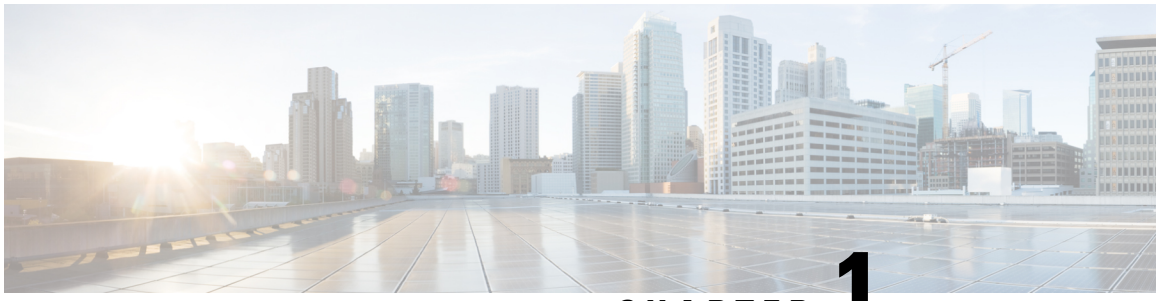


Command Reference for Cisco NCS 1010

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CHAPTER 1

List of Commands

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apc

To enable or disable APC at the link level, use the **apc** command on an OLT node.

apc { **disable | enable** }

Syntax Description

disable	Disable APC
enable	Enable APC

Command Default (config-olc-ots)

Command Modes

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Usage Guidelines Use this command on an OLT node. APC can be disabled and enabled at a link level only from the APC Manager for the link.

Example

The following is a sample configuration that disables APC.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#apc disable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

The following is a sample configuration that enables APC.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#apc enable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

apc-local

Use the **apc-local disable** command to disable APC on an agent node.

apc-local { **RX** | **TX** } **disable**

Syntax Description

RX	Disable APC agent in RX direction
TX	Disable APC agent in TX direction
disable	Disable APC on APC agent.

Command Modes (config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following is a sample configuration that disables APC locally.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#apc-local RX disable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

apc-pause

Use the **apc-pause** command to pause APC.

apc-pause

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Usage Guidelines

If you run the apc-pause command when APC is in idle state, APC remains in the idle state until APC detects changes in the network that requires power correction. APC changes the status to paused after it detects changes, but does not perform power correction.

Running the apc-pause command, does not pause channel startup.

Example

The following is a sample configuration that pauses APC.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#apc-pause
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

automatic-link-bringup

To enable automatic link bring up, use the **automatic-link-bringup** command. To disable automatic link bring up, use the no form of the command.

automatic-link-bringup

no automatic-link-bringup

Command Modes (config-olc)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following sample configuration enables automatic link bring up.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#automatic-link-bringup
RP/0/RP0/CPU0:ios(config-olc)#commit
RP/0/RP0/CPU0:ios(config-olc)#end
```

The following sample configuration disables automatic link bring up.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#no automatic-link-bringup
RP/0/RP0/CPU0:ios(config-olc)#commit
RP/0/RP0/CPU0:ios(config-olc)#end
```

bfr-pause

Use the **bfr-pause** command to pause Band Failure Recovery(BFR). When BFR is paused, the recovery and failure procedures are not initiated in case of band failure. To resume BFR, use the **no** form of this command.

bfr-pause

no bfr-pause

Syntax Description This command has no keywords or arguments.

Command Modes Controller configuration mode

Command History

Release	Modification
Cisco IOS XR Release 7.10.1	This command was introduced.

Example 1

The following is a sample output to pause BFR on the controller 0/0/0/0.

```
 RP/0/RP0/CPU0:#configure
RP/0/RP0/CPU0: (config)#optical-line-control
RP/0/RP0/CPU0: (config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0: (config-olc-ots)#bfr-pause
```

```
RP/0/RP0/CPU0: (config-olc-ots)#commit
```

Example 2

The following is a sample output to resume BFR on the controller 0/0/0/0.

```
 RP/0/RP0/CPU0:#configure
RP/0/RP0/CPU0: (config)#optical-line-control
RP/0/RP0/CPU0: (config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0: (config-olc-ots)#no bfr-pause
RP/0/RP0/CPU0: (config-olc-ots)#commit
```

bridge-port routed-interface

Use the **bridge-port routed-interface** command to bridge traffic between two interfaces. For example, when connecting multiple NCS 1010 device in a Daisy Chain topology, use this command to bridge traffic between a NCS 1010 management interface and a TOR switch interface.

bridge-port routed-interface *type interface-path-id*

Syntax Description

type	Specify the Management Ethernet interface.
interface-path-id	Specify the physical or virtual interface.

Command Default

None

Command Modes

Interface Configuration mode

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Usage Guidelines

None

Task ID

Task ID	Operation
Ethernet-services	read, write

Example

The following example shows how to bridge traffic between a NCS 1010 management port and TOR switch port:

```
RP/0/RP0/CPU0:Box(config)#interface mgmtEth0/RP0/CPU0/1
RP/0/RP0/CPU0:Box(config-if)# no ipv4 address
```

```
RP/0/RP0/CPU0:Box(config-if)# no ipv6 address
RP/0/RP0/CPU0:Box(config-if)# bridge-port routed-interface mgmtEth 0/RP0/CPU0/0
```

cdp

To enable Cisco Discovery Protocol (CDP) globally or on an interface, use the **cdp** command in global configuration mode or in interface configuration mode. To disable CDP, use the **no** form of this command.

cdp

no cdp

Syntax Description

This command has no arguments or keywords.

Command Default

This command is enabled both at the global configuration level and at the interface configuration level.

Command Modes

Global configuration (config) and Interface configuration (config-if)

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Example

The following example enables CDP globally.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#cdp
RP/0/RP0/CPU0:ios(config)#commit
```

The following example enables CDP on the management interface.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#interface mgmtEth 0/RP0/CPU0/1
RP/0/RP0/CPU0:ios(config-if)#cdp
RP/0/RP0/CPU0:ios(config-if)#commit
```

cdp advertise

To enable CDP Version 1 advertising functionality on a device, use the **cdp advertise** command in global configuration mode. To disable CDP Version 1 functionality, use the **no** form of this command.

cdp advertise v1

no cdp advertise v1

Syntax Description

This command has no arguments or keywords.

Command Default

Enabled

Command Modes

Global configuration (config)

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Usage Guidelines

When CDP is enabled, the device sends CDPv2 packets by default. CDP sends and receives CDPv1 packets if the device with which CDP is interacting does not process CDPv2 packets.

Example

The following example configures CDP to use CDP Version 1 in communicating with neighboring devices.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#cdp advertise v1
RP/0/RP0/CPU0:ios(config)#commit
```

cdp holdtime

To specify the amount of time the receiving device must hold a CDP packet sent from another device before discarding it, use the **cdp holdtime** command in global configuration mode. To revert to the default setting, use the **no** form of this command.

cdp holdtime *seconds*

no cdp holdtime

Syntax Description

seconds	Specifies the hold time to be sent in the CDP update packets. The default is 180 seconds. The range is 10 to 255 seconds.

Command Default

180 seconds

Command Modes

Global configuration (config)

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Usage Guidelines

CDP packets are sent with a time to live, or hold time, value. The receiving device will discard the CDP information in the CDP packet after the hold time has elapsed.

You can set the hold time lower than the default setting of 180 seconds if you want the receiving devices to update their CDP information more rapidly.

The CDP hold time must be set to a higher number of seconds than the time between CDP transmissions, which is set using the **cdp timer** command.

Example

The following example configures CDP holdtime to 120 seconds.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#cdp holdtime 120
RP/0/RP0/CPU0:ios(config)#commit
```

cdp timer

To specify the frequency at which CDP update packets are sent., use the **cdp timer** command in global configuration mode. To revert to the default setting, use the **no** form of this command.

cdp timer *seconds*

no cdp timer

Syntax Description

seconds	Specifies the frequency at which CDP update packets are sent. The default is 60 seconds. The range is 5 to 254 seconds.

Command Default

60 seconds

Command Modes

Global configuration (config)

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Usage Guidelines

A lower timer setting causes CDP update packets to be sent more frequently.

Example

The following example configures CDP timer to 65 seconds.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#cdp timer 65
RP/0/RP0/CPU0:ios(config)#commit
```

commit

To commit the target configuration to the active (running) configuration, use the **commit** command in any configuration mode.

commit [**replace**]

Syntax Description

replace	Replaces the entire running configuration with the contents of the target configuration.

Command Default

None

Command Modes

Cisco IOS XR Configuration

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

To remove the entire running configuration on the NCS 1010 node, use the following command:

```
Fri Apr 29 06:48:46.236 UTC
RP/0/RP0/CPU0:P2B_DT_02(config)#commit replace
Fri Apr 29 06:48:53.199 UTC
This commit will replace or remove the entire running configuration. This
operation can be service affecting.
Do you wish to proceed? [no]: yes
RP/0/RP0/CPU0:ios(config)#
RP/0/RP0/CPU0:ios(config)#end
```

connector-loss

To configure connector loss, use the **connector-loss** command.

connector-loss { **rx | tx** } *value*

Syntax Description

rx	Connector loss at receive point
tx	Connector loss at transmit point
value	Connector loss value ranges from 0 to 20 with a unit value of 1 dB. Although the CLI description indicates the unit value as 1 dB, you can also input values in decimal format, up to five decimal places. From Release 24.4.15, the connector loss value ranges from 0 to 20 with a precision value of 0.01 dB.

Command Default

The default connector loss is:

- 0.25 dB for ports without Raman module
- 0.3 dB for ports with Raman module

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following example is a sample configuration that configures rx and tx connector losses to 0.1 dB.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#connector-loss rx 1
RP/0/RP0/CPU0:ios(config-olc-ots)#connector-loss tx 1
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

controller ots

To configure the OTS controller, use the **controller ots** command in the controller OTS configuration mode.

Use the following parameters to configure different configurations for an OTS controller on an ILA node.

controller ots *R/S/I/P* [**tx-voa-attenuation** *value*] [**egress-ampli-gain-range {normal | extended}**] [**egress-ampli-gain** *value*] [**egress-ampli-tilt** *value*] [**egress-ampli-osri {on | off}**] [**egress-ampli-safety-control-mode {auto | disabled}**] [**egress-ampli-force-apr {on | off}**] [**ingress-ampli-gain-range {normal | extended}**] [**ingress-ampli-gain** *value*] [**raman-tx-power** *Raman-transmit-pump-instance*] [**power** *power-value*] [**raman-tx-power-disable** *Raman-transmit-pump-instance*] [**raman-force-apr {on | off}**] [**raman-osri {on | off}**] [ ] [**otdr scan-mode expert**] [**otdr rx auto reflectance-threshold** *value*] [**otdr rx auto splice-loss-threshold** *value*] [**otdr rx expert pulse-width** *value*] [**otdr tx auto reflectance-threshold** *value*] [**otdr tx auto splice-loss-threshold** *value*] [**raman-tx-power <1-N> value** *value*] [**otdr rx auto raman-setpoint** *value*] [**otdr tx auto raman-setpoint** *value*] [**otdr rx auto excess-reflection-threshold** *value*] [**otdr tx auto excess-reflection-threshold** *value*] [**otdr rx back-scattering** *value*] [**otdr tx back-scattering** *value*] [**otdr rx refractive-index** *value*] [**otdr tx refractive-index** *value*] [**otdr rx expert pulse-width** *value*] [**otdr tx expert pulse-width** *value*] [**otdr rx expert capture-end** *value*] [**otdr tx expert capture-end** *value*] [**otdr rx expert capture-start** *value*] [**otdr tx expert capture-start** *value*] [**otdr rx expert scan duration** *value*] [**otdr tx expert scan duration** *value*] [**otdr rx auto excess-orl-threshold** *value*] [**otdr tx auto excess-orl-threshold** *value*] [**otdr rx auto excess-attenuation-threshold** *value*] [**otdr tx auto excess-attenuation-threshold** *value*]

controller ots *R/S/I/P* [**tone-rate**] [**tone-pattern-expected**] [**tone-frequency**]

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OTS controller.
tx-voa-attenuation*value*	Configures the TX VoA attenuation set point.
egress-ampli-gain-range {normal | extended}	Configures egress amplification gain range to normal or extended.
egress-ampli-gain *value*	Configures egress amplification gain.
egress-ampli-tilt *value*	Configures egress amplifier tilt.
egress-ampli-osri {on | off}	Enables or disables egress optical safety remote interlock (OSRI).
egress-ampli-safety-control-mode {auto | disabled}	Configure egress amplification safety control mode to auto or disables it.
egress-ampli-force-apr {on | off}	Enables or disables egress amplification force automatic power reduction.
raman-tx-power *Raman-transmit-pump-instance* **power** *power-value*	Configures Raman transmit power parameters.
raman-tx-power-disable *Raman-transmit-pump-instance*	Disables Raman transmit power.
raman-force-apr {on | off}	Enables or disables Raman force APR.
raman-osri {on | off}	Enables or disables Raman optical safety remote interlock (OSRI).
ingress-ampli-gain-range {normal | extended}	Configure ingress amplification safety control mode to auto or disables it.
ingress-ampli-gain *value*	Configures ingress amplification gain.
otdr rx auto reflectance-threshold *value*	Configures OTDR reflectance threshold in RX direction in auto mode.
otdr rx auto splice-loss-threshold *value*	Configures OTDR splice loss threshold in RX direction in auto mode.
otdr rx expert pulse-width *value*	Configures OTDR pulse width threshold in RX direction in expert mode.
otdr tx auto reflectance-threshold *value*	Configures OTDR reflectance threshold in TX direction in auto mode.
otdr tx auto splice-loss-threshold *value*	Configures OTDR splice loss threshold in TX direction in auto mode.
otdr scan-mode expert	Configures OTDR scan in expert or multiregion mode.

raman-tx-power <1-N> value *value*	Configures the target Raman transmit power value for multiple instances.
otdr rx auto raman-setpoint *value*	Configures OTDR Raman in RX direction in auto mode.
otdr tx auto raman-setpoint *value*	Configures OTDR Raman in TX direction in auto mode.
otdr rx auto excess-reflection-threshold *value*	Configures OTDR excess reflection threshold in RX direction in auto mode.
otdr tx auto excess-reflection-threshold *value*	Configures OTDR excess reflection threshold in TX direction in auto mode.
otdr rx back- scattering *value*	Configures OTDR back scattering in RX direction in auto mode.
otdr tx back- scattering *value*	Configures OTDR back scattering in TX direction in auto mode.
otdr rx refractive-index *value*	Configures OTDR refractive index in RX direction in auto mode.
otdr tx refractive-index *value*	Configures OTDR refractive index in TX direction in auto mode.
otdr rx expert pulse-width *value*	Configures OTDR pulse width in RX direction in expert mode.
otdr tx expert pulse-width *value*	Configures OTDR pulse width in TX direction in expert mode.
otdr rx expert capture-end *value*	Configures OTDR capture end time in RX direction in expert mode.
otdr tx expert capture-end *value*	Configures OTDR capture end time in TX direction in expert mode.
otdr rx expert capture-start *value*	Configures OTDR capture start time in RX direction in expert mode.
otdr tx expert capture-start *value*	Configures OTDR capture start time in TX direction in expert mode.
otdr rx expert scan duration *value*	Configures OTDR scan duration in RX direction in expert mode.
otdr tx expert scan duration *value*	Configures OTDR scan duration in TX direction in expert mode.
otdr rx auto excess-orl-threshold *value*	Configures OTDR excess Optical Return Loss (ORL) threshold in RX direction in auto mode.
otdr tx auto excess-orl-threshold *value*	Configures OTDR excess ORL threshold in TX direction in auto mode.

otdr rx auto excess-attenuation-threshold *value*	Configures OTDR excess attenuation threshold in RX direction in auto mode.
otdr tx auto excess-attenuation-threshold *value*	Configures OTDR excess attenuation threshold in TX direction in auto mode.
tone-rate*value*	Configures the tone rate for tone generation.
tone-pattern*value*	Configures the tone pattern for tone generation.
tone-frequency*value*	Configures the tone frequency for tone generation.

Command Default

None

Command Modes

controller configuration mode

Command History

Release	Modification
Release 7.7.1	Introduced this command.
Release 7.11.1	The following keywords are added: • **otdr rx auto excess-orl-threshold** • **otdr tx auto excess-orl-threshold** • **otdr rx auto excess-attenuation-threshold** • **otdr tx auto excess-attenuation-threshold**

Example

This is a sample of configuring various otdr parameters using the **controller ots 0/0/0/0** command.

```
RP/0/RP0/CPU0:ios#RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-Ots)#otdr scan-mode expert
RP/0/RP0/CPU0:ios(config-Ots)#otdr rx auto reflectance-threshold -50
RP/0/RP0/CPU0:ios(config-Ots)#otdr rx auto splice-loss-threshold 200
RP/0/RP0/CPU0:ios(config-Ots)#otdr rx expert pulse-width 6000
RP/0/RP0/CPU0:ios(config-Ots)#otdr rx auto excess-orl-threshold 600
RP/0/RP0/CPU0:ios(config-Ots)#otdr rx auto excess-reflection-threshold -35
RP/0/RP0/CPU0:ios(config-Ots)#otdr rx auto excess-attenuation-threshold 5
RP/0/RP0/CPU0:ios(config-Ots)#otdr tx auto reflectance-threshold -50
RP/0/RP0/CPU0:ios(config-Ots)#otdr tx auto splice-loss-threshold 200
RP/0/RP0/CPU0:ios(config-Ots)#otdr tx auto excess-orl-threshold 600
RP/0/RP0/CPU0:ios(config-Ots)#otdr tx auto excess-reflection-threshold -50
RP/0/RP0/CPU0:ios(config-Ots)#otdr tx auto excess-attenuation-threshold 5
RP/0/RP0/CPU0:ios(config-Ots)#commit
```

This is a sample of configuring various tone generation parameters using the **controller ots 0/0/0/3** command.

```
RP/0/RP0/CPU0:(config)#controller ots 0/0/0/3
RP/0/RP0/CPU0:(config-Ots)#tone-rate 25
```

```
RP/0/RP0/CPU0:(config-Ots)#tone-frequency 191.175 ( OOB frequency )
RP/0/RP0/CPU0:(config-Ots)#tone-pattern abcd1234
RP/0/RP0/CPU0:(config-Ots)#commit
```

controller dfb

To configure the DFB controller, use the **controller dfb** command in the controller configuration mode.

controller dfb *R/S/I/P* [**tx-voa-attenuation** *value* | **tx-low-threshold** *value* | **sec-admin-state {normal | maintenance}** | **transmit-shutdown** | **shutdown**]

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the DFB controller.
tx-voa-attenuation*value*	Configures the DFB TX VoA attenuation set point.
tx-low-threshold*value*	Configures the low transmit power threshold.
sec-admin-state	Configures the administrative state of the controller. The values are maintenance or normal.
transmit-shutdown	Shuts down the DFB laser.
shutdown	Disables the configuration of the controller.

Command Default

None

Command Modes

controller configuration mode

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

In the following sample, the tx-voa-attenuation is set to 2 dB.

```
RP/0/RP0/CPU0:ios#config
Thu Apr 21 17:00:57.654 UTC
RP/0/RP0/CPU0:ios(config)#
RP/0/RP0/CPU0:ios(config)#controller dfb 0/0/0/0 tx-voa-attenuation 20
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

To view the configured value, use the following command:

```
RP/0/RP0/CPU0:ios#sh controller dfb 0/0/0/0
Thu Apr 21 17:02:06.316 UTC
Controller State: Up
Transport Admin State: In Service
Laser State: On
```

```
Alarm Status:
-------------
Detected Alarms: None
Alarm Statistics:
-----------------
RX-LOS-P = 0
TX-POWER-FAIL-LOW = 0
Parameter Statistics:
---------------------
Total TX Power = 20.00 dBm
Total RX Power = 10.00 dBm
TX Voa Attenuation = 2.0 dB
Configured Parameters:
-------------
TX Voa Attenuation = 2.0 dB
```

The DFB laser attenuates based on the updated value and the TX power changes accordingly.

In the following sample, the sec-admin-state is set to maintenance.

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#controller dfb 0/0/0/0 sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
RP/0/RP0/CPU0:ios#sh controllers dfb 0/0/0/0
Thu Apr 21 17:05:41.311 UTC
Controller State: Up
Transport Admin State: Maintenance
Laser State: On
Alarm Status:
-------------
Detected Alarms: None
Alarm Statistics:
-----------------
RX-LOS-P = 0
TX-POWER-FAIL-LOW = 0
Parameter Statistics:
---------------------
Total TX Power = 20.00 dBm
Total RX Power = 10.00 dBm
TX Voa Attenuation = 2.0 dB
Configured Parameters:
-------------
TX Voa Attenuation = 2.0 dB
```

In the following sample, the DFB controller is shut down.

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#controller dfb 0/0/0/0 shutdown
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
RP/0/RP0/CPU0:ios#sh controllers dfb 0/0/0/0
Thu Apr 21 17:08:40.211 UTC
Controller State: Administratively Down
Transport Admin State: Out Of Service
Laser State: Off
Alarm Status:
-------------
Detected Alarms: None
Alarm Statistics:
-----------------
RX-LOS-P = 0
TX-POWER-FAIL-LOW = 0
Parameter Statistics:
---------------------
```

```
Total TX Power = -50.00 dBm
Total RX Power = 10.00 dBm
TX Voa Attenuation = 2.0 dB
Configured Parameters:
-------------
TX Voa Attenuation = 2.0 dB
```

controller osc

To configure the OSC controller, use the **controller osc** command in the controller configuration mode.

controller osc *R/S/I/P* [**transmit-power** *value* | **sec-admin-state {normal | maintenance}** | **tx-low-threshold** *value* | **shutdown**]

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
transmit-power *value*	Configures the transmit power.
sec-admin-state	Configures the administrative state of the controller. The values are maintenance or normal.
tx-low-threshold *value*	Configures low transmit power threshold
shutdown	Disables the configuration of the controller.

Command Default

None

Command Modes

Controller configuration mode

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

In the following sample, the transmit-power is set to 2 dBm. The transmit power can be changed only after the OSC laser probing loop is closed and the OSC transmit power is stable. The OSC transmit power depends on the span length. If the span loss is high, the OSC Tx power is low and vice versa.

```
RP/0/RP0/CPU0:ios(config)#controller osc 0/0/0/0 transmit-power 20
Fri May 13 11:26:53.445 UTC
WARNING! Changing TX power can impact traffic
RP/0/RP0/CPU0:ios(config)#commit
Fri May 13 11:26:55.127 UTC
RP/0/RP0/CPU0:ios(config)#end
RP/0/RP0/CPU0:ios#sh controllers osc 0/0/0/0
Fri May 13 11:26:59.542 UTC
Controller State: Up
```

```
Transport Admin State: In Service
Laser State: On
Alarm Status:
-------------
Detected Alarms: None
Alarm Statistics:
-----------------
RX-LOS-P = 0
TX-POWER-FAIL-LOW = 0
Parameter Statistics:
---------------------
Total TX Power = 1.89 dBm
Total RX Power = -17.30 dBm

Configured Parameters:
-------------
```

In the following sample, the sec-admin-state is set to maintenance.

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#controller osc 0/0/0/0 sec-admin-state maintenance
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
RP/0/RP0/CPU0:ios#sh controllers osc 0/0/0/0
Fri Apr 22 15:55:36.324 UTC
Controller State: Up
Transport Admin State: Maintenance
Laser State: On
Alarm Status:
-------------
Detected Alarms: None
Alarm Statistics:
-----------------
RX-LOS-P = 0
TX-POWER-FAIL-LOW = 0
Parameter Statistics:
---------------------
Total TX Power = -10.00 dBm
Total RX Power = -30.00 dBm
Configured Parameters:
-------------
```

In the following sample, the OSC controller is shut down.

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#controller osc 0/0/0/0 shutdown
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
RP/0/RP0/CPU0:ios#sh controllers os 0/0/0/0
Tue Apr 12 17:33:12.998 UTC
Controller State: Administratively Down
Transport Admin State: Out Of Service
Laser State: Off
Alarm Status:
-------------
Detected Alarms: None
Alarm Statistics:
-----------------
RX-LOS-P = 0
TX-POWER-FAIL-LOW = 0
Parameter Statistics:
---------------------
Total TX Power = -50.00 dBm
Total RX Power = -30.00 dBm
```

```
Configured Parameters:
----------
```

controller ots-och

To configure the OTS-OCH controller on the add-drop port to which the cross-connection is made on the COM side, use the **controller ots-och** command in the controller configuration mode.

controller ots-och *R/S/I/P/channel-id* **add-drop-channel ots-och** *R/S/I/P/channel-id*

Syntax Description

R/S/I/P/channel-id	Rack/Slot/Instance/Port/Channel-id of the OTS-OCH controller.
add-drop-channel	Creates the add/drop channel on the COM side.

Command Default

None

Command Modes

Controller configuration mode

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

To configure the optical cross-connect, use the following commands:

```
Mon Apr 4 14:54:32.834 UTC
RP/0/RP0/CPU0:ios(config)#controller ots-och 0/0/0/0/1 add-drop-channel ots-och 0/0/0/33/1
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)
```

To view the OTS-OCH controllers, use the following command:

```
RP/0/RP0/CPU0:ios#sh controller ots-och ?
0/0/0/0/1 Ots-Och Interface Instance
0/0/0/33/1 Ots-Och Interface Instance
R/S/I/P/B or R/S/I/P Forward interface in Rack/Slot/Instance/Port/Breakout format or
R/S/I/P format
```

To view the parameters of the OTS-OCH controller (LINE side), use the following command:

```
RP/0/RP0/CPU0:ios#sh controllers ots-och 0/0/0/0/1
Tue Apr  5 06:32:29.696 UTC

 Controller State: Up

 Transport Admin State: In Service

         Alarm Status:
         -------------
         Detected Alarms: None
```

```
        Alarm Statistics:
        -----------------
        RX-LOS-P = 0
        TX-POWER-FAIL-LOW = 0

        Parameter Statistics:
        ---------------------
        Total RX Power = -10.50 dBm
        Total TX Power = -10.50 dBm


        Cross Connect Info:
        ---------------------
        Add-Drop Channel  = Ots-Och0/0/0/33/1



        Configured Parameters:
        -------------

RP/0/RP0/CPU0:ios#
```

Note The Add/Drop channel that is cross connected to the line port, 0/0/0/0/1 is displayed in the output.

drop-psd

Use the **drop-psd** command to set the target PSD for drop ports.

drop-psd *value*

Syntax Description

value	PSD in range -30.0 dBm per 12.5 GHz to 23.0 dBm per 12.5 GHz in increments of 0.1 dBm per 12.5 GHz.

Command Default

The default target PSD for drop ports is –9.4 dB.

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Usage Guidelines

The NCS 1010 applies drop PSD configuration for channels with cross connect configurations.

Example

The following is a sample configuration that sets the target PSD at drop ports to –25 dB.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#drop-psd -250
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
Tue Apr 26 09:50:12.055 UTC
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

dual-band-psd

Use the **dual-band-psd** command to set the target dual-band PSDs when using C+L band configuration.

dual-band-psd *index value*

Syntax Description

index	PSD index 1–33.
value	PSD in range -50.0 dBm per 12.5 GHz to -32.0 dBm per 12.5 GHz in increments of 0.1 dBm per 12.5 GHz.

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.9.1	This command was introduced.

Example

The following example shows how to set the dual band psd values -50 and -49 on setpoints 1 and 2 respectively, on the 0/0/0/0 controller .

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#dual-band-psd 1 -50
RP/0/RP0/CPU0:ios(config-olc-ots)#dual-band-psd 2 -49
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

exception disk-usage-limit

To set the core dump folder /misc/disk1/coredumps storage limit, use the **exception disk-usage-limit** command in the appropriate configuration mode.

exception disk-usage-limit *usage limit percent*

Syntax Description

disk-usage-limit*usage limit percent*	Configures the tone rate for tone generation.

Command Default None

Command Modes Cisco IOS XR Configuration

Command History

Release	Modification
Release 26.1.1	This command was introduced.

