONTROL                 0        0        0        0        0        0
 2  CPU_Q_FORUS_TRAFFIC              336      266      320      0        0        0
```

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

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

Table 3: show platform software fed switch active punt cpuq rates Field Descriptions

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

show platform software fed switch punt packet-capture display

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

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

Syntax Description

switch{*switch-number* | **active** | **standby**}	Displays information about a switch. You have the following options: • **active** —Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available. **Note** The **standby** keyword is not supported.
punt	Specifies punt information.
packet-capture display	Specifies information about the captured packet.
detailed	Specifies detailed information about the captured packet.
hex-dump	Specifies information about the captured packet, in hex format.

Command Modes

Privileged EXEC (#)

Command History

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

Usage Guidelines

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

Examples

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

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

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

 Doppler Frame Descriptor :
```

```
   0000000044004E04  C00F402D94510000  0000000000000100  0000400401000000
   0000000001000050  000000006D000100  0000000025836200  0000000000000000

 Packet Data Dump (length: 68 bytes) :
   01000CCCCCCD2C36  F8FC48840032AAAA  0300000C010B0000  00000080012C36F8
   FC48800000000080  012C36F8FC488080  0400001400020000F  0071000000020001
   244E733E

------ Packet Number: 2, Timestamp: 2018/09/04 23:22:10.179 ------
 interface : GigabitEthernet2/0/2 [if-id: 0x00000032] (physical)
 ether hdr : dest mac: 0180.c200.0000, src mac: 2c36.f8fc.4884
 ether hdr : ethertype: 0x0026
!
!
!
```

show platform software fed switch punt rates interfaces

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

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

Syntax Description

switch{*switch-number* | **active** | **standby**}	Displays information about the switch. You have the following options: • *switch-number.* • **active** —Displays information relating to the active switch. • **standby**—Displays information relating to the standby switch, if available. **Note** This keyword is not supported.
punt	Specifies the punt informtion.
rates	Specifies the rate at which the packets are punted.
interfaces[**interface-id**]	(Optional) Displays the overall statistics for an interface and also the per-queue configuration for the interface at an interval of 10 seconds.

Command Modes

Privileged EXEC (#)

Command History

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

Usage Guidelines

The output displays the punt rates in packets per second at intervals of 10 seconds, 1 minute and 5 minutes.

Example

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

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

Punt Rate on Interfaces Statistics

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

================================================================================================

                              |           |  Rx   |  Rx   |  Rx   |  Drop |  Drop  |  Drop
 Interface Name               |  IF_ID    |  10s  |  1min |  5min |  10s  |  1min  |  5min
```

```
==========================================================================================

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

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

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

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

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

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

Interface : Port-channel1 [if_id: 0x31]

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

Per CPUQ punt stats on the interface (rate averaged over 10s interval)
=========================================================================
 Q  |         Queue                 |  Recv   |  Recv  |  Drop  |  Drop  |
 no |         Name                  |  Total  |  Rate  |  Total |  Rate  |
=========================================================================
 0   CPU_Q_DOT1X_AUTH                       0        0        0        0
 1   CPU_Q_L2_CONTROL                   29519        0        0        0
 2   CPU_Q_FORUS_TRAFFIC                    0        0        0        0
 3   CPU_Q_ICMP_GEN                         0        0        0        0
 4   CPU_Q_ROUTING_CONTROL                  0        0        0        0
 5   CPU_Q_FORUS_ADDR_RESOLUTION            0        0        0        0
 6   CPU_Q_ICMP_REDIRECT                    0        0        0        0
 7   CPU_Q_INTER_FED_TRAFFIC                0        0        0        0
 8   CPU_Q_L2LVX_CONTROL_PKT                0        0        0        0
 9   CPU_Q_EWLC_CONTROL                     0        0        0        0
 10  CPU_Q_EWLC_DATA                        0        0        0        0
 11  CPU_Q_L2LVX_DATA_PKT                   0        0        0        0
 12  CPU_Q_BROADCAST                        0        0        0        0
 13  CPU_Q_LEARNING_CACHE_OVFL              0        0        0        0
 14  CPU_Q_SW_FORWARDING                    0        0        0        0
 15  CPU_Q_TOPOLOGY_CONTROL                98        0        0        0
 16  CPU_Q_PROTO_SNOOPING                   0        0        0        0
 17  CPU_Q_DHCP_SNOOPING                    0        0        0        0
 18  CPU_Q_TRANSIT_TRAFFIC                  0        0        0        0
 19  CPU_Q_RPF_FAILED                       0        0        0        0
```

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

------------------------------------------------------------------------------
```

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

Table 5: show platform software fed switch punt rates interfaces interface-id Field Descriptions

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

show platform software ilpower

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

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

Syntax Description

details	Displays inline power details for all the interfaces.
port	Displays inline power port configuration.
GigabitEthernet *interface-number*	The GigabitEthernet interface number. Values range from 0 to 9.
system *slot-number*	Displays inline power system configuration.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.3.2	This command was modified. The keyword **details** argument was added.
Cisco IOS XE Denali 16.1.1	The command was introduced.

Examples

The following is sample output from the **show platform software ilpower details** command:

```
Device# show platform software ilpower details
ILP Port Configuration for interface Gi1/0/1
    Initialization Done:   Yes
    ILP Supported:         Yes
    ILP Enabled:           Yes
    POST:                  Yes
    Detect On:             No
    Powered Device Detected            No
    Powered Device Class Done          No
    Cisco Powered Device:              No
    Power is On:           No
    Power Denied:          No
    Powered Device Type:               Null
    Powerd Device Class:              Null
    Power State:           NULL
    Current State:         NGWC_ILP_DETECTING_S
    Previous State:        NGWC_ILP_SHUT_OFF_S
    Requested Power in milli watts:       0
    Short Circuit Detected:                 0
    Short Circuit Count:             0
    Cisco Powerd Device Detect Count: 0
    Spare Pair mode:       0
        IEEE Detect:       Stopped
        IEEE Short:        Stopped
        Link Down:         Stopped
        Voltage sense:           Stopped
    Spare Pair Architecture:       1
```

```
Signal Pair Power allocation in milli watts: 0
Spare Pair Power On:   0
Powered Device power state:        0
Timer:
    Power Good:        Stopped
    Power Denied:      Stopped
    Cisco Powered Device Detect:   Stopped
```

show platform software memory

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

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

Syntax Description

Syntax Description

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

process

Level that is being set. Options include:

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

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

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

Command Default No default behavior or values.

