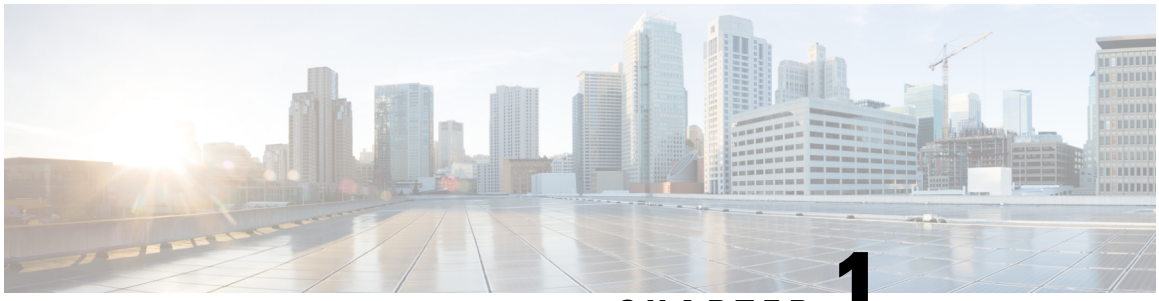


Command Reference for Cisco NCS 1001

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CHAPTER 1

List of Commands

This guide describes the commands supported in NCS 1001.

- controller optics, on page 2
- controller ots, on page 5
- controller ots-och, on page 7
- fault-profile, on page 10
- fault-profile-apply, on page 11
- http client connection, on page 12
- http client response, on page 13
- http client ssl, on page 13
- http client secure-verify-host, on page 14
- http client secure-verify-peer, on page 15
- http client source interface, on page 15
- http client tcp-window-scale, on page 17
- http client version, on page 18
- http client vrf , on page 19
- hw-module, on page 19
- router-id, on page 26
- router ospf, on page 26
- show alarms, on page 27
- show configuration commit changes, on page 32
- show controllers, on page 34
- show hw-module, on page 39
- show inventory, on page 48
- show platform, on page 51
- show tcp dump-file, on page 52
- ssh server timeout, on page 53
- tcp dump-file convert, on page 54
- ztp clean, on page 56
- ztp initiate, on page 56
- ztp terminate, on page 57
- aaa authentication login, on page 58
- aaa authorization (System Admin-VM), on page 58
- aaa authorization, on page 60

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** | **pcr** | **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 *osnr-value*	(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 *description*	Description of the optics controller.
rx-high-threshold *rx-high*	Configures high receive power threshold. The range is -400 to 300 (in the units of 0.1 dBm).
rx-low-threshold *rx-low*	Configures low receive power threshold. The range is -400 to 300 (in the units of 0.1 dBm).
tx-high-threshold *tx-high*	Configures high transmit power threshold. The range is -400 to 300 dBm (in the units of 0.1 dBm).
tx-low-threshold *tx-low*	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 *transmit-power*	(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 | maintenence}** | **shutdown** | **tx-low-threshold** *value* | **tx-voa-attenuation** *value*

Syntax Description

R/S/I/P	(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 *value*	(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. • **max-tca**—Sets OPR maximum TCA reporting status. • **min-tca**—Sets OPR minimum TCA reporting status. **threshold**—Configures threshold on OTS parameters. • **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 | maintenence}** | **shutdown** | **tx-low-threshold** *value* | **tx-voa-attenuation** *value*

Syntax Description

R/S/I/P/C	(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 *value*	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. • **max-tca**—Sets OPR maximum TCA reporting status. • **min-tca**—Sets OPR minimum TCA reporting status. **threshold**—Configures threshold on OTS parameters. • **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 *name*	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: • HW_GFP • HW_ETHERNET • HW_SDH_CONTROLLER • HW_SONET • HW_OPTICS • HW_G709 • HW_CPRI • HW_OTS
fault-tag *fault-name*	The faults that are included as part of the newly created fault profile.

sas *severity-level* **nsas** *severity-level*	Sets the severity level for: • sas (service affecting; impacts traffic) • nsas (non-service affecting; does not impact traffic) The available options are: • Critical • Major • Minor • Non-faulted • Non-reported

Command Default No default behavior or values.

