



Command Reference for Cisco NCS 1001

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CHAPTER 1

List of Commands

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controller optics

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

```
controller optics R/S/I/P [ baud-rate rate ] [ bits-per-symbol value ] [ cd-max cd-max
| cd-min cd-min | cd-low-threshold cd-low | cd-high-threshold cd-high |
dgd-high-threshold dgd-value | lbc-high-threshold lbc-value | osnr-low-threshold osnr-value
description description | rx-high-threshold rx-high | rx-low-threshold rx-low |
tx-high-threshold tx-high | tx-low-threshold tx-low | sec-admin-state { maintenance | normal
} | shutdown | transmit-power transmit-power | transmit-shutdown | perf-mon {
enable | disable } | pm { 30-sec | 15-min | 24-hour } | optics { report | threshold
{ cd | dgd | lbc | lbc-pc | opr | opr-dbm | opt | opt-dbm | osnr | pr |
pdl | pn | sopmd | rx-sig-pow | rx-sig-pow-dbm } } ]
```

Syntax Description	
R/S/I/P	Rack/Slot/Instance/Port of the optics controller.
baud-rate rate	Sets baud-rate for this controller in GBd.
bits-per-symbol value	Sets bits-per-symbol for this controller.
cd-max cd-max	(Only for trunk optics controllers) Maximum chromatic dispersion. The range is -350000 to +350000 ps/nm.
cd-min cd-min	(Only for trunk optics controllers) Minimum chromatic dispersion. The range is -350000 to +350000 ps/nm.
cd-low-threshold cd-low	(Only for trunk optics controllers) Minimum acceptable chromatic dispersion. The CD alarm is raised if the chromatic dispersion goes below this value. The range is -350000 to +350000 ps/nm.
cd-high-threshold cd-high	(Only for trunk optics controllers) Maximum acceptable chromatic dispersion. The CD alarm is raised if the chromatic dispersion exceeds this value. The range is -350000 to +350000 ps/nm.
dgd-high-threshold dgd-value	(Only for trunk optics controllers) Configures the maximum acceptable Differential Group Delay (DGD) value. The DGD alarm is raised if DGD exceeds this value. The range is 0 to 18000 (in the units of 0.01 ps).
lbc-high-threshold lbc-value	Configures the high laser bias current threshold. The range is 0–100%

osnr-low-threshold <i>osnr-value</i>	(Only for trunk optics controllers) Configures the minimum acceptable Optical Signal to Noise ratio (OSNR) value. The OSNR alarm is raised if OSNR goes below this value. The range is 0–4000 (in units of 0.01db).
description <i>description</i>	Description of the optics controller.
rx-high-threshold <i>rx-high</i>	Configures high receive power threshold. The range is -400 to 300 (in the units of 0.1 dBm).
rx-low-threshold <i>rx-low</i>	Configures low receive power threshold. The range is -400 to 300 (in the units of 0.1 dBm).
tx-high-threshold <i>tx-high</i>	Configures high transmit power threshold. The range is -400 to 300 dBm (in the units of 0.1 dBm).
tx-low-threshold <i>tx-low</i>	Configures low transmit power threshold. The range is -400 to 300 dBm (in the units of 0.1 dBm).
sec-admin-state	Configures the administrative state of the controller. The values are maintenance or normal.
shutdown	Disables the configuration of the controller.
pm	Configures performance monitoring parameters for 30 second, 15 minute, and 24 hour intervals.
transmit-power <i>transmit-power</i>	(Only for trunk optics controllers) Configures the transmit power. The range is -190 to 30 dBm (in the units of 0.1 dBm).
transmit-shutdown	Shuts down the transmit laser.
perf-mon { enable disable }	Enables or disables performance monitoring.
cd	Configures the chromatic dispersion threshold.
dgd	Configures the differential group delay threshold.
lbc	Configures the laser bias current threshold.
lbc-pc	Configures the laser bias current threshold in percentage.
opr	Configures the optical Rx power threshold in uW.
opr-dbm	Configures the optical Rx power threshold in dBm. The unit is 0.01 dBm. For example, if you want to configure 30.00 dBm, enter 3000.
opt	Configures the optical Tx power threshold in uW.
opt-dbm	Configures the optical Tx power threshold in dBm. The unit is 0.01 dBm.
osnr	Configures the OSNR threshold.
pcr	Configures the Polarization Change Rate (PCR) threshold.

pdl	Configures the Polarization Dependent Loss (PDL) threshold.
pn	Configures the Phase Noise (PN) threshold.
sopmd	Configures the Second Order Polarization Mode Dispersion (SOPMD) threshold.
rx-sig-pow	Configures the Rx signal power threshold in uW.
rx-sig-pow-dbm	Configures the Rx signal power threshold in dBm. The unit is 0.01 dBm.

Command Default None

Command History	Release	Modification
	Release 6.5.1	This command was introduced.

Command Modes Optics controller configuration

Usage Guidelines The configurations for chromatic dispersion (cd-max, cd-min, cd-low-threshold, and cd-high-threshold) must be performed only after the **hw-module** configuration. These configurations must be removed before the **no hw-module** configuration.

Example

The following example shows how to configure the optics controller and set the high power threshold at the transmit and receive side.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)#controller optics 0/0/1/1
RP/0/RP0/CPU0:ios(config-optics)#rx-high-threshold 200
RP/0/RP0/CPU0:ios(config-optics)#tx-high-threshold 300
```

The following example shows how to configure the optics controller and set the ranges for chromatic dispersion.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller optics 0/0/1/1
RP/0/RP0/CPU0:ios(config-optics)#cd-max 10000
RP/0/RP0/CPU0:ios(config-optics)#cd-min 2000
```

The following is a sample in which the performance monitoring parameters of optics controller are configured in 24 hour intervals.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#controller optics 0/0/1/1 pm 24-hour optics threshold osnr max 345
RP/0/RP0/CPU0:ios(config)#commit
```

controller ots

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

controller ots *R/S/I/P*

ampli-channel-power *value* | **ampli-channel-psd** *value* | **ampli-control-mode** {**automatic** | **manual**} | **ampli-gain** *value* | **ampli-gain-range** {**extended** | **normal**} | **ampli-gain-thr-deg-high** *value* | **ampli-gain-thr-deg-low** *value* | **ampli-tilt** *value* | **channel-power-max-delta** *value* | **osri** {**on** | **off**} | **pm** {**15-min** | **24-hour** | **30-sec**} | **ots** { **report** { **opr** { **max-tca enable** | **min-tca** } | **opt** { **max-tca enable** | **min-tca** } } } | **threshold** { **max** | **min** } *value* } | **rx-low-threshold** *value* | **rx-low-threshold-delta** *value* | **rx-low-threshold-psd** *value* | **rx-voa-attenuation** *value* | **sec-admin-state** {**normal** | **maintenance**} | **shutdown** | **tx-low-threshold** *value* | **tx-voa-attenuation** *value*

Syntax	Description
<i>R/S/I/P</i>	(For EDFA or PSM) Rack/Slot/Instance/Port of the OTS controller, where: R=0 S=1, 2, or 3 I=0 P=0, 1, 2, or 3
ampli-channel-power <i>value</i>	(For EDFA only) Configures the amplifier per channel power set point. Valid range: -500 to +300 Default value: 0.0
ampli-channel-psd	(For EDFA only) Configures the psd per channel. This is the power spectral density that the EDFA uses to calculate the amplifier gain.
ampli-control-mode	(For EDFA only) Configures the amplifier control mode. Valid modes: automatic or manual
ampli-gain	(For EDFA only) Configures the amplifier gain set point. Valid range: 0 to 500 Default value: 0.0
ampli-gain-range	(For EDFA only) Configures the amplifier gain range. Valid modes: normal to extended
ampli-gain-thr-deg-high	(For EDFA only) Configures high amplifier gain degrade threshold for gain alarm. Valid range: 0 to 500
ampli-gain-thr-deg-low	(For EDFA only) Configures low amplifier gain degrade threshold for gain alarm. Valid range: 0 to 500

ampli-tilt	(For EDFA only) Configures the amplifier tilt. Valid range: -50 to +50
channel-power-max-delta	(For EDFA only) Configures the maximum difference among all the measured channel powers. Valid range: 0 to 200
osri	(For EDFA only) Configures the optical safety remote interlock. Valid modes: on or off
pm	(For EDFA or PSM) Configures the OTS performance monitoring parameters for 15-min, 24-hours, 30-sec, and 10-sec. report —Sets OTS/OPR TCA reporting status. <ul style="list-style-type: none"> • max-tca—Sets OPR maximum TCA reporting status. • min-tca—Sets OPR minimum TCA reporting status. threshold —Configures threshold on OTS parameters. <ul style="list-style-type: none"> • max—The maximum value is 6633. • min—The minimum value is -3000.
rx-low-threshold	(For EDFA or PSM) Configures the rx low receive power threshold. Valid range: -400 to +400 dBm (in the units of 0.1 dBm).
rx-low-threshold-delta	(For PSM only) Configures the threshold hysteresis parameter of PSM revertive switch. Threshold hysteresis parameter is required to avoid transient or flipping power readings in the region near the threshold which is monitoring the primary rx port. Threshold hysteresis parameter, if set, works in combination with WTR timer.
rx-low-threshold-psd	(For EDFA only) Configures the psd threshold.
rx-voa-attenuation	(For PSM only) Configures the RX Voa attenuation set point. Valid range: 0 to 200
safety-control-mode	(For EDFA only) Configures the safety control mode. Valid modes: auto or disabled
sec-admin-state	(For EDFA or PSM) Configures the secondary admin state of ots controller. Valid modes: normal or maintenance Default mode: maintenance
shutdown	(For EDFA or PSM) Disables optics controller processing.

tx-low-threshold	(For EDFA or PSM) Configures the transponder (tx) low transmit power threshold. Valid range: -400 to +400 dBm (in the units of 0.1 dBm).
tx-voa-attenuation	(For PSM only) Configures the TX Voa attenuation set point. Valid range: 0 to 200

Command Default

None

Command Modes

OTS configuration

Command History

Release	Modification
Release 6.2.1	This command was introduced.
Release 7.0.1	rx-low-threshold-delta , rx-low-threshold-psd and ampli-channel-psd keywords were added.

Example

The following is a sample in which the amplifier gain range is set to extended and amplifier gain set point is set to 29.0 dB.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)# controller ots 0/3/0/0
RP/0/RP0/CPU0:ios(config-Ots)# ampli-gain-range extended
RP/0/RP0/CPU0:ios(config-Ots)# ampli-gain 290
RP/0/RP0/CPU0:ios(config-Ots)# commit
```