Example

This is a sample configuration that sets the core dump folder storage limit.

```
RP/0/RP0/CPU0#configure
RP/0/RP0/CPU0(config)#exception disk-usage-limit 29
RP/0/RP0/CPU0(config)#commit
```

fiber-type

To configure fiber type, use **fiber-type** command.

fiber-type *type*

Syntax Description

type Fiber type. Possible fiber types are:

- E-LEAF
- FREE-LIGHT
- METRO-CORE
- SMF
- SMF-28E
- TERA-LIGHT
- TW-RS
- TW-Reach
- TW-minus
- TW-plus
- ULL-SMF28

Command Default SMF is the default fiber-type.

Command Modes (config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following example is a sample configuration that configures fiber-type to SMF.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#fiber-type SMF
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

fpd auto-upgrade

To enable or disable automatic FPD upgrade, use the **fpd auto-upgrade** command in Cisco IOS XR Configuration mode.

fpd auto-upgrade { **enable | disable** }

Syntax Description

enable | disable	Enables or disables automatic FPD upgrade

Command Default

Automatic FPD upgrade is enabled.

Command Modes

Cisco IOS XR Configuration

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Example

The following example shows how to disable automatic FPD upgrade.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#fpd auto-upgrade disable
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

gain-estimator

To enable or disable Gain Estimator, use the **gain-estimator** command.

gain-estimator { **disable | enable** }

Syntax Description

disable	Disable Gain Estimator
enable	Enable Gain Estimator

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following output is a sample configuration that disables Gain Estimator.

```
RP/0/RP0/CPU0:ios#configure terminal
Mon Jun 13 05:35:20.510 UTC
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#gain-estimator disable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
```

The following output is a sample configuration that enables Gain Estimator.

```
RP/0/RP0/CPU0:ios#configure terminal
Mon Jun 13 05:35:27.511 UTC
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#gain-estimator enable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
```

http client connection

To configure the connection for http client, use the **http client connection** command in XR Config mode. To restore the default value, use the **no** form of this command.

http client connection { **retry** *count* | **timeout** *seconds* }

Syntax Description

retry *count*	Specifies how many times HTTP Client resends a connection request. Range is from 1 to 5. The default value is 0.
timeout *seconds*	The time interval (in seconds) that HTTP client waits for a server connection to establish before giving up. Range is from 1 to 60 seconds. The default value is 10 seconds.

Command Default

The connection retry is not configured by default. The default connection timeout is set to 10 seconds.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

Use this command to set the connection timeout or connection retry count.

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to configure the connection request retry to two times:

```
RP/0/RP0/CPU0:router(config)#http client connection retry 2
```

The following example shows how to configure the connection request timeout to 20 seconds:

```
RP/0/RP0/CPU0:router(config)#http client connection timeout 20
```

http client response

To configure the time interval (in seconds) for HTTP Client to wait for a response from the server before giving up, use the **http client response** command in XR Config mode. To restore the default value, use the **no** form of this command.

http client response { **timeout** *seconds* }

Syntax Description

timeout *seconds*	The time interval (in seconds) that HTTP client waits for a response from the server before giving up. Range is from 1 to 300 seconds. The default value is 30 seconds.

Command Default

The response timeout is 30 seconds by default.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

Use this command to configure the response timeout.

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to configure the response timeout to 40 seconds:

```
RP/0/RP0/CPU0:router(config)#http client response timeout 40
```

http client ssl

To configure Secure Socket Layer (SSL) version to be used for HTTPS requests, use the **http client ssl** command in XR Config mode. To restore the default value, use the **no** form of this command.

http client ssl *version*

Syntax Description

ssl *version*	Specify the SSL version to be used for HTTPS requests. Select one of the following versions: • **tls1.0** - Forces TLSv1.0 to be used for HTTPS requests. • **tls1.1** - Forces TLSv1.1 to be used for HTTPS requests. • **tls1.2** - Forces TLSv1.2 to be used for HTTPS requests. By default libcurl does not force the TLS version.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Default

By default, the SSL version is not configured.

Command Modes

HTTP configuration

Usage Guidelines

Use this command to configure the ssl version to be used in HTTPS requests.

Task ID

Task ID	Operations
config-servicess	read, write

The following example shows how to configure the SSL version to tls1.1:

```
RP/0/RP0/CPU0:router(config)#http client ssl tls1.1
```

http client secure-verify-host

To enable verifying host in peer's certificate, use the **http client secure-verify-host** command in XR Config mode. To restore the default value, use the **no** form of this command.

http client secure-verify-host

Syntax Description

secure-verify-host	Verifies the host in peer's certificate. This is enabled by default. To disable, use the command **http client secure-verify-host** *disable*

Command Default

Host verification is enabled by default.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

Use the **http client secure-verify-host** command to disable the host verification.

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to disable host verification :

```
RP/0/RP0/CPU0:router(config)#http client secure-verify-host disable
```

http client secure-verify-peer

To enable verifying authenticity of the peer certificate, use the **http client secure-verify-peer** command in XR Config mode. To restore the default value, use the **no** form of this command.

http client secure-verify-peer

Syntax Description

secure-verify-peer	Verifies authenticity of the peer certificate. This is enabled by default. To disable, use the command **http client secure-verify-peer** *disable*

Command Default

Peer verification is enabled by default.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

Use the **http client secure-verify-peer** command to disable the peer verification.

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to disable peer verification :

```
RP/0/RP0/CPU0:router(config)#http client secure-verify-peer disable
```

http client source interface

To specify the interface for source address for Hypertext Transfer Protocol (HTTP) connections, use the **http client source-interface** command in XR Config mode. To remove the **http client source-interface**command from the configuration file and restore the system to its default condition, use the **no** form of this command.

http client source-interface { **ipv4** | **ipv6** }

Syntax Description

ipv4 *ip-address*	Enter ipv4 address from interface.
ipv6 *ip-address*	Enter ipv6 address from interface.

Command Default

No default behavior or values.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

Use the **http client source-interface** command to configure ipv4 and ipv6 source interfaces. If both the source interfaces are configured, then the source interface is selected depending on the host DNS resolution.

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to configure ipv4 source interface for HTTP connection:

```
RP/0/RP0/CPU0:router(config)#http client source-interface ipv4 gigabitEthernet 0/0/0/0
```

The following example shows how to configure ipv6 source interface for HTTP connection:

```
RP/0/RP0/CPU0:router(config)#http client source-interface ipv6 gigabitEthernet 0/0/0/0
```

http client tcp-window-scale

To configure the TCP window scale factor for high latency links, use the **http client tcp-window-scale** command in XR Config mode. To restore the default value, use the **no** form of this command.

http client tcp-window-scale *scale*

Syntax Description

scale	Specify the TCP window scale for HTTP requests. Range is 1 to 14.

Command Default

By default, TCP window scale is disabled.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

Use this command to configure the TCP window scale for HTTP requests.

Note Currently, this is enabled for copying of files using HTTP.

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to set the TCP window scale to 10:

```
RP/0/RP0/CPU0:router(config)#http client tcp-window-scale 10
```

http client version

To configure the HTTP version to be used for HTTP requests, use the **http client version** command in XR Config mode. To restore the default value, use the **no** form of this command.

http client version *version*

Syntax Description

version*version*	Specify the HTTP version to be used for HTTP requests. Select one of the following versions: • **1.0** - Forces HTTP1.0 to be used for all HTTP requests. • **1.1** - Forces HTTP1.1 to be used for all HTTP requests. • **default** - libcurl picks up HTTP version automatically.

Command Default

By default, libcurl does not force the HTTP version.

Note HTTP Client uses libcurl version 7.30

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

Use this command to configure the HTTP version to be used in HTTP requests.

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to configure the HTTP version to 1.1:

```
Router(config)#http client version 1.1
```

http client vrf

To configure a new VRF to be used by the HTTP client, use the **http client vrf** command. To remove the specified vrf, use the **no** form of this command.

http client vrf *vrf-name*

Syntax Description

vrf-name	Specifies the name of the VRF to be used by the HTTP client.

Command Default

If not configured, the default VRF "default-vrf" will be used.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes HTTP configuration

Usage Guidelines A HTTP client can have only one VRF. If a specific VRF is not configured for the HTTP client, the default VRF is assumed.

Task ID

Task ID	Operations
config-services	read, write

The following example shows the HTTP client being configured to start with the specified VRF:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# http client vrf green
```

hw-module

To create the OTS-OCH controller, use the **hw-module location** command in IOS XR configuration mode.

hw-module location *location* **terminal-ampli | inline-ampli grid-mode** *mode* **channel-id** *channel-id* **centre-freq** *frequency* **width** *channel width* [**ase-loading disable**]

Syntax Description

location	Specifies the location of the hardware module. The location is 0/0/NXR0.
terminal-ampli | inline-ampli	terminal-ampli is used for OLT nodes and inline-ampli is used for ILA nodes.
grid-mode *value*	Specifies the optical spectrum on the interfaces.
centre-freq *frequency*	Defines the central frequency of the channel.
width *channel-width*	Defines the width of the channel.

Command Default None

Command Modes Cisco IOS XR Configuration

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines None

Example

To create the OTS-OCH controller on the LINE side of an ILA-C node, use the following commands:

```
RP/0/RP0/CPU0:ios#config
Thu Apr 7 13:14:49.841 UTC
```

```
RP/0/RP0/CPU0:ios(config)#
RP/0/RP0/CPU0:ios(config)#hw-module location 0/0/NXR0 inline-ampli grid-mode flex
RP/0/RP0/CPU0:ios(config-hwmod-ila-flexi)#channel-id 1 centre-freq 196.1 width 75
RP/0/RP0/CPU0:ios(config-hwmod-ila-flexi)# commit
```

To create the OTS-OCH controller on the LINE side of an OLT-R-C node, use the following commands:

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#hw-module location 0/0/nxr0 terminal-ampli grid-mode flex
RP/0/RP0/CPU0:ios(config-hwmod-olt-flexi)#channel-id 1 centre-freq 196.1 width 75
RP/0/RP0/CPU0:ios(config-hwmod-olt-flexi)#commit
```

interface

Use the **interface** command in the config mode to enter the configuration mode of a management interface. To delete the configuration, use the **no** form of this command.

interface *type* *interface-path-id*
no **interface** *type* *interface-path-id*

Syntax Description

type	Interface type.
interface-path-id	Physical interface or virtual interface.

Command Default

None

Command Modes

Configuration Mode

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task ID's. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
otn	write

Examples

This example shows how to enter the configuration mode of *mgmtEth* interface:

```
RP/0/RP0/CPU0:Box(config)#interface mgmtEth0/RP0/CPU0/1
```

ipv4-access-group

To control access to an interface, use the **ipv4 access-group** command in interface configuration mode. To remove the specified access group, use the **no** form of this command.

ipv4 access-group *access-list-name* { **ingress** | **egress** } [**compress level** *compression-level*]

Syntax Description

access-list-name	Name of an IPv4 access list as specified by an **ipv4 access-list** command.
ingress	Filters on inbound packets.
egress	Filters on outbound packets.
compress level *compression-level*	Configures compression level for interface ACLs. Compression level values range from zero and two.

Command Default

The interface does not have an IPv4 access list applied to it.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

Use the **ipv4 access-group** command to control access to an interface. To remove the specified access group, use the **no** form of the command. Use the *access-list-name* argument to specify a particular IPv4 access list.

If the access list permits the addresses, the software continues to process the packet. If the access list denies the address, the software discards the packet and returns an Internet Control Message Protocol (ICMP) host unreachable message.

If the specified access list does not exist, all packets are passed.

Task ID

Task ID	Operations
acl	read, write

Examples

The following example shows how to apply the access list named IPV4-ACL to the management interface:

```
RP/0/RP0/CPU0:ios(config)# interface mgmtEth 0/RP0/CPU0/0
RP/0/RP0/CPU0:ios(config-if)# ipv4 access-group IPV4-ACL ingress
RP/0/RP0/CPU0:ios(config-if)# commit
```

ipv6-access-group

To control access to an interface, use the **ipv6 access-group** command in interface configuration mode. To remove the specified access group, use the **no** form of this command.

ipv6 access-group *access-list-name* { **ingress** | **egress** } [**compress level** *compression-level*]

Syntax Description

access-list-name	Name of an IPv6 access list as specified by an **ipv6 access-list** command.
ingress	Filters on inbound packets.
egress	Filters on outbound packets.
compress level *compression-level*	Configures compression level for interface ACLs. Compression level values range from zero and two.

Command Default

The interface does not have an IPv6 access list applied to it.

Command Modes

Interface configuration

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

Use compression level two to create Hybrid ACLs with an ACE that uses IPv6 extension headers to filter ingress and egress IPv6 packets.

Task ID

Task ID	Operations
acl	read, write

Examples

The following example shows how to apply the access list named IPV6-ACL to the management interface:

```
RP/0/RP0/CPU0:ios(config)# interface mgmtEth 0/RP0/CPU0/0
RP/0/RP0/CPU0:ios(config-if)# ipv6 access-group IPV6-ACL ingress
RP/0/RP0/CPU0:ios(config-if)# commit
```

ipv4-access-list

To define an IPv4 access list by name, use the **ipv4 access-list** command in IOS XR Config mode. To remove all entries in an IPv4 access list, use the **no** form of this command.

ipv4 access-list *name*
no ipv4 access-list *name*

Syntax Description

name	Name of the access list. Names cannot contain a space or quotation marks.

Command Default

No IPv4 access list is defined.

Command Modes

IOS XR Config mode

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

Use the **ipv4 access-list** command to configure an IPv4 access list. This command places the system in access list configuration mode, in which the denied or permitted access conditions must be defined with the **deny** or **permit** command.

Use the **ipv4 access-group** command to apply the access list to an interface.

Task ID

Task ID	Operations
acl	read, write

Examples

This example shows how to define a standard access list named ACL:

```
RP/0/RP0/CPU0:ios(config)# ipv4 access-list ACL
RP/0/RP0/CPU0:ios(config-ipv4-acl)# 10 permit tcp 192.0.2.2 255.255.255.0 any
RP/0/RP0/CPU0:ios(config-ipv4-acl)# 20 deny udp any any
RP/0/RP0/CPU0:ios(config-ipv4-acl)# 30 permit ipv4 192.0.2.64 255.255.255.0 any
RP/0/RP0/CPU0:ios(config-ipv4-acl)# commit
```

ipv6-access-list

To define an IPv6 access list by name, use the **ipv6 access-list** command in IOS XR Config mode. To remove all entries in an IPv6 access list, use the **no** form of this command.

ipv6 access-list *name*
no ipv6 access-list *name*

Syntax Description

name	Name of the access list. Names cannot contain a space or quotation mark, or begin with a numeric.

Command Default

No IPv6 access list is defined.

Command Modes

IOS XR Config mode

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

The IPv6 access lists are used for traffic filtering based on source and destination addresses, IPv6 option headers, and optional, upper-layer protocol type information for finer granularity of control. IPv6 access lists are defined by using the **ipv6 access-list** command in XR Config mode mode and their permit and deny conditions are set by using the **deny** and **permit** commands in IPv6 access list configuration mode. From IPv6 access list configuration mode, permit and deny conditions can be set for the defined IPv6 access list.

The **ipv6 access-list** command is similar to the **ipv4 access-list** command, except that it is IPv6-specific.

Use the **ipv6 access-group** command to apply the access list to an interface.

Every IPv6 access list has an implicit **deny ipv6 any any** statement as its last match condition. An IPv6 access list must contain at least one entry for the implicit **deny ipv6 any any** statement to take effect.

Task ID

Task ID	Operations
acl	read, write

Examples

This example shows how to define a standard access list named ACL:

```
RP/0/RP0/CPU0:ios(config)# ipv6 access-list ACL
RP/0/RP0/CPU0:ios(config-ipv6-acl)# 10 permit ipv6 any any
RP/0/RP0/CPU0:ios(config-ipv6-acl)# 20 deny udp any any
RP/0/RP0/CPU0:ios(config-ipv6-acl)# commit
```

ipv4 address

Use the **ipv4 address** command in the interface configuration mode to configure IPv4 address for an interface. To remove the IPv4 address from an interface, use the **no** form of this command.

ipv4 address *ipv4-address mask*
no ipv4 address *ipv4-address mask*

Syntax Description

ipv4-address	IPv4 address.
mask	Mask for the associated IP subnet. The network mask can be specified in either of two ways: • The network mask can be a four-part dotted decimal address. For example, 255.0.0.0 indicates that each bit equal to 1 means the corresponding address bit belongs to the network address. • The network mask can be indicated as a slash (/) and number. For example, /8 indicates that the first 8 bits of the mask are ones, and the corresponding bits of the address are network address.

Command Default None

Command Modes Interface Configuration mode

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
otn	write

Example

This example shows how to configure IPv4 address on an interface.

```
RP/0/RP0/CPU0:Box(config-if)# ipv4 address 192.0.2.6/24
```

Example

This example shows how to remove IPv4 address from an interface.

```
RP/0/RP0/CPU0:Box(config-if)# no ipv4 address
```

ipv6 address

Use the **ipv6 address** command in the interface configuration mode to configure IPv6 address for an interface. To remove the IPv6 address from an interface, use the **no** form of this command.

ipv6 address *ipv6-prefix/ prefix-length*
no ipv6 address *ipv6-prefix/ prefix-length*

Syntax Description

ipv6-prefix/	The IPv6 network assigned to the interface. This argument must be in the form documented in RFC 2373 where the address is specified in hexadecimal using 16-bit values between colons.
prefix-length	The length of the IPv6 prefix. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash (/) must precede the decimal value.

Command Default None

Command Modes Interface Configuration mode

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operation
otn	write

Example

This example shows how to configure IPv6 address on an interface.

```
RP/0/RP0/CPU0:Box(config-if)# ipv6 address 0:0:0:7272::72/64
```

Example

This example shows how to remove IPv6 address from an interface.

```
RP/0/RP0/CPU0:Box(config-if)# no ipv6 address
```

link-tuner

To enable and disable link tuner and to configure the spectrum density, use the **link-tuner** command.

link-tuner { **enable** | **disable** | **spectrum-density** *value* }

Syntax Description

enable	Enable Link-Tuner
disable	Disable Link-Tuner
spectrum-density	Configure spectrum density
value	Spectrum density in range 1–100 in increments of 1

Command Default The default spectrum density is 81.

Command Modes (config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following is a sample configuration that enables link tuner.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#link-tuner enable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

The following is a sample configuration that disables link tuner.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#link-tuner disable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

The following example is a sample configuration that configures the spectrum density to 80%.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#link-tuner spectrum-density 80
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

license smart deregister

To cancel the registration of your device, use the **license smart deregister** command.

license smart deregister

Command Default

None

Command Modes

None

Command History

Release	Modification
R7.7.1	This command was introduced.

Usage Guidelines

When your device is taken off the inventory, shipped elsewhere for redeployment or returned to Cisco for replacement using the return merchandise authorization (RMA) process, you can use this command to cancel the registration on your device. All smart licensing entitlements and certificates on the platform are removed.

The following example deregisters NCS 1010.

```
RP/0/RP0/CPU0:ios#license smart deregister
```

license smart register

To register the device instance with Cisco licensing cloud, use the **license smart register idtoken** *token-id* **force** command.

license smart register idtoken *token-id* [**force**]

Syntax Description

token_id	Specifies the token generated in smart manager.
force	If the registration fails due to communication failure between the device and the portal, the system waits for 24 hours before attempting to register the device again. Use this option to force the registration.

Command Default

None

Command Modes

None

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

Use this command to register the device instance with Cisco licensing cloud.

The following example registers and sets the token ID required for registration of NCS 1004.

```
RP/0/RP0/CPU0:ios#license smart register
YzY2ZjYyNjktY2NlOS00NTc4LWIxNTAtMjZkNmNiNzMxMTY1LTE2NjAzNjQ3
%0ANzY4Njl8ZVJSckxKN2pFV2tIeHVoMUkxbGxTazFDVm9kc1B5MGlHQmlFWUJi%0Ac3VNRT0%3D%0A
```

license smart renew

To manually renew the ID certification or authorization, use the **license smart renew** command.

license smart renew { **ID | auth** }

Syntax Description

ID	ID certificates are renewed automatically after six months. In case, the renewal fails, the product instance goes into unidentified state. You can manually renew the ID certificate using this option.
auth	Authorization periods are renewed by the Smart Licensing system every 30 days. As long as the license is in an 'Authorized' or 'Out-of-compliance' (OOC), the authorization period is renewed. Use this command to make an on-demand manual update of your registration. Thus, instead of waiting 30 days for the next registration renewal cycle, you can use this option to instantly find out the status of your license. After 90 days, the authorization period expires and the status of the associated licenses display "AUTH EXPIRED". Use this option to retry the authorization period renewal. If the retry is successful, a new authorization period begins.

Command Default None

Command Modes None

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines None

The following example manually renews the ID certificate for the NCS 1010:

```
RP/0/RP0:ios#license smart renew id
```

The following example manually renews the authorization for the NCS 1010:

```
RP/0/RP0:ios#license smart renew auth
```

license smart reservation install file

To register the device using the authorization code that is copied as a file, and to activate smart licensing reservation for your device, use the **license smart reservation install file** command.

license smart reservation install file *file name*

Syntax Description

file name	Name of the file where the authorization code is saved.

Command Default None

Command Modes None

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines None

The following example registers and activates the registration and license for NCS 1010:

```
RP/0/RP0/CPU0:ios#license smart reservation install file /disk0:/smart1
Tue Jul 19 13:46:22.877 UTC
RP/0/RP0/CPU0:Jul 19 13:46:22.946 UTC: plat_sl_client[368]:
%LICENSE-PLAT_CLIENT-6-STATE_CHANGE :
Licensing platform state changing from UNREGISTERED to REGISTERED
RP/0/RP0/CPU0:Jul 19 13:46:22.946 UTC: smartlicserver[247]:
%LICENSE-SMART_LIC-6-AGENT_REG_SUCCESS
: Smart Agent for Licensing Registration successful. udi PID:NCS1010-SA,SN:FCB2546B08T
Reservation install file successful
```

```
Last Confirmation code 8572aa81
```

license smart transport

To configure the smart transport as an alternative option to Call Home,use the **license smart transport** command.

license smart transport smart

Command Default None

Command Modes None

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines None

The following example configures the smart transport option to connect to the CSSM.

```
RP/0/RP0/CPU0:ios#license smart transport smart
       Thu Jul 19 13:34:47.251 UTC
       RP/0/RP0/CPU0:ios#commit
```

linux security audit

To enable the Linux audit monitoring and logging capabilities, use the linux security audit command in XR Config mode.

linux security audit monitor { `all | authlog-files | cron-files | dns-client-files | docker | file-deletion | file-perm-changes | kernel-module-mgmt | process-audits | system-login-reboot | system-software | system-time-change | user-group-config-files | user-privilege-mgmt | xr-software` } | **logging syslog keepalive interval** *interval* }

Syntax Description

monitor	Enable audit monitoring.
all	Enable audit monitoring for all rule groups.
authlog-files	Enable audit monitoring for changes in authlog files.
cron-files	Enable audit monitoring for changes in cron files.
dns-client-files	Enable audit monitoring for changes in DNS client files.

docker	Enable audit monitoring for changes in docker.
file-deletion	Enable audit monitoring for file deletion.
file-perm-changes	Enable audit monitoring for changes in file permissions.
kernel-module-mgmt	Enable audit monitoring for kernel module management.
process-audits	Enable audit monitoring for process audits.
system-login-reboot	Enable audit monitoring for system login and reboot.
system-software	Enable audit monitoring for changes in system software.
system-time-change	Enable audit monitoring for changes in system time.
user-group-config-files	Enable auditmonitoring for changes in user group configuration files.
user-privilege-mgmt	Enable audit monitoring for changes in user privileges.
xr-software	Enable audit monitoring for changes in IOS XR software.
logging syslog	Enable forwarding of audit logs to a remote syslog server.
keepalive interval *interval*	Enables AuditD process keepalive and sets the keepalive interval in minutes.

Command Default

Audit monitoring is disabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 26.3.1	Two new options, **keepalive** and **interval**, were added to the command.
Release 25.3.1	This command was introduced.

Usage Guidelines

Follow these guidelines for audit monitoring:

- Use caution when enabling **all** rule groups, especially those that monitor frequent events, as this may increase CPU, memory, or disk usage. Enable only the groups required for compliance or security needs.
- The RP/0/RP0/CPU0:ios stores audit logs locally at **/var/log/audit/audit.log** , unless you enable log forwarding.

Example

This example shows how you can enable audit monitoring with the **linux security audit monitor** command.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)# linux security audit monitor xr-software
```

```
RP/0/RP0/CPU0:ios(config)# linux security audit monitor user-group-config-files
RP/0/RP0/CPU0:ios(config)# commit
```

This example shows how you can enable audit log forwarding with the **linux security audit logging syslog** command.

```
RP/0/RP0/CPU0:ios# config
RP/0/RP0/CPU0:ios(config)# linux security audit logging syslog
RP/0/RP0/CPU0:ios(config)# logging 10.0.1.2 vrf default severity info port default facility
 local6
RP/0/RP0/CPU0:ios(config)# commit
```

This example shows how you can configure the AuditD process keepalive interval and enable remote audit log forwarding.

```
#Configure the AuditD process keepalive interval
RP/0/RP0/CPU0:ios#  conf t
RP/0/RP0/CPU0:ios#  linux security audit keepalive interval 1010

#Enable remote audit log forwarding
RP/0/RP0/CPU0:ios# # linux security audit logging syslog
RP/0/RP0/CPU0:ios# # commit
```

ntp

To enter Network Time Protocol (NTP) configuration mode and run NTP configuration commands, use the **ntp** command in global configuration mode.

ntp

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Task ID

Task ID	Operations
ip-services	read, write

The following example shows how to enter NTP configuration mode:

```
RP/0/RP0/CPU0:ios(config)#ntp
RP/0/RP0/CPU0:ios(config-ntp)#
```

olc bfr-initialize

Use the **olc bfr-initialize** command to initialize the Band Failure Recovery(BFR) feature.

olc bfr-initialize controller ots *R/S/I/P*

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OTS controller.
controller Ots	Use this parameter to choose a particular controller.

Command Modes

Privileged EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.9.1	This command was introduced.

Example

The following is a sample output of the **olc bfr-initialize** command that initializes BFR.

```
RP/0/RP0/CPU0:ios#olc bfr-initialize controller ots 0/0/0/0
```

olc bfr-pause

Use the **olc bfr-pause** command to enable or disable Band Failure Recovery(BFR) pause. In case of band failure, when BFR pause is enabled, the recovery procedure is not initiated and the surviving band is not switched to single-band PSD profile.

olc bfr-pause controller ots *Rack/Slot/Instance/Port* { **enable | disable** }

Syntax Description

controller Ots	Use this parameter to choose a particular controller.
R/S/I/P	Rack/Slot/Instance/Port of the OTS controller.
enable	Use this keyword to temporarily pause BFR.
disable	Use this keyword to disable BFR pause.

Command Modes

Privileged EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.9.1	This command was introduced.

The following is a sample output of the **olc bfr-pause** command that enables the BFR pause feature and temporarily pauses BFR.

```
RP/0/RP0/CPU0:ios#olc bfr-pause controller ots 0/0/0/0 enable
```

The following is a sample output of the **olc bfr-pause** command that disables the BFR pause feature.

```
RP/0/RP0/CPU0:ios#olc bfr-pause controller ots 0/0/0/0 disable
```

olc force-raman-turn-up

Use the **olc force-raman-turn-up** command to turn on the Raman pumps, when the RAMAN-TURNUP-FAIL alarm is raised due to failure of Raman turn-up fiber check.

olc force-raman-turn-up controller ots *R/S/I/P*

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to choose a particular controller.

Command Modes

Privileged EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Example

The following is a sample configuration to forcefully turn up the Raman pumps:

```
RP/0/RP0/CPU0:IOS#olc force-raman-turn-up controller ots 0/0/0/0
Thu Nov  2 10:12:26.668 UTC
```

olc otdr raman-turn-up

Use the **olc otdr raman-turn-up** command to configure the OTDR for Raman turn-up.

olc otdr raman-turn-up [**enable | disable**] [**relaxation factor** *value*]

Syntax Description

enable	Enables OTDR for Raman turn-up.
disable	Disables OTDR for Raman turn-up.
relaxation factor *value*	Configures the percentage of relaxation factor to ignore the reflective events evaluated by Raman turn-up.

Command Modes Controller configuration mode

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Example

The following are the sample configurations that enable and disable the Raman Turn-up and set up the relaxation factor for Ramam turn-up.