Command Modes Global Configuration

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 *name*	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

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

Command Default

The response timeout is 30 seconds by default.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

Use this command to configure the response timeout.

Task ID

Task ID	Operations
config-services	read, write

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

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

http client ssl

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

http client ssl *version*

Syntax Description

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

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Default

By default, the SSL version is not configured.

Command Modes

HTTP configuration

Usage Guidelines

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

Task ID

Task ID	Operations
config-servicess	read, write

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

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

http client secure-verify-host

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

http client secure-verify-host

Syntax Description

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

Command Default

Host verification is enabled by default.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

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

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to disable host verification :

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

http client secure-verify-peer

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

http client secure-verify-peer

Syntax Description

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

Command Default Peer verification is enabled by default.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes HTTP configuration

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

Task ID

Task ID	Operations
config-services	read, write

The following example shows how to disable peer verification :

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

http client source interface

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

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

Syntax Description

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

Command Default No default behavior or values.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes HTTP configuration

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

Task ID

Task ID	Operations
config-services	read, write

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

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

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

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

http client ssl

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

http client ssl *version*

Syntax Description

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

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Default By default, the SSL version is not configured.

Command Modes HTTP configuration

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

Task ID

Task ID	Operations
config-servicess	read, write

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

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

http client tcp-window-scale

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

http client tcp-window-scale *scale*

Syntax Description

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

Command Default By default, TCP window scale is disabled.

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes HTTP configuration

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

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

Task ID

Task ID	Operations
config-services	read, write

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

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

http client version

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

http client version *version*

Syntax Description

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

Command Default

By default, libcurl does not force the HTTP version.

Note HTTP Client uses libcurl version 7.30

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

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

Task ID

Task ID	Operations
config-services	read, write

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

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

http client vrf

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

http client vrf *vrf-name*

Syntax Description

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

Command Default

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

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Command Modes

HTTP configuration

Usage Guidelines

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

Task ID

Task ID	Operations
config-services	read, write

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

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

hw-module

To 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

location	Specifies the location of the hardware module. The location is 0/RP0/CPU0.
WORD	Specifies the name of the hardware module.
slot *slotnumber*	(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 *channel-id*	(For EDFA only) Defines the channel identifier of a flex-channel. Valid range:**1** to **96**
chan-central-freq *frequency*	(For EDFA only) Defines the central frequency of the channel. Valid range:**191350** to **196100** in multiples of 125.
chan-width *width*	(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 *VLANID*	(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 *wtr-value*	(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 *port-number* **direction** *direction* **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 *relative-switch-threshold* is set to a non-zero value.
otdr-autoscan otdr-module-[ipv4-address | ipv6-address]*IPv4 address* | *IPv6 address***scan-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 remode 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

Release	Modification
Release 6.2.1	This command was introduced.
Release 6.3.1	**iLA** keyword was introduced.
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	• **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	• **ipv6-address** keyword was introduced to perform OTDR autoscan using IPv6 address. • **local-ipv6** and **remote-ipv6** keywords were added to define local or remode 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 *slotnumber*	Specifies the slot number. The range is 1–3.
ampli-auto-rxlow-threshold	Triggers the auto-threshold calculation.
threshold-offset *offset*	*Offset* 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*Device port number*}	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	• **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

ip-address	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

process-id	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.
area-id	Specifies the OSPF area ID as a decimal value.
ip-address	Specifies the OSPF area ID as an IP address in A.B.C.D format.
interface	(Optional) Enters the OSPF interface configuration submode.
type	Interface type.