The following is a sample in which the safety control mode of the booster amplifier is set to disabled.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)# controller ots 0/3/0/1
RP/0/RP0/CPU0:ios(config-Ots)# safety-control-mode disabled
RP/0/RP0/CPU0:ios(config-Ots)# commit
```

controller ots-och

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

controller ots-och *R/S/I/P*

ampli-channel-power *value* | **ampli-control-mode** {**automatic** | **manual**} | **ampli-gain** *value* | **ampli-gain-range** {**extended** | **normal**} | **ampli-gain-thr-deg-high** *value* | **ampli-gain-thr-deg-low** *value* | **ampli-tilt** *value* | **channel-power-max-delta** *value* | **osri** {**on** | **off**} | **pm** {**15-min** | **24-hour** | **30-sec**} | **ots** { **report** { **opr** { **max-tca enable** | **min-tca** } | **opt** { **max-tca enable** | **min-tca** } } } | **threshold** { **max** | **min** } *value* } | **rx-low-threshold** *value* | **rx-voa-attenuation** *value* | **safety-control-mode**

{**auto** | **disabled**} | **sec-admin-state** {**normal** | **maintenance**} | **shutdown** | **tx-low-threshold** *value* | **tx-voa-attenuation** *value*

Syntax	Description
<i>R/S/I/P/C</i>	(For EDFA only) Rack/Slot/Instance/Port/Channel of the OTS-CSH controller, where: R= 0 S= 1, 2, or 3 I= 0 P= 0 or 1 C= 1 to 96 (if grid-mode is set to 50GHz)
ampli-channel-power <i>value</i>	Configures the amplifier per channel power set point. Valid range: -500 to +300 Default value: 0.0
ampli-control-mode	Configures the amplifier control mode. Valid modes: automatic or manual
ampli-gain	Configures the amplifier gain set point. Valid range: 0 to 500 Default value: 0.0
ampli-gain-range	Configures the amplifier gain range. Valid modes: normal to extended
ampli-gain-thr-deg-high	Configures high amplifier gain degrade threshold for gain alarm. Valid range: 0 to 500
ampli-gain-thr-deg-low	Configures low amplifier gain degrade threshold for gain alarm. Valid range: 0 to 500
ampli-tilt	Configures the amplifier tilt. Valid range: -50 to +50
channel-power-max-delta	Configures the maximum difference among all the measured channel powers. Valid range: 0 to 200
osri	Configures the optical safety remote interlock. The valid mode is on or off. Valid modes: on or off

pm	Configures the OTS performance monitoring parameters for 15-min, 24-hours, 30-sec, and 10-sec. report —Sets OTS/OPR TCA reporting status. <ul style="list-style-type: none"> • max-tca—Sets OPR maximum TCA reporting status. • min-tca—Sets OPR minimum TCA reporting status. threshold —Configures threshold on OTS parameters. <ul style="list-style-type: none"> • max—The maximum value is 6633. • min—The minimum value is -3000.
rx-low-threshold	Configures the rx low receive power threshold. Valid range: -400 to +150 dBm (in the units of 0.1 dBm).
rx-voa-attenuation	Configures the RX Voa attenuation set point. Valid range: 0 to 200
safety-control-mode	Configures the safety control mode. Valid modes: auto or disabled
sec-admin-state	Configures the secondary admin state of ots controller. Valid modes: normal or maintenance Default mode: maintenance
shutdown	Disables the ots-och controller processing.
tx-low-threshold	Configures the transponder(tx) low transmit power threshold. Valid range: -400 to +150 dBm (in the units of 0.1 dBm).
tx-voa-attenuation	Configures the TX Voa attenuation set point. Valid range: 0 to 200

Command Default None

Command Modes OTS configuration

Command History	Release	Modification
	Release 6.2.1	This command was introduced.

Example

The following is a sample in which the RX low power threshold and TX low power threshold for the OTS OCH controller is set to -30 dB and -35dB.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)# controller ots-och 0/1/0/0
RP/0/RP0/CPU0:ios(config-Ots)# rx-low-threshold -30
RP/0/RP0/CPU0:ios(config-Ots)# tx-low-threshold -35
RP/0/RP0/CPU0:ios(config-Ots)# commit
```

fault-profile

Use the **fault-profile** command in the global configuration mode, to create a new fault profile with one or more alarms and user-defined severity.

```
fault-profile name fault-identifier subsystem XR fault-type { HW_GFP | HW_ETHERNET | HW_SDH_CONTROLLER | HW_SONET | HW_OPTICS | HW_G709 | HW_CPRI | HW_OTS } fault-tag fault-name sas severity-level nsas severity-level
```

Syntax Description

fault-profile <i>name</i>	Name of the fault profile.
fault-identifier subsystem XR	Supports the IOS XR sub-system.
fault-type	The component the fault profile is applicable to. The available options are: <ul style="list-style-type: none"> • HW_GFP • HW_ETHERNET • HW_SDH_CONTROLLER • HW_SONET • HW_OPTICS • HW_G709 • HW_CPRI • HW_OTS
fault-tag <i>fault-name</i>	The faults that are included as part of the newly created fault profile.

sas severity-level nsas severity-level	<p>Sets the severity level for:</p> <ul style="list-style-type: none"> • sas (service affecting; impacts traffic) • nsas (non-service affecting; does not impact traffic) <p>The available options are:</p> <ul style="list-style-type: none"> • Critical • Major • Minor • Non-faulted • Non-reported
---	---

Command Default	No default behavior or values.
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Command Modes	Global Configuration
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Command History	Release Modification
	This command was introduced.

Example

The following example shows how to use the **fault profile** command.

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RP0/CPU0:ios(config)#fault-profile FpSystem fault-identifier subsystem XR
fault-type HW_OTS fault-tag OTS_SWITCH_TO_PROTECT sas NONFAULTED nsas NONFAULTED
RP/0/RP0/CPU0:ios(config)#commit
```

fault-profile-apply

Use the **fault-profile apply** command in the global configuration mode, to apply a fault profile at the port level or node level.

fault-profile *name* **apply** *rack0 slot location port port-id*

Syntax Description	fault-profile <i>name</i> Name of the fault profile.
	rack 0 slot location port port-id Applies the fault profile at the port level or node level.

Command Default	No default behavior or values.
------------------------	--------------------------------

Command Modes	Global Configuration
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Command History**Release Modification**

This command was introduced.

Example

The following sample creates a fault profile and applies at port or slot level.

The following sample creates a fault profile and applies at node level.

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RP0/CPU0:ios(config)#fault-profile FpNode fault-identifier subsystem XR
fault-type HW_OTS fault-tag OTS_RX_LOS_P sas CRITICAL nsas CRITICAL
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#fault-profile FpNode apply rack 0 slot ALL
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#exit
```

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 <i>seconds</i>	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	<p>ssl version Specify the SSL version to be used for HTTPS requests. Select one of the following versions:</p> <ul style="list-style-type: none"> • 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. <p>By default libcurl does not force the TLS version.</p>
---------------------------	--

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	<p>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</p>
---------------------------	---

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
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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 <i>ip-address</i>	Enter ipv4 address from interface.
	ipv6 <i>ip-address</i>	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 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: <ul style="list-style-type: none"> • 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. <p>By default libcurl does not force the TLS version.</p>
---------------------------	---

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-services	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 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	<i>scale</i> 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	<p>version<i>version</i> Specify the HTTP version to be used for HTTP requests. Select one of the following versions:</p> <ul style="list-style-type: none"> • 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
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Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 7.10.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 7.10.1	This command was introduced.
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.
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Task ID	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>config-services</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	config-services	read, write
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	<i>vrf-name</i> 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	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 7.10.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 7.10.1	This command was introduced.
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	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>config-services</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	config-services	read, write
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 provision the Optical Amplifier Module, Protection Switching Module (PSM), or Optical Time Domain Reflectometer (OTDR) module, use the **hw-module location** command in IOS XR configuration mode.

If **span-loss** is specified, you can specify the optional parameter **span-loss-delta** (range [0,500] in 0.01 dB), which is the threshold delta controlling the OTDR auto-scan trigger.

```
hw-module location { location WORD } slot slotnumber { ampli { auto-threshold } { flex-mode flex-spectrum channel-id channel-id | channel-width channel-width } { grid-mode | { 100GHz | 50GHz | 75GHz | GRIDLESS } | { flex-channel-id channel-id | chan-central-freq frequency | chan-width width | } | span-loss | node-type { iLA | TERM } | udc-vlan VLANID } | psm { revertive wtr wtr-value } { path-protection } { uni-dir } { primary-path path } section-protection { lockout-from { PROTECTED | WORKING } | manual-switch-to { PROTECTED | WORKING } } { relative-switch-threshold value } { relative-switch-threshold-offset value } }
```

```

hw-module location location slot slot-number otdr port port-number direction direction { ml-enabled
| { 1 | 0 } } { scan | { expert | auto | abort } | { mode-auto | mode-expert } }
hw-module location location slot slot-number ampli otdr-autoscan otdr-module-[ipv4-address |
ipv6-address] IPv4 address / IPv6 address otdr-slot-id slot-number otdr-port-id port-number
ampli-far-end-[ipv4-address | ipv6-address] IPv4 address / IPv6 address ampli-far-end-slot-id slot-number
scan-type AUTO
hw-module location location slot slot-number ampli remote node [local-ipv4 | local-ipv6 ] LocalIPv4
address / LocalIPv6 address [remote-ipv4 | remote-ipv6 ] RemoteIPv4 address / RemoteIPv6 address
remote-slot-id slot-number

```

Syntax Description		
<i>location</i>		Specifies the location of the hardware module. The location is 0/RP0/CPU0.
<i>WORD</i>		Specifies the name of the hardware module.
slot <i>slotnumber</i>		(For EDFA, PSM or OTDR) Specifies the slot number. Valid range: 1 to 3
ampli		(For EDFA only) Configures the parameters on the optical amplifier module.
auto-threshold		(For EDFA or PSM) This enables auto-threshold mechanism on EDFA for rx-low-threshold on the ots-och controller, while on PSM enables the auto-threshold mechanism for rx-low-threshold on the working and protected ports.
flex-mode		(For EDFA only) Enables the flex mode. For R7.1.1, the channel width can be set between 50GHz to 800GHz in multiples of 25GHz.
grid-mode { 100GHz 50GHz 75GHz GRIDLESS }		(For EDFA only) Specifies the optical spectrum on the interfaces of the amplifier module. Valid values: 100GHz , 75GHz , 50GHz , and Gridless
flex-channel-id <i>channel-id</i>		(For EDFA only) Defines the channel identifier of a flex-channel. Valid range: 1 to 96
chan-central-freq <i>frequency</i>		(For EDFA only) Defines the central frequency of the channel. Valid range: 191350 to 196100 in multiples of 125.
chan-width <i>width</i>		(For EDFA only) Defines the width of the channel. Valid range: 500 (50.0 GHz) to 8000 (800.0 GHz) in multiples of 12.5GHz.

span-loss	(For EDFA only) Enables automatic span loss calculation.
node-type {iLA TERM}	(For EDFA only) Specifies the type of the node in which the amplifier is set to work. The valid values are iLA and TERM.
udc-vlan <i>VLANID</i>	(For EDFA only) Specifies the VLAN associated to the selected slot and its UDC port. Valid range: 2 to 4080
psm	(For PSM only) Configures the parameters of the protection switching module.
path-protection	(For PSM only) Enables the PSM path protection.
uni-dir	(For PSM only) Enables the PSM uni-directional mode.
revertive	(For PSM only) Enables the revertive switch for PSM.
wtr <i>wtr-value</i>	(For PSM only) Specify the WTR (Wait To Restore Time) in seconds. When this time elapses, traffic is moved to the primary path. This time delay is introduced after LOS alarm on the primary path is cleared. This parameter must be specified in conjunction with revertive .
primary-path	(For PSM only) Configures the primary path of PSM. You can change this path from WORKING to PROTECTED but cannot delete it. Default value: WORKING
lockout-from {PROTECTED WORKING}	(For PSM only) Specify either working or protected port to be locked out. When lockout is configured on any of the ports, traffic is not switched to that port. For example, lockout the protected port if you do not want the traffic to be switched switch to the protected port. Valid values: WORKING or PROTECTED Note If you configure lockout on an active port, the traffic is switched to the other port.
section-protection	(For PSM only) Enables section protection.
otdr port <i>port-number</i> direction <i>direction</i> scan {expert auto abort} {mode-auto mode-expert}	(For OTDR only) Configures OTDR in specific ports and directions in automatic and expert modes.

ml-enabled 1	(For OTDR only) Enables Machine Learning (ML) on the OTDR card. By default, ML is disabled.						
relative-switch-threshold	(For PSM only) Specify the delta threshold value in dB at which the working path should switch to the protected path. It can be set to the value of 0dB. Valid range: <0 to +800> dB Default value: 0 dB When set to 0dB, the threshold is ignored and the system automatically applies the primary and secondary switch thresholds. When set to a non-zero value, the system overrides the primary and secondary switch thresholds.						
relative-switch-threshold offset	(For PSM only) Specify the value in dB that compensates the normal difference of receiving power between the working and protected paths. A negative offset value compensates the difference in receiving power where the protected path receives a higher power than the working path. A positive offset value compensates the difference in receiving power where the protected path receives a lower power than the working path. Valid range: <-300 to +300> dB Default value: 0 dB The offset works only if the value of <i>relative-switch-threshold</i> is set to a non-zero value.						
otdr-autoscan otdr-module-[ipv4-address ipv6-address]IPv4 address IPv6 addressscan-type AUTO	Performs OTDR auto scan between different NCS 1001 nodes using either IPv4 or IPv6 addresses configured on their management interfaces. Limitation: OTDR measurement using IPv6 address is not supported on the OSC management interfaces.						
ampli remote node [local-ipv4 local-ipv6]LocalIPv4 address LocalIPv6 address[remote-ipv4 remote-ipv6]RemoteIPv4 address RemoteIPv6 address	Defines local or remote node addresses using either IPv4 or IPv6 address in span loss calculation.						
Command Default	No hardware module is configured.						
Command Modes	Cisco IOS XR Configuration						
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 6.2.1</td> <td>This command was introduced.</td> </tr> <tr> <td>Release 6.3.1</td> <td>iLA keyword was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 6.2.1	This command was introduced.	Release 6.3.1	iLA keyword was introduced.
Release	Modification						
Release 6.2.1	This command was introduced.						
Release 6.3.1	iLA keyword was introduced.						