Command Modes Privileged EXEC (#)

Command History

Command History

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

The following is a sample output displaying the abbreviated (brief keyword) memory information for the Forwarding Manager process for Cisco Catalyst 3000 Series ESP slot 0:

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

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

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

Table 6: show platform software memory brief Field Descriptions

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

show platform software process list

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

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

Syntax Description

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

Command Modes

Privileged EXE (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	The command was introduced.

Usage Guidelines

Prior to Cisco IOS XE Denali 16.3.1, the Free Memory displayed in the command output was obtained from the underlying Linux kernel. This value was not accurate because some memory chunks that was available for use was not considered as free memory.

In Cisco IOS XE Denali 16.3.1, the 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 platform software process list switch active R0** command:

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

Total number of processes: 278
```

```
Running          : 2
Sleeping         : 276
Disk sleeping    : 0
Zombies          : 0
Stopped          : 0
Paging           : 0

Up time          : 8318
Idle time        : 0
User time        : 216809
Kernel time      : 78931

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

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

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

Buffers (kB)     : 439528

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

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

```
Device# show platform software process list switch active R0
Name                         Pid    PPid  Group Id  Status    Priority  Size
------------------------------------------------------------------------------
systemd                        1       0         1  S               20  7892
kthreadd                       2       0         0  S               20  0
ksoftirqd/0                    3       2         0  S               20  0
kworker/0:0H                   5       2         0  S                0  0
rcu_sched                      7       2         0  S               20  0
rcu_bh                         8       2         0  S               20  0
migration/0                    9       2         0  S       4294967196  0
migration/1                   10       2         0  S       4294967196  0
ksoftirqd/1                   11       2         0  S               20  0
kworker/1:0H                  13       2         0  S                0  0
migration/2                   14       2         0  S       4294967196  0
ksoftirqd/2                   15       2         0  S               20  0
kworker/2:0H                  17       2         0  S                0  0
systemd-journal              221       1       221  S               20  4460
kworker/1:3                  246       2         0  S               20  0
systemd-udevd                253       1       253  S               20  5648
kvm-irqfd-clean              617       2         0  S                0  0
scsi_eh_6                    620       2         0  S               20  0
scsi_tmf_6                   621       2         0  S                0  0
usb-storage                  622       2         0  S               20  0
scsi_eh_7                    625       2         0  S               20  0
scsi_tmf_7                   626       2         0  S                0  0
usb-storage                  627       2         0  S               20  0
kworker/7:1                  630       2         0  S               20  0
bioset                       631       2         0  S                0  0
kworker/3:1H                 648       2         0  S                0  0
kworker/0:1H                 667       2         0  S                0  0
kworker/1:1H                 668       2         0  S                0  0
bioset                       669       2         0  S                0  0
kworker/6:2                  698       2         0  S               20  0
kworker/2:2                  699       2         0  S               20  0
kworker/2:1H                 703       2         0  S                0  0
kworker/7:1H                 748       2         0  S                0  0
kworker/5:1H                 749       2         0  S                0  0
kworker/6:1H                 754       2         0  S                0  0
kworker/7:2                  779       2         0  S               20  0
auditd                       838       1       838  S               16  2564
.
.
.
```

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

Table 7: 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.

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

show platform software process memory

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

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

Syntax Description

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

Command History

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

Command Modes

Privileged EXEC(#)

Examples:

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

```
Device# show platform software process memory switch active R0 all

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

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

Table 8: show platform software process memory Field Descriptions

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

show platform software process slot switch

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

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

Syntax Description

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

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

Examples

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

```
Switch# show platform software process slot switch active R0 monitor

top - 00:01:52 up 1 day, 11:20,  0 users,  load average: 0.50, 0.68, 0.83
Tasks: 311 total,   2 running, 309 sleeping,   0 stopped,   0 zombie
Cpu(s):  7.4%us,  3.3%sy,  0.0%ni, 89.2%id,  0.0%wa,  0.0%hi,  0.1%si,  0.0%st
Mem:   3976844k total,  3955036k used,    21808k free,   419312k buffers
Swap:        0k total,        0k used,        0k free,  1946764k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 5693 root      20   0  3448 1368  912 R    7  0.0   0:00.07 top
17546 root      20   0 2044m 244m  79m S    7  6.3 186:49.08 fed main event
18662 root      20   0 1806m 678m 263m S    5 17.5 215:32.38 linux_iosd-imag
30276 root      20   0  171m  42m  33m S    5  1.1 125:06.77 repm
17835 root      20   0  935m  74m  63m S    4  1.9  82:28.31 sif_mgr
18534 root      20   0  182m 150m  10m S    2  3.9   8:12.08 smand
    1 root      20   0  8440 4740 2184 S    0  0.1   0:09.52 systemd
    2 root      20   0     0    0    0 S    0  0.0   0:00.00 kthreadd
    3 root      20   0     0    0    0 S    0  0.0   0:02.86 ksoftirqd/0
    5 root       0 -20     0    0    0 S    0  0.0   0:00.00 kworker/0:0H
    7 root      RT   0     0    0    0 S    0  0.0   0:01.44 migration/0
    8 root      20   0     0    0    0 S    0  0.0   0:00.00 rcu_bh
    9 root      20   0     0    0    0 S    0  0.0   0:23.08 rcu_sched
   10 root      20   0     0    0    0 S    0  0.0   0:58.04 rcuc/0
   11 root      20   0     0    0    0 S    0  0.0  21:35.60 rcuc/1
   12 root      RT   0     0    0    0 S    0  0.0   0:01.33 migration/1
```

Related Commands

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

show platform software status control-processor

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

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

Syntax Description

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

Prior to Cisco IOS XE Denali 16.3.1, the Free Memory displayed in the command output was obtained from the underlying Linux kernel. This value was not accurate because some memory chunks that was available for use was not considered as free memory.

In Cisco IOS XE Denali 16.3.1, the 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 platform memory software status control-processor** command:

```
Switch# show platform software status control-processor

2-RP0: online, statistics updated 7 seconds ago
Load Average: healthy
  1-Min: 1.00, status: healthy, under 5.00
  5-Min: 1.21, status: healthy, under 5.00
  15-Min: 0.90, status: healthy, under 5.00
Memory (kb): healthy
  Total: 3976852
  Used: 2766284 (70%), status: healthy
  Free: 1210568 (30%)
  Committed: 3358008 (84%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  4.40, System:  1.70, Nice:  0.00, Idle: 93.80
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  3.80, System:  1.20, Nice:  0.00, Idle: 94.90
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  7.00, System:  1.10, Nice:  0.00, Idle: 91.89
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  4.49, System:  0.69, Nice:  0.00, Idle: 94.80
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00