R/S/I/P	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 *location*	Specifies the target location in the *rack/slot* notation.
WORD	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 CESOts0/2/0/1 - Switched
 to Protect Path

0/3             NotAlarmed   Controller       04/17/2017 07:31:10 CESOts0/3/0/0 - Amplifier
 OFF for Safety Reasons

0/3             Critical     Controller       04/17/2017 07:31:10 CESOts0/3/0/1 - Loss Of
Continuity

0/3             NotAlarmed   Controller       04/17/2017 07:31:10 CESOts0/3/0/1 - Amplifier
 OFF for Safety Reasons

0/3             Critical     Controller       04/17/2017 07:31:10 CESOts0/3/0/3 - Loss of
Signal - Payload

0/1             NotAlarmed   Controller       04/17/2017 07:31:10 CESOts0/1/0/0 - Amplifier
 OFF for Safety Reasons

0/1             Critical     Controller       04/17/2017 07:31:10 CESOts0/1/0/1 - Loss Of
Continuity

0/1             NotAlarmed   Controller       04/17/2017 07:31:10 CESOts0/1/0/1 - Amplifier
 OFF for Safety Reasons

0/1             Critical     Controller       04/17/2017 07:31:10 CESOts0/1/0/3 - Loss of
Signal - Payload
```

```
0/2             Critical     Controller       04/17/2017 07:31:10 CESOts0/2/0/1 - Loss of
Signal - Payload

0/2             Critical     Controller       04/17/2017 07:31:10 CESOts0/2/0/2 - 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 CESOts0/1/0/2 - Loss of
Signal - Payload

                                          04/17/2017 04:32:11 CEST
0/1             Critical     Controller       04/17/2017 04:32:38 CESOts0/1/0/2 - Loss of
Signal - Payload

                                          04/17/2017 04:32:38 CEST
0/3             NotAlarmed   Controller      04/17/2017 04:32:41 CESOts0/3/0/1 - Amplifier
 in power reduction for safety reasons

                                          04/17/2017 04:32:49 CEST
0/1             NotAlarmed   Controller      04/17/2017 04:32:43 CESOts0/1/0/1 - Amplifier
 in power reduction for safety reasons

                                          04/17/2017 04:32:51 CEST
0/1             Critical     Controller       04/17/2017 04:33:04 CESOts0/1/0/2 - Loss of
Signal - Payload

                                          04/17/2017 04:33:04 CEST
0/1             Critical     Controller       04/17/2017 04:33:30 CESOts0/1/0/2 - Loss of
Signal - Payload

                                          04/17/2017 04:33:30 CEST
0/1             Critical     Controller       04/17/2017 04:33:56 CESOts0/1/0/2 - Loss of
Signal - Payload

                                          04/17/2017 04:33:56 CEST
0/1             Critical     Controller       04/17/2017 04:34:25 CESOts0/1/0/2 - Loss of
Signal - Payload

                                          04/17/2017 04:34:25 CEST
0/3             NotAlarmed   Controller      04/17/2017 04:34:29 CESOts0/3/0/1 - Amplifier
 in power reduction for safety reasons

                                          04/17/2017 04:34:37 CEST
0/1             NotAlarmed   Controller      04/17/2017 04:34:31 CESOts0/1/0/1 - Amplifier
 in power reduction for safety reasons

                                          04/17/2017 04:34:39 CEST
0/1             Critical     Controller       04/17/2017 04:34:51 CESOts0/1/0/2 - Loss of
Signal - Payload

                                          04/17/2017 04:34:51 CEST
0/1             Critical     Controller       04/17/2017 04:35:17 CESOts0/1/0/2 - Loss of
Signal - Payload

                                          04/17/2017 04:35:17 CEST
0/1             Critical     Controller       04/17/2017 04:35:44 CESOts0/1/0/2 - Loss of
```

```
Signal - Payload

                                        04/17/2017 04:35:44 CEST
0/1             Critical     Controller       04/17/2017 04:36:10 CESOts0/1/0/2 - 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_OTS_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_OTS_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.
commit-id	Displays configuration changes for a specific configuration commit.
last *number-of-commits*	Displays the changes made to the running configuration during the last number of configuration commits specified for the *number-of-commits* argument.
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 ODUC40/1/0/12
 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 ODUC40/1/0/12
-   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-Mp1 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.