```
RP/0/RP0/CPU0:IOS#configure
Thu Nov  2 10:10:53.812 UTC
RP/0/RP0/CPU0:IOS(config)#optical-line-control controller Ots 0/0/0/0
RP/0/RP0/CPU0:IOS(config-olc-ots)#otdr raman-turn-up enable
RP/0/RP0/CPU0:IOS(config-olc-ots)#commit
Thu Nov  2 10:11:20.514 UTC
```

```
RP/0/RP0/CPU0:IOS#configure
Fri Nov  3 11:12:34.631 UTC
RP/0/RP0/CPU0:IOS(config)#optical-line-control controller Ots 0/0/0/0
RP/0/RP0/CPU0:IOS(config-olc-ots)#otdr raman-turn-up disable
RP/0/RP0/CPU0:IOS(config-olc-ots)#commit
Fri Nov  3 11:13:23.514 UTC
```

```
RP/0/RP0/CPU0:IOS#configure
Thu Nov  2 10:24:55.778 UTC
RP/0/RP0/CPU0:IOS(config)#optical-line-control controller Ots 0/0/0/0
RP/0/RP0/CPU0:IOS(config-olc-ots)#otdr raman-turn-up relaxation-factor 40
RP/0/RP0/CPU0:IOS(config-olc-ots)#commit
Thu Nov  2 10:25:06.733 UTC
RP/0/RP0/CPU0:IOS(config-olc-ots)#end
RP/0/RP0/CPU0:IOS#olc start-raman-turn-up controller Ots 0/0/0/0
Thu Nov  2 10:25:24.143 UTC
```

olc start-raman-turn-up

Use the **olc start-raman-turn-up** command to trigger Raman turn-up.

olc start-raman-turn-up controller ots *R/S/I/P*

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to choose a particular controller.

Command Modes Controller configuration mode

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Example

The following output is a sample of the **olc start-raman-turn-up controller ots 0/0/0/0** command.

```
RP/0/RP0/CPU0:IOS#olc start-raman-turn-up controller Ots 0/0/0/2
Thu Nov  2 10:28:41.529 UTC
```

olc start-gain-estimation

Use the **olc start-gain-estimation** command to trigger the gain estimation operation.

olc start-gain-estimation controller ots *R/S/I/P*

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to choose a particular controller.

Command Modes

Privileged EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following output is a sample of the **olc start-gain-estimation controller ots 0/0/0/0** command.

```
RP/0/RP0/CPU0:ios#olc start-gain-estimation controller ots 0/0/0/0
```

olc start-raman-tuning

Use the **olc start-raman-tuning** command to trigger Raman tuning.

olc start-raman-tuning controller ots *R/S/I/P*

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to choose a particular controller.

Command Modes

Privileged EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

optical-line-control

To use the optical applications configuration mode, use the **optical-line-control** command.

optical-line-control

Command Modes

Global configuration mode (config)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

otdr auto-scan

Use the **otdr auto-scan** command to enable or disable the auto otdr scan

otdr auto-scan [**enable | disable**]

Syntax Description

enable	Enables OTDR auto scan.
disable	Disables OTDR auto scan.

Command Modes

Controller configuration mode

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Example

The following are sample configurations that enable and disable automatic OTDR scan.

```
RP/0/RP0/CPU0:ios#configure
Mon Sep 18 13:11:53.812 UTC
RP/0/RP0/CPU0:IOS(config)#optical-line-control controller Ots 0/0/0/0
RP/0/RP0/CPU0:IOS(config-olc-ots)#otdr auto-scan enable
RP/0/RP0/CPU0:IOS(config-olc-ots)#commit
```

```
RP/0/RP0/CPU0:ios#configure
Mon Sep 3 13:28:34.631 UTC
RP/0/RP0/CPU0:IOS(config)#optical-line-control controller Ots 0/0/0/0
RP/0/RP0/CPU0:IOS(config-olc-ots)#otdr auto-scan disable
RP/0/RP0/CPU0:IOS(config-olc-ots)#commit
```

otdr start

Use the **otdr-start controller ots** command to start the otdr operation.

otdr-start controller ots *R/S/I/P direction* [**force**] [**label** *string*]

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OTS controller.
direction	Scan direction (RX or TX)
force	Use this keyword to start the OTDR scan without negotiation.
label	Use this keyword to add the string specified as label in the SOR file.
string	Label string.

Command Modes

Controller configuration mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.
Cisco IOS XR Release 24.4.15	The keyword *force* was added.
Cisco IOS XR Release 25.4.1	The keyword *label string* was added.

Example

This is a sample of starting OTDR scan manually.

```
RP/0/RP0/CPU0:ios#otdr-start controller ots 0/0/0/0 rx
Wed Feb 9 05:49:39.178 UTC
OTS OTDR Scan Started at RX
RP/0/RP0/CPU0:ios#
```

This is a sample of starting OTDR scan manually without negotiation.

```
RP/0/RP0/CPU0:ios#otdr-start controller ots 0/0/0/0 rx force
Wed Sep 4 08:78:34.186 UTC
OTS OTDR Scan Started at RX
RP/0/RP0/CPU0:ios#
```

This is a sample configuration to start OTDR scan manually and to append a custom substring as a prefix to the SOR file name.

```
RP/0/RP0/CPU0:ios#otdr-start controller ots 0/0/0/0 rx label Site1.ABC_xyz-1
Mon Nov 3 09:56:23.278 UTC
OTS OTDR Scan Started at RX
RP/0/RP0/CPU0:ios#
```

otdr stop

Use the **otdr-stop controller ots** command to stop the otdr operation.

otdr-stop controller ots *R/S/I/P direction*

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OTS controller.
otdr-stop controller ots	Use this parameter to stop the otdr operation in a particular direction.
direction	Scan direction (RX or TX)

Command Modes

Privileged EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

```
RP/0/RP0/CPU0:ios#otdr-stop controller ots 0/0/0/0 tx
OTS OTDR Scan Stopped at TX
```

partner-band-port

Use the **partner-band-port** command to establish a connection between C and L-band nodes by configuring the L-band peer IP on C-band node and C-band peer IP on L-band node.

partner-band-port **ipv4** *address* **controller ots** *Rack/Slot/Instance/Port*

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OTS controller.
ipv4 *address*	Specify the IP address of the peer node.
controller Ots	Use this parameter to choose a particular controller.
R/S/I/P	Rack/Slot/Instance/Port of the OTS controller.

Command Modes

Privileged EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.9.1	This command was introduced.

Example 1

The following is a sample output of the **partner-band-port** command that configures the peer node IP address 192.0.2.1 on the C-band node.

```
RP/0/RP0/CPU0:ios# optical-line-control controller Ots0/0/0/0
RP/0/RP0/CPU0:ios# partner-band-port ipv4 address 192.0.2.1 controller Ots0/0/0/0
```

pm

To configure the performance monitoring parameters of the OTS, OTS-OCH, OSC, and DFB controllers, use the **pm** command in the controller configuration mode.

For more information about PM threshold values for the controllers, see the section, Monitor performance.

pm [**flex-bin | 15-min | 30-sec | 24-hour**] [**ots | ots-och | osc | dfb**] [**report | threshold**] [**eagn** | **eatl** | **iagn** | **iatl** | **slr-cl** | **slt-cl** | **opbr** | **opr** | **opr-cl** | **opt** | **opt-s** | **raman-1** | **raman-2** | **raman-3** | **raman-4** | **raman-5** | **raman-tot**] [**max-tca** | **min-tca**] [**enable** | *value*]

Syntax Description

flex-bin| 15-min | 30-sec | 24-hour	Configures performance monitoring parameters for 10 seconds, 15 minutes, 30 seconds, or 24-hour intervals.
ots | ots-och | osc | dfb	Specifies whether to configure performance monitoring parameters for the OTS, OTS-OCH, OSC, or DFB controllers.
history	Displays the historical values of the **pm** command.
report	Configures the TCA reporting status for optics (OTS-OCH, OSC, or DFB) or OTS parameters.
threshold	Configures thresholds on optics (OTS-OCH, OSC, or DFB) or OTS parameters.
iagn | eagn	Configures thresholds for ingress or egress amplifier gain.
iatl |eatl	Configures the thresholds for ingress or egress amplifier tilt.
slr-cl | slt-cl	Configures the thresholds for span loss in Rx or Tx direction.
opr | opr-cl |opr-s	Configures thresholds for total Rx power, total Rx power for C and L band, or total C band signal power.
opbr	Configures thresholds for back reflection power.
opt |opt-s	Configures thresholds for total Tx power or total C band signal power.
raman-1 | raman-2 | raman-3 | raman-4 | raman-5 | raman-tot	Configures thresholds for Raman power (1, 2, 3, 4, or 5) or total Raman pump power.
max-tca | **min-tca enable**	Enable the maximum or minimum TCA reporting status.

value	Value of the thresholds.
bucketrange *value1 value2*	Displays multiple performance monitoring history samples for a controller layer in one command. The **bucket range** option is available for supported controller layers in 30-second, 15-minute, and 24-hourperformance monitoring history windows.
bucketrange all	Displays every stored performance monitoring history bucket for a selected controller layer and time window. The **all** option returns every available history bucket for the selected controller layer and time window.

Command Default

None

Command Modes

Controller configuration

Command History

Release	Modification
Release 7.11.1	• The **slr-cl** and **slt-cl** parameters were added to the **pm** configuration command. • The **SLR (C+L)** and **SLT (C+L)** fields were added to the output of the **show controllers ots R/S/I/P pm** command.
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Examples

The following examples shows how to view the configured maximum and minimum threshold values and the current span loss values for both Tx and Rx direction.

```
RP/0/RP0/CPU0:ios#show controllers ots 0/0/0/0 pm current 15-min optics 1

Optics in the current interval [06:30:00 - 06:37:00 Tue May 17 2022]

Optics current bucket type : Valid
               MIN       AVG       MAX     Operational  Configured    TCA   Operational
Configured  TCA
                                              Threshold(min)Threshold(min(min)
Threshold(max)Threshold(max(max)
OPT[dBm]       : 20.00     20.00     20.00    -20.00    NA           NO   40.00         NA
           NO
OPR[dBm]       : 20.00     20.00     20.00    -30.00    NA           NO   18.00         NA
           NO
OPT(C+L)[dBm] : 20.00     20.00     20.00    -20.00    NA           NO   60.85         NA
           NO
OPR(C+L)[dBm] : -10.00    -10.00    -10.00   -30.00    NA           NO   36.00         NA
           NO
OPT(S)[dBm]    : 20.00     20.00     20.00    -5.00     NA           NO   28.00         NA
           NO
OPR(S)[dBm]    : 20.00     20.00     20.00    -30.00    NA           NO   18.00         NA
           NO
OPBR[dBm]      : -30.00    -30.00    -30.00   -30.00    NA           NO   -14.09        NA
           NO
EAGN[dB]       : 30.00     30.00     30.00    16.00     NA           NO   20.00         20.00
```

```
        YES
SLR(C+L)[dB]   : 4.46      4.49      4.50      0.00      NA            NO    42.00          NA
          NO
SLT(C+L)[dB]   : 0.09      0.09      0.09      0.00      NA            NO    42.00          NA
          NO
EATL[dB]       : -4.80     -4.80     -4.80     -5.00     NA            NO    5.00           NA
          NO
IAGN[dB]       : 25.00     25.00     25.00     12.00     NA            NO    25.00          NA
          NO
IATL[dB]       : -2.40     -2.40     -2.40     -5.00     NA            NO    5.00           NA
          NO
RAMAN-TOT[mW] : 300.00    300.00    300.00    200.00    NA            NO    1410.00        NA
          NO
RAMAN-1 [mW]   : 45.00     45.00     45.00     45.00     NA            NO    390.00         NA
          NO
RAMAN-2 [mW]   : 40.00     40.00     40.00     40.00     NA            NO    390.00         NA
          NO
RAMAN-3 [mW]   : 40.00     40.00     40.00     40.00     NA            NO    220.00         NA
          NO
RAMAN-4 [mW]   : 40.00     40.00     40.00     40.00     NA            NO    220.00         NA
          NO
RAMAN-5 [mW]   : 35.00     35.00     35.00     35.00     NA            NO    190.00         NA
          NO

Last clearing of "show controllers OPTICS" counters never
```

The following sample sets the reporting status to maximum TCA for the eagn parameter of the OTS controller for a 15-minute interval.

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#controller ots 0/0/0/0 pm 15-min ots report eagn max-tca enable
 RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

The following sample configures the maximum threshold for the eagn parameter of the OTS controller to 20 dB.

```
RP/0/RP0/CPU0:ios#config
RP/0/RP0/CPU0:ios(config)#controller ots 0/0/0/0 pm 15-min ots threshold eagn max 2000
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

To view the current PM parameters on an OTS controller for a 15 minute interval, use the following command:

```
RP/0/RP0/CPU0:ios#sh controllers ots 0/0/0/0 pm current 15-min optics 1
Tue May 17 06:37:00.529 UTC

Optics in the current interval [06:30:00 - 06:37:00 Tue May 17 2022]

Optics current bucket type : Valid
             MIN       AVG       MAX     Operational  Configured    TCA   Operational
Configured  TCA
                                          Threshold(min)Threshold(min(min)
Threshold(max)Threshold(max(max)
OPT[dBm]      : 20.00     20.00     20.00    -20.00     NA            NO    40.00          NA
          NO
OPR[dBm]      : 20.00     20.00     20.00    -30.00     NA            NO    18.00          NA
          NO
OPT(C+L)[dBm] : 20.00     20.00     20.00    -20.00     NA            NO    60.85          NA
          NO
OPR(C+L)[dBm] : -10.00    -10.00    -10.00   -30.00     NA            NO    36.00          NA
          NO
```

```
OPT(S)[dBm]    : 20.00     20.00     20.00    -5.00     NA           NO   28.00          NA
          NO
OPR(S)[dBm]    : 20.00     20.00     20.00    -30.00    NA           NO   18.00          NA
          NO
OPBR[dBm]      : -30.00    -30.00    -30.00   -30.00    NA           NO   -14.09         NA
          NO
EAGN[dB]       : 30.00     30.00     30.00    16.00     NA           NO   20.00          20.00
        YES
EATL[dB]       : -4.80     -4.80     -4.80    -5.00     NA           NO   5.00           NA
          NO
IAGN[dB]       : 25.00     25.00     25.00    12.00     NA           NO   25.00          NA
          NO
IATL[dB]       : -2.40     -2.40     -2.40    -5.00     NA           NO   5.00           NA
          NO
RAMAN-TOT[mW] : 300.00    300.00    300.00   200.00    NA           NO   1410.00        NA
          NO
RAMAN-1 [mW]   : 45.00     45.00     45.00    45.00     NA           NO   390.00         NA
          NO
RAMAN-2 [mW]   : 40.00     40.00     40.00    40.00     NA           NO   390.00         NA
          NO
RAMAN-3 [mW]   : 40.00     40.00     40.00    40.00     NA           NO   220.00         NA
          NO
RAMAN-4 [mW]   : 40.00     40.00     40.00    40.00     NA           NO   220.00         NA
          NO
RAMAN-5 [mW]   : 35.00     35.00     35.00    35.00     NA           NO   190.00         NA
          NO

Last clearing of "show controllers OPTICS" counters never
```

To view the historical PM parameters on an OTS controller for a 15 minute interval, use the following command:

```
RP/0/RP0/CPU0:ios#sh controllers ots 0/0/0/0 pm history 15-min optics  1 bucket 1
Tue May 17 07:02:26.911 UTC

Optics in interval 1 [06:45:00 - 07:00:00 Tue May 17 2022]

Optics history bucket type : Valid
                MIN       AVG       MAX
OPT[dBm]    :   20.00      20.00     20.00
OPR[dBm]    :   20.00      20.00     20.00
OPT(C+L)[dBm]: 20.00      20.00     20.00
OPR(C+L)[dBm]: -10.00    -10.00    -10.00
OPT(S)[dBm]  : 20.00      20.00     20.00
OPR(S)[dBm]  : 20.00      20.00     20.00
OPBR[dBm]    : -30.00    -30.00    -30.00
EAGN[dB]     : 30.00     30.00     30.00
EATL[dB]     : -4.80     -4.80     -4.80
IAGN[dB]     : 25.00     25.00     25.00
IATL[dB]     : -2.40     -2.40     -2.40
RAMAN-TOT[mW]: 300.00    300.00    300.00
RAMAN-1 [mW] : 45.00     45.00     45.00
RAMAN-2 [mW] : 40.00     40.00     40.00
RAMAN-3 [mW] : 40.00     40.00     40.00
RAMAN-4 [mW] : 40.00     40.00     40.00
RAMAN-1 [mW] : 35.00     35.00     35.00
```

To view the current PM parameters on an OTS-OCH controller for a 15 minute interval, use the following command:

```
P/0/RP0/CPU0:ios#sh controllers ots-och 0/0/0/0/1 pm current 15-min optics 1
Tue May 17 10:27:20.387 UTC

Optics in the current interval [10:15:00 - 10:27:20 Tue May 17 2022]
```

```
Optics current bucket type : Valid
           MIN  AVG   MAX Operational    Configured      TCA      Operational    Configured     TCA
                          Threshold(min)  Threshold(min) (min)   Threshold(max)  Threshold(max) (max)
OPT[dBm] : 1.20 1.30   1.30     -30.00           NA            NO         15.00          NA      NO
OPR[dBm] :-12.31-12.25-12.20     -30.00           NA            NO         15.00          NA      NO
Last clearing of "show controllers OPTICS" counters never
```

To view the current PM parameters on an OSC controller for a 15 minute interval, use the following command:

```
RP/0/RP0/CPU0:ios#sh controller osc 0/0/0/0 pm current 15-min optics 1
Tue May 17 08:24:32.642 UTC

Optics in the current interval [08:15:00 - 08:24:32 Tue May 17 2022]

Optics current bucket type : Valid
            MIN       AVG       MAX      Operational      Configured      TCA   Operational Configured
     TCA
                                          Threshold(min)   Threshold(min) (min)
Threshold(max)Threshold(max)(max)
OPT[dBm]     : -10.00    -10.00    -10.00   -20.00            NA           NO   12.00            NA
       NO
OPR[dBm]     : -30.00    -30.00    -30.00   -30.00            NA           NO   0.00             NA
       NO

Last clearing of "show controllers OPTICS" counters never
```

To view the current PM parameters on an DFB controller for a 15 minute interval, use the following command:

```
RP/0/RP0/CPU0:ios#sh controller dfb 0/0/0/0 pm current 15-min optics 1
Tue May 17 08:28:37.455 UTC

Optics in the current interval [08:15:00 - 08:28:37 Tue May 17 2022]

Optics current bucket type : Valid
           MIN   AVG  MAX   Operational Configured    TCA   Operational Configured     TCA
                            Threshold  Threshold            Threshold    Threshold
                              (min)      (min)        (min)    (max)         (max)     (max)
OPT[dBm]: 20.00 20.00 20.00   -25.23     NA          NO    18.00            NA          NO
OPR[dBm]: 10.00 10.00 10.00   -30.00     NA          NO    12.00            NA          NO

Last clearing of "show controllers OPTICS" counters never
```

To view the current PM parameters for an OCH controller for a 30-second interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers och 0/1/0/0 pm current 30-sec optics 1

Tue May 10 11:28:29.896 UTC

Optics in the current interval [11:28:00 - 11:28:29 Tue May 10 2022]

Optics current bucket type : Valid
            MIN       AVG       MAX      Operational      Configured      TCA   Operational
Configured     TCA
                                          Threshold(min)   Threshold(min) (min) Threshold(max)
Threshold(max) (max)
OPT[dBm]     : -50.00    -50.00    -50.00   -30.00            NA              NO   15.00            NA
            NO
OPR[dBm]     : -50.00    -50.00    -50.00   -30.00            NA              NO   15.00            NA
            NO

Last clearing of "show controllers OPTICS" counters never
```

To view the historical PM parameters on an OCH controller for a 30-second interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers och 0/1/0/0 pm history 30-sec optics 1 bucket 1
```

```
Mon Jul 25 05:35:52.176 UTC

Optics in interval 1 [05:35:00 - 05:35:30 Mon Jul 25 2022]

Optics history bucket type : Valid
              MIN       AVG       MAX
OPT[dBm]    : -50.00    -50.00    -50.00
OPR[dBm]    : -50.00    -50.00    -50.00

Last clearing of "show controllers OPTICS" counters never
```

To view the current PM parameters for an OCH controller for a 15-minute interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers och 0/1/0/0 pm current 15-min optics 1

Tue May 10 11:28:50.952 UTC

Optics in the current interval [11:15:00 - 11:28:50 Tue May 10 2022]

Optics current bucket type : Valid
             MIN       AVG       MAX      Operational      Configured      TCA   Operational
Configured     TCA
                                          Threshold(min)   Threshold(min)  (min) Threshold(max)
Threshold(max) (max)
OPT[dBm]     : -50.00    -50.00    -50.00   -30.00            NA              NO   15.00            NA
             NO
OPR[dBm]     : -50.00    -50.00    -50.00   -30.00            NA              NO   15.00            NA
             NO

Last clearing of "show controllers OPTICS" counters never
```

To view the historical PM parameters for an OCH controller for a 15-minute interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers och 0/1/0/0 pm history 15-min optics 1 bucket 1


Mon Jul 25 05:36:12.167 UTC

Optics in interval 1 [05:15:00 - 05:30:00 Mon Jul 25 2022]

Optics history bucket type : Valid
              MIN       AVG       MAX
OPT[dBm]    : -50.00    -50.00    -50.00
OPR[dBm]    : -50.00    -50.00    -50.00

Last clearing of "show controllers OPTICS" counters never
```

To view the current PM parameters on an OCH controller for a 24-hour interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers och 0/1/0/0 pm current 24-hour optics 1

Tue May 10 11:29:09.270 UTC

Optics in the current interval [00:00:00 - 11:29:09 Tue May 10 2022]

Optics current bucket type : Invalid
             MIN       AVG       MAX      Operational      Configured      TCA   Operational
Configured     TCA
                                          Threshold(min)   Threshold(min)  (min) Threshold(max)
Threshold(max) (max)
OPT[dBm]     : -50.00    -50.00    -50.00   -30.00            NA              NO   15.00            NA
             NO
OPR[dBm]     : -50.00    -50.00    -50.00   -30.00            NA              NO   15.00            NA
             NO
```

```
Last clearing of "show controllers OPTICS" counters never
RP/0/RP0/CPU0:ios#
```

To view the historical PM parameters on an OCH controller for a 24-hour interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers och 0/1/0/0 pm history 24-hour optics 1


Mon Jul 25 05:36:35.165 UTC

Optics in interval 1 [00:00:00 - 24:00:00 Sun Jul 24 2022]

Optics history bucket type : Valid
              MIN       AVG       MAX
OPT[dBm]    : -50.00    -50.00    -50.00
OPR[dBm]    : -50.00    -50.00    -50.00

Last clearing of "show controllers OPTICS" counters never
```

To view the current PM parameters for an OMS controller for a 30-second interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers oms 0/3/0/8 pm current 30-sec optics 1


Mon Jul 25 07:24:38.319 UTC

Optics in the current interval [07:24:30 - 07:24:38 Mon Jul 25 2022]

Optics current bucket type : Valid
MIN AVG MAX Operational Configured TCA Operational Configured TCA
Threshold(min) Threshold(min) (min) Threshold(max) Threshold(max) (max)
OPT[dBm] : -50.00 -50.00 -50.00 -30.00 NA NO 15.00 NA NO
OPR[dBm] : -50.00 -50.00 -50.00 -30.00 NA NO 15.00 NA NO

Last clearing of "show controllers OPTICS" counters never
```

To view the historical PM parameters on an OMS controller for a 30-second interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers oms 0/3/0/8  pm history 30-sec optics 1 bucket 1


Mon Jul 25 07:13:51.228 UTC

Optics in interval 1 [07:13:00 - 07:13:30 Mon Jul 25 2022]

Optics history bucket type : Valid
              MIN       AVG       MAX
OPT[dBm]    : -50.00    -50.00    -50.00
OPR[dBm]    : -50.00    -50.00    -50.00

Last clearing of "show controllers OPTICS" counters never
```

To view the current PM parameters for an OMS controller for a 15-minute interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers oms 0/3/0/8 pm current 15-min optics 1


Mon Jul 25 07:25:00.183 UTC

Optics in the current interval [07:15:00 - 07:25:00 Mon Jul 25 2022]

Optics current bucket type : Valid
MIN AVG MAX Operational Configured TCA Operational Configured TCA
```

```
Threshold(min) Threshold(min) (min) Threshold(max) Threshold(max) (max)
OPT[dBm] : -50.00 -50.00 -50.00 -30.00 NA NO 15.00 NA NO
OPR[dBm] : -50.00 -50.00 -50.00 -30.00 NA NO 15.00 NA NO

Last clearing of "show controllers OPTICS" counters never
```

To view the historical PM parameters for an OMS controller for a 15-minute interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers oms 0/3/0/8  pm history 15-min optics 1 bucket 1


Mon Jul 25 07:14:03.090 UTC

Optics in interval 1 [06:45:00 - 07:00:00 Mon Jul 25 2022]

Optics history bucket type : Valid
              MIN       AVG       MAX
OPT[dBm]   : -50.00    -50.00    -50.00
OPR[dBm]   : -50.00    -50.00    -50.00

Last clearing of "show controllers OPTICS" counters never
```

To view the current PM parameters on an OMS controller for a 24-hour interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers oms 0/3/0/8 pm current 24-hour optics 1


Mon Jul 25 07:26:09.817 UTC

Optics in the current interval [00:00:00 - 07:26:09 Mon Jul 25 2022]

Optics current bucket type : Valid
MIN AVG MAX Operational Configured TCA Operational Configured TCA
Threshold(min) Threshold(min) (min) Threshold(max) Threshold(max) (max)
OPT[dBm] : -50.00 -50.00 -50.00 -30.00 NA NO 15.00 NA NO
OPR[dBm] : -50.00 -50.00 -50.00 -30.00 NA NO 15.00 NA NO

Last clearing of "show controllers OPTICS" counters never
```

To view the historical PM parameters on an OMS controller for a 24-hour interval, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers oms 0/3/0/8 pm history 24-hour optics 1


Mon Jul 25 07:18:13.532 UTC

Optics in interval 1 [00:00:00 - 24:00:00 Sun Jul 24 2022]

Optics history bucket type : Valid
              MIN       AVG       MAX
OPT[dBm]   : -50.00    -50.00    -50.00
OPR[dBm]   : -50.00    -50.00    -50.00

Last clearing of "show controllers OPTICS" counters never
```

process restart

To restart the license registration process, use the **license smart reservation** command.

process restart smartlicserver location *location*

Syntax Description

location	Specifies the node-id.

Command Default

None

Command Modes

None

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

The following example restarts the smart licensing process:

```
 RP/0/RP0/CPU0:ios#RP/0/RP0/CPU0:ios(config)#process restart smartlicserver location
0/RP0/CPU0
```

psd

Use the **psd** command to set the target PSDs.

psd *index* *value*

Syntax Description

index	PSD index 1–33.
value	PSD in range -30.0 dBm per 12.5 GHz to 23.0 dBm per 12.5 GHz in increments of 0.1 dBm per 12.5 GHz.