Release	Modification
Release 6.5.1	otdr keyword was introduced. span-loss keyword was introduced.
Release 7.0.1	revertive wtr , flex-mode , primary-path , relative-switch-threshold , and relative-switch-threshold-offset keywords were introduced.
Release 7.1.1	auto-threshold keyword was introduced for EDFA.
Release 7.3.1	<ul style="list-style-type: none"> • ml-enabled keyword was introduced to enable ML on the OTDR card. • 75GHz grid mode was introduced. • flex-channel-id, chan-central-freq, and chan-width keywords were added to configure flex channels on the Amplifier module.
Release 7.10.1	<ul style="list-style-type: none"> • ipv6-address keyword was introduced to perform OTDR autoscan using IPv6 address. • local-ipv6 and remote-ipv6 keywords were added to define local or remote node addresses using IPv6 address in span loss calculation.

Usage Guidelines

You can use **no hw-module location** command to remove all the hardware module configurations.

Example

The following is a sample in which the amplifier module is inserted in slot 3 and udc-vlan is set to 4000.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)# hw-module location 0/RP0/CPU0 slot 3 ampli grid-mode 100GHz
RP/0/RP0/CPU0:ios(config)# hw-module location 0/RP0/CPU0 slot 3 ampli udc-vlan 4000
```

The following is a sample in which the PSM module is inserted in slot 2.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)# hw-module location 0/RP0/CPU0 slot 2 psm manual-switch-to working
RP/0/RP0/CPU0:ios(config)# hw-module location 0/RP0/CPU0 slot 2 psm lockout-from working
```

The following is a sample in which the amplifier module is configured in ILA automatic mode.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)# hw-module location 0/RP0/CPU0 slot 3 ampli grid-mode 50GHz
node-type iLA
```

The following is a sample of configuring the WTR parameter of PSM revertive switch in which the PSM module is inserted in slot 2 and primary path is set to working.

```
configure
hw-module location 0/RP0/CPU0 slot 2 psm
revertive wtr 120
primary-path WORKING
commit
end
```

The following is a sample for enabling autothreshold on an EDFA equipped in slot 1.

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RP0/CPU0:ios(config)#hw-module location 0/RP0/CPU0 slot 1 ampli auto-threshold
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

The following command configures the channel width as 800GHz. This means that the channels are spaced on eight slices at 100GHz each.

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RP0/CPU0:ios(config)#hw-module location 0/RP0/CPU0 slot 1 ampli flex-mode flex-spectrum
channel-id 10 channel-width 8000
RP/0/RP0/CPU0:ios(config)#commit
RP/0/RP0/CPU0:ios(config)#end
```

The following is a sample for enabling ML on the OTDR card on slot 1, port 1, and direction tx:

```
RP/0/RP0/CPU0(config)#hw-module location 0/RP0/CPU0 slot 1 otdr port 1 direction tx ml-enabled
1
RP/0/RP0/CPU0(config)#commit
```

The following is a sample in which the amplifier module is configured in flex spectrum.

```
RP/0/RP0/CPU0:ios#configure terminal
RP/0/RP0/CPU0:ios(config)#hw-module location 0/RP0/CPU0 slot 2 ampli grid-mode gridless
RP/0/RP0/CPU0:ios(config)#hw-module location 0/RP0/CPU0 slot 2 ampli flex-channel-id 5
chan-central-freq 1931750 chan-width 6500
RP/0/RP0/CPU0(config)#commit
RP/0/RP0/CPU0(config)#end
```

hw-module slot

To start the calculation of rxlow-threshold for an EDFA inserted in slot 1, use the **hw-module slot** command in IOS XR configuration mode.

hw-module slot { *slot number* } { **ampli-auto-rxlow-threshold** { **threshold-offset** } { *offset* } }

Syntax Description	slot <i>slotnumber</i>	Specifies the slot number. The range is 1–3.
	ampli-auto-rxlow-threshold	Triggers the auto-threshold calculation.
	threshold-offset <i>offset</i>	<i>Offset</i> is a value to be chosen in the range <0-800> (in tenth of dBm).
Command Modes	EXEC	
Command History	Release	Modification
	Release 7.1.1	ampli-auto-rxlow-threshold and threshold-offset keywords were introduced.

Example

The following is a sample to start the calculation of rx-low-threshold for an EDFA equipped in slot 1 and offset is 4 dB.

```
RP/0/RP0/CPU0:ios#hw-module slot 1 ampli-auto-rxlow-threshold threshold-offset 40
```

hw-module eth-switch

To enable or disable the UDC ports and their attributes, use the **hw-module eth-switch** command in IOS XR configuration mode.

```
hw-module eth-switch { port [ CpuMgmt | Rj45Mgmt | Rj45Udc1 | Rj45Udc2 | Rj45Udc3
| SfpMgmt | SfpUdc1 | SfpUdc2 | SfpUdc3 ] { disable | enable-clear-on-read
| enable-loopback } | { clear-stats [ all | port Device port number ] }
```

Syntax Description

eth-switch	Enables, disables, or clears port configurations.
port { CpuMgmt Rj45Mgmt Rj45Udc1 Rj45Udc2 Rj45Udc3 SfpMgmt SfpUdc1 SfpUdc2 SfpUdc3 {disable enable-clear-on-read enable-loopback } }	Disables configurations, clears attribute, or enables loopback for each port.
clear-stats {all port <i>Device port number</i> }	Clears all the counters on the selected port and turns off the Clear-On-Read attribute.

Command Modes

Cisco IOS XR Configuration

Command History

Release	Modification
Release 7.8.1	<ul style="list-style-type: none"> • port keyword was introduced to disable attributes or enable loopback for the selected ports. • clear-stats keyword was introduced to clear all the counters on the selected port.

Example

The following is a sample to enable loopback for the management port on the CPU side.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#hw-module eth-switch port CpuMgmt enable-loopback
RP/0/RP0/CPU0(config)#commit
```

The following is a sample to clear the counters of the management port on the CPU side.

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#hw-module eth-switch clear-stats port CpuMgmt
RP/0/RP0/CPU0(config)#commit
```

router-id

To specify an IPv4 address to act as the router ID, use the **router-id** command in MPLS LDP configuration mode.

router-id *ip-address*

Syntax Description	
	<i>ip-address</i> IP address in A.B.C.D format

Command Default LDP uses router ID as determined by global router ID agent, IP Address Repository Manager (IP ARM).

Command Modes MPLS LDP configuration

Command History	Release	Modification
	Release 6.3.2	This command was introduced.

Example

The following example shows how to specify an IP address as the router ID:

```
RP/0/RP0/CPU0:ios(config-ldp)# router-id 10.0.0.1
```

router ospf

To enable Open Shortest Path First (OSPF) for a specific area interface, use the **router ospf** command in IOS XR Configuration mode.

router ospf *process-id* [**area** { *area-id* | *ip-address* }] **interface** *type* *R/S/I/P*

Syntax Description	
	<i>process-id</i> Internally used identification parameter for an OSPF routing process. It is locally assigned and can be any positive integer. A unique value is assigned for each OSPF routing process.
	area (Optional) Enters the OSPF area configuration submode.
	<i>area-id</i> Specifies the OSPF area ID as a decimal value.
	<i>ip-address</i> Specifies the OSPF area ID as an IP address in A.B.C.D format.
	interface (Optional) Enters the OSPF interface configuration submode.
	<i>type</i> Interface type.
	<i>R/S/I/P</i> Rack/Slot/Instance/Port

Command Default No default behavior or values

Command Modes IOS XR Configuration Mode

Command History	Release	Modification
	Release 6.3.2	This command was introduced.

Example

The following example shows how to enable OSPF.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)# router ospf 109
RP/0/RP0/CPU0:ios(config-ospf)#
```

show alarms

To display alarms in brief, detail or xml format, use the **show alarms** command in XR EXEC mode or Administration EXEC mode.

show alarms brief [**card** [**location** *location* | *WORD* | **xml**] | **xml**]

show alarms detail [**card** [**location** *location* | *WORD* | **xml**] | **xml**] **system** [**active** | **clients** | **history** | **stats** | **suppressed** | **xml**]

show alarms xml

Syntax Description		
brief		Displays alarms in brief.
card		Displays card scope alarms related data.
location <i>location</i>		Specifies the target location in the <i>rack/slot</i> notation.
<i>WORD</i>		Specifies the name of the card.
xml		Displays the output in xml format.
detail		Displays alarms in detail.
system		Displays the system scope alarms related data.
active		Displays the active alarms.
clients		Displays the clients associated with the service.
history		Displays the alarm history.
stats		Displays the service statistics.
suppressed		Displays the suppressed alarms.

Command Default None

Command Modes EXEC

Administration EXEC

Command History

Release	Modification
Release 6.2.1	This command was introduced.

Example

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

```
sysadmin-vm:0_RP0# show alarms
```

```
RP/0/RP0/CPU0:ios#show alarms
Mon Apr 17 07:32:33.474 CEST
```

```
-----
Active Alarms (Brief) for 0/RP0
-----
```

Location	Severity	Group	Set Time	Description
0/2	NotAlarmed	Controller	04/17/2017 07:31:09	CES0ts0/2/0/1 - Switched to Protect Path
0/3	NotAlarmed	Controller	04/17/2017 07:31:10	CES0ts0/3/0/0 - Amplifier OFF for Safety Reasons
0/3	Critical	Controller	04/17/2017 07:31:10	CES0ts0/3/0/1 - Loss Of Continuity
0/3	NotAlarmed	Controller	04/17/2017 07:31:10	CES0ts0/3/0/1 - Amplifier OFF for Safety Reasons
0/3	Critical	Controller	04/17/2017 07:31:10	CES0ts0/3/0/3 - Loss of Signal - Payload
0/1	NotAlarmed	Controller	04/17/2017 07:31:10	CES0ts0/1/0/0 - Amplifier OFF for Safety Reasons
0/1	Critical	Controller	04/17/2017 07:31:10	CES0ts0/1/0/1 - Loss Of Continuity
0/1	NotAlarmed	Controller	04/17/2017 07:31:10	CES0ts0/1/0/1 - Amplifier OFF for Safety Reasons
0/1	Critical	Controller	04/17/2017 07:31:10	CES0ts0/1/0/3 - Loss of Signal - Payload
0/2	Critical	Controller	04/17/2017 07:31:10	CES0ts0/2/0/1 - Loss of Signal - Payload
0/2	Critical	Controller	04/17/2017 07:31:10	CES0ts0/2/0/2 - Loss of Signal - Payload

History Alarms (Brief) for 0/RP0

Location	Severity	Group	Set Time	Description
			Clear Time	
0/1	Critical	Controller	04/17/2017 04:32:11	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:32:11 CEST	
0/1	Critical	Controller	04/17/2017 04:32:38	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:32:38 CEST	
0/3	NotAlarmed	Controller	04/17/2017 04:32:41	CES0ts0/3/0/1 - Amplifier in power reduction for safety reasons
			04/17/2017 04:32:49 CEST	
0/1	NotAlarmed	Controller	04/17/2017 04:32:43	CES0ts0/1/0/1 - Amplifier in power reduction for safety reasons
			04/17/2017 04:32:51 CEST	
0/1	Critical	Controller	04/17/2017 04:33:04	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:33:04 CEST	
0/1	Critical	Controller	04/17/2017 04:33:30	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:33:30 CEST	
0/1	Critical	Controller	04/17/2017 04:33:56	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:33:56 CEST	
0/1	Critical	Controller	04/17/2017 04:34:25	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:34:25 CEST	
0/3	NotAlarmed	Controller	04/17/2017 04:34:29	CES0ts0/3/0/1 - Amplifier in power reduction for safety reasons
			04/17/2017 04:34:37 CEST	
0/1	NotAlarmed	Controller	04/17/2017 04:34:31	CES0ts0/1/0/1 - Amplifier in power reduction for safety reasons
			04/17/2017 04:34:39 CEST	
0/1	Critical	Controller	04/17/2017 04:34:51	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:34:51 CEST	
0/1	Critical	Controller	04/17/2017 04:35:17	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:35:17 CEST	
0/1	Critical	Controller	04/17/2017 04:35:44	CES0ts0/1/0/2 - Loss of Signal - Payload
			04/17/2017 04:35:44 CEST	
0/1	Critical	Controller	04/17/2017 04:36:10	CES0ts0/1/0/2 - Loss of Signal - Payload