3-RP0: unknown, statistics updated 2 seconds ago
Load Average: healthy
  1-Min: 0.24, status: healthy, under 5.00
  5-Min: 0.27, status: healthy, under 5.00
```

```
  15-Min: 0.32, status: healthy, under 5.00
Memory (kb): healthy
  Total: 3976852
  Used: 2706768 (68%), status: healthy
  Free: 1270084 (32%)
  Committed: 3299332 (83%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  4.50, System:  1.20, Nice:  0.00, Idle: 94.20
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  5.20, System:  0.50, Nice:  0.00, Idle: 94.29
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  3.60, System:  0.70, Nice:  0.00, Idle: 95.69
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  3.00, System:  0.60, Nice:  0.00, Idle: 96.39
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00

4-RP0: unknown, statistics updated 2 seconds ago
Load Average: healthy
  1-Min: 0.21, status: healthy, under 5.00
  5-Min: 0.24, status: healthy, under 5.00
  15-Min: 0.24, status: healthy, under 5.00
Memory (kb): healthy
  Total: 3976852
  Used: 1452404 (37%), status: healthy
  Free: 2524448 (63%)
  Committed: 1675120 (42%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  2.30, System:  0.40, Nice:  0.00, Idle: 97.30
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  4.19, System:  0.69, Nice:  0.00, Idle: 95.10
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  4.79, System:  0.79, Nice:  0.00, Idle: 94.40
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU3: CPU Utilization (percentage of time spent)
  User:  2.10, System:  0.40, Nice:  0.00, Idle: 97.50
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00

9-RP0: unknown, statistics updated 4 seconds ago
Load Average: healthy
  1-Min: 0.20, status: healthy, under 5.00
  5-Min: 0.35, status: healthy, under 5.00
  15-Min: 0.35, status: healthy, under 5.00
Memory (kb): healthy
  Total: 3976852
  Used: 1451328 (36%), status: healthy
  Free: 2525524 (64%)
  Committed: 1675932 (42%), under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User:  1.90, System:  0.50, Nice:  0.00, Idle: 97.60
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU1: CPU Utilization (percentage of time spent)
  User:  4.39, System:  0.19, Nice:  0.00, Idle: 95.40
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
CPU2: CPU Utilization (percentage of time spent)
  User:  5.70, System:  1.00, Nice:  0.00, Idle: 93.30
  IRQ:  0.00, SIRQ:  0.00, IOwait:  0.00
```

```
CPU3: CPU Utilization (percentage of time spent)
  User:  1.30, System:  0.60, Nice:  0.00, Idle: 98.00
  IRQ:  0.00, SIRQ:  0.10, IOwait:  0.00
```

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

```
Switch# show platform software status control-processor brief

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

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

CPU Utilization
 Slot  CPU   User System   Nice   Idle    IRQ   SIRQ IOwait
2-RP0    0   4.10   2.00   0.00  93.80   0.00   0.10   0.00
         1   4.60   1.00   0.00  94.30   0.00   0.10   0.00
         2   6.50   1.10   0.00  92.40   0.00   0.00   0.00
         3   5.59   1.19   0.00  93.20   0.00   0.00   0.00
3-RP0    0   2.80   1.20   0.00  95.90   0.00   0.10   0.00
         1   4.49   1.29   0.00  94.20   0.00   0.00   0.00
         2   5.30   1.60   0.00  93.10   0.00   0.00   0.00
         3   5.80   1.20   0.00  93.00   0.00   0.00   0.00
4-RP0    0   1.30   0.80   0.00  97.89   0.00   0.00   0.00
         1   1.30   0.20   0.00  98.50   0.00   0.00   0.00
         2   5.60   0.80   0.00  93.59   0.00   0.00   0.00
         3   5.09   0.19   0.00  94.70   0.00   0.00   0.00
9-RP0    0   3.99   0.69   0.00  95.30   0.00   0.00   0.00
         1   2.60   0.70   0.00  96.70   0.00   0.00   0.00
         2   4.49   0.89   0.00  94.60   0.00   0.00   0.00
         3   2.60   0.20   0.00  97.20   0.00   0.00   0.00
```

show platform software thread list

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

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

Syntax Description

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

Command History

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

Command Modes

Privileged EXEC(#)

Examples:

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

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

Name           Tid    PPid  Group Id  Core    Vcswch   Nvcswch  Status    Priority
TIME+  Size
-------------------------------------------------------------------------------------------------
cdman         8407    7295      8407     1         0         0  S               20
12309  36976
```

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

Table 9: show platform software thread list Field Descriptions

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

show processes cpu platform

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

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

Syntax Description

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

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	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:  1%, one minute:  3%, five minutes:  2%
Core 0: CPU utilization for five seconds:  2%, one minute:  2%, five minutes:  2%
Core 1: CPU utilization for five seconds:  2%, one minute:  1%, five minutes:  1%
Core 2: CPU utilization for five seconds:  3%, one minute:  1%, five minutes:  1%
Core 3: CPU utilization for five seconds:  2%, one minute:  5%, five minutes:  2%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
------------------------------------------------------------------------------
     1       0      0%      0%      0%  S             4876  systemd
```

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

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

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

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

.
.

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

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

CPU utilization for five seconds:  3%, one minute:  3%, five minutes:  3%
Core 0: CPU utilization for five seconds:  1%, one minute:  5%, five minutes:  5%
Core 1: CPU utilization for five seconds:  1%, one minute: 11%, five minutes:  5%
Core 2: CPU utilization for five seconds: 22%, one minute:  7%, five minutes:  6%
Core 3: CPU utilization for five seconds:  5%, one minute:  6%, five minutes:  6%
Core 4: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 5: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 6: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  0%
Core 7: CPU utilization for five seconds:  0%, one minute:  0%, five minutes:  6%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
--------------------------------------------------------------------------------
     1       0      0%      0%      0%  S             8044  systemd
     2       0      0%      0%      0%  S                0  kthreadd
.
.
.
```