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Usage Guidelines

You can configure the target power spectral densities for 33 points across the band. The 33 PSD values divide the entire spectrum into 150-GHz steps. APC uses the corresponding PSD value if the channel frequency corresponds to a configured point. If the central frequency is not on a configured position, APC computes the target PSD for a channel by extrapolating from the two adjacent steps.

Example

The following is a sample configuration that sets the psd to 15 dB for the setpoints 1 and 2.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#psd 1 150
RP/0/RP0/CPU0:ios(config-olc-ots)#psd 2 150
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

psd-min

Use the **psd-min** command to set the desired minimum PSD.

psd-min *value*

Syntax Description

value	PSD in range -40.0 dBm per 12.5 GHz to 23.0 dBm per 12.5 GHz in increments of 0.1 dBm per 12.5 GHz.

Command Default

The default minimum PSD is –24 dB.

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following is a sample configuration that sets the minimum PSD to –25 dB.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#psd-min -250
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
Tue Apr 26 09:50:12.055 UTC
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

raman-tuning

Use the **raman-tuning** command to disable and enable Raman tuning and to configure Raman gain target manually.

raman-tuning { **disable** | **enable** | { **raman-gain-target** *value* } }

Syntax Description

disable	Disable Automatic Raman Tuner
enable	Enable Automatic Raman Tune

raman-gain-target	Configure Raman Gain Target manually
value	Target Raman Gain in the range 8.0 to 25.0 dB in increments of 0.1 dB.

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Usage Guidelines

You can configure Target Raman Gain of 8.0 to 25.0 dB in multiples of 0.1 dB.

Example

The following is a sample configuration that disables Raman tuning.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#raman-tuning disable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

The following is a sample configuration that enables Raman tuning.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#raman-tuning enable
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

The following is a sample configuration that configures the Raman gain target to 18 dB.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#raman-tuning raman-gain-target 180
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

raman-tx-power

Use the **raman-tx-power** command to set the Raman pump powers manually.

raman-tx-power *pump* **value** *value*

Syntax Description

pump	RAMAN Transmit Pump Instance
value	Power level (in units of 0.01mW). Range: 3500-39000

Command Modes

(config-Ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following is a sample configuration that sets the pump power of the first Raman pump to 211 mW.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#raman-tx-power 1 value 21100
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

reload

To perform the reload operation on the NCS 1010 unit and its modules, use the **reload** command.

reload location *location*

Syntax Description

location | *location*	(Optional) Enter the location for the unit or module which you want to reload.

Command Default

All slots are reloaded.

Command Modes

Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

To reboot the Cisco NCS 1010 system, use the following command.

```
RP/0/RP0/CPU0:ios#reload
Fri Apr 29 06:50:12.312 UTC
Proceed with reload? [confirm]
RP/0/RP0/CPU0:ios#
Preparing system for backup. This may take a few minutes especially for large configurations.
Status report: node0_RP0_CPU0: BACKUP INPROGRESS
Status report: node0_RP0_CPU0: BACKUP HAS COMPLETED SUCCESSFULLY
[Done]
```

To reboot the entire Cisco NCS 1010 system along with its modules, use the following command.

```
RP/0/RP0/CPU0:ios#reload location all noprompt
Fri Jul 15 14:53:25.775 UTC
RP/0/RP0/CPU0:ios#yes
% Invalid input detected at '^' marker.
RP/0/RP0/CPU0:ios#
********Completed Card Reload of all ********
##### Rack reload : all######
################## Iteration under Test : 7 ##############
Waiting for 1000 seconds...
Waiting for 990 seconds...
Waiting for 980 seconds...
Waiting for 970 seconds...
.
.
output snipped
.
.
Waiting for 110 seconds...
Waiting for 100 seconds...
Waiting for 90 seconds...
Waiting for 80 seconds...
Waiting for 70 seconds...
Waiting for 60 seconds...
Waiting for 50 seconds...
Waiting for 40 seconds...
Waiting for 30 seconds...
Waiting for 20 seconds...
Waiting for 10 seconds...
XR Prompt =  RP/0/RP0/CPU0:P2A_DT_08#
Login sucessfull

type is <class 'telnetlib.Telnet'>
clear logging
Fri Jul 15 15:10:17.840 UTC
Clear logging buffer [confirm]
[y/n] :y
RP/0/RP0/CPU0:ios#
********XR Logging Cleared********
********Started Sanity Verification Tests ********
The term length 0 op is term length 0
Fri Jul 15 15:10:17.925 UTC
```

To reboot the Cisco NCS 1010 RP, use the following command.

```
RP/0/RP0/CPU0:ios#reload location 0/RP0 noprompt
Fri Jul 15 18:21:13.785 UTC
RP/0/RP0/CPU0:ios#yes
% Invalid input detected at '^' marker.
RP/0/RP0/CPU0:ios#
********Completed Card Reload of 0/RP0 ********
##### Rack reload : 0/RP0######
################## Iteration under Test : 1 ##############
Waiting for 900 seconds...
Waiting for 890 seconds...
.
.
output snipped
.
.
Waiting for 110 seconds...
Waiting for 100 seconds...
Waiting for 90 seconds...
Waiting for 80 seconds...
Waiting for 70 seconds...
Waiting for 60 seconds...
```

```
Waiting for 50 seconds...
Waiting for 40 seconds...
Waiting for 30 seconds...
Waiting for 20 seconds...
Waiting for 10 seconds...
XR Prompt =  RP/0/RP0/CPU0:ios#
Login sucessfull

type is <class 'telnetlib.Telnet'>
clear logging
Fri Jul 15 18:36:25.996 UTC
Clear logging buffer [confirm]
[y/n] :y
RP/0/RP0/CPU0:ios#
********XR Logging Cleared********
********Started Sanity Verification Tests ********
The term length 0 op is term length 0
Fri Jul 15 18:36:26.062 UTC
```

```
RP/0/RP0/CPU0:ios#reload location 0/0/NXR0 noprompt
Sat Jul 16 05:03:51.547 UTC
RP/0/RP0/CPU0:ios#yes
% Invalid input detected at '^' marker.
RP/0/RP0/CPU0:ios#
********Completed Card Reload of 0/0/NXR0 ********
##### Rack reload : 0/0/NXR0######
################## Iteration under Test : 1 #############
Waiting for 900 seconds...
Waiting for 890 seconds...
Waiting for 880 seconds...
Waiting for 870 seconds...
.
.
output snipped
.
.
Waiting for 40 seconds...
Waiting for 30 seconds...
Waiting for 20 seconds...
Waiting for 10 seconds...
XR Prompt =  RP/0/RP0/CPU0:ios#
Login sucessfull

type is <class 'telnetlib.Telnet'>
clear logging
Sat Jul 16 05:19:03.274 UTC
Clear logging buffer [confirm]
[y/n] :y\
RP/0/RP0/CPU0:ios#
********XR Logging Cleared********
********Started Sanity Verification Tests ********
The term length 0 op is term length 0
Sat Jul 16 05:19:03.350 UTC
```

To warm reboot the Cisco NCS 1010 line card, use the following command.

```
RP/0/RP0/CPU0:ios#reload location 0/0 noprompt
Fri Jul 15 23:42:33.536 UTC
RP/0/RP0/CPU0:ios#yes
% Invalid input detected at '^' marker.
RP/0/RP0/CPU0:ios#
********Completed Card Reload of 0/0 ********
##### Rack reload : 0/0######
################## Iteration under Test : 1 #############
Waiting for 900 seconds...
```

```
Waiting for 890 seconds...
Waiting for 880 seconds...
Waiting for 870 seconds...
.
.
output snipped
.
.
Waiting for 80 seconds...
Waiting for 70 seconds...
Waiting for 60 seconds...
Waiting for 50 seconds...
Waiting for 40 seconds...
Waiting for 30 seconds...
Waiting for 20 seconds...
Waiting for 10 seconds...
XR Prompt =  RP/0/RP0/CPU0:ios#
Login sucessfull

type is <class 'telnetlib.Telnet'>
clear logging
Fri Jul 15 23:57:45.284 UTC
Clear logging buffer [confirm]
[y/n] :y
RP/0/RP0/CPU0:ios#
********XR Logging Cleared********
********Started Sanity Verification Tests ********
The term length 0 op is term length 0
Fri Jul 15 23:57:45.348 UTC
```

To warm reboot the Cisco NCS 1010 RP card, use the following command.

```
RP/0/RP0/CPU0:ios#reload location 0/RP0/CPU0 noprompt
Sat Jul 16 10:25:10.102 UTC
RP/0/RP0/CPU0:ios#yes
% Invalid input detected at '^' marker.
RP/0/RP0/CPU0:ios#
********Completed Card Reload of 0/RP0/CPU0 ********
##### Rack reload : 0/RP0/CPU0######
################## Iteration under Test : 1 ##############
Waiting for 900 seconds...
Waiting for 890 seconds...
Waiting for 880 seconds...
Waiting for 870 seconds...
Waiting for 860 seconds...

.
.
output snipped
.
.
Waiting for 70 seconds...
Waiting for 60 seconds...
Waiting for 50 seconds...
Waiting for 40 seconds...
Waiting for 30 seconds...
Waiting for 20 seconds...
Waiting for 10 seconds...
XR Prompt =  RP/0/RP0/CPU0:P2A_DT_08#
Login sucessfull

type is <class 'telnetlib.Telnet'>
clear logging
Sat Jul 16 10:40:22.211 UTC
Clear logging buffer [confirm]
```

```
[y/n] :y
RP/0/RP0/CPU0:ios#
********XR Logging Cleared********
********Started Sanity Verification Tests ********
The term length 0 op is term length 0
Sat Jul 16 10:40:22.292 UTC
```

server

To allow the system clock to be synchronized by a NTP time server, use the **server** command in one of the NTP configuration modes. To remove the **server** command from the configuration file and restore the system to its default condition with respect to this command, use the **no** form of this command.

server
[**ipv4** | **ipv6**] *ip-address* [**version** *number*] [**key** *key-id*] [**minpoll** *interval*] [**maxpoll** *interval*] [**source** *type* *interface-path-id*] [**prefer**] [**burst**] [**iburst**]
no server
[**ipv4** | **ipv6**] *ip-address*

Syntax Description

ipv4	(Optional) Specifies an IPv4 IP address.
ipv6	(Optional) Specifies an IPv6 IP address.
ip-address	IPv4 or IPv6 address of the time server providing the clock synchronization.
version *number*	(Optional) Defines the Network Time Protocol (NTP) version number, where the *number* argument is a value from 1 to 4. The default is 4.
key *key-id*	(Optional) Defines the authentication key, where the *key-id* argument is the authentication key to use when packets are sent to this peer. By default, no authentication key is used.
minpoll *interval*	(Optional) Defines the shortest polling interval, where the *interval* argument is specified in powers of two seconds. Range is from 4 to 17. The default value is 6.
maxpoll *interval*	(Optional) Defines the longest polling interval, where the *interval* argument is specified in powers of two seconds. Range is from 4 to 17. The default value is 10.
source	(Optional) Specifies the IP source address. The default is the outgoing interface.
type	(Optional) Interface type. For more information, use the question mark (**?**) online help function.
interface-path-id	(Optional) Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the device.
prefer	(Optional) Makes this peer the preferred server that provides synchronization.
burst	(Optional) Sends a series of packets instead of a single packet within each synchronization interval to achieve faster synchronization.

iburst	(Optional) Sends a series of packets instead of a single packet within the initial synchronization interval to achieve faster initial synchronization.

Command Default

No servers are configured by default.

Command Modes

NTP configuration

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

The value for the **minpoll** keyword must be less than or equal to the value for the **maxpoll** keyword. If this is not the case, the system issues an error message.

Using the **prefer** keyword reduces switching back and forth among servers.

Task ID

Task ID	Operations
ip-services	read, write

The following example shows how to configure the device to allow its system clock to be synchronized with the clock of the peer at IP address 203.0.113.51 using NTP.

```
RP/0/RP0/CPU0:ios(config)#ntp
RP/0/RP0/CPU0:ios(config-ntp)#server 203.0.113.51 minpoll 8 maxpoll 12 prefer iburst
```

show access-lists-ipv4

To display the contents of current IPv4 access lists, use the **show access-lists ipv4** command in IOS XR EXEC mode.

show access-lists ipv4 [*access-list-name* **hardware** { **ingress** | **egress** } [**interface** *type interface-path-id*] { **sequence** *number* | **location** *node-id* | [**usage pfilter** { **location** *node-id* }] }]

Syntax Description

access-list-name	(Optional) Name of a particular IPv4 access list. The name cannot contain spaces or quotation marks, but can include numbers.
hardware	(Optional) Identifies the access list as an access list for an interface.
ingress	(Optional) Specifies an inbound interface.

interface	(Optional) Displays interface statistics.
type	(Optional) Interface type.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router.
sequence *number*	(Optional) Sequence number of a particular IPv4 access list. Range is 1 to 2147483644.
location *node-id*	(Optional) Location of a particular IPv4 access list. The *node-id* argument is entered in the *rack/slot/module* notation.
summary	(Optional) Displays a summary of all current IPv4 access lists.
sequence-number	(Optional) Sequence number of a particular IPv4 access list. Range is 1 to 2147483644.
usage	(Optional) Displays the usage of the access list on a given line card.
pfilter	(Optional) Displays the packet filtering usage for the specified line card.

Command Default

The default displays all IPv4 access lists.

Command Modes

IOS XR EXEC

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

Use the **show access-lists ipv4** command to display the contents of all IPv4 access lists. To display the contents of a specific IPv4 access list, use the *name* argument. Use the *sequence-number* argument to specify the sequence number of the access list.

Use the **hardware , ingress** and **location** keywords to display the access list hardware contents and counters for all interfaces that use the specified access list in a given direction. To display the contents of a specific

access list entry, use the **sequence** *number* keyword and argument. The access group for an interface must be configured using the **ipv4 access-group** command for access list hardware counters to be enabled.

Use the **show access-lists ipv4 summary** command to display a summary of all current IPv4 access lists. To display a summary of a specific IPv4 access list, use the *name* argument.

Use the **show access-list ipv4 usage** command to display a summary of all interfaces and access lists programmed on the specified line card.

Task ID

Task ID	Operations
acl	read

Examples

In the following example, the contents of all IPv4 access lists are displayed:

```
RP/0/RP0/CPU0:ios# show access-lists ipv4 acl_1
Fri Oct 20 06:22:17.223 UTC
ipv4 access-list acl_1
10 permit ipv4 172.16.0.0 0.0.255.255 any
20 deny ipv4 192.168.34.0 0.0.0.255 any
```

show access-lists ipv6

To display the contents of current IPv6 access lists, use the **show access-lists ipv6** command in IOS XR EXEC mode.

show access-lists ipv6 [*access-list-name* **hardware** { **ingress** | **egress** } [**interface** *type interface-path-id*] { **sequence** *number* | **location** *node-id* | [**usage pfilter** { **location** *node-id* }] }]

Syntax Description

access-list-name	(Optional) Name of a particular IPv6 access list. The name cannot contain a spaces or quotation marks, but can include numbers.
hardware	(Optional) Identifies the access list as an access list for an interface.
ingress	(Optional) Specifies an inbound interface.
interface	(Optional) Displays interface statistics.
type	(Optional) Interface type.

interface-path-id	(Optional) Either a physical interface instance or a virtual interface instance as follows: • Physical interface instance. Naming notation is *rack/slot/instance/port* and a slash between values is required as part of the notation. • *rack*: Chassis number of the rack. • *slot*: Physical slot number of the modular services card or line card. • *instance*: Module number. • *port*: Physical port number of the interface. • Virtual interface instance. Number range varies depending on interface type.
sequence *number*	(Optional) Sequence number of a particular IPv6 access list. Range is 1 to 2147483644.
location *node-id*	(Optional) Location of a particular IPv6 access list. The *node-id* argument is entered in the *rack/slot/instance* notation.
summary	(Optional) Displays a summary of all current IPv6 access lists.
sequence-number	(Optional) Sequence number of a particular IPv6 access list. Range is 1 to 2147483644.
usage	(Optional) Displays the usage of the access list on a given line card.
pfilter	(Optional) Displays the packet filtering usage for the specified line card.
all	(Optional) Displays the location of all the line cards.

Command Default

Displays all IPv6 access lists.

Command Modes

IOS XR EXEC

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

The **show access-lists ipv6** command is similar to the **show access-lists ipv4** command, except that it is IPv6 specific.

Use the **show access-lists ipv6** command to display the contents of all IPv6 access lists. To display the contents of a specific IPv6 access list, use the *name* argument. Use the *sequence-number* argument to specify the sequence number of the access list.

Use the **hardware , ingress** and **location** keywords to display the access list hardware contents and counters for all interfaces that use the specified access list in a given direction. To display the contents of a specific access list entry, use the **sequence** *number* keyword and argument. The access group for an interface must be configured using the **ipv6 access-group** command for access list hardware counters to be enabled.

Use the **show access-lists ipv6 summary** command to display a summary of all current IPv6 access lists. To display a summary of a specific IPv6 access list, use the *name* argument.

Use the **show access-list ipv6 usage** command to display a summary of all interfaces and access lists programmed on the specified line card.

Task ID

Task ID	Operations
acl	read

Examples

In the following example, the contents of all IPv6 access lists are displayed:

```
RP/0/RP0/CPU0:ios# show access-lists ipv6
Fri Oct 20 05:29:01.125 UTC
ipv6 access-list V6-INGRESS-ACL
10 permit ipv6 any any
20 deny udp any any
```

show alarms

To view alarm information, use the **show alarms** command in XR EXEC mode or Administration EXEC mode.

show alarms [**brief**] [**system**] [**active**]

Syntax Description

brief	Displays alarms in brief.
system	Displays system scope alarms related data.
active	Displays active alarms.

Command Default

None

Command Modes

XR EXEC

Administration EXEC

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Usage Guidelines

This command displays the alarm information. The command displays only the administration alarms in admin EXEC mode and all the alarms in XR EXEC mode.

Example

The following example shows the output of the **show alarms brief system active** command.

```
RP/0/RPO/CPUO:P1AL 05#show alarms brief system active
Thu Feb 9 11:33:03.137 UTC
------------------------------------------------------------------------------------------
```

```
Active Alarms
------------------------------------------------------------------------------------------------
Location          Severity      Group           Set time                    Description
------------------------------------------------------------------------------------------------
0/PM1             Major         Environ         01/25/2023 05:21:37 UTC     Power Module
Error (PM VIN VOLT 00R)

0/PM1 DISABLED)   Major         Environ         01/25/2023 05:21:37 UTC     Power Module
Output Disabled (PM OUTPUT_DISABLED)

RP/0/RPO/CPUO:P1AL 05#RP/0/RPO/CPU:Feb 9 11:33:05.115 UTC: phyl mgmt [152]: %PKT INFRA-FM-2
 -FAULT CRITICAL : AL
ARM CRITICAL : PHYI-MDIO-ACCESS-ERROR : DECLARE : 0: Phyl MDI0 access failure detected
```

show cdp

To display global CDP information (including timer and hold-time information, information about neighboring devices, interfaces on which CDP is enabled, traffic between devices), use the **show cdp** command in EXEC mode.

show cdp { **traffic** | **neighbors** [*type number* | **detail**] | **interface** [*type number*] }

Syntax Description

type	(Optional) Interface type that is connected to the neighbors about which you want information.
number	(Optional) Number of the interface connected to the neighbors about which you want information.
detail	(Optional) Displays detailed information about a neighbor (or neighbors) including network address, enabled protocols, hold time, and software version.
*	Dispalys all CDP neighbors.
device-name *	Name of the neighbor about which you want information. You can enter an optional asterisk (*) at the end of a *device-name* as a wildcard. For example, entering **show cdp entry dev*** will match all device names that begin with **dev**.
version	(Optional) Limits the display to information about the software version running on the device.
protocol	(Optional) Limits the display to information about the protocols enabled on the device.

Command Default

No default behavior or values.

Command Modes

EXEC

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Example

Use the **show cdp** command to display global CDP information.

```
RP/0/RP0/CPU0:ios#show cdp
Tue Feb 14 16:59:38.255 UTC
Global CDP information:
        Sending CDP packets every 60 seconds
        Sending a holdtime value of 180 seconds
        Sending CDPv2 advertisements is enabled
```

Use the **show cdp neighbors** command to display detailed information about neighboring devices discovered using CDP.

```
RP/0/RP0/CPU0:R2#show cdp neighbors mgmtEth 0/RP0/CPU0/1
Mon Apr 10 12:30:30.902 UTC
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater

Device ID       Local Intrfce    Holdtme Capability Platform  Port ID
R1              Mg0/RP0/CPU0/1   172     R          NCS1010   Mg0/RP0/CPU0/1
RP/0/RP0/CPU0:R2#show cdp neighbors
Mon Apr 10 12:30:39.251 UTC
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater

Device ID       Local Intrfce    Holdtme Capability Platform  Port ID
R1              Mg0/RP0/CPU0/1   164     R          NCS1010   Mg0/RP0/CPU0/1
```

```
RP/0/RP0/CPU0:R2#show cdp neighbors mgmtEth 0/RP0/CPU0/1 detail
Mon Apr 10 12:31:23.622 UTC

-------------------------
Device ID: R1
SysName : R1
Entry address(es):
  IPv4 address: 192.168.0.2
  IPv6 address: 2000:110::1
Platform: cisco NCS1010,  Capabilities: Router
Interface: MgmtEth0/RP0/CPU0/1
Port ID (outgoing port): MgmtEth0/RP0/CPU0/1
Holdtime : 120 sec

Version :
7.10.1.19I

advertisement version: 2
Duplex: full
```

Use the **show cdp entry** *entry-name* command to display information about a specific neighboring device or all the neighboring devices discovered using CDP.

```
RP/0/RP0/CPU0:R2#show cdp entry R1
Mon Apr 10 12:22:22.564 UTC

-------------------------
Device ID: R1
SysName : R1
Entry address(es):
  IPv4 address: 192.168.0.2
  IPv6 address: 2000:110::1
Platform: cisco NCS1010,  Capabilities: Router
Interface: MgmtEth0/RP0/CPU0/1
Port ID (outgoing port): MgmtEth0/RP0/CPU0/1
Holdtime : 121 sec
```

```
Version :
7.10.1.19I

advertisement version: 2
Duplex: full


RP/0/RP0/CPU0:R2#show cdp entry *
Mon Apr 10 12:24:59.927 UTC

-------------------------
Device ID: R1
SysName : R1
Entry address(es):
  IPv4 address: 192.168.0.2
  IPv6 address: 2000:110::1
Platform: cisco NCS1010,  Capabilities: Router
Interface: MgmtEth0/RP0/CPU0/1
Port ID (outgoing port): MgmtEth0/RP0/CPU0/1
Holdtime : 143 sec

Version :
7.10.1.19I

advertisement version: 2
Duplex: full
```

Use the **show cdp interface** [*interface-name*] command to display information about the interfaces on which CDP is enabled.

```
RP/0/RP0/CPU0:R2#show cdp interface Mg0/RP0/CPU0/1
Mon Apr 10 12:24:27.253 UTC
MgmtEth0/RP0/CPU0/1 is Up
  Encapsulation ether
  Sending CDP packets every 60 seconds
  Holdtime is 180 seconds
```

Use the **show cdp traffic** command to display information about the traffic gathered between devices using CDP.

```
RP/0/RP0/CPU0:ios#show cdp traffic
Mon Apr 10 12:32:09.247 UTC

CDP counters :
        Packets output: 11, Input: 5
        Hdr syntax: 0, Chksum error: 0, Encaps failed: 0
        No memory: 0, Invalid packet: 0, Truncated: 0
        CDP version 1 advertisements output: 0, Input: 0
        CDP version 2 advertisements output: 11, Input: 5
        Unrecognize Hdr version: 0, File open failed: 0
```

show configuration commit changes

To display the changes made to the running configuration by previous configuration commits, a configuration commit, or for a range of configuration commits, use the **show configuration commit changes** command in EXEC, administration EXEC, administration configuration, or global configuration mode.

show configuration commit changes { *commit-id* | **since** *commit-id* | **last** *number-of-commits* | **original** *last-modified* } [**diff**]

Syntax Description

since	Displays all changes committed to the running configuration since (and including) a specific configuration commit.
commit-id	Displays configuration changes for a specific configuration commit.
last *number-of-commits*	Displays the changes made to the running configuration during the last number of configuration commits specified for the *number-of-commits* argument.
original *last-modified*	Displays the original content of the actual commit operation before policy modifications by commit scripts.
diff	(Optional) Displays added lines, changed lines, and deleted lines.

Command Default

None

Command Modes

EXEC

Administration EXEC

Administration configuration

Global configuration

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

Each time a configuration is committed with the **commit** command, the configuration commit operation is assigned a commit ID. The **show configuration commit changes** command displays the configuration changes made since the specified commit.

To display a list of the available commit IDs, enter the **show configuration commit list** command. You can also display the commit IDs by entering the **show configuration commit changes** command with the online help function (**?**).

You cannot view commit IDs from a different release if the syntax or semantics of the configuration changed in the current release.

Note Syntax of a configuration refers to its structure and format, while the semantics of a configuration refers to its backend interpretation.

The following example shows sample output from the **show configuration commit changes** command with the *commit-id* argument. In this example, the output displays the changes made in the configuration commit assigned commit ID 1000000006.

```
RP/0/RP0/CPU0:ios#show configuration commit changes 1000000006
Building configuration...

controller Ots0/0/0/0
 raman-osri off
 raman-force-apr off
 raman-tx-power 1 value 22300
 raman-tx-power 2 value 26800
 raman-tx-power 3 value 6400
 raman-tx-power 4 value 12900
 raman-tx-power 5 value 19000
 raman-safety-control-mode auto
!
end
```

The following example shows sample output from the **show configuration commit changes** command with the **since** *commit-id* keyword and argument. In this example, the output displays the configuration changes made since the configuration commit assigned commit ID 1000000006 was committed.

```
RP/0/RP0/CPU0:ios#show configuration commit changes since 1000000006
Tue Feb 28 11:41:04.643 UTC
Building configuration...
controller Ots0/0/0/0
 otdr rx auto reflectance-threshold -45
 otdr rx auto splice-loss-threshold 200
 otdr rx auto excess-reflection-threshold -20
 otdr rx expert capture-end 8000000
 otdr rx expert pulse-width 20000
 otdr rx expert capture-start 5000000
 otdr rx expert scan-duration 160
 otdr rx back-scattering -8200
 otdr rx refractive-index 1468000
 otdr tx auto reflectance-threshold -48
 otdr tx auto splice-loss-threshold 250
 otdr tx auto excess-reflection-threshold -22
 otdr tx expert capture-end 9000000
 otdr tx expert pulse-width 5000
 otdr tx expert capture-start 6000000
 otdr tx back-scattering -8300
 otdr tx refractive-index 1468200
 otdr scan-mode expert
 raman-osri off
 raman-force-apr off
 raman-tx-power 1 value 22300
 raman-tx-power 2 value 26800
 raman-tx-power 3 value 6400
 raman-tx-power 4 value 12900
 raman-tx-power 5 value 19000
 raman-safety-control-mode auto
```

```
!
end
```

The following example shows sample output from the **show configuration commit changes** command with the **diff** keyword. In the display, the following symbols signify changes:

+ indicates an added line.

– indicates a deleted line.