```

04/17/2017 04:36:10 CEST
0/3          NotAlarmed  Controller      04/17/2017 04:36:17 CESOts0/3/0/1 - Amplifier
in power reduction for safety reasons

04/17/2017 04:36:25 CEST
0/1          NotAlarmed  Controller      04/17/2017 04:36:19 CESOts0/1/0/1 - Amplifier
in power reduction for safety reasons

04/17/2017 04:36:27 CEST
0/1          Critical     Controller      04/17/2017 04:36:36 CESOts0/1/0/2 - Loss of
Signal - Payload

04/17/2017 04:36:36 CEST
0/1          Critical     Controller      04/17/2017 04:37:02 CESOts0/1/0/2 - Loss of
Signal - Payload

04/17/2017 04:37:02 CEST
0/1          Critical     Controller      04/17/2017 04:37:27 CESOts0/1/0/2 - Loss of
Signal - Payload

04/17/2017 04:37:27 CEST
0/1          Critical     Controller      04/17/2017 04:37:54 CESOts0/1/0/2 - Loss of
Signal - Payload

04/17/2017 04:37:54 CEST
0/3          Critical     Controller      04/17/2017 04:31:01 CESOts0/3/0/1 - Loss Of
Continuity

04/17/2017 04:38:06 CEST
0/3          NotAlarmed  Controller      04/17/2017 04:31:01 CESOts0/3/0/1 - Amplifier
OFF for Safety Reasons

04/17/2017 04:38:06 CEST
0/2          NotAlarmed  Controller      04/17/2017 04:30:59 CESOts0/2/0/1 - Switched
to Protect Path

04/17/2017 04:38:06 CEST

```

RP/0/RP0/CPU0:ios#show alarms detail system active

Mon Apr 17 07:35:49.634 CEST

Active Alarms

Description: Amplifier in power reduction for safety reasons

```

Location:          0/3
AID:               XR/(null)/139
Tag String:        FAM_FAULT_TAG_OTS_AUTO_POW_RED
Module Name:       Ots0/3/0/0
EID:               MODULE/TRC/1:PORT/OTS/0
Reporting Agent ID: 65587
Pending Sync:      false
Severity:          NotAlarmed
Status:            Set
Group:             Controller
Set Time:          04/17/2017 07:32:50 CEST
Clear Time:        -
Service Affecting: NotServiceAffecting
Transport Direction: Receive
Transport Source:  NearEnd

```



```

Threshold Value:      -
Current Value:       -
Bucket Type:         NotSpecified
Event Type:          Default
Interface:           Ots0/3/0/0
Alarm Name:          AUTO-POW-RED

```

```
-----
Description:         Loss Of Continuity

```

```

Location:            0/3
AID:                 XR/(null)/135
Tag String:          FAM_FAULT_TAG_OTX_RX_LOC
Module Name:         Ots0/3/0/1
EID:                 MODULE/TRC/1:PORT/OTS/1
Reporting Agent ID: 65587
Pending Sync:        false
Severity:            Critical
Status:              Set
Group:               Controller
Set Time:            04/17/2017 07:35:11 CEST
Clear Time:          -
Service Affecting:   ServiceAffecting
Transport Direction: Receive
Transport Source:    NearEnd
Threshold Value:     -
Current Value:       -
Bucket Type:         NotSpecified
Event Type:          Default
Interface:           Ots0/3/0/1
Alarm Name:          RX-LOC

```

```
-----
Description:         Amplifier OFF for Safety Reasons

```

```

Location:            0/3
AID:                 XR/(null)/138
Tag String:          FAM_FAULT_TAG_OTX_AUTO_LASER_SHUT
Module Name:         Ots0/3/0/1
EID:                 MODULE/TRC/1:PORT/OTS/1
Reporting Agent ID: 65587
Pending Sync:        false
Severity:            NotAlarmed
Status:              Set
Group:               Controller
Set Time:            04/17/2017 07:35:11 CEST
Clear Time:          -
Service Affecting:   NotServiceAffecting
Transport Direction: Receive
Transport Source:    NearEnd
Threshold Value:     -
Current Value:       -
Bucket Type:         NotSpecified
Event Type:          Default
Interface:           Ots0/3/0/1
Alarm Name:          AUTO-LASER-SHUT

```

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
| all } [diff]
```

Syntax Description		
	since	Displays all changes committed to the running configuration since (and including) a specific configuration commit.
	<i>commit-id</i>	Displays configuration changes for a specific configuration commit.
	last <i>number-of-commits</i>	Displays the changes made to the running configuration during the last number of configuration commits specified for the <i>number-of-commits</i> argument.
	all	Displays commit ID and configurations completed for last 100 commits.
	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 7.0.1	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 1000035693.

```
RP/0/RP0/CPU0:ios#show configuration commit changes 1000035693
Tue Feb 28 14:28:03.404 UTC
!! Building configuration...
interface GCC20/1/0/12
  ipv4 address 10.1.1.2 255.255.255.0
!
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 1000035693 was committed.

```
RP/0/RP0/CPU0:ios#show configuration commit changes since 1000035693
Tue Feb 28 14:29:42.858 UTC
!! Building configuration...
controller ODU40/1/0/12
  no gcc2
!
no interface preconfigure GCC20/1/0/12
no keyring keyring_all_in_one
no ikev2 profile profile_all_in_one
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:ios#show configuration commit changes since 1000035681 diff
Tue Feb 28 14:32:24.349 UTC
!! Building configuration...
- logging console disable
# line default
# exec-timeout 0 0
# !
- controller ODU40/1/0/12
- gcc2
- !
- interface preconfigure GCC20/1/0/12
- ipv4 address 10.1.1.2 255.255.255.0
- !
- keyring keyring_all_in_one
```

```

- peer link_1
- pre-shared-key password 11021C1C46
- address 10.1.1.2 255.255.255.0
- !
- !
end

```

The following example shows sample output from the **show configuration commit changes** command with the **all** keyword. In this example, the output displays the list of configurations that are committed in last 100 commits along with their commit-ID.

```

RP/0/RP0/CPU0:ios#show configuration commit changes all
Tue Feb 28 14:33:33.772 UTC

Commit ID : 1000035611
-----
!! Building configuration...
controller Optics0/3/0/12
 shutdown
!
end

Commit ID : 1000035612
-----
!! Building configuration...
controller Optics0/3/0/12
 no shutdown
!
end

Commit ID : 1000035613
-----
!! Building configuration...
controller Odu-Group-Mpl signal Otn odu-type ODUC4
 no protection-switching operate lockout odu-dest ODUC40/3/0/12
!
end

```

show controllers

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

```

show controllers controllertype R/S/I/P [db | dwdm-carrrier-map | periodic {15-min period period
duration duration | 24-hour period period duration duration | 30-sec period period duration duration }
| pm | {current {15-min optics lane number } {24-hour optics lane number } {30-sec optics lane number
} { flex-bin optics lane number bucket bucket number } | history {15-min optics lane number bucket
bucket number } {24-hour optics lane number } {30-sec optics lane number bucket bucket number } {
flex-bin optics lane number bucket bucket number }} | summary]

```

Syntax Description

controllertype

Type of the controller. The possible values are OTS, OTS-OCH, Coherent DSP, Fast Ethernet, FortyGigECtrlr, GigabitEthernet and so on.

<i>R/S/I/P/L</i>	Rack/Slot/Instance/Port/Lane number of the controller.
db	(Optional) Displays the optics parameters.
dwdm-carrrier-map	(Optional) Displays the ITU channel, frequency, and wavelength.
periodic	(Optional) Displays the performance monitoring data in 15 minute, 24 hour, and 30 seconds intervals.
period <i>period</i>	(Optional) Displays the performance monitoring data after the specified period. The range is from 1 to 60.
duration <i>duration</i>	(Optional) Displays the performance monitoring data for the specified number of times. The range is from 1 to 60.
pm	(Optional) Displays the optics performance monitoring parameters.
current	(Optional) Displays the current performance monitoring data in 10 seconds, 15 minute, 24 hour, and 30 seconds intervals.
history	(Optional) Displays the historical performance monitoring data in 10 seconds, 15 minute, 24 hour, and 30 seconds intervals.
optics	(Optional) Displays the performance monitoring data for optics controller.
<i>lanenumber</i>	(Optional) Lane number to display performance monitoring data. The valid value is 1.
bucket	(Optional) Displays the performance monitoring data for the specified bucket.
<i>bucketnumber</i>	(Optional) Lane number to display performance monitoring data. The valid range is 1 to 32 for 15 minute interval. The valid range is 1 to 30 for 30 seconds interval.
summary	(Optional) Displays brief information about optics controller.

Command Default

The status and configuration information of all the interfaces is displayed.

Command Modes

EXEC

Command History

Release	Modification
Release 6.2.1	This command was introduced.
Release 7.3.1	flex-bin keyword was added.

Examples

RP/0/RP0/CPU0:ios# **show controllers ots 0/3/0/1**

```
RP/0/RP0/CPU0:ios#show controllers ots 0/3/0/1
Wed Aug 23 09:08:27.962 UTC
```

```
Controller State: Up

Transport Admin State: In Service

Port Type: Line

Laser State: Off

Optics Status::
```

```
Alarm Status:
-----
Detected Alarms:
RX-LOC
```

```
Alarm Statistics:
-----
LOW-RX-PWR = 0
LOW-TX-PWR = 0
RX-LOS-P = 0
RX-LOC = 1
AMPLI-GAIN-DEG-LOW = 0
AMPLI-GAIN-DEG-HIGH = 0
AUTO-LASER-SHUT = 0
AUTO-POW-RED = 89
AUTO-AMPLI-CTRL-DISABLED = 0
AUTO-AMPLI-CFG-MISMATCH = 0
SWITCH-TO-PROTECT = 0
AUTO-AMPLI-CTRL-RUNNING = 0
```

```
Parameter Statistics:
-----
TX Power = -40.00 dBm
RX Power = -40.00 dBm
Ampli Gain = -1.00 dB
Ampli Tilt = 0.00
Total TX Power = -40.00 dBm
Total RX Power = -40.00 dBm
```

```
Configured Parameters:
-----
Rx Low Threshold = -25.0 dBm
Tx Low Threshold = -20.0 dBm
Ampli Gain = 1.00 dB
Ampli Tilt = 0.00
Ampli Channel power = 0.00 dBm
Channel Power Max Delta = 3.00 dBm
Ampli Control mode = Manual
Ampli Gain Range = Normal
Ampli Safety Control mode = auto
Osri = OFF
```

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