R/S/I/P/L	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 *period*	(Optional) Displays the performance monitoring data after the specified period. The range is from 1 to 60.
duration *duration*	(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.
lanenumber	(Optional) Lane number to display performance monitoring data. The valid value is 1.
bucket	(Optional) Displays the performance monitoring data for the specified bucket.
bucketnumber	(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  TCA     Threshold  TCA
                                           (min)    (enable)    (max)   (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  TCA     Threshold  TCA
                                           (min)    (enable)    (max)   (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    TX Total Power  RX Power    RX Total Power

                                  (dBm)       (dBm)           (dBm)       (dBm)

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

 Ots0_1_0_3  Com-Check  N/A      Unavailable  Unavailable     -8.30       Unavailable

RX Voa Attenuation    TX Voa Attenuation    Ampli Gain     Ampli Tilt
(dBm)                 (dBm)
------------------    ------------------    ----------     ----------
 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** } } [**usb-port** *port number* **passive-eeprom** { **manuf | all | il** }]
show hw-module slot *slot-number* **otdr {status | scan}**
show hw-module eth-switch { **ports-attrs** | | **stats** `port` *port number* | | **vlans** }

Syntax Description

details	Displays the hardware module information.
fpd	Displays information for all the Field Programmable Devices (FPD) installed.
WORD	(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 *R/S/I/P*	Displays the configured patch-cord information for the specified optical port. *R/S/I/P*—Rack/Slot/Instance/Port/Lane number of the controller

slot *slotnumber*	Displays the slot information. *slotnumber*—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.
vlans	Displays the list of configured VLANs.
usb-port *port number* **passive-eeprom { all | manuf| il}**	Displays the inventory data such as insertion loss and manufacturing details stored in the eeprom of the passive device connected through the usb port.

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 **vlans** 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
```

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

         Bst Gain = 1.00 dB                      Pre Gain = -90.00 dB
         Bst Tilt = 2.00                         Pre Tilt = 0.00
Bst Channel Power = 3.00 dBm            Pre Channel Power = 3.00 dBm
 Bst Control Mode = Auto                 Pre Control Mode = Auto
  Bst Safety Mode = ALS Auto              Pre Safety Mode = ALS Auto
         Bst Osri = Off                          Pre Osri = Off
   Bst Gain Range = Normal                 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
=====================================
                                        0/COM - BST - 1/LINE      1/LINE - PRE - 0/COM
 Och Name    Wavelength    Frequency     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
=====================================
```

```
                                                                                                  0/COM - BST - 1/LINE
 1/LINE - PRE - 0/COM
     Och Name            Wavelength      Frequency        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
 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
  pkts1024tomaxOoctets  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)
```

This is a sample output from NCS1K-MD-32O-CE (OOD) passive unit.

```
RP/0/RP0/CPU0:ios#show hw-module usb-port 0 passive-eeprom il
INSERTION LOSS VALUES:
[ 1]: from: Com-O-Rx to: Ch-00-Tx IL value: 6.04dB
[ 2]: from: Com-O-Rx to: Ch-01-Tx IL value: 5.79dB
[ 3]: from: Com-O-Rx to: Ch-02-Tx IL value: 5.81dB
[ 4]: from: Com-O-Rx to: Ch-03-Tx IL value: 6.01dB
.................................................
```

```
.....................................................
[ 65]: from: Ch-31-Rx to: Com-O-Tx IL value: 5.46dB
[ 66]: from: Probe-Rx to: Com-O-Tx IL value: 10.61dB
[ 67]: from: Com-O-Rx to: Mon-O-Dmx IL value: 20.30dB
[ 68]: from: Odd-Even-Rx to: Odd-Tx IL value: 3.51dB
[ 69]: from: Odd-Even-Rx to: Even-Tx IL value: 3.53dB
[ 70]: from: Com-O-Tx to: Mon-O-Mux IL value: 19.67dB
```