# indicates a modified line.

```
RP/0/RP0/CPU0:R1#show configuration commit changes since 1000000006 diffBuilding
configuration...
+  controller Ots0/0/0/0
+   otdr rx auto reflectance-threshold -45
+   otdr rx auto splice-loss-threshold 200
+   otdr rx auto excess-reflection-threshold -20
+   otdr rx expert capture-end 8000000
+   otdr rx expert pulse-width 20000
+   otdr rx expert capture-start 5000000
+   otdr rx expert scan-duration 160
+   otdr rx back-scattering -8200
+   otdr rx refractive-index 1468000
+   otdr tx auto reflectance-threshold -48
+   otdr tx auto splice-loss-threshold 250
+   otdr tx auto excess-reflection-threshold -22
+   otdr tx expert capture-end 9000000
+   otdr tx expert pulse-width 5000
+   otdr tx expert capture-start 6000000
+   otdr tx back-scattering -8300
+   otdr tx refractive-index 1468200
+   otdr scan-mode expert
+   raman-osri off
+   raman-force-apr off
+   raman-tx-power 1 value 22300
+   raman-tx-power 2 value 26800
+   raman-tx-power 3 value 6400
+   raman-tx-power 4 value 12900
+   raman-tx-power 5 value 19000
+   raman-safety-control-mode auto
+  !
end


RP/0/RP0/CPU0:ios#show configuration commit changes all
Tue Feb 28 11:38:42.876 UTC

 Commit ID :  1000000001
-------------------------------------------------------
Building configuration...
username cisco
 group root-lr
 group cisco-support
 secret 10
$6$PAYio/1d9RuG5o/.$daupPZwNJCuPsJqAGa8IlhAq8U1O2Qa8UdtVszjh4MaRWixFfGvNfFq/FPB36DH07v77oCOssLTZ4LUxN88QT.
!
end


 Commit ID :  1000000002
-------------------------------------------------------
```

```
Building configuration...
call-home
 service active
 contact smart-licensing
 profile CiscoTAC-1
  active
  destination transport-method email disable
  destination transport-method http
 !
!
end


 Commit ID :  1000000003
------------------------------------------------------
Building configuration...

hostname R1
logging console disable
line console
 exec-timeout 0 0
 absolute-timeout 0
 session-timeout 0
!
line default
 exec-timeout 0 0
 absolute-timeout 0
 session-timeout 0
!
end


 Commit ID :  1000000004
------------------------------------------------------
Building configuration...

line console
 exec-timeout 0 0
 absolute-timeout 0
 session-timeout 0
!
line default
 exec-timeout 0 0
 absolute-timeout 0
 session-timeout 0
!
end


 Commit ID :  1000000005
------------------------------------------------------
Building configuration...

controller Ots0/0/0/0
 egress-ampli-br enable
 egress-ampli-force-apr off
 egress-ampli-osri off
 egress-ampli-tilt 11
 egress-ampli-br-high-threshold -170
 ingress-ampli-force-apr off
 egress-ampli-gain 190
 ingress-ampli-osri off
 ingress-ampli-tilt -11
 ingress-ampli-gain 200
```

```
 ingress-ampli-gain-range normal
 egress-ampli-safety-control-mode auto
 ingress-ampli-safety-control-mode auto
!
end


 Commit ID :  1000000006
-------------------------------------------------------
Building configuration...

controller Ots0/0/0/0
 raman-osri off
 raman-force-apr off
 raman-tx-power 1 value 22300
 raman-tx-power 2 value 26800
 raman-tx-power 3 value 6400
 raman-tx-power 4 value 12900
 raman-tx-power 5 value 19000
 raman-safety-control-mode auto
!
end


 Commit ID :  1000000007
-------------------------------------------------------
Building configuration...

controller Ots0/0/0/0
 otdr rx auto reflectance-threshold -45
 otdr rx auto splice-loss-threshold 200
 otdr rx auto excess-reflection-threshold -20
 otdr rx expert capture-end 8000000
 otdr rx expert pulse-width 20000
 otdr rx expert capture-start 5000000
 otdr rx expert scan-duration 160
 otdr rx back-scattering -8200
 otdr rx refractive-index 1468000
 otdr tx auto reflectance-threshold -48
 otdr tx auto splice-loss-threshold 250
 otdr tx auto excess-reflection-threshold -22
 otdr tx expert capture-end 9000000
 otdr tx expert pulse-width 5000
 otdr tx expert capture-start 6000000
 otdr tx back-scattering -8300
 otdr tx refractive-index 1468200
 otdr scan-mode expert
!
end
```

show controllers

To display status and configuration information about the interfaces on a specific node, use the **show controllers** command in XR EXEC mode.

Show controllers [**description**] [*Controller-type R/S/I/P*] [**spectrum-info**] [**otdr-info** *direction*] [**tone-info**]

Syntax Description

description	Displays the controller status.
Controller-type R/S/I/P	Rack/Slot/Instance/Port of the controller.
spectrum-info	Displays the Optical Channel Monitoring (OCM) raw data at slice level, such as Tx-power and Rx-power.
otdr-info	Displays the OTDR scan status and location of the SOR file, and the OTDR events.
direction	Scan direction (RX or TX)
tone-info	Displays the Tone Generation parameters that are set for connection verification and the status of the connection verification operation.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

To view the OTS controller status on the ILA cards, use the sh controller description command.

```
RP/0/RP0/CPU0:ios#sh controller description
Fri Mar 25 09:24:53.386 UTC
Interface Status Description
--------------------------------------------------------------------------------
Osc0/0/0/0 up
Osc0/0/0/2 up
Ots0/0/0/0 up
Ots0/0/0/1 up
Ots0/0/0/2 up
Ots0/0/0/3 up
RP/0/RP0/CPU0:ios#
```

To view the parameters of the LINE 0 OTS controller, use the following command:

```
RP/0/RP0/CPU0:ios#sh controllers ots 0/0/0/0
Wed Mar 23 06:00:37.097 UTC
Controller State: Up
Transport Admin State: In Service
LED State: Red
Alarm Status:
-------------
Detected Alarms:
RX-LOS-P
EGRESS-AUTO-LASER-SHUT
HIGH-RX-BR-PWR
```

```
Alarm Statistics:
-----------------
LOW-TX-PWR = 0
RX-LOS-P = 1
RX-LOC = 1
TX-POWER-FAIL-LOW = 1
INGRESS-AUTO-LASER-SHUT = 0
INGRESS-AUTO-POW-RED = 0
INGRESS-AMPLI-GAIN-LOW = 0
INGRESS-AMPLI-GAIN-HIGH = 0
EGRESS-AUTO-LASER-SHUT = 1
EGRESS-AUTO-POW-RED = 0
EGRESS-AMPLI-GAIN-LOW = 0
EGRESS-AMPLI-GAIN-HIGH = 0
HIGH-TX-BR-PWR = 0
HIGH-RX-BR-PWR = 1
SPAN-TOO-SHORT-TX = 0
SPAN-TOO-SHORT-RX = 0
Parameter Statistics:
---------------------
Total RX Power(C+L) = -50.00 dBm
Total TX Power(C+L) = -50.00 dBm
Total RX Power = -50.00 dBm
Total TX Power = -50.00 dBm
RX Signal Power = -50.00 dBm
TX Signal Power = -50.00 dBm
TX Voa Attenuation = 0.0 dB
Ingress Ampli Gain = -1.1 dB
Ingress Ampli Tilt = 0.0 dB
Ingress Ampli Gain Range = Normal
Ingress Ampli Safety Control mode = auto
Ingress Ampli Osri = OFF
Ingress Ampli Force Apr = OFF
Egress Ampli Gain = -0.7 dB
Egress Ampli Tilt = 0.0 dB
Egress Ampli Safety Control mode = auto
Egress Ampli Osri = OFF
Egress Ampli Force Apr = OFF
Configured Parameters:
-------------
TX Voa Attenuation = 0.0 dB
Ingress Ampli Gain = 10.9 dB
Ingress Ampli Tilt = 0.0 dB
Ingress Ampli Gain Range = Normal
Ingress Ampli Safety Control mode = auto
Ingress Ampli Osri = OFF
Ingress Ampli Force Apr = OFF
Egress Ampli Gain = 15.3 dB
Egress Ampli Tilt = 0.0 dB
Egress Ampli Safety Control mode = auto
Egress Ampli Osri = OFF
Egress Ampli Force Apr = OFF
RP/0/RP0/CPU0:ios#
```

Example

To view the raw OCM data (slice level channel power) use the following commands:

```
RP/0/RP0/CPU0:ios#sh controllers ots 0/0/0/0 spectrum-info
Fri Feb 4 13:12:49.841UTC
Spectrum Slices spacing        :           3.125 GHz
Spectrum Slices Range          :           1 - 1548
Slice start wavelength         :           1566.82 nm
```

```
Slice start frequency          :            191337.50 GHz
Spectrum power information :
Rx power :
-------------------------------------------------------------------------------
spectrum-slice num                        Rx-power values (dBm)
-------------------------------------------------------------------------------
   1 - 12               -88.8  -88.8  -88.8  -88.8      -88.8  -88.8  -88.8  -88.8
-88.8  -88.8  -88.8  -88.8
  13 - 24               -88.8  -88.8  -88.8  -88.8      -88.8  -88.8  -88.8  -88.8
-88.8  -88.8  -88.8  -88.8
…....
…....
…....
1537 - 1548             -88.8  -88.8  -88.8  -88.8      -88.8  -88.8  -88.8  -88.8
-88.8  -88.8  -88.8  -88.8
-------------------------------------------------------------------------------
Tx power :
-------------------------------------------------------------------------------
spectrum-slice num                        Tx-power values (dBm)
-------------------------------------------------------------------------------
1 - 12                -9.5   -7.3   -6.0   -5.2       -4.9   -4.8   -4.6   -4.4       -4.4
   -4.4   -4.4   -4.4
13 - 24               -4.4   -4.5   -4.6   -4.8       -5.1   -5.5   -6.4   -7.7       -9.6
  -12.0  -13.2  -11.4
25 - 36               -9.2   -7.7   -6.7   -6.2       -6.0   -5.9   -5.7   -5.6       -5.6
   -5.5   -5.4   -5.4
37 - 48               -5.3   -5.3   -5.4   -5.5       -5.8   -6.1   -6.6   -7.3       -8.6
  -10.4  -12.2  -11.8
…...
…...
…...
1525 - 1536             -2.4   -2.4   -2.4   -2.4       -2.4   -2.3   -2.3   -3.0
-4.2   -6.5  -10.3  -14.9
1537 - 1548             -19.3  -22.6  -24.3  -25.3      -26.1  -26.6  -27.1  -27.6
-27.9  -28.2  -28.4  -28.6
```

To view the OTDR scan status and events use the following commands:

```
RP/0/RP0/CPU0:ios#show controllers ots 0/0/0/0 otdr-info rx
Wed Feb  9 05:55:19.791 UTC
        Scan Direction: RX
        Scan Status: Data Ready
        SOR file: /harddisk:/otdr/P1D_DT_01_NCS1010_OTDR_Ots0_0_0_0_RX_20220209-055045.sor

        Total Events detected: 11
        Scan Timestamp: Wed Feb  9 05:50:45 2022 UTC
        Event Type Legend:  NR:Non-Reflective  R:Reflective  FE:Fiber-End
ER:Excess-Reflection
Event# | Detected Event(s) | Location(km) | Accuracy(m) | Magnitude(dB) | Attenuation/km(dB)
1      | R                 | 50.4709      | 52.47       | -39.87        | 0.18
2      | NR                | 50.4709      | 52.47       | 1.17          | 0.18
3      | R                 | 100.9261     | 102.92      | -37.73        | 0.21
4      | NR                | 100.9261     | 102.92      | 1.01          | 0.21
5      | R                 | 105.9500     | 107.94      | -38.52        | 0.24

6      | NR                | 105.9500     | 107.94      | 0.85          | 0.24

7      | R                 | 112.7458     | 114.74      | -40.56        | 0.00

8      | NR                | 112.7458     | 114.74      | 1.48          | 0.00

9      | NR                | 117.9873     | 119.98      | 0.66          | -0.02

10     | R FE              | 120.1206     | 122.12      | -35.55        | 0.00
```

```
        11      | NR FE              | 120.1206      | 122.12       | 21.65          | 0.00
```

The following sample displays the Optical Return Loss as part of the OTDR status:

```
RP/0/RP0/CPU0:NCS1010#show controllers Ots 0/0/0/2 otdr-info rx
Mon Oct  2 11:55:48.552 UTC
        Scan Direction: RX
        Scan Status: Data Ready
        Optical Return Loss: 39.0 dB
        SOR file: /harddisk:/otdr/NCS1010_NCS1010_OTDR_Ots0_0_0_2_RX_20231001-110754.sor
        Total Events detected: 8
        Scan Timestamp: Sun Oct  1 11:07:54 2023 UTC
        Event Type Legend:  NR:Non-Reflective  R:Reflective  FE:Fiber-End
ER:Excess-Reflection EA:Excess-Attenuation

 Event# |  Detected Event(s) |  Location(m) |  Accuracy(m) |  Magnitude(dB) |
Attenuation/km(dB)
 1      |  NR EA             |  4.4100      |  2.00        |  0.69          |  0.00

 2      |  NR                |  664.3200    |  2.66        |  0.21          |  0.00

 3      |  R ER              |  18222.3900  |  20.22       |  -33.78        |  0.19

 4      |  NR                |  18222.3900  |  20.22       |  0.35          |  0.19
 5      |  R ER              |  68674.4800  |  70.67       |  -32.25        |  0.20

 6      |  NR                |  68674.4800  |  70.67       |  0.36          |  0.20
 7      |  R FE ER           |  118765.2600 |  120.76      |  -28.55        |  0.23
 8      |  NR FE             |  118765.2600 |  120.76      |  25.86         |  0.23
```

To view the parameter values set for Tone Generation and the status of connection verification on port 4 OTS controller, use the following command:

```
RP/0/RP0/CPU0:ios#show controllers ots 0/0/0/4 tone-info
Fri Sep 15 14:53:22.579 UTC
Tone Info:
Tone Frequency : 191.3750000 THz
Tone Rate : 2 bits/second
Tone Pattern(Hex value) : abcd1234
Tone Pattern Expected(Hex value) : abcd1234
Tone Pattern Received(Hex value) : 00000000
Tone Detected OOB :  Enabled
 Detection State: Inprogress
```

To view the parameter values set for Tone Generation and the status of connection verification on port 4 OMS controller, use the following command:

```
RP/0/RP0/CPU0:#show controllers oms 0/0/0/4 tone-info
Tue May 10 11:41:18.847 UTC
Tone Info:
Tone Rate : 25 bits/second
Tone Pattern Expected(Hex value) : abcd1234
Tone Pattern Received(Hex value) : abcd1234
Tone Detected OOB : Enabled
Detection State: Success
```

To view the parameter values set for Tone Generation and the status of connection verification on port 4 OCH controller, use the following command:

```
RP/0/RP0/CPU0:#show controllers och 0/0/0/4 tone-info
Tue May 10 11:41:18.847 UTC
Tone Info:
Tone Rate : 25 bits/second
Tone Pattern Expected(Hex value) : abcd1234
```

```
Tone Pattern Received(Hex value) : abcd1234
Tone Detected OOB : Enabled
Detection State: Success
```

show controllers raman-info

To view the individual Raman pump information and other parameters, use the **show controllers ots r/s/i/p raman-info** command.

show controllers ots *R/S/I/P* **raman-info**

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.

Command Modes

User EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following sample shows the output of the **show controllers ots r/s/i/p raman-info** command.

```
RP/0/RP0/CPU0:ios#show controllers ots 0/0/0/0 raman-info
Fri Apr  1 06:40:33.849 UTC

         Alarm Status:
         -------------
         Detected Alarms: None


         Alarm Statistics:
         -----------------
         RAMAN-AUTO-POW-RED = 0
         RAMAN-1-LOW-POW = 0
         RAMAN-2-LOW-POW = 0
         RAMAN-3-LOW-POW = 0
         RAMAN-4-LOW-POW = 0
         RAMAN-5-LOW-POW = 0
         RAMAN-1-HIGH-POW = 1
         RAMAN-2-HIGH-POW = 0
         RAMAN-3-HIGH-POW = 0
         RAMAN-4-HIGH-POW = 0
         RAMAN-5-HIGH-POW = 0

         Parameter Statistics:
         ---------------------
         Raman Safety Control mode = auto
         Raman Osri = OFF
         Raman Force Apr = OFF
         Composite Raman Power = 886.60 mW

         RAMAN Pump Info:
         ---------------------
```

```
Instance        Wavelength(nm)   Power(mW)
 1               1424.00                 257.60
 2               1438.00                 255.10
 3               1457.00                 71.60
 4               1470.00                 127.50
 5               1495.00                 170.10


Configured Parameters:
------------
Raman Safety Control mode = auto
Raman Osri = OFF
Raman Force Apr = OFF

RAMAN Pump Info:
--------------------
Instance        Power(mW)
 1               45.00
 2               40.00
 3               40.00
 4               40.00
 5               35.00
```

show environment

To display environmental monitor parameters for the system, use the **show environment** command.

show environment [**alarm-contact** | **all** | **altitude** | **current** | **fan** | **humidity** | **power** | **voltages** [**location** | *location*] | **temperature** [**location** | *location*]]

Syntax Description

alarm-contact	(Optional) Displays information about the alarm ports.
all	(Optional) Displays information for all the environmental monitor parameters.
altitude	(Optional) Displays information about the altitude.
current	(Optional) Displays current sensor information.
fan	(Optional) Displays information about the fans.
humidity	(Optional) Displays information about the humidity.
power	(Optional) Displays power supply voltage and current information.
temperature	(Optional) Displays system temperature information.
voltages	(Optional) Displays system voltage information.
location | *location*	(Optional) Enter the location for which the environmental information needs to be displayed.

Command Default

All environmental monitor parameters are displayed.

Command Modes

Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

The **show environment** command displays information about the hardware that is installed in the system, including fans, power supply voltage, current information, and temperatures.

Example

The following example shows sample output from the **show environment** command with the **fan** keyword.

sysadmin-vm:0_RP0# **show environment fan**

```
Thu May 26 04:15:37.765 UTC
================================================================================
                                                 Fan speed (rpm)
Location      FRU Type                           FAN_0    FAN_1   FAN_2
--------------------------------------------------------------------------------

0/PM0         NCS1010-AC-PSU                      5368
0/PM1         NCS1010-AC-PSU                      5336
0/FT0         NCS1010-FAN                        10020   10020   10020
0/FT1         NCS1010-FAN                        10020   10020    9960

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

The following example shows sample output from the **show environment** command with the **temperature** keyword.

sysadmin-vm:0_RP0# **show environment temperature location 0/RP0**

```
Thu May 26 04:16:39.832 UTC
=============================================================================================================
Location  TEMPERATURE                          Value     Crit    Major    Minor    Minor    Major
Crit
          Sensor                             (deg C)     (Lo)     (Lo)     (Lo)     (Hi)     (Hi)
(Hi)
-------------------------------------------------------------------------------------------------------------
0/RP0/CPU0
          RP_TEMP_PCB                          30      -10       -5        0       70       75
80
          RP_TEMP_HOT_SPOT                     33      -10       -5        0       70       75
80
          RP_TEMP_LTM4638                      49      -10       -5        0       80       85
90
          RP_TEMP_LTM4644_0                    36      -10       -5        0       80       85
90
          RP_TEMP_LTM4644_1                    39      -10       -5        0       80       85
90
          RP_JMAC_1V0_VCCP_TMON                33      -10       -5        0       80       85
90
          RP_JMAC_1V0_VNN_TMON                 33      -10       -5        0       80       85
90
          RP_JMAC_1V0_VCC_RAM_TMON             32      -10       -5        0       80       85
90
          RP_JMAC_1V2_DDR_VDDQ_TMON            33      -10       -5        0       80       85
90
=============================================================================================================
```

The following example shows sample output from the **show environment** command with the **power** keyword.

sysadmin-vm:0_RP0# **show environment power**

```
Thu May 26 04:17:55.592 UTC
==============================================================================
CHASSIS LEVEL POWER INFO: 0
==============================================================================
   Total output power capacity (Group 0 + Group 1) :    1050W +     1050W
   Total output power required                     :     700W
   Total power input                               :     228W
   Total power output                              :     140W

Power Group 0:
==============================================================================
   Power       Supply         ------Input----   ------Output---     Status
   Module      Type            Volts     Amps    Volts     Amps
==============================================================================
   0/PM0       NCS1010-AC-PSU  228.5     0.5     12.1      5.6      OK

Total of Group 0:              114W/0.5A         67W/5.6A

Power Group 1:
==============================================================================
   Power       Supply         ------Input----   ------Output---     Status
   Module      Type            Volts     Amps    Volts     Amps
==============================================================================
   0/PM1       NCS1010-AC-PSU  228.5     0.5     12.1      6.1      OK

Total of Group 1:              114W/0.5A         73W/6.1A

==============================================================================
   Location     Card Type               Power       Power        Status
                                        Allocated   Used
                                        Watts       Watts
==============================================================================
   0/RP0/CPU0   NCS1010-CNTLR-K9        90          14           ON
   0/FT0        NCS1010-FAN             110         17           ON
   0/FT1        NCS1010-FAN             110         15           ON
   0/0/NXR0     NCS1K-OLT-C             350         61           ON
   0/Rack       NCS1010-SA              40          19           ON


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

The following example shows sample output from the **show environment** command with the **voltages** keyword.

sysadmin-vm:0_RP0# **show environment voltages location 0/RP0**

```
Thu May 26 04:19:16.636 UTC
=============================================================================================================
Location  VOLTAGE                                Value      Crit    Minor    Minor     Crit
          Sensor                                 (mV)       (Lo)    (Lo)     (Hi)      (Hi)
-------------------------------------------------------------------------------------------------------------
0/RP0/CPU0
          RP_ADM1266_12V0                       12094    10800    11280    12720    13200
          RP_ADM1266_1V8_CPU                     1806     1670     1750     1850     1930
          RP_ADM1266_1V24_VCCREF                 1238     1150     1200     1280     1330
          RP_ADM1266_1V05_CPU                    1047      980     1020     1080     1120
          RP_ADM1266_1V2_DDR_VDDQ                1204     1120     1160     1240     1280
          RP_ADM1266_1V0_VCC_RAM                  988      650      700     1250     1300
          RP_ADM1266_1V0_VNN                      869      550      600     1250     1300
          RP_ADM1266_1V0_VCCP                    1018      450      500     1250     1300
          RP_ADM1266_0V6_DDR_VTT                  599      560      580      620      640
          RP_ADM1266_3V3_STAND_BY                3301     3070     3200     3400     3530
          RP_ADM1266_5V0                         5004     4650     4850     5150     5350
          RP_ADM1266_3V3                         3325     3070     3200     3400     3530
          RP_ADM1266_2V5_PLL                     2489     2330     2430     2580     2680
          RP_ADM1266_2V5_FPGA                    2502     2330     2430     2580     2680
          RP_ADM1266_1V2_FPGA                    1202     1120     1160     1240     1280
```

```
          RP_ADM1266_3V3_CPU                  3332     3070     3200     3400     3530
          RP_ADM1266_2V5_CPU                  2498     2330     2430     2580     2680

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

The following example shows a sample output of the **show environment current** command.

```
RP/0/RP0/CPU0:P2C_DT_02#show environment current
Tue Jul  5 08:36:22.132 UTC
=====================================================
Location  CURRENT                                Value
          Sensor                                 (mA)
-----------------------------------------------------
0/RP0/CPU0
          RP_CURRMON_LTM4638                      395
          RP_CURRMON_LTM4644_0                    179
          RP_CURRMON_LTM4644_1                    307
          RP_JMAC_1V0_VCCP_IMON                   187
          RP_JMAC_1V0_VNN_IMON                     62
          RP_JMAC_1V0_VCC_RAM_IMON                  0
          RP_JMAC_1V2_DDR_VDDQ_IMON               187
0/Rack
          SA_ADM1275_12V_MOD0_IMON               4154
          SA_ADM1275_12V_MOD1_IMON                 43
          SA_ADM1275_12V_MOD2_IMON                 18
          SA_ADM1275_12V_FAN0_IMON               1356
          SA_ADM1275_12V_FAN1_IMON               1517
          SA_INA230_5V0_IMON                      129
          SA_INA230_3V3_IMON                     2998
          SA_INA230_1V0_XGE_CORE_IMON            2464
          SA_INA230_1V0_FPGA_CORE_IMON            787
          SA_ADM1275_12V_SA_IMON                 1668
          SA_ADM1275_12V_CPU_IMON                1147
```

The following example shows a sample output from the **show environment altitude** command.

```
RP/0/RP0/CPU0:P2C_DT_02#show environment altitude
Tue Jul  5 08:36:51.710 UTC
================================================================================
Location     Altitude Value (Meters)    Source
--------------------------------------------------------------------------------
0            760                     sensor
```

The following example shows sample output from the **show environment** command.

sysadmin-vm:0_RP0# **show environment**

```
Thu May 26 04:20:09.507 UTC
=============================================================================================================
Location  TEMPERATURE                            Value     Crit    Major    Minor    Minor
  Major    Crit
          Sensor                               (deg C)     (Lo)     (Lo)     (Lo)     (Hi)
   (Hi)    (Hi)
-------------------------------------------------------------------------------------------------------------
0/RP0/CPU0
          RP_TEMP_PCB                            30      -10       -5        0       70
    75       80
          RP_TEMP_HOT_SPOT                       33      -10       -5        0       70
    75       80
          RP_TEMP_LTM4638                        49      -10       -5        0       80
    85       90
          RP_TEMP_LTM4644_0                      36      -10       -5        0       80
    85       90
          RP_TEMP_LTM4644_1                      39      -10       -5        0       80
    85       90
          RP_JMAC_1V0_VCCP_TMON                  33      -10       -5        0       80
```

```
     85       90
            RP_JMAC_1V0_VNN_TMON                33       -10       -5        0        80
     85       90
            RP_JMAC_1V0_VCC_RAM_TMON            32       -10       -5        0        80
     85       90
            RP_JMAC_1V2_DDR_VDDQ_TMON           34       -10       -5        0        80
     85       90
0/PM0
            Ambient Temp                        30       -10       -5        0        55
     60       65
            Secondary HotSpot Temp              49       -10       -5        0        65
     70       75
            Primary HotSpot Temp                40       -10       -5        0        85
     90       95
0/PM1
            Ambient Temp                        29       -10       -5        0        55
     60       65
            Secondary HotSpot Temp              48       -10       -5        0        65
     70       75
            Primary HotSpot Temp                40       -10       -5        0        85
     90       95
0/0/NXR0
            OLTC_LT_P0_iEDFA0                   24        18        19       20        30
     31       32
            OLTC_LT_P0_iEDFA1                   25        18        19       20        30
     31       32
            OLTC_LT_P0_iEDFA2                   24        18        19       20        30
     31       32
            OLTC_LT_P2_iEDFA0                   25        18        19       20        30
     31       32
            OLTC_LT_P3_iEDFA0                   25        18        19       20        30
     31       32
            OLTC_LT_P0_eEDFA0                   24        18        19       20        30
     31       32
            OLTC_CT_1                           32       -10       -7        -5        75
     77       80
            OLTC_LT_P0_eEDFA1                   24        18        19       20        30
     31       32
            OLTC_CT_2                           27       -10       -7        -5        70
     73       75
            OLTC_CT_3                           30       -10       -7        -5        70
     73       75
            OLTC_CT_4                           30       -10       -7        -5        70
     73       75
            OLTC_FT_P0_iEDFA0                   60        55        57       58        62
     64       65
            OLTC_FT_P2_iEDFA0                   60        55        57       58        62
     64       65
            OLTC_FT_P3_iEDFA0                   60        55        57       58        62
     64       65
            OLTC_FT_P0_eEDFA0                   60        55        57       58        62
     64       65
0/Rack
            SA_TEMP_AIR_INLET0                  27       -10       -5        0        45
     55       60
            SA_TEMP_AIR_INLET1                  28       -10       -5        0        45
     55       60
            SA_TEMP_AIR_EXAUST0                 30       -10       -5        0        75
     85       90
            SA_TEMP_AIR_EXAUST1                 28       -10       -5        0        75
     85       90
            SA_TEMP_PCB_HOT_SPOT0               31       -10       -5        0        80
     85       90
            SA_TEMP_PCB_HOT_SPOT1               34       -10       -5        0        80
```