```
RP/0/RP0/CPU0:ios# show controllers ots 0/1/0/3 db
```

```
Wed Apr 12 08:34:37.869 CEST
```

```
Transport Admin State: In Service
```

Controller State: Up

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

Wed Apr 12 07:49:58.268 CEST

Optics in interval 1 [00:00:00 - 24:00:00 Tue Apr 11 2017]

Optics history bucket type : Valid

	MIN	AVG	MAX
LBC[%]	: 0.0	15.0	18.9
OPT[dBm]	: -40.00	0.44	8.00
OPR[dBm]	: -40.00	-11.37	-7.80

Last clearing of "show controllers OPTICS" counters never

RP/0/RP0/CPU0:ios# show controllers ots 0/1/0/1 periodic 15-min period 2 duration 2

Wed Apr 12 08:06:46.211 CEST

Iteration 1 of 2 for channel 1, Query At Timestamp: [08:06:48.495 Wed Apr 12 2017]

Optics in the current interval [08:00:00 - 08:06:48 Wed Apr 12 2017]

Optics current bucket type : Valid

	MIN	AVG	MAX	Threshold (min)	TCA (enable)	Threshold (max)	TCA (enable)
LBC[%]	: 15.1	15.1	15.1	0.0	NO	0.0	NO
OPT[dBm]	: 0.40	0.42	0.50	-50.00	NO	10.00	NO
OPR[dBm]	: -11.70	-11.69	-11.61	-50.00	NO	10.00	NO

Last clearing of "show controllers OPTICS" counters never

Iteration 2 of 2 for channel 1, Query At Timestamp: [08:06:50.494 Wed Apr 12 2017]

Optics in the current interval [08:00:00 - 08:06:50 Wed Apr 12 2017]

Optics current bucket type : Valid

	MIN	AVG	MAX	Threshold (min)	TCA (enable)	Threshold (max)	TCA (enable)
LBC[%]	: 15.1	15.1	15.1	0.0	NO	0.0	NO
OPT[dBm]	: 0.40	0.42	0.50	-50.00	NO	10.00	NO
OPR[dBm]	: -11.70	-11.69	-11.61	-50.00	NO	10.00	NO

Last clearing of "show controllers OPTICS" counters never

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

Wed Apr 12 08:15:22.555 CEST

Optics in interval 1 [08:14:30 - 08:15:00 Wed Apr 12 2017]

Optics history bucket type : Valid

	MIN	AVG	MAX
LBC[%]	: 15.1	15.1	15.1
OPT[dBm]	: 0.50	0.50	0.50
OPR[dBm]	: -11.70	-11.61	-11.61

Last clearing of "show controllers OPTICS" counters never

RP/0/RP0/CPU0:ios# show controllers ots 0/1/0/3 summary

Wed Apr 12 08:35:26.353 CEST

Port	Type	Status	TX Power (dBm)	TX Total Power (dBm)	RX Power (dBm)	RX Total Power (dBm)
Ots0_1_0_3	Com-Check	N/A	Unavailable	Unavailable	-8.30	Unavailable

RX Voa Attenuation (dBm)	TX Voa Attenuation (dBm)	Ampli Gain	Ampli Tilt
Unavailable	Unavailable	Unavailable	Unavailable

The following sample shows the configured channel with its frequency and width.

RP/0/RP0/CPU0#show controllers ots-och 0/2/0/0/5 summary

```

Fri Oct 9 10:43:44.002 CEST
Port      Type  Status  TX Power  RX Power
          (dBm) (dBm)
-----
Ots-Och0_2_0_0_5  Com   N/A     -8.60     -8.90
TX psd      RX psd  Central  Channel Width
(nW/MHz)    (nW/MHz) Frequency (GHz)  (GHz)
-----
0.410      0.450    193175.0    650.0

```

RP/0/RP0/CPU0#show controllers ots-och 0/2/0/0/5

Fri Oct 9 10:46:33.046 CEST

Controller State: Up

Transport Admin State: Maintenance

Port Type: Com

Laser State: Unknown

Optics Status::

```

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

```

```

Alarm Statistics:
-----
LOW-RX-PWR = 0
LOW-TX-PWR = 0
RX-LOS-P = 0
RX-LOC = 0
AMPLI-GAIN-DEG-LOW = 0
AMPLI-GAIN-DEG-HIGH = 0
AUTO-LASER-SHUT = 0
AUTO-POW-RED = 0
AUTO-AMPLI-CTRL-DISABLED = 0
AUTO-AMPLI-CFG-MISMATCH = 0

```



```

SWITCH-TO-PROTECT = 0
AUTO-AMPLI-CTRL-RUNNING = 0

Parameter Statistics:
-----
TX Power = -8.60 dBm
RX Power = -8.90 dBm
TX psd = 0.440 nW/MHz
RX psd = 0.450 nW/MHz
Channel Central Frequency = 193175.0 GHz
Channel Width = 650.0 GHz

Configured Parameters:
-----
Rx Low Threshold = -25.0 dBm
Tx Low Threshold = -25.0 dBm

```

show hw-module

To display the details of the Field Programmable Devices (FPDs), location, patchcord configuration, and slot, use the **show hw-module** in EXEC mode.

```

show hw-module { details | fpd [ WORD | help-fpd ] | location { WORD | all fpd [ WORD | help-fpd ] | help-loc | 0/0 | 0/1 | 0/2 | 0/3 | 0/FT0 | 0/FT1 | 0/FT2 | 0/FT3 | 0/RP0 } | patchcord { all | port optics R/S/I/P } | slot slotnumber { ampli-trail-view { all | bst | pre } | channel-trail-view active all } }
show hw-module slot slot-number otdr {status | scan}
show hw-module eth-switch { ports-attrs | | stats port port number | | vlangs }

```

Syntax Description	details	Displays the hardware module information.
	fpd	Displays information for all the Field Programmable Devices (FPD) installed.
	<i>WORD</i>	(Optional) Displays information of the specified FPD.
	help-fpd	(Optional) Displays the list of all FPDs installed.
	location	Displays the information of the specified location of the FPD.
	all	Displays all the FPDs location information.
	help-loc	Displays the list of all available locations.
	0/0, 0/1, 0/2, 0/3, 0/FT0, 0/FT1, 0/FT2, 0/FT3, 0/RP0	Displays the location of the FPD.
	patchcord	Displays the hardware module patch-cord information.
	all	Displays all the hardware module patch-cord information.
	port optics <i>R/S/I/P</i>	Displays the configured patch-cord information for the specified optical port. <i>R/S/I/P</i> —Rack/Slot/Instance/Port/Lane number of the controller

slot <i>slotnumber</i>	Displays the slot information. <i>slotnumber</i> —Slot number of the hardware module. The valid range is 1–3.
ampli-trail-view	Defines the booster and pre trail information.
all	Displays booster and pre trail information.
bst	Displays booster trail information.
pre	Displays pre trail information.
channel-trail-view	Defines the channels trail information.
active	Displays active channels trail information.
all	Displays all channels trail information.
otdr { status scan }	status keyword: Displays a table with the status for all the OTDR ports and directions scan keyword: Displays the list of OTDR measurements
eth-switch	Displays information that is related to the port state, VLAN lists and port statistics.
ports-attrs	Displays ports attributes and status.
stats	Displays counters for the selected port.
vlangs	Displays the list of configured VLANs.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 6.2.1	This command was introduced.
Release 6.5.1	otdr keyword was introduced.
Release 7.8.1	eth-switch , ports-attrs , stats , and vlangs were introduced to display information that is related to the port state, VLAN lists, and port statistics.

Example

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

```
Tue Sep 12 16:13:00.898 CEST
```

```
FPD Versions
=====
```

Location	Card type	HWver	FPD device	ATR	Status	Running	Programd
0/0	NCS1001-K9	0.1	Control_BKP	B	CURRENT		1.09
0/0	NCS1001-K9	0.1	Control_FPGA		CURRENT	1.09	1.09
0/1	NCS1K-EDFA	0.0	FW_EDFAv1		CURRENT	1.39	1.39
0/2	NCS1K-PSM	0.0	FW_PSMv1		CURRENT	1.38	1.38
0/3	NCS1K-EDFA	0.0	FW_EDFAv1		CURRENT	1.39	1.39
0/RP0	NCS1K-CNTLR2	0.1	BIOS_Backup	BS	CURRENT		13.60
0/RP0	NCS1K-CNTLR2	0.1	BIOS_Primary	S	CURRENT	13.60	13.60
0/RP0	NCS1K-CNTLR2	0.1	Daisy_Duke_BKP	BS	CURRENT		0.17
0/RP0	NCS1K-CNTLR2	0.1	Daisy_Duke_FPGA	S	CURRENT	0.17	0.17

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

```
Thu Apr 13 08:24:15.770 CEST
Control_BKP
Control_FPGA
FW_EDFAv1
FW_PSMv2
FW_EDFAv1
BIOS_Backup
BIOS_Primary
Daisy_Duke_BKP
Daisy_Duke_FPGA
```

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

```
Thu Apr 13 08:25:15.360 CEST

FPD Versions
=====
Location  Card type      HWver  FPD device    ATR  Status  Running  Programd
-----
0/0       NCS1001-K9     0.1    Control_BKP   B    CURRENT  1.09     1.09
```

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

```
Thu Apr 13 08:30:12.529 CEST
Control_BKP
Control_FPGA
```

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

```
Thu Apr 13 08:30:38.114 CEST

FPD Versions
=====
Location  Card type      HWver  FPD device    ATR  Status  Running  Programd
-----
0/0       NCS1001-K9     0.1    Control_FPGA   B    CURRENT  1.09     1.09
```

RP/0/RP0/CPU0:ios# show hw-module location all fpd help-fpd

```
Thu Apr 13 08:33:50.794 CEST
Control_BKP
Control_FPGA
FW_EDFAv1
FW_PSMv2
FW_EDFAv1
BIOS_Backup
BIOS_Primary
```

show hw-module

```
Daisy_Duke_BKP
Daisy_Duke_FPGA
```

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

```
Tue Sep 12 16:13:00.898 CEST
```

```

                                          FPD Versions
                                          =====
Location   Card type           HWver FPD device   ATR Status   Running Programd
-----
0/0         NCS1001-K9           0.1 Control_BKP       B CURRENT    1.09         1.09
0/0         NCS1001-K9           0.1 Control_FPGA      CURRENT      1.09         1.09
0/1         NCS1K-EDFA           0.0 FW_EDFAv1        CURRENT      1.39         1.39
0/2         NCS1K-PSM            0.0 FW_PSMv1         CURRENT      1.38         1.38
0/3         NCS1K-EDFA           0.0 FW_EDFAv1        CURRENT      1.39         1.39
0/RP0      NCS1K-CNTLR2         0.1 BIOS_Backup      BS CURRENT    13.60        13.60
0/RP0      NCS1K-CNTLR2         0.1 BIOS_Primary     S CURRENT    13.60        13.60
0/RP0      NCS1K-CNTLR2         0.1 Daisy_Duke_BKP   BS CURRENT    0.17         0.17
0/RP0      NCS1K-CNTLR2         0.1 Daisy_Duke_FPGA   S CURRENT    0.17         0.17

```

RP/0/RP0/CPU0:ios# show hw-module location all fpd Control_BKP

```
Thu Apr 13 08:37:26.261 CEST
```

```

                                          FPD Versions
                                          =====
Location   Card type           HWver FPD device   ATR Status   Running Programd
-----
0/0         NCS1001-K9           0.1 Control_BKP       B CURRENT    1.09

```

RP/0/RP0/CPU0:ios# show hw-module patchcord all

```
Thu Apr 13 08:38:53.553 CEST
```

```
Hw-module Patchcord Configuration
```

```
-----
No Hw-module Patchcord Configuration exists
```

RP/0/RP0/CPU0:ios# show hw-module patchcord port optics 0/3/0/4

```
Thu Apr 13 08:40:52.355 CEST
```

```
Hw-module Patchcord Configuration
```

```
-----
Given Port has not been used in any Patchcord Configuration
```

RP/0/RP0/CPU0:ios# show hw-module slot 1 ampli-trail-view all

```
Thu Apr 13 08:43:25.305 CEST
```

```

Ampli Trail View - BST and PRE Amplifiers
=====
Port: 0/COM                               Port: 1/LINE
-----
      Rx Power = -17.00 dBm                 Rx Power = -50.00 dBm
      Rx Total Power = -17.00 dBm           Rx Total Power = -50.00 dBm
      Rx Low Threshold = -25.0 dBm          Rx Low Threshold = -25.0 dBm

Port: 1/LINE                               Port: 0/COM
-----

```

```

Tx Power = -50.00 dBm
Tx Total Power = -50.00 dBm
Tx Low Threshold = -20.0 dBm

Bst Gain = 1.00 dB
Bst Tilt = 2.00
Bst Channel Power = 3.00 dBm
Bst Control Mode = Auto
Bst Safety Mode = ALS Auto
Bst Osri = Off
Bst Gain Range = Normal

Tx Power = -50.00 dBm
Tx Total Power = -50.00 dBm
Tx Low Threshold = -20.0 dBm

Pre Gain = -90.00 dB
Pre Tilt = 0.00
Pre Channel Power = 3.00 dBm
Pre Control Mode = Auto
Pre Safety Mode = ALS Auto
Pre Osri = Off
Pre Gain Range = Normal

```

RP/0/RP0/CPU0:ios# show hw-module slot 1 ampli-trail-view pre

Thu Apr 13 08:44:44.927 CEST

Ampli Trail View - PRE Amplifier

=====

Port: 1/LINE