show processes cpu platform history

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

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

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

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	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:  1%, one minute:  3%, five minutes:  2%
Core 0: CPU utilization for five seconds:  2%, one minute:  2%, five minutes:  2%
Core 1: CPU utilization for five seconds:  2%, one minute:  1%, five minutes:  1%
Core 2: CPU utilization for five seconds:  3%, one minute:  1%, five minutes:  1%
Core 3: CPU utilization for five seconds:  2%, one minute:  5%, five minutes:  2%
   Pid    PPid    5Sec    1Min    5Min  Status        Size  Name
--------------------------------------------------------------------------------
     1       0      0%      0%      0%  S             4876  systemd
     2       0      0%      0%      0%  S                0  kthreadd
     3       2      0%      0%      0%  S                0  ksoftirqd/0
     5       2      0%      0%      0%  S                0  kworker/0:0H
     7       2      0%      0%      0%  S                0  rcu_sched
     8       2      0%      0%      0%  S                0  rcu_bh
     9       2      0%      0%      0%  S                0  migration/0
    10       2      0%      0%      0%  S                0  watchdog/0
    11       2      0%      0%      0%  S                0  watchdog/1
    12       2      0%      0%      0%  S                0  migration/1
    13       2      0%      0%      0%  S                0  ksoftirqd/1
    15       2      0%      0%      0%  S                0  kworker/1:0H
    16       2      0%      0%      0%  S                0  watchdog/2
    17       2      0%      0%      0%  S                0  migration/2
    18       2      0%      0%      0%  S                0  ksoftirqd/2
    20       2      0%      0%      0%  S                0  kworker/2:0H
    21       2      0%      0%      0%  S                0  watchdog/3
    22       2      0%      0%      0%  S                0  migration/3
    23       2      0%      0%      0%  S                0  ksoftirqd/3
    24       2      0%      0%      0%  S                0  kworker/3:0
    25       2      0%      0%      0%  S                0  kworker/3:0H
    26       2      0%      0%      0%  S                0  kdevtmpfs
    27       2      0%      0%      0%  S                0  netns
    28       2      0%      0%      0%  S                0  perf
    29       2      0%      0%      0%  S                0  khungtaskd
    30       2      0%      0%      0%  S                0  writeback
    31       2      7%      8%      8%  S                0  ksmd
    32       2      0%      0%      0%  S                0  khugepaged
    33       2      0%      0%      0%  S                0  crypto
    34       2      0%      0%      0%  S                0  bioset
    35       2      0%      0%      0%  S                0  kblockd
    36       2      0%      0%      0%  S                0  ata_sff
    37       2      0%      0%      0%  S                0  rpciod
    63       2      0%      0%      0%  S                0  kswapd0
    64       2      0%      0%      0%  S                0  vmstat
    65       2      0%      0%      0%  S                0  fsnotify_mark
.
.
.
```

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

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

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

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

show processes cpu platform monitor

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

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

Syntax Description

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Denali 16.1.1	This command was introduced.

Usage Guidelines

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

Examples

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

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

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

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 6294 root      20   0  3448 1368  912 R    9  0.0   0:00.07 top
17546 root      20   0 2044m 244m  79m S    7  6.3 187:02.07 fed main event
30276 root      20   0  171m  42m  33m S    7  1.1 125:15.54 repm
   16 root      20   0     0    0    0 S    5  0.0  22:07.92 rcuc/2
   21 root      20   0     0    0    0 R    5  0.0  22:13.24 rcuc/3
```

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

Related Commands

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

show processes memory platform

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

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

Syntax Description

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

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
	This command was introduced.
Cisco IOS XE Gibraltar 16.11.1	This command was modified. The keyword **accounting** was added. The **Total** column was deleted from the output.

Examples

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

```
device# show processes memory platform

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

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

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

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

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

  smand_rp_0              3624155137          172389           3624155138          50
         1#a3e0e4361082c702e5bf1afbd90e6313       2018-09-04 14:23
  linux_iosd-imag_rp_0    3626295305          49188            3624155138          12
         1#545420bd869d25eb5ab826182ee5d9ce       2018-09-04 12:03
  btman_rp_0              3624737792          17080            2953915394          64
         1#d6888bd9564a3c4fcf049c31ba07a036       2018-09-04 22:29
```

```
  fman_fp_image_fp_0      3624059905          16960            4027402242          298
         1#921ba4d9df5b0a6e946a3b270bd6592d       2018-09-04 22:55
  fed_main_event_fp_0     3626295305          16396            4027402242          32
         1#27083f7bf3985d892505806cae2bfb0d       2018-09-04 12:03
  dbm_rp_0                3626295305          16396            4027402242          3
         1#2b878f802bd7703c5298d37e7a4e8ac3       2018-09-04 12:02
  tamd_proc_rp_0          3895208962          12632            3624667171          7
         1#5b0ed8f88ef5f873abcaf8a744037a44       2018-09-04 18:47
  btman_fp_0              3624233985          12288            3624737792          9
         1#d6888bd9564a3c4fcf049c31ba07a036       2018-09-04 15:23
  sif_mgr_rp_0            3624059907          8216             4027402242          4
         1#de2a951a8a7bae83ca2c04c56810eb72       2018-09-04 14:21
  python2.7_fp_0          2954560513          8000             2954560513          1
                                                   2018-09-04 12:16
  nginx_rp_0              3357041665          4608             4027402242          4
         1#32e56bb09e0509c5fa5ac32093631206       2018-09-04 16:18
  rotee_FRU_SLOT_NUM      3624667169          4097             3624667169          1
         1#ff68e5150a698cd59fa259828614995b       2018-09-04 10:43
  hman_rp_0               3893617664          1488             3893617664          1
         1#1c4aadada30083c5d6f66dc8ca8cd4cb       2018-09-04 10:42
  tams_proc_rp_0          3895096320          1024             3895096320          1
         1#a36a3afa9884c8dc4d40af1e80cacd26       2018-09-04 10:42
  stack_mgr_rp_0          4027402242          904              4027402242          4
         1#ca902eab11a18ab056b16554f49871e8       2018-09-04 14:21
  sessmgrd_rp_0           3491618816          848              3624155138          8
         1#720239fc8bddcabc059768c55a1640ed       2018-09-04 14:32
  psd_rp_0                4027402242          696              4027402242          4
         1#98cf04e0ddd78c2400b3ca3b5f298594       2018-09-04 14:21
  lman_rp_0               4027402242          592              4027402242          4
         1#dc8ed9e428d36477a617d56c51d5caf2       2018-09-04 14:21
  bt_logger_rp_0          4027402242          592              4027402242          4
         1#ba882be1ed783e72575e97cc0908e0e8       2018-09-04 14:21
  repm_rp_0               4027402242          592              4027402242          4
         1#ae461a05430efa767427f2ab40aba372       2018-09-04 14:21
  fman_rp_rp_0            4027402242          592              4027402242          3
         1#09def9cc1390911be9e3a7a9c89f4cf7       2018-09-04 12:16
  epc_ws_liaison_fp_0     4027402242          592              4027402242          4
         1#41451626dcce9d1478b22e2ebbbdcf54       2018-09-04 14:21
  cli_agent_rp_0          4027402242          592              4027402242          4
         1#92d3882919daf3a9e210807c61de0552       2018-09-04 14:21
  cmm_rp_0                4027402242          592              4027402242          4
         1#15ed1d79e96874b1e0621c42c3de6166       2018-09-04 14:21
  tms_rp_0                4027402242          352              4027402242          4
         1#5c6efe2e21f15aa16318576d3ec9153c       2018-09-04 12:03
  plogd_rp_0              4027402242          48               4027402242          1
         1#2d7f2ef57206f4fa763d7f2f5400bf1b       2018-09-04 10:43
  cmand_rp_0              3624155137          17               3624155137          1
         1#f1f41f61c44d73014023db5d8a46ecf5       2018-09-04 10:42
!
!
!
```

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

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

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

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

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

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

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

show processes platform

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

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

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

Command History

Release	Modification
Cisco IOS XE Gibraltar 16.11.1	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 10: show processes platform Field Descriptions

Field	Description
Pid	Displays the process ID.