```
    85       90
          SA_TEMP_PCB_HOT_SPOT2                31      -10       -5        0       80
    85       90
          SA_TEMP_PCB_HOT_SPOT3                32      -10       -5        0       80
    85       90
==============================================================================================================
Location  VOLTAGE                              Value      Crit     Minor     Minor      Crit
          Sensor                               (mV)       (Lo)     (Lo)      (Hi)       (Hi)
--------------------------------------------------------------------------------------------------------------
0/RP0/CPU0
          RP_ADM1266_12V0                    12094     10800    11280     12720     13200
          RP_ADM1266_1V8_CPU                  1806      1670     1750      1850      1930
          RP_ADM1266_1V24_VCCREF              1238      1150     1200      1280      1330
          RP_ADM1266_1V05_CPU                 1052       980     1020      1080      1120
          RP_ADM1266_1V2_DDR_VDDQ             1204      1120     1160      1240      1280
          RP_ADM1266_1V0_VCC_RAM               988       650      700      1250      1300
          RP_ADM1266_1V0_VNN                   871       550      600      1250      1300
          RP_ADM1266_1V0_VCCP                 1018       450      500      1250      1300
          RP_ADM1266_0V6_DDR_VTT               599       560      580       620       640
          RP_ADM1266_3V3_STAND_BY             3301      3070     3200      3400      3530
          RP_ADM1266_5V0                      5004      4650     4850      5150      5350
          RP_ADM1266_3V3                      3325      3070     3200      3400      3530
          RP_ADM1266_2V5_PLL                  2489      2330     2430      2580      2680
          RP_ADM1266_2V5_FPGA                 2502      2330     2430      2580      2680
          RP_ADM1266_1V2_FPGA                 1197      1120     1160      1240      1280
          RP_ADM1266_3V3_CPU                  3332      3070     3200      3400      3530
          RP_ADM1266_2V5_CPU                  2498      2330     2430      2580      2680
0/Rack
          SA_ADM1266_12V_BUS_EITU            12065     10800    11280     12720     13200
          SA_ADM1266_5V0                      5033      4650     4800      5200      5350
          SA_ADM1266_1V8_ZARLINK_DPLL         1808      1670     1730      1870      1930
          SA_ADM1266_1V0_PHY                  1009       930      960      1040      1070
          SA_ADM1266_1V0_ALDRIN_CORE           981       910      930      1070      1090
          SA_ADM1266_1V0_ALDRIN_SERDES        1006       930      960      1040      1070
          SA_ADM1266_1V0_FPGA                 1010       930      960      1040      1070
          SA_ADM1266_1V2_FPGA                 1211      1120     1150      1250      1280
          SA_ADM1266_1V8                      1804      1670     1730      1870      1930
          SA_ADM1266_2V5                      2498      2330     2400      2600      2680
          SA_ADM1266_3V3                      3308      3070     3170      3430      3530
          SA_ADM1275_12V_SA_BP               12073     10800    11280     12720     13200
          SA_ADM1275_12V_CPU_BP              12058     10800    11280     12720     13200
          SA_ADM1275_12V_MOD0_BP             12063     10800    11280     12720     13200
          SA_ADM1275_12V_MOD1_BP             12037     10800    11280     12720     13200
          SA_ADM1275_12V_MOD2_BP             12053     10800    11280     12720     13200
          SA_ADM1275_12V_FAN0_BP             12037     10800    11280     12720     13200
          SA_ADM1275_12V_FAN1_BP             12063     10800    11280     12720     13200
==============================================================================================================
Location  CURRENT                              Value
          Sensor                               (mA)
--------------------------------------------------------------------------------------------------------------
0/RP0/CPU0
          RP_CURRMON_LTM4638                   395
          RP_CURRMON_LTM4644_0                 179
          RP_CURRMON_LTM4644_1                 311
          RP_JMAC_1V0_VCCP_IMON                 62
          RP_JMAC_1V0_VNN_IMON                  93
          RP_JMAC_1V0_VCC_RAM_IMON              62
          RP_JMAC_1V2_DDR_VDDQ_IMON            187
0/Rack
          SA_ADM1275_12V_MOD0_IMON            5495
          SA_ADM1275_12V_MOD1_IMON               6
          SA_ADM1275_12V_MOD2_IMON               6
          SA_ADM1275_12V_FAN0_IMON            1146
          SA_ADM1275_12V_FAN1_IMON            1381
```

```
          SA_INA230_5V0_IMON                    323
          SA_INA230_3V3_IMON                   2584
          SA_INA230_1V0_XGE_CORE_IMON          2459
          SA_INA230_1V0_FPGA_CORE_IMON          784
          SA_ADM1275_12V_SA_IMON               1603
          SA_ADM1275_12V_CPU_IMON              1222
==============================================================================
                                              Fan speed (rpm)
Location      FRU Type                        FAN_0    FAN_1   FAN_2
------------------------------------------------------------------------------

0/PM0         NCS1010-AC-PSU                   5456
0/PM1         NCS1010-AC-PSU                   5336
0/FT0         NCS1010-FAN                     10020   10020   10020
0/FT1         NCS1010-FAN                      9960   10020    9960
==============================================================================
Location     Altitude Value (Meters)    Source
------------------------------------------------------------------------------
0            772                    sensor

==============================================================================
CHASSIS LEVEL POWER INFO: 0
==============================================================================
   Total output power capacity (Group 0 + Group 1) :    1050W +     1050W
   Total output power required                     :     700W
   Total power input                               :     206W
   Total power output                              :     138W

Power Group 0:
==============================================================================
   Power       Supply         ------Input----   ------Output---     Status
   Module      Type            Volts     Amps    Volts     Amps
==============================================================================
   0/PM0       NCS1010-AC-PSU  229.0     0.4     12.1      5.5      OK

Total of Group 0:               91W/0.4A         66W/5.5A

Power Group 1:
==============================================================================
   Power       Supply         ------Input----   ------Output---     Status
   Module      Type            Volts     Amps    Volts     Amps
==============================================================================
   0/PM1       NCS1010-AC-PSU  229.0     0.5     12.1      6.0      OK

Total of Group 1:              114W/0.5A         72W/6.0A

==============================================================================
   Location     Card Type               Power       Power        Status
                                        Allocated   Used
                                        Watts       Watts
==============================================================================
   0/RP0/CPU0   NCS1010-CNTLR-K9        90          14           ON
   0/FT0        NCS1010-FAN            110         16           ON
   0/FT1        NCS1010-FAN            110         16           ON
   0/0/NXR0     NCS1K-OLT-C            350         71           ON
   0/Rack       NCS1010-SA             40          19           ON

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

show fpd package

To determine the FPDs that are supported with the current software release and the minimum hardware requirements for each FPD, use the **show fpd package** command in Cisco IOS XR mode.

show fpd package [**detail**]

Syntax Description

detail	(Optional) Displays detailed information about FPD upgrade.

Command Default

Firmware information of all the hardware components is displayed.

Command Modes

Cisco IOS XR EXEC

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Example

The following example shows sample output from the **show fpd package** command.

```
RP/0/RP0/CPU0:ios#show fpd package
Wed Jun 29 08:50:21.057 UTC
================================ ================================================
                                          Field Programmable Device Package
                                 ================================================
                                                Req     SW      Min Req   Min Req
Card Type            FPD Description            Reload  Ver     SW Ver  Board Ver
================== ========================== ====== ======= ======== =========
--------------------------------------------------------------------------------
NCS1010-AC-PSU       AP-PrimMCU                  NO      1.03      1.03      0.0
                     AP-SecMCU                   NO      2.01      2.01      0.0
--------------------------------------------------------------------------------
NCS1010-CNTLR-K9     ADMConfig                   NO      2.30      2.30      0.0
                     ADMConfig                   NO      2.30      2.30      0.0
                     ADMConfig                   NO      3.40      3.30      1.0
                     BIOS                        YES     4.10      4.10      0.0
                     BIOS                        YES     4.10      4.10      0.0
                     BIOS-Golden                 YES     4.10      4.10      0.0
                     BIOS-Golden                 YES     4.10      4.10      0.0
                     CpuFpga                     YES     1.02      1.02      0.0
                     CpuFpga                     YES     1.02      1.02      0.0
                     CpuFpgaGolden               YES     1.01      1.01      0.0
                     CpuFpgaGolden               YES     1.01      1.01      0.0
                     SsdIntelS4510               YES    11.32     11.32      0.0
                     SsdIntelS4510               YES    11.32     11.32      0.0
                     SsdMicron5300               YES     0.01      0.01      0.0
                     SsdMicron5300               YES     0.01      0.01      0.0
                     SsdSmartModular             YES    13.06     13.06      0.0
                     SsdSmartModular             YES    13.06     13.06      0.0
                     TamFw                       YES     6.13      6.13      0.0
                     TamFw                       YES     6.13      6.13      0.0
                     TamFwGolden                 YES     6.11      6.11      0.0
                     TamFwGolden                 YES     6.11      6.11      0.0
--------------------------------------------------------------------------------
```

```
NCS1010-SA           EITU-ADMConfig             NO      1.04      1.04      0.0
                     EITU-ADMConfig             NO      2.10      2.10      1.0
                     EITU-ADMConfig             NO      1.04      1.04      0.0
                     EITU-ADMConfig             NO      2.10      2.10      1.0
                     IoFpga                     NO      1.04      1.04      0.0
                     IoFpga                     NO      1.04      1.04      0.0
                     IoFpgaGolden               NO      1.01      1.01      0.0
                     IoFpgaGolden               NO      1.01      1.01      0.0
                     SsdIntelS4510              YES    11.32     11.32      0.0
                     SsdIntelS4510              YES    11.32     11.32      0.0
                     SsdMicron5300              YES     0.01      0.01      0.0
                     SsdMicron5300              YES     0.01      0.01      0.0
                     SsdSmartModular            YES    13.06     13.06      0.0
                     SsdSmartModular            YES    13.06     13.06      0.0
-------------------------------------------------------------------------------
NCS1K-ILA-2R-C       ILA                        NO      1.00      1.00      0.1
                     ILA                        NO      0.23      0.23     99.1
                     Raman-1                    NO      1.00      1.00      0.1
                     Raman-1                    NO      0.23      0.23     99.1
                     Raman-2                    NO      1.00      1.00      0.1
                     Raman-2                    NO      0.23      0.23     99.1
-------------------------------------------------------------------------------
NCS1K-ILA-C          ILA                        NO      1.00      1.00      0.1
                     ILA                        NO      0.23      0.23     99.1
-------------------------------------------------------------------------------
NCS1K-ILA-R-C        ILA                        NO      1.00      1.00      0.1
                     ILA                        NO      0.23      0.23     99.1
                     Raman-1                    NO      1.00      1.00      0.1
                     Raman-1                    NO      0.23      0.23     99.1
-------------------------------------------------------------------------------
NCS1K-OLT-C          OLT                        NO      1.00      1.00      0.1
                     OLT                        NO      0.23      0.23     99.1
-------------------------------------------------------------------------------
NCS1K-OLT-R-C        OLT                        NO      1.00      1.00      0.1
                     OLT                        NO      0.23      0.23     99.1
                     Raman-1                    NO      1.00      1.00      0.1
                     Raman-1                    NO      0.23      0.23     99.1
```

show hw-module fpd

To display the firmware information of various hardware components of NCS 1010, use the **show hw-module fpd** command in Cisco IOS XR mode.

show hw-module fpd [*fpd-name*]

Syntax Description

fpd-name	(Optional) Name of the FPD.

Command Default

Firmware information of all the hardware components is displayed.

Command Modes

Cisco IOS XR EXEC

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Example

The following example shows sample output from the **show hw-module fpd** command.

```
RP/0/RP0/CPU0:ios# show hw-module fpd

Wed Jun 29 08:50:21.057 UTC

Auto-upgrade:Disabled
                                                                                FPD Versions
                                                                               ==============
Location   Card type             HWver FPD device       ATR Status    Running   Programd
Reload Loc
-----------------------------------------------------------------------------------------------
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   ADMConfig            CURRENT    3.40    3.40
NOT REQ
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS                  S  CURRENT    4.10    4.10
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS-Golden          BS  CURRENT            4.10
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpga               S  CURRENT    1.02    1.02
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpgaGolden        BS  CURRENT            1.01
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   SsdIntelS4510         S  CURRENT   11.32   11.32
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFw                 S  CURRENT    6.13    6.13
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFwGolden          BS  CURRENT            6.11
  0/RP0
0/PM0      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM0      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/0/NXR0   NCS1K-ILA-C           1.0   ILA                   S  CURRENT    1.00    1.00
NOT REQ
0/Rack     NCS1010-SA            1.0   EITU-ADMConfig       CURRENT    2.10    2.10
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpga                S  CURRENT    1.04    1.04
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpgaGolden         BS  CURRENT            1.01
NOT REQ
0/Rack     NCS1010-SA            1.0   SsdIntelS4510         S  CURRENT   11.32   11.32
 0/Rack
```

show inventory

To retrieve and display the physical inventory information of the system, use the **show inventory** command in Cisco IOS XR mode.

show environment [**WORD** | **all** | **chassis** | **details** | **fan** | **location** | **power**] [**raw** | **vendor-type**]

Syntax Description

WORD	(Optional) Displays partially qualified location specification.
all	(Optional)Displays inventory information for all the physical entities.
chassis	(Optional) Displays inventory information for the entire chassis.
details	(Optional) Displays detailed entity information.
fan	(Optional) Displays inventory information for the fans.
location | *location*	(Optional) Displays inventory information for a specific node, or for all nodes in the chassis.
power	(Optional) Displays inventory information for the power supply.
raw	(Optional) Displays raw information about the chassis for diagnostic purposes.
vendor-type	(Optional) Displays vendor-type information.

Command Default

All hardware inventory information is displayed.

Command Modes

Cisco IOS XR EXEC

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

Enter the **show inventory** command with the **raw** keyword to display every RFC 2737 entity installed in NCS 1004, including those without a PID, unique device identifier (UDI), or other physical identification. The **raw** keyword is primarily intended for troubleshooting problems with the **show inventory** command itself.

Example

The following example shows a sample output from the **show inventory** command with the **chassis** keyword.

RP/0/RP0/CPU0:P2B_DT_02#**show inventory chassis**

```
Thu May 26 04:24:52.892 UTC

NAME: "Rack 0", DESCR: "NCS 1010 Shelf Assembly"
PID: NCS1010-SA        , VID: V00, SN: FCB2544B0KC
```

==========

The following example shows a sample output from the **show inventory** command with the **fan** keyword.

RP/0/RP0/CPU0:P2B_DT_02#**show inventory fan**

```
Thu May 26 04:25:23.655 UTC

NAME: "0/FT0", DESCR: "NCS1010 - Shelf Fan"
PID: NCS1010-FAN       , VID: V00, SN: FCB2541B0BJ

NAME: "0/FT1", DESCR: "NCS1010 - Shelf Fan"
```

```
PID: NCS1010-FAN       , VID: V00, SN: FCB2544B1GM

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

The following example shows a sample output from the **show inventory** command with the **power** keyword.

RP/0/RP0/CPU0:P2B_DT_02#**show inventory power**

```
Thu May 26 04:25:58.164 UTC

NAME: "0/PM0", DESCR: "NCS 1010 - AC Power Supply Unit"
PID: NCS1010-AC-PSU    , VID: V00, SN: APS2534003Z

NAME: "0/PM1", DESCR: "NCS 1010 - AC Power Supply Unit"
PID: NCS1010-AC-PSU    , VID: V00, SN: APS2534007Q

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

The following example shows a sample output from the **show inventory** command with the **all** keyword.

RP/0/RP0/CPU0:P2B_DT_02#**show inventory all**

```
Thu May 26 04:26:49.509 UTC

NAME: "Rack 0", DESCR: "NCS 1010 Shelf Assembly"
PID: NCS1010-SA        , VID: V00, SN: FCB2544B0KC

NAME: "0/RP0/CPU0", DESCR: "NCS1010 - Controller"
PID: NCS1010-CNTLR-K9  , VID: V00, SN: FCB2541B0JD

NAME: "0/RP0-PTP0", DESCR: "Cisco Pluggable Optics Module"
PID: GLC-SX-MMD        , VID: V01, SN: OPM22160169

NAME: "0/RP0-PTP1", DESCR: "Cisco Pluggable Optics Module"
PID: SFP-GE-S          , VID: V01, SN: FNS12450CHY

NAME: "0/0/NXR0", DESCR: "NCS 1010 - Optical Line Terminal - C-band"
PID: NCS1K-OLT-C       , VID: V00, SN: FCB2543B002

NAME: "0/1", DESCR: "NCS 1000 32 chs Odd  Mux/Demux Patch Panel - 150GHz - C-band"
PID: NCS1K-MD-32O-C    , VID: V00 , SN: ACW2529YO20

NAME: "0/2", DESCR: "NCS 1000 32 chs Even Mux/Demux Patch Panel - 150GHz - C-band"
PID: NCS1K-MD-32E-C    , VID: V00 , SN: ACW2529YB15

NAME: "0/FT0", DESCR: "NCS1010 - Shelf Fan"
PID: NCS1010-FAN       , VID: V00, SN: FCB2541B0BJ

NAME: "0/FT1", DESCR: "NCS1010 - Shelf Fan"
PID: NCS1010-FAN       , VID: V00, SN: FCB2544B1GM

NAME: "0/PM0", DESCR: "NCS 1010 - AC Power Supply Unit"
PID: NCS1010-AC-PSU    , VID: V00, SN: APS2534003Z

NAME: "0/PM1", DESCR: "NCS 1010 - AC Power Supply Unit"
PID: NCS1010-AC-PSU    , VID: V00, SN: APS2534007Q

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

show license all

To display all licensing information, use the **show license all** command. This command displays status, authorization, UDI, and usage information, all combined.

show license all

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Administration for Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None.

This example shows you how to use the **show license all** command, and the sample output.

```
RP/0/RP0/CPU0:ios#show license all
Fri Jul 15 05:32:02.678 UTC
Smart Licensing Status
======================
Smart Licensing is ENABLED
Registration:
Status: REGISTERED
Smart Account: InternalTestDemoAccount8.cisco.com
Virtual Account: NCS1010-PROD
Export-Controlled Functionality: ALLOWED
Initial Registration: SUCCEEDED on Jul 15 2022 04:58:24 UTC
Last Renewal Attempt: None
Next Renewal Attempt: Jan 11 2023 04:58:23 UTC
Registration Expires: Jul 15 2023 04:53:20 UTC
License Authorization:
Status: AUTHORIZED on Jul 15 2022 04:58:40 UTC
Last Communication Attempt: SUCCEEDED on Jul 15 2022 04:58:40 UTC
Next Communication Attempt: Aug 14 2022 04:58:40 UTC
Communication Deadline: Oct 13 2022 04:53:41 UTC
Export Authorization Key:
Features Authorized:
<none>
Utility:
Status: DISABLED
Data Privacy:
Sending Hostname: yes
Callhome hostname privacy: DISABLED
Smart Licensing hostname privacy: DISABLED
Version privacy: DISABLED
Transport:
Type: Callhome
Miscellaneous:
Smart Licensing
10
```

```
Smart Licensing
Verify Smart Licensing Configuration
REVIEW DRAFT - CISCO CONFIDENTIAL
Custom Id: <empty>
License Usage
=============
NCS1010 - Essentials - OLT RTU (NCS1010_ESS_OLT_RTU):
Description: NCS1010 - Essentials Tier - Optical Line Terminal RTU (Per Port)
Count: 2
Version: 1.0
Status: AUTHORIZED
Export status: NOT RESTRICTED
NCS1010 - Essentials - OLT SIA (NCS1010_ESS_OLT_SIA):
Description: NCS1010 - Essentials Subscription - Optical Line Terminal - SIA
(Per Port)
Count: 2
Version: 1.0
Status: AUTHORIZED
Export status: NOT RESTRICTED
Product Information
===================
UDI: PID:NCS1010-SA,SN:FCB2546B08T
Agent Version
=============
Smart Agent for Licensing: 5.4.16_rel/63
Reservation Info
================
License reservation: DISABLED
```

show license summary

To display the license summary, use the **show license summary** command.

show license summary

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Administration for Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None.

This example shows you how to use the **show license summary command**, and the sample output.

```
RP/0/RP0/CPU0:ios#show license summary

                  Tue Jul 19 15:21:49.227 UTC

                  Smart Licensing is ENABLED
                  License Reservation is ENABLED
```

```
                    Registration:
                    Status: REGISTERED - SPECIFIC LICENSE RESERVATION
                    Export-Controlled Functionality: ALLOWED

                    License Authorization:
                    Status: AUTHORIZED - RESERVED

                    License Usage:
                    License                 Entitlement Tag               Count Status

-----------------------------------------------------------------------------
                    NCS1010 - Essentials... (NCS1010_ESS_OLT_RTU)             3 AUTHORIZED
                    NCS1010 - Essentials... (NCS1010_ESS_OLT_SIA)             3 AUTHORIZED
                    RP/0/RP0/CPU0:P2A_DT_08#show license usage
                    Tue Jul 19 15:22:11.234 UTC

                    License Authorization:
                    Status: AUTHORIZED - RESERVED on Jul 19 2022 15:21:24 UTC

                    NCS1010 - Essentials - OLT RTU (NCS1010_ESS_OLT_RTU):
                   Description: NCS1010 - Essentials Tier - Optical Line Terminal RTU (Per
 Port)
                    Count: 3
                    Version: 1.0
                    Status: AUTHORIZED
                    Export status: NOT RESTRICTED
                    Reservation:
                    Reservation status: SPECIFIC INSTALLED
                    Total reserved count: 3

                    NCS1010 - Essentials - OLT SIA (NCS1010_ESS_OLT_SIA):
                    Description: NCS1010 - Essentials Subscription - Optical Line Terminal
 - SIA
                    (Per Port)
                    Count: 3
                    Version: 1.0
                    Status: AUTHORIZED
                    Export status: NOT RESTRICTED
                    Reservation:
                    Reservation status: SPECIFIC INSTALLED
                    Total reserved count: 3
                    RP/0/RP0/CPU0:P2A_DT_08#show license platform summary
                    Tue Jul 19 15:22:35.859 UTC
                    Collection: LAST: (unavailable)
                    NEXT: (pending in 1 minute(s))
                    Reporting:  LAST: (unavailable)
                    NEXT: (pending in 1 minute(s))

**********************************IMPORTANT*************************************
                  SIA Status: Out of Compliance(Remaining Grace Period: 89 days, 23 hours)

                    SIA license(s) status is Not Authorized.
                    SW Upgrade will still be allowed as SIA Grace Period is remaining

******************************************************************************
                    Count
                    Feature/Area     Entitlement                                  Last
Next
                    ============ ================================================ ====
====
                    FCM          NCS1010 - Essentials Tier - Optical Line Terminal R    3
   0
                    FCM          NCS1010 - Essentials Subscription - Optical Line Te    3
```

0

show linux security audit

To view the details of the Linux security audit information, use the **show linux security audit** command in XR EXEC mode.

show linux security audit

{ **monitor status** { *rule-group* | | **detail** *rule-group* } | | **logging syslog** }

Syntax Description

monitor	Displays the audit monitor information.
status	Displays the audit monitor status.
rule-group	Displays the status of the specified rule group. This field can take these values: **all, authlog-files, cron-files, dns-client-files, docker, file-deletion, file-perm-changes, kernel-module-mgmt, process-audits, system-login-reboot, system-software, system-time-change, user-group-config-files, user-privilege-mgmt, xr-software**
detail	Displays the detailed status of the specified rule group.
logging	Displays the audit logging information.
syslog	Displays the remote syslog server information.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 25.3.1	This command was introduced.

Usage Guidelines

Use the **show linux security audit monitor status** command to verify the general status of all active audit rule groups.

Use the **show linux security audit logging syslog** command to verify whether audit log forwarding is enabled and to view the configured remote syslog server.

Example

This example displays the audit log forwarding details.

```
RP/0/RP0/CPU0:ios# show linux security audit logging syslog
status: enabled
syslog-server(s):
```

```
ipaddr: 10.0.1.2 vrf: default port: 514
ipaddr: 2001:db8::1 vrf: default port: 514
```

show logging onboard

Use the **show logging onboard** command to view the Onboard Failure Logs (OBFL).

show logging onboard { **alarm** | | **location** *location* }

Syntax Description

alarm	Displays the alarm events.
location *location*	Specify the location of the hardware module.

Command Modes

User EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.9.1	This command was introduced.

Example

The following example shows how to display the Onboard Failure Logs (OBFL) details for the **show logging onboard** command.

```
RP/0/RPO/CPUO:PIAL 05#show logging onboard alarm location 0/ rp0/CPUO
Thu Feb 9 11:34:25.158 UTC
OBFL alarm information for: 0/RPO/CPU0

2022-12-09 09:50:31 DECLARE     ALARM MAJOR    Power Group redundancy lost
2022-12-14 11:25:41 DECLARE     ALARM MAJOR    Power Group redundancy lost
2022-12-09 09:50:31 DECLARE     ALARM MAJOR    Power Group redundancy lost
2022-12-14 11:25:41 DECLARE     ALARM MAJOR    Power Group redundancy lost
2023-02-09 11:33:05 DECLARE     ALARM CRITICAL PHY1-MDIO-ACCESS-ERROR Phyl MDI0 access
failure detected
```

show linux security audit

To view the details of the Linux security audit information, use the **show linux security audit** command in XR EXEC mode.

show linux security audit

{ **monitor status** { *rule-group* | | **detail** *rule-group* } | | **logging syslog** }

Syntax Description

monitor	Displays the audit monitor information.
status	Displays the audit monitor status.

rule-group	Displays the status of the specified rule group. This field can take these values: **all, authlog-files, cron-files, dns-client-files, docker, file-deletion, file-perm-changes, kernel-module-mgmt, process-audits, system-login-reboot, system-software, system-time-change, user-group-config-files, user-privilege-mgmt, xr-software**
detail	Displays the detailed status of the specified rule group.
logging	Displays the audit logging information.
syslog	Displays the remote syslog server information.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 25.3.1	This command was introduced.

Usage Guidelines

Use the **show linux security audit monitor status** command to verify the general status of all active audit rule groups.

Use the **show linux security audit logging syslog** command to verify whether audit log forwarding is enabled and to view the configured remote syslog server.

Example

This example displays the audit log forwarding details.

```
RP/0/RP0/CPU0:ios# show linux security audit logging syslog
status: enabled
syslog-server(s):
ipaddr: 10.0.1.2 vrf: default port: 514
ipaddr: 2001:db8::1 vrf: default port: 514
```

show license platform detail

To display the detailed summary of all Flexible Consumption Models (FCM) licenses in the NCS 1010 platform, use the **show license platform detail** command.

show license platform detail

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Administration for Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None.

This example shows you how to use the **show license platform detail** command, and the sample output.