This is a sample output from 15216-FLD-4-58.9

```
RP/0/RP0/CPU0:ios#show hw-module usb-port 0 passive-eeprom manuf 000: 04 FF 40 48 09 C0 46
 03 20 00 84 1C 02 41 00 00 ..@H..F. ....A..
010: 42 41 30 C1 8B 4F 50 4C 32 35 30 39 30 30 30 31 BA0..OPL25090001
020: D0 8A 46 4C 44 2D 34 2D 35 38 2E 39 C6 8A 57 4F ..FLD-4-58.9..WO
030: 4F 4D 41 34 33 57 41 41 CB 91 31 35 32 31 36 2D OMA43WAA..15216-
.....................................................................................
0B0: 06 00 01 05 01 01 1F E0 08 01 05 00 01 07 00 14 ................
0C0: 2C E0 08 01 05 01 01 07 01 13 54 FF FF FF FF FF ,.........T.....
0D0: FF FF FF FF FF FF FF FF FF FF FF
```

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

WORD	(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
```

RP/0/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-CNTLR2      , 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

WORD	(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
0/1               NCS1K-EDFA                 OPERATIONAL       NSHUT
0/2               NCS1K-PSM                  OPERATIONAL       NSHUT
0/3               NCS1K-EDFA                 OPERATIONAL       NSHUT
0/RP0/CPU0        NCS1K-CNTLR2(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 in EXEC mode.

show tcp dump-file { *dump-file-name* | | **all** | | **list** | { *ipv4-address-of-dumpfiles* | *ipv6-address-of-dumpfiles* | | **all** } } { **location** *node-id* }

Syntax Description

all	Displays all connections information.
location *node-id*	Displays RAW statistics for the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release R24.2.1	This command was introduced.

Usage Guidelines

The basic use of this command is to provide information about the list of all TCP dump files, details of any specific or all TCP dumpfile file. You can also use this command for debugging purpose or to monitor the flow of TCP packets for a TCP connection.

Task ID

Task ID	Operations
transport	read

Examples

The following is sample output from the **show tcp dumpfile all location 0/RP0/CPU0** command:

```
RP/0/RP0/CPU0:ios# show tcp dumpfile list all location 0/RP0/CPU0

total 4
-rw-r--r-- 1 rpathark eng 3884 May 11 20:16 80_80_80_80.26355.179.cl.15892
```

ssh server timeout

To configure timeout for unused SSH connections and SSH channels on your routers that function as SSH servers, use the **ssh server timeout** command in configuration mode. To remove the timeout configuration, use the **no** form of this command.

ssh server timeout { **channel** | **connection** } *timeout-period*
no ssh server timeout

Syntax Description

ssh server timeout { **channel** | **connection** }	Configures server timeout for SSH channel and connection
timeout-period	Timeout period, in seconds, for unused SSH connections and idle SSH channels. The range is 1 to 86400.

Command Default

Disabled

Command Modes

Configuration mode

Command History

Release	Modification
Release 25.3.1	This command was introduced.

Usage Guidelines

The unused connection timeout and channel timeout are applicable only for connections that are newly created after the timeout period is configured.

The channel timeout begins counting down after the set period of inactivity. The unused connection timeout begins counting down when there is no active channel within the SSH connection.

Task ID

Task ID	Operation
crypto	read, write

Examples

This example shows how to configure a timeout of 600 seconds for an unused SSH connection:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#ssh server timeout connection 600
RP/0/RP0/CPU0:ios(config-ssh)#commit
```