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

show power inline

To display the Power over Ethernet (PoE) status for the specified PoE port, the specified stack member, or for all PoE ports in the switch stack, use the **show power inline** command in EXEC mode.

show power inline [{**police** | **priority**}] [{*interface-id* | **module** *stack-member-number*}] [**detail**]

Syntax Description

police	(Optional) Displays the power policing information about real-time power consumption.
priority	(Optional) Displays the power inline port priority for each port.
interface-id	(Optional) ID of the physical interface.
module *stack-member-number*	(Optional) Limits the display to ports on the specified stack member. The range is 1 to 9. This keyword is supported only on stacking-capable switches.
detail	(Optional) Displays detailed output of the interface or module.

Command Modes

User EXEC

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Examples

This is an example of output from the **show power inline** command. The table that follows describes the output fields.

```
Device> show power inline
Module   Available     Used     Remaining
          (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
1             n/a        n/a         n/a
2             n/a        n/a         n/a
3          1440.0       15.4      1424.6
4           720.0        6.3       713.7
Interface Admin  Oper       Power   Device              Class Max
                            (Watts)
--------- ------ ---------- ------- ------------------- ----- ----
Gi3/0/1   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/2   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/3   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/4   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/5   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/6   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/7   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/8   auto   off        0.0     n/a                 n/a   30.0
```

```
Gi3/0/9   auto   off        0.0     n/a                 n/a   30.0
Gi3/0/10  auto   off        0.0     n/a                 n/a   30.0
Gi3/0/11  auto   off        0.0     n/a                 n/a   30.0
Gi3/0/12  auto   off        0.0     n/a                 n/a   30.0
<output truncated>
```

This is an example of output from the **show power inline** *interface-id* command on a switch port:

```
Device> show power inline gigabitethernet1/0/1
Interface Admin  Oper       Power   Device              Class Max
                            (Watts)
--------- ------ ---------- ------- ------------------- ----- ----
Gi1/0/1   auto   off        0.0     n/a                 n/a   30.0
```

This is an example of output from the **show power inline module** *switch-number* command on stack member 3. The table that follows describes the output fields.

```
Device> show power inline module 3
Module   Available     Used     Remaining
          (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
3           865.0      864.0         1.0
Interface Admin  Oper       Power   Device              Class Max
                            (Watts)
--------- ------ ---------- ------- ------------------- ----- ----
Gi3/0/1   auto   power-deny 4.0     n/a                 n/a   15.4
Gi3/0/2   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/3   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/4   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/5   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/6   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/7   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/8   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/9   auto   off        0.0     n/a                 n/a   15.4
Gi3/0/10  auto   off        0.0     n/a                 n/a   15.4
<output truncated>
```

Table 11: show power inline Field Descriptions

Field	Description
Available	The total amount of configured power[1] on the PoE switch in watts (W).
Used	The amount of configured power that is allocated to PoE ports in watts.
Remaining	The amount of configured power in watts that is not allocated to ports in the system. (Available – Used = Remaining)
Admin	Administration mode: auto, off, static.

Field	Description
Oper	Operating mode: • on—The powered device is detected, and power is applied. • off—No PoE is applied. • faulty—Device detection or a powered device is in a faulty state. • power-deny—A powered device is detected, but no PoE is available, or the maximum wattage exceeds the detected powered-device maximum.
Power	The maximum amount of power that is allocated to the powered device in watts. This value is the same as the value in the *Cutoff Power* field in the **show power inline police** command output.
Device	The device type detected: n/a, unknown, Cisco powered-device, IEEE powered-device, or the name from CDP.
Class	The IEEE classification: n/a or a value from 0 to 4.
Max	The maximum amount of power allocated to the powered device in watts.
AdminPowerMax	The maximum amount power allocated to the powered device in watts when the switch polices the real-time power consumption. This value is the same as the *Max* field value.
AdminConsumption	The power consumption of the powered device in watts when the switch polices the real-time power consumption. If policing is disabled, this value is the same as the *AdminPowerMax* field value.

[1] The configured power is the power that you manually specify or that the switch specifies by using CDP power negotiation or the IEEE classification, which is different than the real-time power that is monitored with the power sensing feature.

This is an example of output from the **show power inline police** command on a stacking-capable switch:

```
Device> show power inline police
Module   Available     Used      Remaining
          (Watts)     (Watts)    (Watts)
------   ---------   --------   ---------
1           370.0        0.0       370.0
3           865.0      864.0         1.0
          Admin  Oper         Admin      Oper       Cutoff Oper
Interface State  State        Police     Police     Power  Power
--------- ------ ------------ ---------- ---------- ------ ------
Gi1/0/1   auto   off          none       n/a        n/a    0.0
Gi1/0/2   auto   off          log        n/a        5.4    0.0
Gi1/0/3   auto   off          errdisable n/a        5.4    0.0
Gi1/0/4   off    off          none       n/a        n/a    0.0
Gi1/0/5   off    off          log        n/a        5.4    0.0
Gi1/0/6   off    off          errdisable n/a        5.4    0.0
Gi1/0/7   auto   off          none       n/a        n/a    0.0
Gi1/0/8   auto   off          log        n/a        5.4    0.0
Gi1/0/9   auto   on           none       n/a        n/a    5.1
Gi1/0/10  auto   on           log        ok         5.4    4.2
Gi1/0/11  auto   on           log        log        5.4    5.9
Gi1/0/12  auto   on           errdisable ok         5.4    4.2
```

```
Gi1/0/13  auto   errdisable  errdisable n/a        5.4    0.0
<output truncated>
```

In the previous example:

- The Gi1/0/1 port is shut down, and policing is not configured.
- The Gi1/0/2 port is shut down, but policing is enabled with a policing action to generate a syslog message.
- The Gi1/0/3 port is shut down, but policing is enabled with a policing action is to shut down the port.
- Device detection is disabled on the Gi1/0/4 port, power is not applied to the port, and policing is disabled.
- Device detection is disabled on the Gi1/0/5 port, and power is not applied to the port, but policing is enabled with a policing action to generate a syslog message.
- Device detection is disabled on the Gi1/0/6 port, and power is not applied to the port, but policing is enabled with a policing action to shut down the port.
- The Gi1/0/7 port is up, and policing is disabled, but the switch does not apply power to the connected device.
- The Gi1/0/8 port is up, and policing is enabled with a policing action to generate a syslog message, but the switch does not apply power to the powered device.
- The Gi1/0/9 port is up and connected to a powered device, and policing is disabled.
- The Gi1/0/10 port is up and connected to a powered device, and policing is enabled with a policing action to generate a syslog message. The policing action does not take effect because the real-time power consumption is less than the cutoff value.
- The Gi1/0/11 port is up and connected to a powered device, and policing is enabled with a policing action to generate a syslog message.
- The Gi1/0/12 port is up and connected to a powered device, and policing is enabled with a policing action to shut down the port. The policing action does not take effect because the real-time power consumption is less than the cutoff value.
- The Gi1/0/13 port is up and connected to a powered device, and policing is enabled with a policing action to shut down the port.

This is an example of output from the **show power inline police** *interface-id* command on a standalone switch. The table that follows describes the output fields.

```
Device> show power inline police gigabitethernet1/0/1
Interface Admin  Oper       Admin      Oper       Cutoff Oper
          State  State      Police     Police     Power  Power
--------- ------ ---------- ---------- ---------- ------ -----
Gi1/0/1   auto   off        none       n/a        n/a    0.0
```

Table 12: show power inline police Field Descriptions

Field	Description
Available	The total amount of configured power[2] on the switch in watts (W).
Used	The amount of configured power allocated to PoE ports in watts.
Remaining	The amount of configured power in watts that is not allocated to ports in the system. (Available – Used = Remaining)
Admin State	Administration mode: auto, off, static.
Oper State	Operating mode: • errdisable—Policing is enabled. • faulty—Device detection on a powered device is in a faulty state. • off—No PoE is applied. • on—The powered device is detected, and power is applied. • power-deny—A powered device is detected, but no PoE is available, or the real-time power consumption exceeds the maximum power allocation. **Note** The operating mode is the current PoE state for the specified PoE port, the specified stack member, or for all PoE ports on the switch.
Admin Police	Status of the real-time power-consumption policing feature: • errdisable—Policing is enabled, and the switch shuts down the port when the real-time power consumption exceeds the maximum power allocation. • log—Policing is enabled, and the switch generates a syslog message when the real-time power consumption exceeds the maximum power allocation. • none—Policing is disabled.
Oper Police	Policing status: • errdisable—The real-time power consumption exceeds the maximum power allocation, and the switch shuts down the PoE port. • log—The real-time power consumption exceeds the maximum power allocation, and the switch generates a syslog message. • n/a—Device detection is disabled, power is not applied to the PoE port, or no policing action is configured. • ok—Real-time power consumption is less than the maximum power allocation.
Cutoff Power	The maximum power allocated on the port. When the real-time power consumption is greater than this value, the switch takes the configured policing action.
Oper Power	The real-time power consumption of the powered device.

[2] The configured power is the power that you manually specify or that the switch specifies by using CDP power negotiation or the IEEE classification, which is different than the real-time power that is monitored with the power sensing feature.

This is an example of output from the **show power inline priority** command on a standalone switch.

```
Device> show power inline priority
Interface  Admin  Oper       Priority
           State  State
---------- ------ ---------- --------

Gi1/0/1    auto   off        low
Gi1/0/2    auto   off        low
Gi1/0/3    auto   off        low
Gi1/0/4    auto   off        low
Gi1/0/5    auto   off        low
Gi1/0/6    auto   off        low
Gi1/0/7    auto   off        low
Gi1/0/8    auto   off        low
Gi1/0/9    auto   off        low
```

show stack-power

To display information about StackPower stacks or switches in a power stack, use the **show stack-power** command in EXEC mode.

{**show stack-power** [{**budgeting** | **detail** | **load-shedding** | **neighbors**}] [**order** *power-stack-name*] | [{**stack-name** [*stack-id*] | **switch** [*switch-id*]}]}

Syntax Description

budgeting	(Optional) Displays the stack power budget table.
detail	(Optional) Displays the stack power stack details.
load-shedding	(Optional) Displays the stack power load shedding table.
neighbors	(Optional) Displays the stack power neighbor table.
order *power-stack-name*	(Optional) Displays the load shedding priority for a power stack. **Note** This keyword is available only after the **load-shedding** keyword.
stack-name	(Optional) Displays budget table, details, or neighbors for all power stacks or the specified power stack. **Note** This keyword is not available after the **load-shedding** keyword.
stack-id	(Optional) Power stack ID for the power stack. The stack ID must be 31 characters or less.
switch	(Optional) Displays budget table, details, load-shedding, or neighbors for all switches or the specified switch.
switch-id	(Optional) Switch ID for the switch. The switch number is from 1 to 9.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE Denali 16.3.2	Support for all the options was enabled for this command.
Cisco IOS XE Denali 16.1.1	This command was reintroduced.

Usage Guidelines

This command is available only on switch stacks running the IP Base or IP Services image.

If a switch is shut down because of load shedding, the output of the **show stack-power** command still includes the MAC address of the shutdown neighbor switch. The command output shows the stack power topology even if there is not enough power to power a switch.

Examples

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

```
Device# show stack-power
Power Stack           Stack   Stack    Total   Rsvd    Alloc   Unused  Num  Num
Name                  Mode    Topolgy  Pwr(W)  Pwr(W)  Pwr(W)  Pwr(W)  SW   PS
--------------------  ------  -------  ------  ------  ------  ------  ---  ---
Powerstack-1          SP-PS   Stndaln  350     150     200     0       1    1
```

This is an example of output from the **show stack-power budgeting** command:

```
Device# show stack-power budgeting
Power Stack           Stack   Stack    Total   Rsvd    Alloc   Unused  Num  Num
Name                  Mode    Topolgy  Pwr(W)  Pwr(W)  Pwr(W)  Pwr(W)  SW   PS
--------------------  ------  -------  ------  ------  ------  ------  ---  ---
Powerstack-1          SP-PS   Stndaln  350     150     200     0       1    1

    Power Stack           PS-A   PS-B   Power     Alloc     Avail   Consumd Pwr
SW  Name                  (W)    (W)    Budgt(W)  Power(W)  Pwr(W)  Sys/PoE(W)
--  --------------------  -----  -----  --------  --------  ------  -----------
1   Powerstack-1          350    0      200       200       0       60   /0
--  --------------------  -----  -----  --------  --------  ------  -----------
Totals:                                          200       0       60   /0
```

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 3.2SE	This command was introduced.