```
RP/0/RP0/CPU0:ios#show license platform detail
Mon Jul 18 10:52:46.333 UTC
Collection: LAST: Mon Jul 18 2022 10:52:07 UTC
            NEXT: Mon Jul 18 2022 10:54:07 UTC
Reporting:  LAST: Mon Jul 18 2022 10:52:07 UTC
            NEXT: Mon Jul 18 2022 10:54:07 UTC
SIA Status: In Compliance
Parameters: Collection interval:           2 minute(s)
            Reporting  interval:           2 minute(s)
            Throughput gauge:        1000000 Kbps


================================================
Feature/Area 'FCM'
   Name:  FCM
   Status:   ACTIVE
   Flags:


   [ 1] Name:  NCS1010 - Essentials Tier - In-Line Amplifier RTU
        Entitlement Tag:
regid.2022-05.com.cisco.NCS1010_ESS_ILA_RTU,1.0_9b4322b1-bff3-4ddf-944c-16ec9aaab1cc
        Count: Last reported:    0
               Next report:      0
   [ 2] Name:  NCS1010 - Essentials Subscription - In-Line Amplifier - SIA
        Entitlement Tag:
regid.2022-05.com.cisco.NCS1010_ESS_ILA_SIA,1.0_67243ac7-1a7c-41e4-a160-f13df80fd0e4
        Count: Last reported:    0
               Next report:      0
   [ 3] Name:  NCS1010 - Essentials Tier - Optical Line Terminal RTU (Per Port)
        Entitlement Tag:
regid.2022-05.com.cisco.NCS1010_ESS_OLT_RTU,1.0_e4309530-2085-40e6-9aa6-5f3137ff49b2
        Count: Last reported:    9
               Next report:      0
   [ 4] Name:  NCS1010 - Essentials Subscription - Optical Line Terminal - SIA (Per Port)
        Entitlement Tag:
regid.2022-05.com.cisco.NCS1010_ESS_OLT_SIA,1.0_b3c976c1-e509-474f-8cac-b9db62f28f2b
        Count: Last reported:    9
               Next report:      0
   [ 5] Name:  NCS1010 - Advantage Tier- In-Line Amplifier RTU
        Entitlement Tag:
regid.2022-05.com.cisco.NCS1010_ADV_ILA_RTU,1.0_cf1746b7-def4-4c0e-ab90-de30614507d8
        Count: Last reported:    0
               Next report:      0
   [ 6] Name:  NCS1010 - Advantage Subscription - In-Line Amplifier - SIA
        Entitlement Tag:
regid.2022-05.com.cisco.NCS1010_ADV_ILA_SIA,1.0_ea769b05-9363-47dd-9991-2122c37479eb
        Count: Last reported:    0
               Next report:      0
   [ 7] Name:  NCS1010 - Advantage Tier - Optical Line Terminal RTU (Per Port)
        Entitlement Tag:
regid.2022-05.com.cisco.NCS1010_ADV_OLT_RTU,1.0_7a6ce8f3-3336-4ce2-8803-431227dabfff
```

```
        Count: Last reported:    0
               Next report:      0
   [ 8] Name:  NCS1010 - Advantage Subscription - Optical Line Terminal - SIA (Per Port)
        Entitlement Tag:
regid.2022-05.com.cisco.NCS1010_ADV_OLT_SIA,1.0_5f283f1c-143e-4c6e-9af7-73e088fb77a5
        Count: Last reported:    0
               Next report:      0
```

show license platform summary

To display the summary of FCM licenses in the NCS 1010 platform, use the **show license platform summary** command.

show license platform summary

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Administration for Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None.

This example shows you how to use the **show license platform summary** command, and the sample output.

```
RP/0/RP0/CPU0:ios#show license platform summary
Mon Jul 18 10:50:59.263 UTC
Collection: LAST: Mon Jul 18 2022 10:50:07 UTC
            NEXT: Mon Jul 18 2022 10:52:07 UTC
Reporting:  LAST: Mon Jul 18 2022 10:50:07 UTC
            NEXT: Mon Jul 18 2022 10:52:07 UTC
*********************************IMPORTANT************************************
SIA Status: Out of Compliance(Remaining Grace Period: 89 days, 23 hours)
            Device is in Authorization Expired state.
            SW Upgrade will still be allowed as SIA Grace Period is remaining
******************************************************************************
                                                                      Count
Feature/Area     Entitlement                                       Last Next
============ ================================================== ==== ====
FCM          NCS1010 - Essentials Tier - Optical Line Terminal R    9    0
FCM          NCS1010 - Essentials Subscription - Optical Line Te    9    0
```

show license summary

To display the license summary, use the **show license summary** command.

show license summary

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Administration for Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None.

This example shows you how to use the **show license summary** command, and the sample output.

```
 RP/0/RP0/CPU0:ios#show license summary
Tue Jul 19 15:21:49.227 UTC
Smart Licensing is ENABLED
License Reservation is ENABLED

Registration:
  Status: REGISTERED - SPECIFIC LICENSE RESERVATION
  Export-Controlled Functionality: ALLOWED

License Authorization:
  Status: AUTHORIZED - RESERVED

License Usage:
  License                 Entitlement Tag               Count Status
  -----------------------------------------------------------------------------
  NCS1010 - Essentials... (NCS1010_ESS_OLT_RTU)             3 AUTHORIZED
  NCS1010 - Essentials... (NCS1010_ESS_OLT_SIA)             3 AUTHORIZED
R
```

show license udi

To display the smart licensing UDI, use the **show license udi** command.

show license udi

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes None

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines None.

This example shows you how to use the **show license udi** command, and the sample output.

```
RP/0/RP0/CPU0:ios#show license udi
Tue Jul 19 13:43:19.731 UTC
UDI: PID:NCS1010-SA,SN:FCB2546B08T
```

show license usage

To display the license usage count, use the **show license usage** command.

show license usage

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes Administration for Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines None.

This example shows you how to use the **show license usage** command, and the sample output.

```
 RP/0/RP0/CPU0:iso#show license usage
Fri Jul 15 08:17:40.048 UTC
License Authorization:
Status: OUT OF COMPLIANCE on Jul 15 2022 07:01:00 UTC
NCS1010 - Essentials - OLT RTU (NCS1010_ESS_OLT_RTU):
Description: NCS1010 - Essentials Tier - Optical Line Terminal RTU (Per Port)
Count: 32
Version: 1.0
Status: OUT OF COMPLIANCE
Export status: NOT RESTRICTED
NCS1010 - Essentials - OLT SIA (NCS1010_ESS_OLT_SIA):
Description: NCS1010 - Essentials Subscription - Optical Line Terminal - SIA
Smart Licensing
13
Smart Licensing
Verify Smart Licensing Configuration
REVIEW DRAFT - CISCO CONFIDENTIAL
```

```
(Per Port)
Count: 32
Version: 1.0
Status: OUT OF COMPLIANCE
Export status: NOT RESTRICTED
```

show ntp associations

To display the status of Network Time Protocol (NTP) associations, use the **show ntp associations** command in privileged EXEC mode.

show ntp associations [**detail**] [**location** *node-id*]

Syntax Description

detail	(Optional) Displays detailed information about each NTP association.
location *node-id*	(Optional) Displays the status of NTP associations from the designated node. The *node-id* argument is entered in the *rack/slot* notation.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

Output for the **show ntp associations** command is displayed only if NTP is configured.

Task ID

Task ID	Operations
ip-services	read

This example shows sample output from the **show ntp associations** command:

```
RP/0/RP0/CPU0:ios#show ntp associations
Sun Nov 5 15:14:44.128 UTC

address ref clock st when poll reach delay offset disp
*~203.0.113.51 10.64.58.50 2 81 128 377 1.84 7.802 2.129
* sys_peer, # selected, + candidate, - outlayer, x falseticker, ~ configured
```

Table 1: show ntp associations Field Descriptions

Field	Description
*	Peer has been declared the system peer and lends its variables to the system variables.

Field	Description
#	A pound sign (#) displayed next to a configured peer indicates that the router does not synchronize with the peer even though NTP request and response packets are exchanged. In this case, check the output of the **show ntp associations detail** command or the NTP debugs to see why the clocks are not synchronized. Use the **show ntp associations detail** and **show ntp status** commands to obtain additional information about the state of NTP. One possible reason for the # sign is that the NTP client clock differs by more than 4000 seconds from the NTP server clock. On Cisco routers, a time difference of greater than 4000 seconds is considered out of range and prevents the router from synchronization to the server. This does not apply when you first configure an NTP peer on a Cisco router or on reload. In this case, the NTP client clock is changed to match the NTP server clock. Verify the time zone of the client clock; local time is displayed, but time values in NTP messages are in UTC (GMT) time zone. You can manually change the client clock to within a few minutes of the NTP server clock.
+	Peer is a survivor and a candidate for the combining algorithm.
-	Peer is discarded by the clustering algorithm as an outlier.
x	Peer is discarded by the intersection algorithm as a falseticker.
~	Indicates peer is statically configured.
address	IPv4 or IPv6 address of the peer. If a nondefault VRF is configured for the peer, the VRF follows the address.
ref clock	Reference clock type or address for the peer.
st	Stratum setting for the peer.
when	Time since last NTP packet was received from peer, in milliseconds.
poll	Polling interval between NTP poll packets, in seconds. As the NTP server and client are better synced (and there are no dropped packets), this number increases to a maximum of 1024.
reach	Peer reachability (bit string, in octal). The reach field is a circular bit buffer. It gives you the status of the last eight NTP messages (eight bits in octal is 377, so you want to see a reach field value of 377). If an NTP response packet is lost, the lost packet is tracked over the next eight NTP update intervals in the reach field.
delay	Round-trip delay to peer, in milliseconds.

Field	Description
offset	Relative time difference between the client time and server time, in milliseconds. The client slows down or speeds up its clock to match the server time value. The offset decreases toward zero over time. It likely never reaches zero since the packet delay between the client and server is never exactly the same. Therefore, the client NTP cannot ever exactly match its clock with the server. If there is an asterisk (*) next to a configured peer, then you are syncronized to this peer and use them as the primary clock.
disp	Dispersion.

This example shows sample output from the **show ntp associations** command with the **detail** keyword:

```
RP/0/RP0/CPU0:ios#show ntp associations detail
Sun Nov 5 15:14:48.763 UTC

203.0.113.51 configured, our_master, stratum 2
ref ID 10.64.58.50, time E8F22BB9.79D4A841 (14:56:57.475 UTC Sun Nov 5 2023)
our mode client, peer mode server, our poll intvl 128, peer poll intvl 128
root delay 0.6866 msec, root disp 1.04, reach 377, sync dist 6.2590
delay 1.84 msec, offset 7.802 msec, dispersion 2.129
precision 2**23, version 4
org time E8F22F92.B647E8FC (15:13:22.712 UTC Sun Nov 5 2023)
rcv time E8F22F92.B88F303C (15:13:22.720 UTC Sun Nov 5 2023)
xmt time E8F22F92.B88F303C (15:13:22.720 UTC Sun Nov 5 2023)
filtdelay = 1.844 1.772 1.983 1.954 1.945 2.000 1.902 1.778
filtoffset = 7.857 7.802 8.065 8.063 8.332 8.397 8.664 8.684
filterror = 0.000 0.060 1.995 2.055 4.050 4.110 6.060 6.120
```

Table 2: show ntp associations detail Field Descriptions

Field	Descriptions
vrf	Nondefault VRF, if specified for this peer.
configured	Statically configured peer.
dynamic	Dynamically discovered peer.
our_master	Synchronization of the local machine to this peer.
sane	Passing of basic sanity checks by this peer.
ref ID	Address of machine to which the peer is synchronized.
time	Last time stamp that the peer received from its master.
our mode	`Mode relative to peer (active/passive/client/server/bdcast/bdcast client).`
peer mode	Mode of peer relative.
our poll intvl	Poll interval to peer.

Field	Descriptions
peer poll intvl	Poll interval of interval.
root delay	Delay along path to root (ultimate stratum 1 time source).
root disp	Dispersion of path to root.
reach	Peer reachability (bit string in octal).
sync dist	Peer synchronization distance.
delay	Round-trip delay to peer.
offset	Offset of peer clock relative to this clock.
dispersion	Dispersion of peer clock.
precision	Precision of peer clock in (Hertz) Hz.
version	NTP version number that peer is using.
org time	Originate time stamp.
rcv time	Receive time stamp.
xmt time	Transmit time stamp.
filtdelay	Round-trip delay of each sample, in milliseconds.
filtoffset	Clock offset of each sample, in milliseconds.
filterror	Approximate error of each sample.

show ntp status

To display the status of Network Time Protocol (NTP), use the **show ntp status** command in XR EXEC mode.

show ntp status [**location** *node-id*]

Syntax Description

location *node-id*	(Optional) Displays the status of NTP from the designated node. The *node-id* argument is entered in the *rack/slot* notation.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Usage Guidelines

None

Task ID

Task ID	Operations
ip-services	read

This example shows sample output from the **show ntp status** command:

```
RP/0/RP0/CPU0:ios#show ntp status
Sun Nov 5 15:14:36.949 UTC

Clock is synchronized, stratum 3, reference is 203.0.113..51
nominal freq is 1000000000.0000 Hz, actual freq is 44881851.3383 Hz, precision is 2**24
reference time is E8F22D7A.AB020D97 (15:04:26.668 UTC Sun Nov 5 2023)
clock offset is 9.690 msec, root delay is 2.553 msec
root dispersion is 24.15 msec, peer dispersion is 2.13 msec
loopfilter state is 'CTRL' (Normal Controlled Loop), drift is 0.0000212807 s/s
system poll interval is 128, last update was 610 sec ago
authenticate is disabled, panic handling is disabled,
hostname resolution retry interval is 1440 minutes.
```

Table 3: show ntp status Field Descriptions

Field	Description
synchronized	Synchronized system to an NTP peer.
stratum	NTP stratum of this system.
reference	IPv4 address or first 32 bits of the MD5 hash of the IPv6 address of the peer to which clock is synchronized.
nominal freq	Nominal frequency in Hertz (Hz) of the system hardware clock.
actual freq	Measured frequency in Hz of the system hardware clock.
precision	Precision of the clock of this system in Hz.
reference time	Reference time stamp.
clock offset	Offset of clock to synchronized peer, in milliseconds.
root delay	Total delay along path to root clock, in milliseconds.
root dispersion	Dispersion of root path.
peer dispersion	Dispersion of synchronized peer.
loopfilter state	The state of the clock state machine transition function.

Field	Description
drift	Drift of the hardware clock.
system poll interval	Poll interval of the peer.
last update	Time the router last updated its NTP information.

show olc apc

Use the **show olc apc** command to view APC status.

show olc apc { **controller Ots** *R/S/I/P* }

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to view the information for a particular controller.

Command Modes

User EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following sample is an output of **show olc apc** command.

```
RP/0/RP0/CPU0:OLT1#show olc apc

Controller      : Ots0/0/0/0
APC Status      : WORKING

Node RID        : 10.1.1.1
Internal State  : IDLE

Node RID        : 10.99.1.2
Internal State  : IDLE

Node RID        : 10.99.2.2
Internal State  : IDLE

Node RID        : 10.99.4.1
Internal State  : IDLE

Node RID        : 10.1.1.5
Internal State  : DISCREPANCY
```

show olc apc-local

To view the local status of APC on each node, use the **show olc apc-local** command.

show olc apc-local { **regulation-info** { **controller Ots** *R/S/I/P* | { **tx | rx** } } | **target-psd-profile** } { **controller Ots** *R/S/I/P* }

Syntax Description

regulation-info	Displays APC regulation information.
target-psd-profile	Displays target PSD profile information
R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to view the information for a particular controller.

Command Modes

User EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following sample is an output of **show olc apc-local** command.

```
RP/0/RP0/CPU0:ios#show olc apc-local
Mon Apr 11 06:59:14.679 UTC

Controller : Ots0/0/0/0

TX Status : ENABLED
RX Status : ENABLED
```

The following sample is an output of **show olc apc-local target-psd-profile** command.

```
RP/0/RP0/CPU0:ios#show olc apc-local target-psd-profile
Tue Apr 26 10:19:24.910 UTC
Controller          : Ots0/0/0/0
Target PSD source   : Configuration
--------------------------------------------------------------------------------
Setpoint                Frequency                        Target PSD
                          (THz)                       (dBm/12.5 GHz)
--------------------------------------------------------------------------------
01                    191.337494                          15.0
02                    191.488678                          15.0
03                    191.639847                          -4.1
04                    191.791016                          -4.1
05                    191.942184                          -4.1
06                    192.093353                          -4.1
07                    192.244537                          -4.1
08                    192.395706                          -4.1
09                    192.546875                          -4.1
10                    192.698044                          -4.1
11                    192.849213                          -4.1
12                    193.000397                          -4.1
```

```
13                    193.151566                          -4.1
14                    193.302734                          -4.1
15                    193.453903                          -4.1
16                    193.605072                          -4.1
17                    193.756256                          -4.1
18                    193.907425                          -4.1
19                    194.058594                          -4.1
20                    194.209763                          -4.1
21                    194.360931                          -4.1
22                    194.512115                          -4.1
23                    194.663284                          -4.1
24                    194.814453                          -4.1
25                    194.965622                          -4.1
26                    195.116791                          -4.1
27                    195.267975                          -4.1
28                    195.419144                          -4.1
29                    195.570312                          -4.1
30                    195.721481                          -4.1
31                    195.872650                          -4.1
32                    196.023834                          -4.1
33                    196.175003                          -4.1
```

The following sample is an output of**show olc apc-local regulation-info controller ots 0/0/0/0 tx**command.

```
RP/0/RP0/CPU0:ios#show olc apc-local regulation-info controller ots 0/0/0/0 tx
Wed Jul  6 05:01:45.177 UTC
Controller            : Ots0/0/0/0
Domain Manager        : 10.1.1.1
Internal Status       : OOR
Direction            : TX
PSD Minumum          : -24.0 (dBm/12.5 GHz)
Gain Range           : Normal
Last Correction      : 2022-07-06 05:01:28

  Device Parameters                 Min   Max  Configuration Operational
=============================================================================
  Egress Ampli Gain (dB)           :15.4  29.4 19.5          19.5
  Egress Ampli Tilt (dB)           :-5.0  3.1  -2.2          -2.2
  TX Ampli Power (dBm)             : -    22.4  -            21.4
  TX VOA Attenuation (dB)          :0.0   20.0 0.0           0.0
  Egress WSS/DGE Attenuation (dB)  :0.0   25.0  -             -


Channel Center Channel Channel Channel Spectrum   Ampli-Input      Target       Current
 Discrepancy Channel Slice
  Frequency     Width    ID    Source  Slice Num      PSD           PSD           PSD
              Attn Config
    (THz)       (GHz)                           (dBm/12.5 GHz)(dBm/12.5 GHz)(dBm/12.5 GHz)
    (dB)        (dB)
=============================================================================================

 191.375000    75.00     1      OCh       13          -23.2         -4.6          -4.9
     0.2        7.1
 191.449997    75.00     -      ASE       37          -23.0         -4.6          -4.7
     0.1        9.2
 191.524994    75.00     -      ASE       61          -23.1         -4.6          -4.7
     0.1        9.3
 191.600006    75.00     4      OCh       85          -23.1         -4.5          -4.7
     0.1        8.0
 191.675003    75.00     -      ASE       109         -23.0         -4.5          -4.5
     0.0        9.1
 191.750000    75.00     6      OCh       133         -23.0         -4.4          -4.6
     0.1        8.0
```

```
191.824997    75.00     -      ASE       157         -23.1         -4.4          -4.6
    0.1        9.3
191.899994    75.00     8      OCh       181         -23.0         -4.4          -4.4
    0.0        8.0
191.975006    75.00     -      ASE       205         -23.0         -4.3          -4.5
    0.1        9.1
192.050003    75.00     10     OCh       229         -23.0         -4.3          -4.5
    0.1        8.2
192.125000    75.00     -      ASE       253         -22.9         -4.3          -4.3
    0.0        9.0
192.199997    75.00     12     OCh       277         -22.8         -4.2          -4.3
    0.0        8.3
192.274994    75.00     -      ASE       301         -22.9         -4.2          -4.4
    0.1        9.0
192.350006    75.00     14     OCh       325         -22.6         -4.2          -4.2
    0.0        8.3
192.425003    75.00     -      ASE       349         -22.8         -4.2          -4.3
    0.1        8.7
192.500000    75.00     16     OCh       373         -22.4         -4.1          -3.9
   -0.2        8.1
192.574997    75.00     -      ASE       397         -22.7         -4.1          -4.2
    0.1        8.6
192.649994    75.00     18     OCh       421         -22.6         -4.1          -4.2
    0.1        8.1
192.725006    75.00     -      ASE       445         -22.7         -4.0          -4.2
    0.1        8.6
192.800003    75.00     20     OCh       469         -22.7         -4.0          -4.1
    0.1        7.9
192.875000    75.00     -      ASE       493         -22.6         -4.0          -4.0
    0.0        8.4
192.949997    75.00     22     OCh       517         -22.6         -3.9          -4.1
    0.1        7.6
193.024994    75.00     -      ASE       541         -22.5         -3.9          -4.0
    0.1        8.2
193.100006    75.00     24     OCh       565         -22.7         -3.8          -4.0
    0.1        7.5
193.175003    75.00     -      ASE       589         -22.7         -3.8          -4.0
    0.1        8.2
193.250000    75.00     26     OCh       613         -22.5         -3.8          -3.9
    0.1        7.2
193.324997    75.00     -      ASE       637         -22.6         -3.8          -4.0
    0.2        8.1
193.399994    75.00     28     OCh       661         -22.7         -3.7          -3.9
    0.1        7.2
193.475006    75.00     -      ASE       685         -22.5         -3.7          -3.8
    0.1        8.0
193.550003    75.00     30     OCh       709         -22.7         -3.7          -3.8
    0.1        7.0
193.625000    75.00     -      ASE       733         -22.7         -3.6          -3.8
    0.1        8.1
193.699997    75.00     32     OCh       757         -22.7         -3.6          -3.7
    0.1        6.7
193.774994    75.00     -      ASE       781         -22.7         -3.5          -3.7
    0.1        8.2
193.850006    75.00     34     OCh       805         -22.7         -3.5          -3.7
    0.1        6.6
193.925003    75.00     -      ASE       829         -22.7         -3.5          -3.6
    0.1        8.1
194.000000    75.00     36     OCh       853         -22.8         -3.5          -3.7
    0.2        6.6
194.074997    75.00     -      ASE       877         -22.8         -3.4          -3.6
    0.1        8.3
194.149994    75.00     38     OCh       901         -22.7         -3.4          -3.5
    0.1       10.9
```

```
194.225006    75.00     -      ASE       925         -22.8         -3.3          -3.5
    0.1        8.2
194.300003    75.00     40     OCh       949         -22.9         -3.3          -3.5
    0.1        7.1
194.375000    75.00     -      ASE       973         -22.8         -3.3          -3.4
    0.1        8.4
194.449997    75.00     42     OCh       997         -22.9         -3.2          -3.5
    0.2        7.3
194.524994    75.00     -      ASE       1021        -22.9         -3.2          -3.4
    0.1        8.4
194.600006    75.00     44     OCh       1045        -22.8         -3.2          -3.3
    0.1        7.2
194.675003    75.00     -      ASE       1069        -22.8         -3.2          -3.3
    0.1        8.4
194.750000    75.00     46     OCh       1093        -22.9         -3.1          -3.4
    0.2        7.3
194.824997    75.00     -      ASE       1117        -22.8         -3.1          -3.2
    0.1        8.2
194.899994    75.00     48     OCh       1141        -22.8         -3.0          -3.3
    0.2        6.9
194.975006    75.00     -      ASE       1165        -22.9         -3.0          -3.2
    0.1        8.3
195.050003    75.00     50     OCh       1189        -22.8         -3.0          -3.1
    0.1        6.6
195.125000    75.00     -      ASE       1213        -22.9         -3.0          -3.1
    0.1        8.3
195.199997    75.00     52     OCh       1237        -22.9         -2.9          -3.1
    0.1        6.3
195.274994    75.00     -      ASE       1261        -23.0         -2.9          -3.0
    0.1        8.1
195.350006    75.00     54     OCh       1285        -23.1         -2.8          -3.0
    0.1        6.4
195.425003    75.00     -      ASE       1309        -23.2         -2.8          -3.0
    0.1        8.3
195.500000    75.00     56     OCh       1333        -23.1         -2.8          -2.9
    0.1        6.2
195.574997    75.00     -      ASE       1357        -23.4         -2.8          -3.0
    0.2        8.2
195.649994    75.00     58     OCh       1381        -23.4         -2.7          -2.9
    0.1        6.4
195.725006    75.00     -      ASE       1405        -23.4         -2.7          -2.8
    0.1        8.5
195.800003    75.00     60     OCh       1429        -23.6         -2.7          -2.8
    0.1        6.6
195.875000    75.00     -      ASE       1453        -23.7         -2.6          -2.9
    0.2        8.7
195.949997    75.00     62     OCh       1477        -23.7         -2.6          -2.8
    0.2        6.9
196.024994    75.00     -      ASE       1501        -23.6         -2.5          -2.7
    0.1        9.0
196.100006    75.00     64     OCh       1525        -23.7         -2.5          -2.7
    0.1        7.1


ASE - Noise Loaded Channel
OCh - Optical Channel
```

show olc band-status

Use the **show olc band-status**command to display the status of all the nodes in the controller.

show olc band-status

Table 4: Syntax Description

This command has no keywords or arguments.

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.9.1	This command was introduced.

Example

The following example shows how to view the status of BFR on each node.

```
RP/0/RP0/CPU0#sh olc band-status
Tue Dec 13 10:45:30.594 UTC

Controller              : Ots0/0/0/0
Self-Band               : C-Band
BFR status              : Running

Node RID                : 10.1.1.1
Self IP Address         : 192.0.2.1
Self Controller         : Ots0/0/0/0
Partner IP address      : 192.0.2.2
Partner Controller      : Ots0/0/0/0
Partner link status     : UP
C-Band status           : ACTIVE
C-Band PSD              : Dual Band
L-Band status           : ACTIVE
L-Band PSD              : Dual Band

Node RID                : 10.1.1.2
Self IP Address         : 192.0.2.6
Self Controller         : Ots0/0/0/0
Partner IP address      : 192.0.2.7
Partner Controller      : Ots0/0/0/2
Partner link status     : UP
C-Band status           : ACTIVE
C-Band PSD              : Dual Band
L-Band status           : ACTIVE
L-Band PSD              : Dual Band

Node RID                : 10.1.1.3
Self IP Address         : 198.51.100.1
Self Controller         : Ots0/0/0/0
Partner IP address      : 198.51.100.2
Partner Controller      : Ots0/0/0/2
Partner link status     : UP
C-Band status           : ACTIVE
C-Band PSD              : Dual Band
L-Band status           : ACTIVE
L-Band PSD              : Dual Band

Node RID                : 10.1.1.4
Self IP Address         : 203.0.113.1
```

```
Self Controller         : Ots0/0/0/0
Partner IP address      : 203.0.113.2
Partner Controller      : Ots0/0/0/0
Partner link status     : UP
C-Band status           : ACTIVE
C-Band PSD              : Dual Band
L-Band status           : ACTIVE
L-Band PSD              : Dual Band

Node RID                : 10.1.1.5
Self IP Address         : 203.0.113.45
Self Controller         : Ots0/0/0/0
Partner IP address      : 203.0.113.46
Partner Controller      : Ots0/0/0/0
Partner link status     : UP
C-Band status           : ACTIVE
C-Band PSD              : Dual Band
L-Band status           : ACTIVE
L-Band PSD              : Dual Band
```

The following table describes the different fields that are displayed in the output of the *show olc band-status* command.

Status	Description
Controller	Name of the controller.
Self-Band	Name of the band. Values: • C-Band • L-Band • None
BFR status	Status of BFR. Values: • Running • Paused • NA
Node RID	Node router ID.
Self IP Address	IP address of the current node on which the command is running. **Note** This field displays *NA* if BFR is paused.
Self Controller	Controller details of the current node on which the command is running. **Note** This field displays *NA* if BFR is paused.

Status	Description
Partner IP address	IP address of the partner node that is connected to the self node in the *Node RID*. This IP address is used to communicate between the L-band and C-band device. **Note** This field displays *NA* if BFR is paused.
Partner Controller	Controller details of the partner node. **Note** This field displays *NA* if BFR is paused.
Partner link status	Connection status of the C and L band nodes. Values: • UP • DOWN **Note** This field displays *NA* if BFR is paused.
C-Band status	C band node status. Valid values: • ACTIVE • FAILED • RECOVERING • NA **Note** This field displays *NA* if BFR is paused.
C-Band PSD	The active PSD profile on the C-Band node. Valid values: • Dual Band • Single Band **Note** This field displays *NA* if BFR is paused.

Status	Description
L-Band status	L band node status. Valid values: • ACTIVE • FAILED • RECOVERING • NA **Note** This field displays *NA* if BFR is paused.
L-Band PSD	The active PSD profile on the L-Band node. Valid values: • Dual Band • Single Band **Note** This field displays *NA* if BFR is paused.

show olc gain-estimator

Use the **show olc gain-estimator** command to view the gain estimation details.

show olc gain-estimator { **controller Ots** *R/S/I/P* }

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to view the information for a particular controller.

Command Modes

User EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following output is a sample of the **show olc gain-estimator** command.