```

Rx Power = -7.70 dBm
Rx Total Power = -7.80 dBm
Rx Low Threshold = -25.0 dBm

```

Port: 0/COM

```

Tx Power = -50.00 dBm
Tx Total Power = -50.00 dBm
Tx Low Threshold = -2.0 dBm

```

```

Ampli Gain = 0.00 dB
Ampli Tilt = 0.00
Channel Power = 3.00 dBm
Control Mode = Auto
Safety Mode = ALS Auto
Osri = Off
Gain Range = Normal

```

RP/0/RP0/CPU0:ios# show hw-module slot 1 channel-trail-view active

Thu Apr 13 08:45:45.582 CEST

Channel Trail View - Active

=====

Och Name	Wavelength	Frequency	0/COM - BST - 1/LINE		1/LINE - PRE - 0/COM	
			Rx Power	Tx Power	Rx Power	Tx Power

RP/0/RP0/CPU0:ios# show hw-module location all fpd Control_BKP

RP/0/RP0/CPU0:ios#show hw-module slot 1 channel-trail-view all

Thu Apr 13 08:48:00.763 CEST

Channel Trail View - All

=====

1/LINE - PRE - 0/COM			0/COM - BST - 1/LINE			
Och Name	Wavelength	Frequency	Rx Power	Tx Power	Rx Power	Tx Power
Rx Power						
Tx Power						

```

-----
Ots-Och0_1_0_0_1      1528.77 nm      196.10 THz      -34.80 dBm      -50.00 dBm
-36.00 dBm      -5.50 dBm
Ots-Och0_1_0_0_2      1529.16 nm      196.05 THz      -35.80 dBm      -50.00 dBm
-38.20 dBm      -5.50 dBm
Ots-Och0_1_0_0_3      1529.55 nm      196.00 THz      -18.70 dBm      -50.00 dBm
-39.30 dBm      -5.40 dBm
Ots-Och0_1_0_0_4      1529.94 nm      195.95 THz      -36.50 dBm      -31.60 dBm
-33.80 dBm      -5.30 dBm
Ots-Och0_1_0_0_5      1530.33 nm      195.90 THz      -35.50 dBm      -50.00 dBm
-42.00 dBm      -5.50 dBm
Ots-Och0_1_0_0_6      1530.72 nm      195.85 THz      -46.40 dBm      -33.90 dBm
-44.10 dBm      -5.60 dBm
Ots-Och0_1_0_0_7      1531.12 nm      195.80 THz      -42.80 dBm      -35.90 dBm
-39.20 dBm      -5.60 dBm
Ots-Och0_1_0_0_8      1531.51 nm      195.75 THz      -39.50 dBm      -43.20 dBm
-44.80 dBm      -5.80 dBm
Ots-Och0_1_0_0_9      1531.90 nm      195.70 THz      -36.20 dBm      -50.00 dBm
-41.20 dBm      -5.80 dBm
Ots-Och0_1_0_0_10     1532.29 nm      195.65 THz      -42.00 dBm      -36.50 dBm
-46.40 dBm      -5.90 dBm
Ots-Och0_1_0_0_11     1532.68 nm      195.60 THz      -30.90 dBm      -33.60 dBm
-32.50 dBm      -6.10 dBm
Ots-Och0_1_0_0_12     1533.07 nm      195.55 THz      -46.00 dBm      -50.00 dBm
-41.00 dBm      -6.40 dBm
Ots-Och0_1_0_0_13     1533.46 nm      195.50 THz      -42.40 dBm      -50.00 dBm
-40.80 dBm      -6.50 dBm
Ots-Och0_1_0_0_14     1533.86 nm      195.45 THz      -42.80 dBm      -34.60 dBm
-37.00 dBm      -6.80 dBm
Ots-Och0_1_0_0_15     1534.25 nm      195.40 THz      -42.50 dBm      -33.60 dBm
-38.30 dBm      -7.00 dBm
Ots-Och0_1_0_0_16     1534.64 nm      195.35 THz      -39.90 dBm      -40.10 dBm
-40.30 dBm      -7.30 dBm
Ots-Och0_1_0_0_17     1535.04 nm      195.30 THz      -36.90 dBm      -50.00 dBm
-37.60 dBm      -7.60 dBm
Ots-Och0_1_0_0_18     1535.43 nm      195.25 THz      -34.00 dBm      -35.40 dBm
-34.80 dBm      -8.00 dBm
Ots-Och0_1_0_0_19     1535.82 nm      195.20 THz      -36.70 dBm      -50.00 dBm
-50.00 dBm      -8.30 dBm
Ots-Och0_1_0_0_20     1536.22 nm      195.15 THz      -39.80 dBm      -50.00 dBm
-41.80 dBm      -8.50 dBm
Ots-Och0_1_0_0_21     1536.61 nm      195.10 THz      -40.20 dBm      -50.00 dBm
-39.40 dBm      -8.60 dBm
Ots-Och0_1_0_0_22     1537.00 nm      195.05 THz      -36.70 dBm      -50.00 dBm
-43.00 dBm      -8.90 dBm
Ots-Och0_1_0_0_23     1537.40 nm      195.00 THz      -39.40 dBm      -50.00 dBm
-40.20 dBm      -9.00 dBm
Ots-Och0_1_0_0_24     1537.79 nm      194.95 THz      -44.40 dBm      -50.00 dBm
-39.10 dBm      -8.90 dBm
Ots-Och0_1_0_0_25     1538.19 nm      194.90 THz      -35.50 dBm      -30.40 dBm
-41.20 dBm      -9.10 dBm
Ots-Och0_1_0_0_26     1538.58 nm      194.85 THz      -39.80 dBm      -50.00 dBm
-41.60 dBm      -9.10 dBm
Ots-Och0_1_0_0_27     1538.98 nm      194.80 THz      -30.40 dBm      -31.10 dBm
-32.90 dBm      -9.20 dBm
Ots-Och0_1_0_0_28     1539.37 nm      194.75 THz      -40.00 dBm      -50.00 dBm
-38.60 dBm      -9.30 dBm
Ots-Och0_1_0_0_29     1539.77 nm      194.70 THz      -40.90 dBm      -33.50 dBm
-38.50 dBm      -9.30 dBm
Ots-Och0_1_0_0_30     1540.16 nm      194.65 THz      -36.20 dBm      -50.00 dBm
-36.30 dBm      -9.30 dBm
Ots-Och0_1_0_0_31     1540.56 nm      194.60 THz      -35.70 dBm      -50.00 dBm
-43.50 dBm      -9.50 dBm

```

Ots-Och0_1_0_0_32	1540.95 nm	194.55 THz	-48.70 dBm	-40.20 dBm
-50.00 dBm	-9.50 dBm			
Ots-Och0_1_0_0_33	1541.35 nm	194.50 THz	-35.40 dBm	-50.00 dBm
-36.80 dBm	-9.40 dBm			
Ots-Och0_1_0_0_34	1541.75 nm	194.45 THz	-34.50 dBm	-50.00 dBm
-38.10 dBm	-9.40 dBm			
Ots-Och0_1_0_0_35	1542.14 nm	194.40 THz	-39.60 dBm	-38.00 dBm
-38.60 dBm	-9.50 dBm			
Ots-Och0_1_0_0_36	1542.54 nm	194.35 THz	-42.50 dBm	-50.00 dBm
-35.10 dBm	-9.50 dBm			
Ots-Och0_1_0_0_37	1542.94 nm	194.30 THz	-34.80 dBm	-39.40 dBm
-38.90 dBm	-9.70 dBm			
Ots-Och0_1_0_0_38	1543.33 nm	194.25 THz	-40.10 dBm	-36.90 dBm
-41.60 dBm	-9.80 dBm			
Ots-Och0_1_0_0_39	1543.73 nm	194.20 THz	-29.90 dBm	-29.20 dBm
-33.10 dBm	-9.60 dBm			
Ots-Och0_1_0_0_40	1544.13 nm	194.15 THz	-36.50 dBm	-50.00 dBm
-34.80 dBm	-9.80 dBm			
Ots-Och0_1_0_0_41	1544.53 nm	194.10 THz	-37.60 dBm	-35.50 dBm
-39.40 dBm	-9.90 dBm			
Ots-Och0_1_0_0_42	1544.92 nm	194.05 THz	-37.10 dBm	-50.00 dBm
-40.70 dBm	-9.60 dBm			
Ots-Och0_1_0_0_43	1545.32 nm	194.00 THz	-38.60 dBm	-50.00 dBm
-36.20 dBm	-9.80 dBm			
Ots-Och0_1_0_0_44	1545.72 nm	193.95 THz	-32.40 dBm	-41.30 dBm
-41.80 dBm	-10.20 dBm			
Ots-Och0_1_0_0_45	1546.12 nm	193.90 THz	-33.90 dBm	-32.50 dBm
-41.20 dBm	-10.00 dBm			
Ots-Och0_1_0_0_46	1546.52 nm	193.85 THz	-38.00 dBm	-50.00 dBm
-50.00 dBm	-10.10 dBm			
Ots-Och0_1_0_0_47	1546.92 nm	193.80 THz	-32.70 dBm	-29.80 dBm
-37.40 dBm	-10.20 dBm			
Ots-Och0_1_0_0_48	1547.32 nm	193.75 THz	-40.20 dBm	-37.80 dBm
-38.70 dBm	-10.20 dBm			
Ots-Och0_1_0_0_49	1547.71 nm	193.70 THz	-35.80 dBm	-32.00 dBm
-40.60 dBm	-10.40 dBm			
Ots-Och0_1_0_0_50	1548.12 nm	193.65 THz	-35.70 dBm	-41.10 dBm
-37.80 dBm	-10.40 dBm			
Ots-Och0_1_0_0_51	1548.52 nm	193.60 THz	-45.40 dBm	-45.10 dBm
-37.20 dBm	-10.40 dBm			
Ots-Och0_1_0_0_52	1548.91 nm	193.55 THz	-47.10 dBm	-32.80 dBm
-39.10 dBm	-10.70 dBm			
Ots-Och0_1_0_0_53	1549.32 nm	193.50 THz	-41.60 dBm	-50.00 dBm
-37.40 dBm	-10.60 dBm			
Ots-Och0_1_0_0_54	1549.71 nm	193.45 THz	-34.60 dBm	-50.00 dBm
-34.10 dBm	-10.80 dBm			
Ots-Och0_1_0_0_55	1550.12 nm	193.40 THz	-38.80 dBm	-50.00 dBm
-43.50 dBm	-10.50 dBm			
Ots-Och0_1_0_0_56	1550.52 nm	193.35 THz	-29.40 dBm	-29.90 dBm
-31.30 dBm	-10.90 dBm			
Ots-Och0_1_0_0_57	1550.92 nm	193.30 THz	-33.50 dBm	-50.00 dBm
-37.90 dBm	-11.00 dBm			
Ots-Och0_1_0_0_58	1551.32 nm	193.25 THz	-38.20 dBm	-35.30 dBm
-37.30 dBm	-10.90 dBm			
Ots-Och0_1_0_0_59	1551.72 nm	193.20 THz	-30.70 dBm	-36.10 dBm
-37.10 dBm	-10.90 dBm			
Ots-Och0_1_0_0_60	1552.12 nm	193.15 THz	-34.80 dBm	-50.00 dBm
-42.00 dBm	-11.10 dBm			
Ots-Och0_1_0_0_61	1552.52 nm	193.10 THz	-38.00 dBm	-31.80 dBm
-35.30 dBm	-11.10 dBm			
Ots-Och0_1_0_0_62	1552.93 nm	193.05 THz	-33.40 dBm	-30.90 dBm
-41.00 dBm	-11.00 dBm			
Ots-Och0_1_0_0_63	1553.33 nm	193.00 THz	-34.20 dBm	-50.00 dBm
-50.00 dBm	-11.20 dBm			

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Ots-Och0_1_0_0_64	1553.73 nm	192.95 THz	-36.40 dBm	-43.50 dBm
-36.10 dBm	-11.30 dBm			
Ots-Och0_1_0_0_65	1554.13 nm	192.90 THz	-41.20 dBm	-37.70 dBm
-50.00 dBm	-11.50 dBm			
Ots-Och0_1_0_0_66	1554.54 nm	192.85 THz	-35.40 dBm	-30.00 dBm
-40.10 dBm	-11.30 dBm			
Ots-Och0_1_0_0_67	1554.94 nm	192.80 THz	-38.70 dBm	-50.00 dBm
-37.40 dBm	-11.30 dBm			
Ots-Och0_1_0_0_68	1555.34 nm	192.75 THz	-42.10 dBm	-50.00 dBm
-40.80 dBm	-11.30 dBm			
Ots-Och0_1_0_0_69	1555.75 nm	192.70 THz	-34.20 dBm	-34.60 dBm
-36.20 dBm	-11.30 dBm			
Ots-Och0_1_0_0_70	1556.15 nm	192.65 THz	-38.10 dBm	-31.60 dBm
-37.20 dBm	-11.40 dBm			
Ots-Och0_1_0_0_71	1556.56 nm	192.60 THz	-43.50 dBm	-36.90 dBm
-50.00 dBm	-11.30 dBm			
Ots-Och0_1_0_0_72	1556.96 nm	192.55 THz	-32.30 dBm	-50.00 dBm
-50.00 dBm	-12.00 dBm			
Ots-Och0_1_0_0_73	1557.36 nm	192.50 THz	-39.50 dBm	-50.00 dBm
-37.00 dBm	-11.50 dBm			
Ots-Och0_1_0_0_74	1557.77 nm	192.45 THz	-35.20 dBm	-50.00 dBm
-39.10 dBm	-11.80 dBm			
Ots-Och0_1_0_0_75	1558.17 nm	192.40 THz	-32.50 dBm	-50.00 dBm
-41.00 dBm	-11.40 dBm			
Ots-Och0_1_0_0_76	1558.58 nm	192.35 THz	-34.70 dBm	-50.00 dBm
-39.10 dBm	-11.70 dBm			
Ots-Och0_1_0_0_77	1558.98 nm	192.30 THz	-37.90 dBm	-50.00 dBm
-41.20 dBm	-11.70 dBm			
Ots-Och0_1_0_0_78	1559.39 nm	192.25 THz	-35.30 dBm	-50.00 dBm
-36.10 dBm	-11.90 dBm			
Ots-Och0_1_0_0_79	1559.79 nm	192.20 THz	-35.70 dBm	-50.00 dBm
-50.00 dBm	-12.00 dBm			
Ots-Och0_1_0_0_80	1560.20 nm	192.15 THz	-35.40 dBm	-50.00 dBm
-40.20 dBm	-12.00 dBm			
Ots-Och0_1_0_0_81	1560.61 nm	192.10 THz	-32.40 dBm	-50.00 dBm
-37.80 dBm	-12.10 dBm			
Ots-Och0_1_0_0_82	1561.01 nm	192.05 THz	-35.80 dBm	-38.10 dBm
-37.70 dBm	-12.10 dBm			
Ots-Och0_1_0_0_83	1561.42 nm	192.00 THz	-33.10 dBm	-50.00 dBm
-32.70 dBm	-12.20 dBm			
Ots-Och0_1_0_0_84	1561.83 nm	191.95 THz	-42.10 dBm	-33.90 dBm
-32.60 dBm	-11.90 dBm			
Ots-Och0_1_0_0_85	1562.23 nm	191.90 THz	-28.90 dBm	-28.60 dBm
-30.30 dBm	-12.70 dBm			
Ots-Och0_1_0_0_86	1562.64 nm	191.85 THz	-31.30 dBm	-50.00 dBm
-33.60 dBm	-12.60 dBm			
Ots-Och0_1_0_0_87	1563.05 nm	191.80 THz	-34.70 dBm	-34.20 dBm
-32.70 dBm	-12.40 dBm			
Ots-Och0_1_0_0_88	1563.45 nm	191.75 THz	-35.10 dBm	-34.20 dBm
-35.00 dBm	-13.00 dBm			
Ots-Och0_1_0_0_89	1563.86 nm	191.70 THz	-33.00 dBm	-32.00 dBm
-42.10 dBm	-12.70 dBm			
Ots-Och0_1_0_0_90	1564.27 nm	191.65 THz	-39.90 dBm	-50.00 dBm
-33.90 dBm	-13.20 dBm			
Ots-Och0_1_0_0_91	1564.68 nm	191.60 THz	-34.90 dBm	-50.00 dBm
-35.70 dBm	-13.10 dBm			
Ots-Och0_1_0_0_92	1565.09 nm	191.55 THz	-30.40 dBm	-32.00 dBm
-50.00 dBm	-13.30 dBm			
Ots-Och0_1_0_0_93	1565.50 nm	191.50 THz	-38.00 dBm	-50.00 dBm
-50.00 dBm	-13.70 dBm			
Ots-Och0_1_0_0_94	1565.90 nm	191.45 THz	-31.90 dBm	-36.00 dBm
-37.70 dBm	-12.90 dBm			
Ots-Och0_1_0_0_95	1566.31 nm	191.40 THz	-35.40 dBm	-31.30 dBm
-35.70 dBm	-13.30 dBm			