This example shows how to configure a timeout of 300 seconds for an idle SSH channel:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#ssh server timeout channel 300
RP/0/RP0/CPU0:ios(config-ssh)#commit
```

tcp dump-file convert

Use the **tcp dump-file convert** command in EXEC mode to convert the TCP dump packet traces files to other readable formats such as pcap, text, or both.

tcp dump-file convert { *pcap* | *text* | *all-formats* } { *all* | *binary_file_name* | *ipaddress* } **location** { *node-id* } **file** { *absolute file path* }

Syntax Description

pcap	Converts TCP dump packet files to packet capture (pcap) format.
text	Converts TCP dump packet traces files to text format.
all-format	Converts TCP dump packet traces files to both pcap and text format.
all	Collects TCP dump file data from all peers and nodes.
binary_file_name	Specifies the name of the dump file to be converted.
ipaddress	Specifies the IP address of the peer node.

location {*node-id*}	(Optional) Specifies the node to store the converted TCP dump file. The *node-id* is entered in the *rack/slot/module* notation, for example **location** *0/RP0/CPU0*. By default, the files are stored in the current node where the CLI command is executed.
file {*absolute file path* }	(Optional) Specifies the absolute file path where you want to store the converted TCP dump files. The file path is entertered in the *node/filename* notation, for example */harddisk:/demo1*. By default, the converted files are stored inside the file "decoded_dumpfiles" in the current node where the CLI command is executed or if you have provided the location the files are stored in that location.

Command Default

By default, the converted files are stored inside the *decoded_dumpfiles* file.

Command Modes

EXEC

Command History

Release	Modification
Release R24.2.1	This command was introduced.

Usage Guidelines

Use this command to convert TCP dump packet traces files into text, pcap, or both readable formats.

Examples

The following example shows how to convert TCP packet traces files into text and pcap readable formats:

```
RP/0/RP0/CPU0:ios# tcp dump-file convert all-formats all
ascii file is saved at :
/harddisk:/decoded_dumpfiles/text_tcpdump_peer_all_node0_RP0_CPU0_2024_3_19_10_8_53.462070.txt
pcap file is saved at :
/harddisk:/decoded_dumpfiles/pcap_tcpdump_peer_all_node0_RP0_CPU0_2024_3_19_10_8_40.154838.pcap
[OK]
```

The following example shows how to filter TCP dump packet traces by IP address and convert them into text and pcap readable format:

```
RP/0/RP0/CPU0:ios# tcp dump-file convert all-formats ipaddress 192.0.2.121
ascii file is saved at :
/harddisk:/decoded_dumpfiles/text_tcpdump_peer_1_1_1_2_node0_RSP0_CPU0_2024_3_19_10_9_20.539021.txt
pcap file is saved at :
/harddisk:/decoded_dumpfiles/pcap_tcpdump_peer_1_1_1_2_node0_RSP0_CPU0_2024_3_19_10_9_20.539021.pcap
[OK]
```

The following example specifies a location where you want to store the converted TCP dump file:

```
RP/0/RP0/CPU0:ios# tcp dump-file convert all-formats all location 0/RP0/CPU0
ascii file is saved at :
/harddisk:/decoded_dumpfiles/text_tcpdump_peer_all_node0_RP0_CPU0_2024_3_19_12_53_35.12323.txt
pcap file is saved at :
/harddisk:/decoded_dumpfiles/pcap_tcpdump_peer_all_node0_RP0_CPU0_2024_3_19_12_53_35.12323.pcap
[OK]
```

The following example specifies the absolute file path where you want to store the converted TCP dump files:

```
RP/0/RP0/CPU0:ios# tcp dump-file convert text all file /harddisk:/demo2
ascii file is saved at : /harddisk:/demo2.txt
[OK]
```

ztp clean

To remove all Zero Touch Provisioning (ZTP) logs and settings that are saved on the node, use the **ztp clean** command in EXEC mode.

ztp clean

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Cisco IOS XR Configuration

Command History

Release	Modification
Release 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.
list-name	Character string used to name the authentication method list.
method-list	Method used to enable AAA system accounting. Method list types are entered in the preferred sequence. The value is one of the following options: • **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 *integer*	Specifies the command rule number.
range *integer*	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.
action-type	Specifies the action type for the command rule or data rule. Available options are: **accept**, **accept_log** and **reject**.
command *cmd-name*	Specifies the command to which the command rule applies. The command must be entered within double-quotes. Example, **get**.
context *context-name*	Specifies to which type of connection the command rule or data rule applies. The connection type can be netconf, cli, or xml.
group *group-name*	Specifies the group to which the command rule or data rule applies. Example, **admin-r**.
ops *ops-type*	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.
list-name	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 *group-name*	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
```