Usage Guidelines

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

Examples

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

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

show tech-support

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

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

Syntax Description

cef	(Optional) Displays CEF related information.
cft	(Optional) Displays CFT related information.
eigrp	(Optional) Displays EIGRP related information.
evc	(Optional) Displays EVC related information.
fnf	(Optional) Displays flexible netflow related information.
ipc	(Optional) Displays IPC related information.
ipmulticast	(Optional) Displays IP multicast related information.
ipsec	(Optional) Displays IPSEC related information.
mfib	(Optional) Displays MFIB related information.
nat	(Optional) Displays NAT related information.
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>".
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 enhanced to display the output of the **show logging onboard uptime** command
Cisco IOS XE Denali 16.3.2	This command was enhanced to display of the outputs of the following commands in the output modifier : • **show power inline** • **show platform software ilpower details** • **show power inline police** • **show stack-power budgeting**
Cisco IOS XE Denali 16.1.1	This command was implemented on the Cisco Catalyst 3850 Series Switches

Usage Guidelines

The output of the **show logging onboard uptime** command is displayed in the output of the **show tech-support** command.

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 diagnostic bootup level**
- **show diagnostic status**
- **show diagnostic content switch all**
- **show diagnostic result switch all detail**
- **show diagnostic schedule switch all**
- **show diagnostic post**
- **show diagnostic description switch [switch number] test all**
- **show logging onboard switch [switch number] clilog detail**
- **show logging onboard switch [switch number] counter detail**
- **show logging onboard switch [switch number] environment detail**
- **show logging onboard switch [switch number] message detail**

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

Examples

The following is a sample output from the **show tech-support diagnostic** command:

```
Device# show tech-support diagnostic

.
.
.
------------------ show diagnostic status ------------------

<BU> - Bootup Diagnostics, <HM> - Health Monitoring Diagnostics,

<OD> - OnDemand Diagnostics, <SCH> - Scheduled Diagnostics

====== ================================= ================================ ======
Card   Description                       Current Running Test             Run by
------ --------------------------------- -------------------------------- ------
1      C3650                             N/A                              N/A


2      MODEL UNSET                       N/A                              N/A


3      MODEL UNSET                       N/A                              N/A


4      MODEL UNSET                       N/A                              N/A


5      MODEL UNSET                       N/A                              N/A


6      MODEL UNSET                       N/A                              N/A


7      MODEL UNSET                       N/A                              N/A


====== ================================= ================================ ======
```

```
------------------ show diagnostic content switch all ------------------

switch 1:


  Diagnostics test suite attributes:
    M/C/* - Minimal bootup level test / Complete bootup level test / NA
      B/* - Basic ondemand test / NA
    P/V/* - Per port test / Per device test / NA
    D/N/* - Disruptive test / Non-disruptive test / NA
      S/* - Only applicable to standby unit / NA
      X/* - Not a health monitoring test / NA
      F/* - Fixed monitoring interval test / NA
      E/* - Always enabled monitoring test / NA
      A/I - Monitoring is active / Monitoring is inactive

                                                          Test Interval   Thre-
  ID   Test Name                           Attributes     day hh:mm:ss.ms shold
  ==== ================================== ============   =============== =====
    1) DiagGoldPktTest -----------------> *BPN*X**I       not configured  n/a
    2) DiagThermalTest -----------------> *B*N****A       000 00:01:30.00 5
    3) DiagFanTest ---------------------> *B*N****A       000 00:01:30.00 5
    4) DiagPhyLoopbackTest -------------> *BPD*X**I       not configured  n/a
    5) DiagScratchRegisterTest ---------> *B*N****A       000 00:01:30.00 5
    6) TestUnusedPortLoopback ----------> *BPN****I       not configured  n/a
    7) TestPortTxMonitoring ------------> *BPN****A       000 00:01:30.00 1
    8) DiagPoETest ---------------------> ***D*X**I       not configured  n/a
    9) DiagStackCableTest --------------> ***D*X**I       not configured  n/a
   10) DiagMemoryTest ------------------> *B*D*X**I       not configured  n/a


switch 2:


  Diagnostics test suite attributes:
```

```
    M/C/* - Minimal bootup level test / Complete bootup level test / NA
      B/* - Basic ondemand test / NA
    P/V/* - Per port test / Per device test / NA
    D/N/* - Disruptive test / Non-disruptive test / NA
      S/* - Only applicable to standby unit / NA
      X/* - Not a health monitoring test / NA
      F/* - Fixed monitoring interval test / NA
      E/* - Always enabled monitoring test / NA
      A/I - Monitoring is active / Monitoring is inactive

                                                          Test Interval   Thre-
  ID   Test Name                           Attributes     day hh:mm:ss.ms shold
  ==== ================================== ============   =============== =====
    1) DiagGoldPktTest -----------------> *BPN*X**I      not configured  n/a
    2) DiagThermalTest -----------------> *B*N****A      000 00:01:30.00 5
    3) DiagFanTest ---------------------> *B*N****A      000 00:01:30.00 5
    4) DiagPhyLoopbackTest -------------> *BPD*X**I      not configured  n/a
    5) DiagScratchRegisterTest ---------> *B*N****A      000 00:01:30.00 5
    6) TestUnusedPortLoopback ----------> *BPN****I      not configured  n/a
    7) TestPortTxMonitoring ------------> *BPN****A      000 00:01:30.00 1
    8) DiagPoETest ---------------------> ***D*X**I      not configured  n/a
    9) DiagStackCableTest --------------> ***D*X**I      not configured  n/a
   10) DiagMemoryTest ------------------> *B*D*X**I      not configured  n/a
.
.
.
------------------ show logging onboard switch 4 clilog detail ------------------


--------------------------------------------------------------------------------
CLI LOGGING SUMMARY INFORMATION
--------------------------------------------------------------------------------
COUNT COMMAND
--------------------------------------------------------------------------------
No summary data to display
```

```
------------------------------------------------------------------------------

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

CLI LOGGING CONTINUOUS INFORMATION

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

MM/DD/YYYY HH:MM:SS COMMAND

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


No continuous data

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



------------------ show logging onboard switch 5 clilog detail ------------------


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

CLI LOGGING SUMMARY INFORMATION

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

COUNT COMMAND

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

No summary data to display

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

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

CLI LOGGING CONTINUOUS INFORMATION

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

MM/DD/YYYY HH:MM:SS COMMAND

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


No continuous data

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


.
.
.
```

speed

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

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

Syntax Description

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

Command Default

The default is **auto**.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.
Cisco IOS XE Denali 16.3.1	This command was modified. The following keywords were added: **2500** and **5000**. These keywords are visible only on multi-Gigabit Ethernet port supporting devices.