```
Ots-Och0_1_0_0_96      1566.72 nm      191.35 THz      -38.30 dBm      -50.00 dBm
-33.90 dBm      -13.90 dBm
```

The following is a sample to display all the counters on the management port on the CPU side.

```
RP/0/RP0/CPU0:ios#show hw-module eth-switch stats port CpuMgmt
Mon May 16 09:10:24.491 UTC
```

```
***** START *****
PORT MAC COUNTERS - Test cmd [1] [Port:0x18]
goodPktsSent          0
goodPktsRcv           0
ucPktsSent            17
ucPktsRcv             2
mcPktsSent            1489
mcPktsRcv             0
brdcPktsSent          349
brdcPktsRcv           1
goodOctetsSent        200863
goodOctetsRcv         474
pkts64Octets          614
pkts65to127Octets    872
pkts128to255Octets   86
pkts256to511Octets   286
pkts512to1023Octets  0
pkts1024tomaxOctets  0
pkts1024to1518Octets 0
```

The following is a sample to display the attributes for all the configured ports.

```
RP/0/RP0/CPU0:ios#show hw-module eth-switch ports-attrs
Thu Nov 10 13:24:16.932 CET
Ports Attributes:
Port SfpUdc3 # 0 (enable)      Link UP          Full-Duplex  9604 [1 Gbps] 6(1000BASE_X)
Clear-On-Read
Port SfpUdc2 # 4 (enable)      Link UP          Full-Duplex  9604 [1 Gbps] 6(1000BASE_X)
Clear-On-Read
Port SfpUdc1 # 8 (enable)      Link UP          Full-Duplex  9604 [1 Gbps] 6(1000BASE_X)
Clear-On-Read
Port Rj45Udc1 # 12 (enable)    Link DOWN       Half-Duplex  9600 [1 Gbps] 3(SGMII)
Clear-On-Read
Port Rj45Udc2 # 16 (enable)    Link DOWN       Half-Duplex  9600 [1 Gbps] 3(SGMII)
Clear-On-Read
Port Rj45Udc3 # 20 (enable)    Link DOWN       Half-Duplex  9600 [1 Gbps] 3(SGMII)
Clear-On-Read
Port CpuMgmt # 24 (enable)     Link UP          Full-Duplex  1522 [1 Gbps] 6(1000BASE_X)
Port # 25 (enable)            Link UP          Full-Duplex  1522 [1 Gbps] 6(1000BASE_X)
Port Rj45Mgmt # 26 (enable)    Link UP          Full-Duplex  1522 [1 Gbps] 3(SGMII)
Port SfpMgmt # 27 (enable)     Link DOWN       Half-Duplex  1522 [1 Gbps] 3(SGMII)
```

show inventory

To retrieve and display the physical inventory information, use the **show inventory** command in EXEC or administration EXEC mode.

```
show inventory [WORD | all | details | location {WORD | all | 0/0 | 0/1 | 0/2 | 0/3 | 0/FT0 | 0/FT1 | 0/FT2 | 0/FT3 | 0/RP0} details | raw | {details} | vendor-type]
```

Syntax Description	<i>WORD</i>	(Optional) Displays information of the partially qualified location specification.
	all	(Optional) Displays inventory information for all the physical entities.
	details	(Optional) Displays the detailed entity information.
	location	(Optional) Displays inventory information for the specified location of the chassis. 0/0, 0/1, 0/2, 0/3, 0/FT0, 0/FT1, 0/FT2, 0/FT3, 0/RP0 —Fully qualified location specification.
	raw	(Optional) Displays raw information about the chassis for diagnostic purposes.
	vendor-type	(Optional) Displays vendor type inventory information about the chassis.

Command Default All hardware inventory information is displayed.

Command Modes EXEC
Administration EXEC

Command History	Release	Modification
	Release 6.2.1	This command was introduced.
	Release 6.5.1	The output was updated to include the passive modules connected through the USB ports.

Example

RP/0/RP0/CPU0:ios# **show inventory**

```
Thu Apr 13 09:21:03.096 CEST
NAME: "0/0", DESCR: "Network Convergence System 1001 line system 3 slots"
PID: NCS1001-K9      , VID: V00, SN: CAT2015B010

NAME: "0/1", DESCR: "Network Convergence System 1000 amplifier module"
PID: NCS1K-EDFA     , VID: V01, SN: IIF2025003L

NAME: "0/2", DESCR: "Network Convergence System 1000 protection module"
PID: NCS1K-PSM      , VID: V01, SN: OPM20461001

NAME: "0/3", DESCR: "Network Convergence System 1000 amplifier module"
PID: NCS1K-EDFA     , VID: V01, SN: IIF2024001K

NAME: "0/RP0", DESCR: "Network Convergence System 1000 Controller"
PID: NCS1K-CNTLR2   , VID: V01, SN: CAT2013B00P

NAME: "0/RP0-SFP-PORT", DESCR: "Unqualified SFP Pluggable Optics Module"
PID: ONS-SI-GE-LX   , VID: V01 , SN: FNS17350WZT

NAME: "Rack 0", DESCR: "Network Convergence System 1001 line system 3 slots"
PID: NCS1001-K9     , VID: V00, SN: CAT2015B010

NAME: "0/FT0", DESCR: "Network Convergence System 1001 Fan"
PID: NCS1K1-FAN     , VID: V01, SN: N/A
```

```

NAME: "0/FT1", DESCR: "Network Convergence System 1001 Fan"
PID: NCS1K1-FAN          , VID: V01, SN: N/A

NAME: "0/FT2", DESCR: "Network Convergence System 1001 Fan"
PID: NCS1K1-FAN          , VID: V01, SN: N/A

NAME: "0/FT3", DESCR: "Network Convergence System 1001 Fan"
PID: NCS1K1-FAN          , VID: V01, SN: N/A

NAME: "0/PM0", DESCR: "Network Convergence System 1000 2KW AC PSU"
PID: NCS1K-2KW-AC2      , VID: V00, SN: POG2004JT0L

NAME: "0/PM1", DESCR: "Network Convergence System 1000 2KW AC PSU"
PID: NCS1K-2KW-AC2      , VID: V00, SN: POG2015JT1G

NAME: "0/RP0-USB0", DESCR: "ONS Mux/Demux Patch Panel Even Extended"
PID: 15216-MD-48-EVENE  , VID: V01 , SN: NSZ19510021

NAME: "0/RP0-USB1", DESCR: "OSC Combiner-Splitter Module"
PID: 15216-FLD-OSC=     , VID: V00 , SN: OPL17190305

NAME: "0/RP0-USB2", DESCR: "ONS Mux/Demux Patch Panel Odd Extended"
PID: 15216-MD-48-ODDE  , VID: V01 , SN: NSZ19510003

NAME: "0/RP0-USB3", DESCR: "ONS Coupler and Splitter Pluggable"
PID: 15216-MD-48-CME   , VID: V01 , SN: NSZ20159002

```

RP0/RP0/CPU0:ios# show inventory details

```

Thu Apr 13 09:22:11.529 CEST
NAME: "0/0", DESCR: "Network Convergence System 1001 line system 3 slots"
PID: NCS1001-K9          , VID: V00, SN: CAT2015B010
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 4097      , Type: Module
PN: N/A

