Release Notes for Cisco NCS 1000 Series, IOS XR Release 7.10.1

First Published: 2023-08-18

NCS 1010

NCS 1010 OLS platform is an integral component of the Routed Optical Networking solution. The OLS platform supports ROADM nodes of up to 8 degrees using the NCS 1000 Breakout Patch Panel. NCS 1010 supports both C-band and L-band WDM transmission through three variants of Optical Line Terminal (OLT), such as OLT-C, OLT-R-C, and OLT-L, and four variants of In-Line Amplifier (ILA), such as ILA-C, ILA-L, ILA-R-C, ILA-2R-C. The PIDs such as NCS1K-E-OLT-C, NCS1K-E-OLT-L, NCS1K-E-OLT-R-C, NCS1K-E-ILA-R-C, and NCS1K-E-ILA-2R-C are added as part of the new designs of the OLT and ILA line cards. The NCS 1010 controller card, NCS1010-CTLR-B-K9, supports 9600 baud rate on the RS232 console port. This card works with BIOS version 4.40.

The NCS 1010 OLS platform comprises of:

- Network Convergence System (NCS 1010) chassis—A 3RU modular chassis that has an in-built External Interface Timing Unit (EITU) and multiple field-replaceable modules.
- Cisco NCS 1000 Breakout Patch Panel—A colorless breakout patch panel that enables you to implement long-haul topologies. By using three NCS1K-BRK-24 modules, up to 72 Mux/Demux channels can be supported, and by using one NCS1K-BRK-8 module, up to eight ROADM degrees can be supported.
- Cisco NCS 1000 32-Channel Mux/Demux Patch Panels—Support colored channels that enable you to implement metro topologies, and the Routed Optical Networking solution. Each of the two Mux/Demux patch panels (NCS1K-MD-32O-C and NCS1K-MD32E-C) supports 32 channels and works as an add/drop unit for the OLT-C and OLT-R-C line cards.

NCS 1004

The Cisco NCS 1004 chassis is a 2 RU chassis that delivers a universal transponder solution which provides excellent performance for metro, long-haul and submarine applications. The following is the list of cards supported by NCS 1004 and the corresponding PIDs:

- 1.2T C-Band line card (1.2 Tbps) - NCS1K4-1.2T-K9
- 1.2T L-Band line card (800 Gbps) - NCS1K4-1.2TL-K9
- OTN-XP card (800 Gbps) - NCS1K4-OTN-XP
- 2-QDD-C line card (800 Gbps) - NCS1K4-2-QDD-C-K9
- 3.2T QSFP-DD DCO transponder card (3.2 Tbps) - NCS1K4-QXP-K9

The 2 RU of NCS 1004 supports up to 4.8Tbps of traffic with the NCS1K4-1.2T-K9 line cards in all of its four slots. The 3.2T QXP card in each of the four slots can provide 2.4T (6x400G) and hence can support up to 9.6Tbps of traffic.

NCS 1004 has the following components:

- Removable controller
- Two replaceable power supply units
- Four line card slots
- Three replaceable fan units

NCS 1001

The Cisco Network Convergence System (NCS) 1001 is a 1-RU chassis that addresses the growing bandwidth needs of data center DWDM applications. It provides a DWDM line system that is optimized for data center environments and point-to-point applications at maximum capacity. Cisco NCS 1001 supports up to three optical modules. The modules that can be hosted inside the NCS 1001 chassis are amplifiers, OTDR, or protection switching modules.

NCS 1001 has the following components:

- Four removable fans.
- Two removable AC or DC power supply modules (PSU).
- Three slots for optical modules. The Optical Amplifier Module (NCS1K-EDFA), Protection Switching Module (NCS1K-PSM), and Optical Time Domain Reflectometer Module (NCS1K-OTDR) can be inserted in these slots.

What's New in Cisco NCS 1000 Series, IOS XR Release 7.10.1

NCS 1010

Feature	Description
Datapath	
SNMP OLC MIB Support	NCS 1010 platform now supports a new Optical Line Control (OLC) MIB called CISCO-OPTICAL-OLC-MIB which is used for OLC based applications. See Cisco SNMP MIBs for more details.
Optical Applications	
Band Failure Recovery (BFR) Pause	Use the new **bfr-pause** configuration command from this release to pause the BFR function. Unlike in the previous releases, the BFR pause state is now preserved during a system reload. BFR pause stays paused indefinitely until you resume it. Command added: bfr-pause
Nontraffic Affecting C+L Band Upgrade	Upgrading an existing C-band network to a C+L band network is now possible without impacting the traffic flow. Cisco Optical Network Planner (CONP) computes the values for relevant parameters in C+L network configuration. The upgrade benefits even those networks that were not planned for a future L-band upgrade. C+L band upgrade enables you to accommodate more bands to your network to boost network bandwidth.