```
RP/0/RP0/CPU0:ios#show olc gain-estimator
Thu May 12 09:30:39.987 UTC
Controller                          : Ots0/0/0/0
```

```
Egress  Gain Estimator Status       : IDLE
Egress  Estimated Gain              : 25.9 dB
Egress  Estimated Gain Mode         : Extended
Egress  Gain Estimation Timestamp   : 2022-05-07 09:16:53

Controller                          : Ots0/0/0/2
Egress  Gain Estimator Status       : IDLE
Egress  Estimated Gain              : 11.7 dB
Egress  Estimated Gain Mode         : Normal
Egress  Gain Estimation Timestamp   : 2022-05-07 10:13:53
```

The following output is a sample of the **show olc gain-estimator controller ots R/S/I/P** command.

```
RP/0/RP0/CPU0:ios#show olc gain-estimator controller Ots 0/0/0/0
Fri Jun 10 05:47:21.119 UTC
Controller                          : Ots0/0/0/0
Ingress Gain Estimator Status       : IDLE
Ingress Estimated Gain              : 21.7 dB
Ingress Estimated Gain Mode         : Normal
Ingress Gain Estimation Timestamp   : 2022-06-10 05:46:48
```

show olc link-tuner

To view link tuner status and PSD computation information, use **show olc link-tuner** command.

show olc link-tuner { **detail** } { { **controller Ots** *R/S/I/P* } }

Syntax Description

detail	Displays link tuner status, PSD computation information, and computed total noise.
R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to view the information for a particular controller.

Command Modes

User EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following sample is an output of **show olc link-tuner** command.

```
RP/0/RP0/CPU0:ios#show olc link-tuner
Controller          : Ots0/0/0/0
Link Tuner Status   : OPERATIONAL
Last PSD computation: 2022-05-06 10:59:51
-------------------------------------------------------------------------
Setpoint            : Computed PSD
                      (dBm/12.5 GHz)
--------------------------s----------------------------------------------
01                     -5.7
02                     -5.6
03                     -5.6
```

```
04                    -5.5
05                    -5.5
06                    -5.4
07                    -5.4
08                    -5.3
09                    -5.3
10                    -5.2
11                    -5.2
12                    -5.1
13                    -5.1
14                    -5.0
15                    -5.0
16                    -4.9
17                    -4.9
18                    -4.8
19                    -4.8
20                    -4.7
21                    -4.7
22                    -4.6
23                    -4.6
24                    -4.5
25                    -4.4
26                    -4.4
27                    -4.3
28                    -4.3
29                    -4.2
30                    -4.2
31                    -4.1
32                    -4.1
33                    -4.0
```

The following sample is an output of **show olc link-tuner detail** command.

```
RP/0/RP0/CPU0:ios#show olc link-tuner detail
Controller          : Ots0/0/0/0
Link Tuner Status   : OPERATIONAL
Last PSD computation: 2022-05-06 10:59:51
Computed Total Noise: -35.4 dB
------------------------------------------------------------------------
Setpoint            : Computed PSD
                      (dBm/12.5 GHz)
------------------------------------------------------------------------
01                     -5.7
02                     -5.6
03                     -5.6
04                     -5.5
05                     -5.5
06                     -5.4
07                     -5.4
08                     -5.3
09                     -5.3
10                     -5.2
11                     -5.2
12                     -5.1
13                     -5.1
14                     -5.0
15                     -5.0
16                     -4.9
17                     -4.9
18                     -4.8
19                     -4.8
20                     -4.7
21                     -4.7
22                     -4.6
23                     -4.6
```

```
24                    -4.5
25                    -4.4
26                    -4.4
27                    -4.3
28                    -4.3
29                    -4.2
30                    -4.2
31                    -4.1
32                    -4.1
33                    -4.0
```

show olc otdr-status

Use the **show olc otdr-status** command to display the status of OTDR scan.

show olc otdr-status [**details**]

Syntax Description

details	Displays detailed OTDR scan status information.

Command Modes

Controller configuration mode

Command History

Release	Modification
Cisco IOS XR Release 7.11.1	This command was introduced.

Example

The following sample displays the results of Raman Turn-up evaluation for Go-condition.

```
RP/0/RP0/CPU0:IOS#show olc otdr-status
Thu Nov  2 10:35:29.338 UTC

Controller                          : Ots0/0/0/0
Auto-scan Start Time                : 2023-11-02 10:32:56
OTDR Auto-scan Status               : COMPLETED
Status Detail                       : Completed on Span Up
Raman Turn Up Fiber Check           : Success
Optical Span Status                 : Up
Trigger Event                       : Span Restore

RP/0/RP0/CPU0:IOS#show olc otdr-status details
Thu Nov  2 10:35:37.969 UTC

Controller                          : Ots0/0/0/0
Auto-scan Start Time                : 2023-11-02 10:32:56
OTDR Auto-scan Status               : COMPLETED
Status Detail                       : Completed on Span Up
Raman Turn Up Fiber Check           : Success
Optical Span Status                 : Up
Trigger Event                       : Span Restore
Last Raman Turn Up Scan Time        : 2023-11-02 10:32:56
Last Raman Turn Up Fiber Check      : Success
Last Trigger Event                  : Span Restore

Critical Distance (m)               : 10200.00
```

```
Raman Turn Up Relaxation Factor (%) : 40
Total Events detected               : 0

NO-GO Events List

Event Type Legend:  NR:Non-Reflective  R:Reflective  FE:Fiber-End  ER:Excess-Reflection
EA:Excess-Attenuation

Event#      |  Detected Event(s)       |  Location (m)    |  Accuracy (m)    |  Magnitude
(dB)  |  Min Relaxation Factor (%)
```

The following samples display the various status of OTDR automatic scan during span fault:

```
RP/0/RP0/CPU0:ios#show olc otdr-status details
Mon Sep 18 13:16:16.461 UTC
Controller                                  : Ots0/0/0/0
Auto-scan Start Time                        : NA
OTDR Auto-scan Status                       : RUNNING
Status Detail                               : Starting on Span Down
Optical Span Status                         : Down
Trigger Event                               : Span Fault
Last Trigger Event                          : Span Restore

RP/0/RP0/CPU0:ios#show olc otdr-status details
Mon Sep 18 13:16:33.304 UTC
Controller                                  : Ots0/0/0/0
Auto-scan Start Time                        : 2023-09-18 13:16:27
OTDR Auto-scan Status                       : RUNNING
Status Detail                               : Waiting Scan Completion on Span Down
Optical Span Status                         : Down
Trigger Event                               : Span Fault
Last Trigger Event                          : Span Restore

RP/0/RP0/CPU0:ios#show olc otdr-status details
Mon Sep 18 13:18:54.154 UTC
Controller                                  : Ots0/0/0/0
Auto-scan Start Time                        : 2023-09-18 13:16:27
OTDR Auto-scan Status                       : COMPLETED
Status Detail                               : Completed on Span Down
Optical Span Status                         : Down
Trigger Event                               : Span Fault
Last Trigger Event                          : Span Fault
```

show olc raman-tuning

To view the Raman tuning status using **show olc raman-tuning** command.

show olc raman-tuning { **controller Ots** *R/S/I/P* }

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to view the information for a particular controller.

Command Modes

User EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following sample is an output of the **show olc raman-tuning** command.

```
RP/0/RP0/CPU0:ios#sh olc raman-tuning
Fri Apr  1 06:38:34.330 UTC

Controller                       : Ots0/0/0/0
Raman-Tuning Status              : TUNED
Tuning Complete Timestamp        : 2022-04-01 05:49:30.407029
Estimated Max Possible Gain      : 21.7 dB
Raman Gain Target                : 14.7 dB
Gain Achieved on Tuning Complete : 14.6 dB
```

The following sample is an output of the **show olc raman-tuning controller ots r/s/i/p** command.

```
RP/0/RP0/CPU0:ios#sh olc raman-tuning controller ots 0/0/0/0
Fri Apr  1 06:42:49.538 UTC

Controller                       : Ots0/0/0/0
Raman-Tuning Status              : TUNED
Tuning Complete Timestamp        : 2022-04-01 05:50:19.934044
Estimated Max Possible Gain      : 21.1 dB
Raman Gain Target                : 18.0 dB
Gain Achieved on Tuning Complete : 18.1 dB
```

show olc span-loss

Use the **show olc span-loss** command to view the Tx span loss and Rx span loss.

show olc span-loss { **controller Ots** *R/S/I/P* }

Syntax Description

R/S/I/P	Rack/Slot/Instance/Port of the OSC controller.
controller Ots	Use this parameter to view the span loss for a particular controller.

Command Modes

User EXEC mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example 1

This example shows the span loss values on a Raman span.

```
RP/0/RP0/CPU0:ios#show olc span-loss

Controller name                           : Ots0/0/0/0
Neighbour RID                             : 10.1.1.2
Apparent Rx Span Loss                     : 21.1 dB

Rx Span Loss (with pumps off)             : NA
Rx Span Loss (with pumps off) measured at : 2024-09-02 07:42:56
Estimated Rx Span Loss                    : NA
Apparent Tx Span Loss                     : 20.8 dB

Tx Span Loss (with pumps off)             : NA
Tx Span Loss (with pumps off) measured at : 2024-09-02 07:42:56
Estimated Tx Span Loss                    : NA
```

Example 2

This example shows the span loss values on a non-Raman span.

```
RP/0/RP0/CPU0:ios#show olc span-loss

Controller name                           : Ots0/0/0/0
Neighbour RID                             : 10.1.1.2
Rx Span Loss                              : 21.1 dB

Rx Span Loss (with pumps off)             : NA
Estimated Rx Span Loss                    : NA
Tx Span Loss                              : 20.8 dB
Tx Span Loss (with pumps off)             : NA
Estimated Tx Span Loss                    : NA
```

show platform

To display information and status for each node in the network, use the **show platform** command in the XR EXEC mode.

Show platform

Syntax Description

show platform	Displays the status of the node

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

To view the information of the node, use the following command:

```
RP/0/RP0/CPU0:R3#sh platform
Wed May 11 15:58:41.627 UTC
Node               Type                      State                     Config state
--------------------------------------------------------------------------------
0/RP0/CPU0         NCS1010-CNTLR-K9(Active) IOS XR RUN                NSHUT,NMON
0/PM0              NCS1010-AC-PSU            OPERATIONAL               NSHUT,NMON
0/PM1              NCS1010-AC-PSU            OPERATIONAL               NSHUT,NMON
0/FT0              NCS1010-FAN               OPERATIONAL               NSHUT,NMON
0/FT1              NCS1010-FAN               OPERATIONAL               NSHUT,NMON
0/0/NXR0           NCS1K-OLT-R-C             OPERATIONAL               NSHUT,NMON
0/2                NCS1K-BRK-SA              OPERATIONAL               NSHUT,NMON
0/2/0              NCS1K-BRK-8               OPERATIONAL               NSHUT,NMON
0/2/1              NCS1K-BRK-16              OPERATIONAL               NSHUT,NMON
0/2/2              NCS1K-BRK-24              OPERATIONAL               NSHUT,NMON
0/2/3              NCS1K-BRK-24-SIM          OPERATIONAL               NSHUT,NMON
```

show tcp dump-file

To display the details of the PCB state from a dump file, use the **show tcp dump-file** command in in EXEC mode.

show tcp dump-file { *dump-file-name* | | **all** | | **list** | { *ipv4-address-of-dumpfiles* | *ipv6-address-of-dumpfiles* | | **all** } } { **location** *node-id* }

Syntax Description

all	Displays all connections information.
location *node-id*	Displays RAW statistics for the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release R24.2.1	This command was introduced.

Usage Guidelines

The basic use of this command is to provide information about the list of all TCP dump files, details of any specific or all TCP dumpfile file. You can also use this command for debugging purpose or to monitor the flow of TCP packets for a TCP connection.

Task ID

Task ID	Operations
transport	read

Examples

The following is sample output from the **show tcp dumpfile all location 0/RP0/CPU0** command:

```
RP/0/RP0/CPU0:ios# show tcp dumpfile list all location 0/RP0/CPU0

total 4
-rw-r--r-- 1 rpathark eng 3884 May 11 20:16 80_80_80_80.26355.179.cl.15892
```

show version

To display the software version and details such as system uptime, use the **show version** command.

show version]

Syntax Description

This command has no keywords or arguments.

Command Default

The software version and details such as system uptime are displayed for all the nodes in the system.

Command Modes

Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

Enter the **show version** command to display the software version, build information and system uptime.

Example

The following example shows a sample output from the **show version** command.

sysadmin-vm:0_RP0# **show version**

```
Thu Apr 28 05:47:48.980 UTC
Cisco IOS XR Software, Version 7.7.1.19I LNT
Copyright (c) 2013-2022 by Cisco Systems, Inc.

Build Information:
Built By     : ingunawa
Built On     : Tue Apr 12 18:27:51 UTC 2022
Build Host   : iox-lnx-109
Workspace    : /auto/iox-lnx-109-san1/prod/7.7.1.19I.SIT_IMAGE/ncs1010/ws
Version      : 7.7.1.19I
Label        : 7.7.1.19I-PROD_BUILD_7_7_1_19I_SIT_IMAGE

cisco NCS1010 (C3758 @ 2.20GHz)
cisco NCS1010-SA (C3758 @ 2.20GHz) processor with 32GB of memory
ios uptime is 2 minutes
NCS 1010 - Chassis
```

span-length

To configure span length, use the **span-length** command.

span-length *length*

Syntax Description

length	Span length in 0.1 km. Range: 1-2000

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Example

The following example is a sample configuration that configures span-length to 10 km.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#span-length 100
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

span-loss

Use the span-loss command to configure the minimum and maximum span loss, baseline and OSC span loss, and bidirectional span loss mismatch thresholds.

span-loss **min** | **max** *threshold* **payload-osc-min-deviation** | **payload-osc-max-deviation** *threshold_value* **min-baseline-deviation** | **max-baseline-deviation** *threshold_value* **bidir-mismatch-tolerance** *threshold_value*

Syntax Description

max	Sets the maximum span loss threshold.
min	Sets the minimum span loss threshold.
threshold	The threshold is set within the range of 0.0 to 42.0 dB, in increments of 0.1 dB. If the threshold value is configured to 42 dB, the actual span loss value is 4.2 dB.
payload-osc-min-deviation *threshold_value*	Configures the minimum threshold difference between the C band and OSC signal Rx span loss values. If the difference is less than the configured minimum value, an alarm is raised. • **Valid range**: 0–420. The unit is 0.1 dB.

payload-osc-max-deviation *threshold_value*	Configures the maximum threshold difference between the C band and OSC signal Rx span loss values. If the difference is more than the configured minimum value, an alarm is raised. • **Valid range**: 0–420. The unit is 0.1 dB.
max-baseline-deviation *threshold_value*	Configures the maximum threshold value for baseline span loss. If the measured signal Rx spanloss increases and the difference between the measured signal Rx span loss and the baselined signal Rx span loss value exceeds the configured max threshold range, the *SPAN-LOSS-BASELINE-DEVIATION-OUT-OF-RANGE* alarm is raised. • **Valid range**: 0–420. The unit is 0.1 dB.
min-baseline-deviation *threshold_value*	Configures the minimum threshold value for baseline span loss. If the measured signal Rx spanloss decreases and the difference between the measured Rx span loss and the baselined signal Rx span loss value exceeds the configured minimum threshold range, the *SPAN-LOSS-BASELINE-DEVIATION-OUT-OF-RANGE* alarm is raised. • **Valid range**: 0–420. The unit is 0.1 dB.
bidir-mismatch-tolerance *threshold_value*	Configures the bidirectional span loss mismatch threshold value for the span. The *SIGNAL-BIDIR-SPAN-LOSS-MISMATCH* alarm is raised when the difference between Tx and Rx signal span loss is greater than the set tolerance value. For non-Raman spans, the difference is between Tx and Rx signal span loss. For Raman spans, it is between apparent Rx and Tx signal span loss. • **Valid range**: 0–420. The unit is 0.1 dB.

Command Modes

(config-olc-ots)

Command History

Release	Modification
Cisco IOS XR Release 26.1.1	These parameters were added: • **payload-osc-min-deviation** *threshold_value* • **payload-osc-max-deviation** *threshold_value* • **min-baseline-deviation** *threshold_value* • **max-baseline-deviation** *threshold_value* • **bidir-mismatch-tolerance** *threshold_value*
Cisco IOS XR Release 7.7.1	This command was introduced.

Example 1

This example sets the span loss minimum threshold to 14 dB and the maximum threshold to 35 dB.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#span-loss max 350
RP/0/RP0/CPU0:ios(config-olc-ots)#span-loss min 140
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

Example 2

In this example, the values configured provide the maximum and minimum difference thresholds between the Rx OSC span loss and Rx span loss, as well as maximum permissible increase and minimum permissible decrease between C band signal Rx span loss and the C band signal Rx span loss baseline values.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#optical-line-control
RP/0/RP0/CPU0:ios(config-olc)#controller ots 0/0/0/0
RP/0/RP0/CPU0:ios(config-olc-ots)#span-loss payload-osc-min-deviation 10 /*sets to 1 dB*/
RP/0/RP0/CPU0:ios(config-olc-ots)#span-loss payload-osc-max-deviation 20 /*sets to 2 dB*/
RP/0/RP0/CPU0:ios(config-olc-ots)#span-loss min-baseline-deviation 5 /*sets to 0.5 dB*/
RP/0/RP0/CPU0:ios(config-olc-ots)#span-loss max-baseline-deviation 30 /*sets to 3 dB*/
RP/0/RP0/CPU0:ios(config-olc-ots)#commit
RP/0/RP0/CPU0:ios(config-olc-ots)#end
```

ssh server timeout

To configure timeout for unused SSH connections and SSH channels on your routers that function as SSH servers, use the **ssh server timeout** command in configuration mode. To remove the timeout configuration, use the **no** form of this command.

ssh server timeout { **channel** | **connection** } *timeout-period*
no ssh server timeout

Syntax Description

ssh server timeout { **channel** | **connection** }	Configures server timeout for SSH channel and connection
timeout-period	Timeout period, in seconds, for unused SSH connections and idle SSH channels. The range is 1 to 86400.

Command Default

Disabled

Command Modes

Configuration mode

Command History

Release	Modification
Release 25.3.1	This command was introduced.

Usage Guidelines

The unused connection timeout and channel timeout are applicable only for connections that are newly created after the timeout period is configured.

The channel timeout begins counting down after the set period of inactivity. The unused connection timeout begins counting down when there is no active channel within the SSH connection.

Task ID

Task ID	Operation
crypto	read, write

Examples

This example shows how to configure a timeout of 600 seconds for an unused SSH connection:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#ssh server timeout connection 600
RP/0/RP0/CPU0:ios(config-ssh)#commit
```

This example shows how to configure a timeout of 300 seconds for an idle SSH channel:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#ssh server timeout channel 300
RP/0/RP0/CPU0:ios(config-ssh)#commit
```

tcp dump-file convert

Use the **tcp dump-file convert** command in EXEC mode to convert the TCP dump packet traces files to other readable formats such as pcap, text, or both.

tcp dump-file convert { *pcap* | *text* | *all-formats* } { *all* | *binary_file_name* | *ipaddress* } **location** { *node-id* } **file** { *absolute file path* }

Syntax Description

pcap	Converts TCP dump packet files to packet capture (pcap) format.
text	Converts TCP dump packet traces files to text format.
all-format	Converts TCP dump packet traces files to both pcap and text format.
all	Collects TCP dump file data from all peers and nodes.
binary_file_name	Specifies the name of the dump file to be converted.
ipaddress	Specifies the IP address of the peer node.

location {*node-id*}	(Optional) Specifies the node to store the converted TCP dump file. The *node-id* is entered in the *rack/slot/module* notation, for example **location** *0/RP0/CPU0*. By default, the files are stored in the current node where the CLI command is executed.
file {*absolute file path* }	(Optional) Specifies the absolute file path where you want to store the converted TCP dump files. The file path is entertered in the *node/filename* notation, for example */harddisk:/demo1*. By default, the converted files are stored inside the file "decoded_dumpfiles" in the current node where the CLI command is executed or if you have provided the location the files are stored in that location.

Command Default

By default, the converted files are stored inside the *decoded_dumpfiles* file.

Command Modes

EXEC

Command History

Release	Modification
Release R24.2.1	This command was introduced.

Usage Guidelines

Use this command to convert TCP dump packet traces files into text, pcap, or both readable formats.

Examples

The following example shows how to convert TCP packet traces files into text and pcap readable formats:

```
RP/0/RP0/CPU0:ios# tcp dump-file convert all-formats all
ascii file is saved at :
/harddisk:/decoded_dumpfiles/text_tcpdump_peer_all_node0_RP0_CPU0_2024_3_19_10_8_53.462070.txt
pcap file is saved at :
/harddisk:/decoded_dumpfiles/pcap_tcpdump_peer_all_node0_RP0_CPU0_2024_3_19_10_8_40.154838.pcap
[OK]
```

The following example shows how to filter TCP dump packet traces by IP address and convert them into text and pcap readable format:

```
RP/0/RP0/CPU0:ios# tcp dump-file convert all-formats ipaddress 192.0.2.121
ascii file is saved at :
/harddisk:/decoded_dumpfiles/text_tcpdump_peer_1_1_1_2_node0_RSP0_CPU0_2024_3_19_10_9_20.539021.txt
pcap file is saved at :
/harddisk:/decoded_dumpfiles/pcap_tcpdump_peer_1_1_1_2_node0_RSP0_CPU0_2024_3_19_10_9_20.539021.pcap
[OK]
```

The following example specifies a location where you want to store the converted TCP dump file:

```
RP/0/RP0/CPU0:ios# tcp dump-file convert all-formats all location 0/RP0/CPU0
ascii file is saved at :
/harddisk:/decoded_dumpfiles/text_tcpdump_peer_all_node0_RP0_CPU0_2024_3_19_12_53_35.12323.txt
pcap file is saved at :
/harddisk:/decoded_dumpfiles/pcap_tcpdump_peer_all_node0_RP0_CPU0_2024_3_19_12_53_35.12323.pcap
[OK]
```

The following example specifies the absolute file path where you want to store the converted TCP dump files:

```
RP/0/RP0/CPU0:ios# tcp dump-file convert text all file /harddisk:/demo2
ascii file is saved at : /harddisk:/demo2.txt
[OK]
```

tone-pattern controller

Use the **tone-pattern controller** command to start or stop initiating the tone pattern from the OTS controller.

tone-pattern controller ots *R/S/I/P* [**start** | **stop**]

Syntax Description

tone-pattern controller ots	Use this parameter to stop or start the tone pattern operation in the OTS controller.
R/S/I/P	Rack/Slot/Instance/Port of the OTS controller.
start	Use this parameter to start the tone-pattern operation in the OTS controller.
stop	Use this parameter to stop the tone-pattern operation in the OTS controller.

Command Default

None

Command Modes

controller configuration mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

The following is a sample configuration of the **tone-pattern controller ots** command that starts the tone pattern on port 2 OTS controller.

```
RP/0/RP0/CPU0:ios#tone-pattern controller ots 0/0/0/2 start
Wed May 25 12:00:03.271 UTC
Tone pattern started
```

The following is a sample configuration of the **tone-pattern controller ots** command that stops the tone pattern on port 2 OTS controller.

```
RP/0/RP0/CPU0:ios#tone-pattern controller ots 0/0/0/2 stop
Wed May 25 12:00:03.271 UTC
Tone pattern detect started
```

tone-pattern-detect controller

Use the **tone-pattern-detect controller** command to start or stop detecting the tone pattern that is initiated from the OTS controller.

tone-pattern-detect controller *controllertype R/S/I/P* [**start** | **stop**]

Syntax Description

tone-pattern-detect controller	Use this parameter to stop or start the tone-pattern detect operation in a particular controller.
controllertype R/S/I/P	Rack/Slot/Instance/Port of the controller.
start	Use this parameter to start the tone-pattern detect operation in a particular controller.
stop	Use this parameter to stop the tone-pattern detect operation in a particular controller.

Command Default

None

Command Modes

controller configuration mode

Command History

Release	Modification
Cisco IOS XR Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

The following is a sample configuration of the **tone-pattern-detect controller** command that starts the tone pattern detection on port 2 OTS controller.

```
RP/0/RP0/CPU0:ios#tone-pattern-detect controller ots 0/0/0/2 start
Wed May 25 12:00:03.271 UTC
Tone pattern detect started
```

The following is a sample configuration of the **tone-pattern-detect controller** command that starts the tone pattern detection on port 2 OMS controller.

```
RP/0/RP0/CPU0:ios#tone-pattern-detect controller oms 0/0/0/2 start
Wed May 25 12:00:03.271 UTC
Tone pattern detect started
```

The following is a sample configuration of the **tone-pattern-detect controller** command that starts the tone pattern detection on port 2 OCH controller.

```
RP/0/RP0/CPU0:ios#tone-pattern-detect controller och 0/0/0/2 start
Wed May 25 12:00:03.271 UTC
Tone pattern detect started
```

The following is a sample configuration of the **tone-pattern-detect controller** command that stops the tone pattern detection on port 2 OTS controller.

```
RP/0/RP0/CPU0:ios#tone-pattern-detect controller ots 0/0/0/2 stop
Wed May 25 12:00:03.271 UTC
Tone pattern detect started
```

The following is a sample configuration of the **tone-pattern-detect controller** command that stops the tone pattern detection on port 2 OMS controller.

```
RP/0/RP0/CPU0:ios#tone-pattern-detect controller oms 0/0/0/2 stop
Wed May 25 12:00:03.271 UTC
Tone pattern detect started
```

The following is a sample configuration of the **tone-pattern-detect controller** command that stops the tone pattern detection on port 2 OCH controller.

```
RP/0/RP0/CPU0:ios#tone-pattern-detect controller och 0/0/0/2 stop
Wed May 25 12:00:03.271 UTC
Tone pattern detect started
```

upgrade hw-module

To upgrade a specific FPD, all the FPDs, or the FPDs belonging to a specific location, use the **upgrade-hw-module** command in Cisco IOS XR mode.

upgrade hw-module [location [*location-id* **| all]] [fpd [** *fpd-name* **] | all]**

Syntax Description

location [*location-id* **| all]**	Upgrades the FPDs belonging to a specific location.
fpd [*fpd-name* **| all]**	Upgrades a specific FPD or all the FPDs.

Command Default

None

Command Modes

Cisco IOS XR

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Example

The following example shows how to upgrade IoFpga FPD.

```
RP/0/RP0/CPU0:ios# upgrade hw-module location 0/Rack fpd IoFpga
```

ztp clean

To remove all Zero Touch Provisioning (ZTP) logs and settings that are saved on the node, use the ztp clean command in EXEC mode.

ztp clean

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Cisco IOS XR Configuration

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

To remove all the ZTP logs and saved settings use the following command.

```
RP/0/RP0/CPU0:ios#ztp clean
Fri Apr 29 06:49:29.760 UTC
This would remove all ZTP temporary files.
Would you like to proceed? [no]: yes
All ZTP operation files have been removed.
ZTP logs are present in /var/log/ztp*.log for logrotate.
Please remove manually if needed.
If you now wish ZTP to run again from boot, do 'conf t/commit replace' followed by reload.
```

ztp initiate

To remove all Zero Touch Provisioning (ZTP) logs and settings that are saved on the node, use the ztp clean command in EXEC mode.

ztp clean

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Cisco IOS XR Configuration

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

To initiate the ZTP use the following command.

```
RP/0/RP0/CPU0:ios#ztp initiate
Fri Jun 17 11:44:08.791 UTC
Initiating ZTP may change your configuration.
Interfaces might be brought up if they are in shutdown state
Would you like to proceed? [no]: yes
ZTP will now run in the background.
Please use "show logging" or look at /var/log/ztp.log to check progress.
RP/0/RP0/CPU0:ios#
```

ztp terminate

To terminate all existing Zero Touch Provisioning (ZTP) processes, use the ztp terminate command in EXECmode.

ztp terminate

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Cisco IOS XR Configuration

Command History

Release	Modification
Release 7.7.1	This command was introduced.

Usage Guidelines

None

Example

To terminate the ZTP process use the following command.

```
RP/0/RP0/CPU0:ios#ztp terminate
Fri Apr 29 06:38:59.238 UTC
This would terminate active ZTP session if any (this may leave your system in a partially
configured
state)
Would you like to proceed? [no]: yes
Terminating ZTP
No ZTP process running
```