NAME: "0/1", DESCR: "Network Convergence System 1000 amplifier module"
PID: NCS1K-EDFA          , VID: V01, SN: IIF2025003L
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 8193      , Type: Module
PN: N/A

NAME: "0/3", DESCR: "Network Convergence System 1000 amplifier module"
PID: NCS1K-EDFA          , VID: V01, SN: IIF2024001K
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 16385     , Type: Module
PN: N/A

NAME: "0/RP0", DESCR: "Network Convergence System 1000 Controller"
PID: NCS1K-CNTRLR2      , VID: V01, SN: CAT2013B00P
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 1         , Type: Module
PN: 800-45459-02

NAME: "0/RP0-SFP-PORT", DESCR: "Unqualified SFP Pluggable Optics Module"
PID: ONS-SI-GE-LX       , VID: V01 , SN: FNS17350WZT
MFG_NAME: CISCO-FINISAR , SNMP_IDX: 532481   , Type: Module
PN: N/A

NAME: "Rack 0", DESCR: "Network Convergence System 1001 line system 3 slots"
PID: NCS1001-K9          , VID: V00, SN: CAT2015B010
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 8384513   , Type: Rack
PN: 800-46433-01

NAME: "0/FT0", DESCR: "Network Convergence System 1001 Fan"
PID: NCS1K1-FAN          , VID: V01, SN: N/A
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 20481     , Type: Fantray
PN: N/A

```

```

NAME: "0/FT1", DESCR: "Network Convergence System 1001 Fan"
PID: NCS1K1-FAN      , VID: V01, SN: N/A
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 24577      , Type: Fantray
PN: N/A

NAME: "0/FT2", DESCR: "Network Convergence System 1001 Fan"
PID: NCS1K1-FAN      , VID: V01, SN: N/A
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 28673      , Type: Fantray
PN: N/A

NAME: "0/FT3", DESCR: "Network Convergence System 1001 Fan"
PID: NCS1K1-FAN      , VID: V01, SN: N/A
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 32769      , Type: Fantray
PN: N/A

NAME: "0/PM0", DESCR: "Network Convergence System 1000 2KW AC PSU"
PID: NCS1K-2KW-AC2   , VID: V00, SN: POG2004JT0L
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 36865      , Type: Power Supply
PN: 341-100362-02

NAME: "0/PM1", DESCR: "Network Convergence System 1000 2KW AC PSU"
PID: NCS1K-2KW-AC2   , VID: V00, SN: POG2015JT1G
MFG_NAME: CISCO SYSTEMS, INC, SNMP_IDX: 40961      , Type: Power Supply
PN: 341-100362-02

```

RP/0/RP0/CPU0:ios# show inventory raw

```

Thu Apr 13 09:25:46.814 CEST
NAME: "Rack 0-Interconnect Board Slot", DESCR: "NCS1K1 Interconnect Board"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0", DESCR: "Network Convergence System 1001 line system 3 slots"
PID: NCS1001-K9      , VID: V00, SN: CAT2015B010

NAME: "0/0-Module Interconnect Board", DESCR: "Module Interconnect Board"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-Power Sequencer 1", DESCR: "Sensor Module 1"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-V12P0 IMON MOD1 CS", DESCR: "Current Sensor"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-V12P0 IMON MOD2 CS", DESCR: "Current Sensor"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-V12P0 IMON MOD3 CS", DESCR: "Current Sensor"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-V1P2 IMON FPGA Core", DESCR: "Current Sensor"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-V1P0 IMON PON Core", DESCR: "Current Sensor"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-V0P9 IMON PEX Core", DESCR: "Current Sensor"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-V3P3", DESCR: "Voltage Sensor"
PID: N/A      , VID: N/A, SN: N/A

NAME: "0/0-V5P0 USB0-1", DESCR: "Voltage Sensor"

```

```

PID: N/A                , VID: N/A, SN: N/A

NAME: "0/0-V5P0 USB2-3", DESCR: "Voltage Sensor"
PID: N/A                , VID: N/A, SN: N/A

NAME: "0/0-V5P0 SATA",  DESCR: "Voltage Sensor"
PID: N/A                , VID: N/A, SN: N/A

NAME: "0/0-V1P8",      DESCR: "Voltage Sensor"
PID: N/A                , VID: N/A, SN: N/A

NAME: "0/0-V1P2 FPGA Core", DESCR: "Voltage Sensor"
PID: N/A                , VID: N/A, SN: N/A

NAME: "0/0-V0P9 PEX Core", DESCR: "Voltage Sensor"
PID: N/A                , VID: N/A, SN: N/A

```

show platform

To display information and status for each node in the system, use the **show platform** command in XR EXEC or administration EXEC mode.

show platform [*WORD* | **vm** | **0/0** | **0/1** | **0/2** | **0/3** | **0/FT0** | **0/FT1** | **0/FT2** | **0/FT3** | **0/RP0**]

Syntax Description	
<i>WORD</i>	(Optional) Specifies the node type.
vm	(Optional) Displays the virtual machine information of node.
0/0, 0/1, 0/2, 0/3, 0/FT0, 0/FT1, 0/FT2, 0/FT3, 0/RP0	(Optional) Displays the platform detail of the specified node location.

Command Default The status and information are displayed for all the nodes in the system.

Command Modes EXEC

Administration EXEC

Command History	Release	Modification
	Release 6.2.1	This command was introduced.

Example

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

RP/0/RP0/CPU0:ios#**show platform**

```

Mon Apr 17 07:37:38.014 CEST
Node                Type                State                Config state
-----
0/0                 NCS1001-K9          OPERATIONAL         NSHUT

```

show tcp dump-file

```

0/1          NCS1K-EDFA          OPERATIONAL      NSHUT
0/2          NCS1K-PSM          OPERATIONAL      NSHUT
0/3          NCS1K-EDFA          OPERATIONAL      NSHUT
0/RP0/CPU0  NCS1K-CNTRLR2 (Active)      IOS XR RUN       NSHUT
0/FT0       NCS1K1-FAN          OPERATIONAL      NSHUT
0/FT1       NCS1K1-FAN          OPERATIONAL      NSHUT
0/FT2       NCS1K1-FAN          OPERATIONAL      NSHUT
0/FT3       NCS1K1-FAN          OPERATIONAL      NSHUT

```

RP/0/RP0/CPU0:ios# show platform vm

```

Mon Apr 17 07:38:54.025 CEST
Node name      Node type      Partner name    SW status      IP address
-----
0/RP0/CPU0    RP (ACTIVE)    NONE            FINAL Band     198.51.100.1

```

show tcp dump-file

To display the details of the PCB state from a dump file, use the **show tcp dump-file** command 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 <i>node-id</i>	Displays RAW statistics for the designated node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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.c1.15892
```

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 { <i>node-id</i> }	(Optional) Specifies the node to store the converted TCP dump file. The <i>node-id</i> is entered in the <i>rack/slot/module</i> notation, for example location <i>0/RP0/CPU0</i> . By default, the files are stored in the current node where the CLI command is executed.
file { <i>absolute file path</i> }	(Optional) Specifies the absolute file path where you want to store the converted TCP dump files. The file path is entered in the <i>node/filename</i> notation, for example <i>/harddisk:/demo1</i> . 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]
```

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	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 6.5.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 6.5.2	This command was introduced.
Release	Modification				
Release 6.5.2	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 initiate** command in EXEC mode.

ztp initiate

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

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

Command Modes	Cisco IOS XR Configuration
----------------------	----------------------------

Command History	Release	Modification
	Release 6.5.2	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 EXEC mode.

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 6.5.2	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
```

aaa authentication login

To configure authentication, authorization, and accounting (AAA) authentication at login, use the **aaa authentication login** command in global configuration mode.

aaa authentication login { **default** | *list-name* } *method-list*

Syntax Description	login	Sets authentication for login.
	default	Uses the listed authentication methods that follow this keyword as the default list of methods for authentication.
	<i>list-name</i>	Character string used to name the authentication method list.
	<i>method-list</i>	Method used to enable AAA system accounting. Method list types are entered in the preferred sequence. The value is one of the following options: <ul style="list-style-type: none"> • group tacacs+ — Specifies a method list that uses the list of all configured TACACS+ servers for authentication. • group radius — Specifies a method list that uses the list of all configured RADIUS servers for authentication. • group named-group — Specifies a named subset of TACACS+ or RADIUS servers for authentication. • local — Specifies a local username or password database for authentication. • line — Specifies a line password or user group for authentication.

Command Default No authentication is performed.

Command Modes Global configuration

Example

The following example shows how to specify the default method list for authentication, and also enable authentication.

```
configure
aaa authentication login default group tacacs+
exit
commit
```

aaa authorization (System Admin-VM)

To create command rules and data rules on for user authorization, use the **aaa authorization** command in System Admin Config mode. To delete the command rules and data rules, use the **no** form of this command.

```
aaa authorization { cmdrules cmdrule { integer | range integer } [ action action-type | command cmd-name | context context-name | group group-name | ops ops-type ] | commands group { none | tacacs } | datarules datarule { integer | range integer } [ action action-type | context context-name | group group-name | keypath keypath-name | namespace namespace-string | ops ops-type ] }
```

Syntax Description	
cmdrules	Configures command rules.
cmdrule <i>integer</i>	Specifies the command rule number.
range <i>integer</i>	Specifies the range of the command rules or data rules to be configured.
action	Specifies whether users are permitted or not allowed to perform the operation specified for the ops keyword.
<i>action-type</i>	Specifies the action type for the command rule or data rule. Available options are: accept , accept_log and reject .
command <i>cmd-name</i>	Specifies the command to which the command rule applies. The command must be entered within double-quotes. Example, get .
context <i>context-name</i>	Specifies to which type of connection the command rule or data rule applies. The connection type can be netconf, cli, or xml.
group <i>group-name</i>	Specifies the group to which the command rule or data rule applies. Example, admin-r .

ops <i>ops-type</i>	Specifies whether the user has read, execute, or read and execute permissions for the command. Available options for command rules are: r , rx , and x . To know the available options for data rules, use a ? after the ops keyword.
commands group	Sets the command authorization lists for server groups. Available options are none that specifies no authorization and tacacs that specifies use of the list of all tacacs+ hosts.

Command Default

None

Command Modes

System Admin Config mode

Command History

Release	Modification
Release 7.3.2	This command was introduced.

This example shows how to create a command rule:

```
Router#admin
sysadmin-vm:0_RP0#configure
sysadmin-vm:0_RP0(config)#aaa authorization cmdrules cmdrule 6
sysadmin-vm:0_RP0(config-cmdrule-6)#context netconf
sysadmin-vm:0_RP0(config-cmdrule-6)#command get
sysadmin-vm:0_RP0(config-cmdrule-6)#group admin-r
sysadmin-vm:0_RP0(config-cmdrule-6)#ops rx
sysadmin-vm:0_RP0(config-cmdrule-6)#action accept
sysadmin-vm:0_RP0(config)#commit
```

aaa authorization

To create a method list for authorization, use the **aaa authorization** command in global configuration mode.

```
aaa authorization {exec | nacm} { default | list-name } {none | local | group tacacs+ | group radius | group group-name }
```

Syntax Description

exec	Configures authorization for an interactive (EXEC) session.
nacm	Enables the NACM (NETCONF Access Control Model) functionality.
default	Uses the listed authorization methods that follow this keyword as the default list of methods for authorization.
<i>list-name</i>	Character string used to name the list of authorization methods.
none	Uses no authorization. If you specify none , no subsequent authorization method is attempted.

local	Uses local authorization. This method of authorization is not available for command authorization.
group tacacs+	Uses the list of all configured TACACS+ servers for authorization.
group radius	Uses the list of all configured RADIUS servers for authorization. This method of authorization is not available for command authorization.
group <i>group-name</i>	Specifies a named subset of TACACS+ or RADIUS servers for authorization.

Command Default

Authorization is disabled for all actions (equivalent to the method none keyword).

Command Modes

Global configuration

Example

The following example shows how to define the network authorization method list named listname1, which specifies that TACACS+ authorization is used.

```
configure
aaa authorization exec listname1 group tacacs+
exit
commit
```