Usage Guidelines

You cannot configure speed on 10-Gigabit Ethernet ports.

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

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

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

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

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

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

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

Examples

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

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

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

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

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

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

stack-power

To configure StackPower parameters for the power stack or for a switch in the power stack, use the **stack power** command in global configuration mode. To return to the default setting, use the **no** form of the command,

stack-power {**stack** *power-stack-name* | **switch** *stack-member-number*}
no stack-power {**stack** *power-stack-name* | **switch** *stack-member-number*}

Syntax Description

stack *power-stack-name*	Specifies the name of the power stack. The name can be up to 31 characters. Entering these keywords followed by a carriage return enters power stack configuration mode.
switch *stack-member-number*	Specifies the switch number in the stack (1 to 4) to enter switch stack-power configuration mode for the switch.

Command Default

There is no default.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

When you enter the **stack-power stack** *power stack name* command, you enter power stack configuration mode, and these commands are available:

- **default**—Returns a command to its default setting.
- **exit**—Exits ARP access-list configuration mode.
- **mode**—Sets the power mode for the power stack. See the **mode** command.
- **no**—Negates a command or returns to default settings.

If you enter the **stack-power switch** *switch-number* command with a switch number that is not participating in StackPower, you receive an error message.

When you enter the **stack-power switch** *switch-number* command with the number of a switch participating in StackPower, you enter switch stack power configuration mode, and these commands are available:

- **default**—Returns a command to its default setting.
- **exit**—Exits switch stack power configuration mode.
- **no**—Negates a command or returns to default settings.
- **power-priority**—Sets the power priority for the switch and the switch ports. See the **power-priority** command.
- **stack-id** *name*—Enters the name of the power stack to which the switch belongs. If you do not enter the power stack-ID, the switch does not inherit the stack parameters. The name can be up to 31 characters.
- **standalone**—Forces the switch to operate in standalone power mode. This mode shuts down both stack power ports.

Examples

This example removes switch 2, which is connected to the power stack, from the power pool and shutting down both power ports:

```
Device(config)# stack-power switch 2
Device(config-switch-stackpower)# standalone
Device(config-switch-stackpower)# exit
```

switchport block

To prevent unknown multicast or unicast packets from being forwarded, use the **switchport block** command in interface configuration mode. To allow forwarding unknown multicast or unicast packets, use the **no** form of this command.

switchport block {**multicast** | **unicast**}
no switchport block {**multicast** | **unicast**}

Syntax Description

multicast	Specifies that unknown multicast traffic should be blocked. **Note** Only pure Layer 2 multicast traffic is blocked. Multicast packets that contain IPv4 or IPv6 information in the header are not blocked.
unicast	Specifies that unknown unicast traffic should be blocked.

Command Default

Unknown multicast and unicast traffic is not blocked.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

By default, all traffic with unknown MAC addresses is sent to all ports. You can block unknown multicast or unicast traffic on protected or nonprotected ports. If unknown multicast or unicast traffic is not blocked on a protected port, there could be security issues.

With multicast traffic, the port blocking feature blocks only pure Layer 2 packets. Multicast packets that contain IPv4 or IPv6 information in the header are not blocked.

Blocking unknown multicast or unicast traffic is not automatically enabled on protected ports; you must explicitly configure it.

For more information about blocking packets, see the software configuration guide for this release.

This example shows how to block unknown unicast traffic on an interface:

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

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

system mtu

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

system mtu *bytes*
no system mtu

Syntax Description

bytes	The global MTU size in bytes. The range is 1500 to 9198 bytes; the default is 1500 bytes.

Command Default

The default MTU size for all ports is 1500 bytes.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	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.
```

test mcu read-register

To enable debugging of the Power over Ethernet (PoE) controller, use the **test mcu read-register** command in privileged EXEC mode.

test mcu read-register {**det-cls-offset** | **manufacture-id** | **port-mode**}

Syntax Description

det-cls-offset	Displays the read detection classification register summary.
manufacture-id	Displays the PoE controller manufacture ID.
port-mode	Displays the port mode details.

Command Modes

Privileged EXEC

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Examples

The following is sample output from the **test mcu read-register det-cls-offset** command:

```
Device# test mcu read-register det-cls-offset 1
 DETECTION ENABLE BIT SUMMARY

Controller    port1          port2          port3          port4       register
                                                                      (hexadecimal)
----------   -------        -------        -------        -------     ------------
1               1              0              1              0           5

2               1              0              1              0           5

3               1              0              1              0           5

4               1              0              1              0           5

5               1              0              1              0           5

6               1              0              1              0           5

7               1              0              1              0           5

8               1              0              1              0           5

9               1              0              1              0           5

10              1              0              1              0           5

11              0              0              1              0           4

12              1              0              0              0           1

 CLASSIFICATION ENABLE BIT SUMMARY

Controller    port1          port2          port3          port4       register
                                                                      (hexadecimal)
----------   -------        -------        -------        -------     ------------
```

1	1	0	1	0	5
2	1	0	1	0	5
3	1	0	1	0	5
4	1	0	1	0	5
5	1	0	1	0	5
6	1	0	1	0	5
7	1	0	1	0	5
8	1	0	1	0	5
9	1	0	1	0	5
10	1	0	1	0	5
11	0	0	1	0	4
12	1	0	0	0	1

The following is sample output from the **test mcu read-register manufacture-id** command:

```
MANUFACTURE ID : DEVICE_BCM_PALPATINE reg_val = 0x1B
```

The following is sample output from the **test mcu read-register port-mode** command:

```
 PORT MODE SUMMERY
```

Controller	port1	port2	port3	port4	register (hexadecimal)
1	01	00	01	00	22
2	01	00	01	00	22
3	01	00	01	00	22
4	01	00	01	00	22
5	01	00	01	00	22
6	01	00	01	00	22
7	01	00	01	00	22
8	01	00	01	00	22
9	01	00	01	00	22
10	01	00	01	00	22
11	00	00	01	00	20
12	01	00	00	00	2

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 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

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

voice vlan (network-policy configuration)

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

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

Syntax Description

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

Command Default

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

The default CoS value is 5.

The default DSCP value is 46.

The default tagging mode is untagged.

Command Modes

Network-policy profile configuration

Command History

Release	Modification
Cisco IOS XE 3.2SE	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

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

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

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

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