Feature	Description
Raman Tuning with OTDR Lock	If the OTDR scan and Raman tuning are performed on the same fiber simultaneously, the OTDR reports unexpected results. In this release, a check is being implemented to prevent both operations from running simultaneously. The Raman tuning application imposes an OTDR lock at both ends of the fiber before the process starts and releases the same after the tuning is completed.
olc bfr-pause (Command deprecated)	The command olc bfr-pause is deprecated starting R7.10.1. To pause and resume BFR, use the bfr-pause command. To upgrade from R7.9.1 to R7.10.1 or later with BFR pause enabled, before upgrading software, pause BFR on the OLT-C band using the **olc bfr pause** command before beginning the software upgrade. Once the upgrade is finished, pause and resume BFR using the **bfr-pause** configuration command on the OLT-C and OLT-L bands.
System Setup and Software Installation	
CDP Support	Cisco Discovery Protocol (CDP) support is introduced on NCS 1010. CDP is a Layer 2 network discovery protocol for learning about directly connected Cisco devices. This protocol lets you easily view peer Cisco device information such as IP address, version number, platform type, connected ports, and so on, for network planning and troubleshooting.
Daisy Chain on NCS 1010 Management Ports	You can now connect NCS 1010 devices in a Daisy Chain topology. Here multiple NCS 1010 devices are connected to form a ring-like topology, and only the first and last nodes are connected to a Top-of-Rack (TOR) switch, thereby reducing the number of connections. The Daisy Chain topology also provides more redundancy as data is transmitted in both directions. The first connection acts as a primary path and carries the traffic whereas the last connection acts as a secondary path. In case the primary path fails, the secondary path serves as its backup for data transmission and allows traffic to continue to transmit in the network.
FPD Upgrade for Passive Modules	You can now perform FPD upgrade of the breakout modules and multiplexer/demultiplexer modules. It is essential to upgrade the passive modules to ensure the proper functioning of the modules. You can upgrade the FPD on all passive modules simultaneously or selectively upgrade the required modules.
Hardware	

Feature	Description
LC Ports on OLT and ILA Line Cards	The new OLT and ILA line cards introduce LC ports on their faceplates. These LC ports enable you to directly connect the breakout or multiplexer/demultiplexer modules for degree interconnect or Add/Drop options. The following are the new PIDs introduced for the OLT and ILA line cards: • NCS1K-E-OLT-C • NCS1K-E-OLT-L • NCS1K-E-OLT-R-C • NCS1K-E-ILA-R-C • NCS1K-E-ILA-2R-C
NCS1K10-CNTLR-B-K9 Controller Card	The new NCS1010-CTLR-B-K9 controller card for the NCS 1010 optical line system supports a default baud rate of 9600 bps on the RS232 console port. It runs on BIOS version 4.40 and later.

NCS 1004

Feature	Description
Hardware	
Pluggables Support	The following pluggables are supported on the QXP card: • DP04QSDD-HK9 • DP01QSDD-LK9 These are Cisco 400G QSFP-DD High-Power (Bright) Optical Modules.
Configuration	
Cisco 400G QSFP-DD High-Power (Bright) Optical module support on QXP card	The QXP card now supports Cisco 400G QSFP-DD High-Power (Bright) Optical module. This pluggable provides higher output power compared to other ZR Pluggables (QDD-400G-ZR-S and QDD-400G-ZRP-S). This allows users to interconnect directly to add/drop ports without additional amplifiers which improves performance and saves cost for end to end services.
Enhanced Mixed Mode Client Traffic Configuration on 2-QDD-C Card	This feature is an upgrade of earlier mixed-mode configuration on 2-QDD-C card that required reprovision of all client ports to switch between provisioning Ethernet or OTU interfaces. This enhancement makes the 2-QDD-C card smarter to delegate OTU and Ethernet traffic in the same slice simultaneously, avoiding the need to reprovision the client ports. This enhancement provides you with greater flexibility to configure both Ethernet and OTU interfaces for different client ports on the same slice in the 2-QDD-C card without disrupting the client traffic. Enable this enhancement with the following keywords on the **hw-module** command: • **client-port-rate <2-5> | <6-9>** • **client-type <100GE | OTU4>**

Feature	Description
GMPLS UNI Support for OTN-XP and 2-QDD-C Cards	Generalized Multiprotocol Label Switching (GMPLS) User Network Interface (UNI) support is enabled for OTN-XP and 2-QDD-C cards in NCS 1004. GMPLS UNI helps in optimizing the utilization of network resources. For OTN-XP card the following data paths are allowed. • 2x100 - 200G MXP • 4x100 - 400G MXP • 40x10 - 400G MXP • 20x10 - 200G MXP For 2-QDD-C card only 200G/300G/400G trunk rates are allowed with 100GE or OTU4 client payloads in both the muxponder and muxponder slice configurations.
Generic Smart License	Smart licensing functionality is enhanced to enable you to use one common license across cards and functionalities. Hence, a single license will provide entitlement to use 2-QDD-C card, 1.2T card, and OTN XP card, with encryption enabled or disabled, and for different client data rates. This feature reduces license procurement and management effort.
Multi-Tier Certificate Authority for Trustpoint Authentication	Apart from the root certificate authority (CA), you can now use a subordinate CA to issue certificates and authenticate your network devices. This feature is beneficial when you have an existing CA hierarchy where it is not the root CA but the subordinate CA that issues the leaf or certificates. In earlier releases, you could associate only a single CA, not a multi-tier CA, to a trustpoint. And, you could use only the root CA certificate to enroll the certificates. This feature modifies the show crypto ca certificates command to display the **Trusted Certificate Chain** field.
OC192 and STM64 clients on OTN-XP card	40x10G-4x100G-MXP card mode on the OTN-XP card now supports OC192/STM64 clients in the 40x10G mode. This allows you to use the OTN-XP card to handle OC192 SONET and STM64 SDH payloads.
OTN Datapath on QXP card trunk ports	The QXP line card now supports OTN standard based trunk transmission with Cisco 400G QSFP-DD High-Power (Bright) Optical Module. This allows trunk connections from the QXP card to be connected to other OpenROADMcompliant trunk devices.

NCS 1001

Feature	Description
Configuration	
IPv6 Support for OTDR Auto Scan	OTDR auto scan can now be enabled on NCS 1001 nodes configured with IPv6 addresses. This extends to OTDR auto scan functionality to work on both IPv4 and IPv6 nodes.

Feature	Description
IPv6 Support for Span Loss Calculation	You can now perform span loss calculations on IPv6 spans connecting two NCS 1001 nodes. As a result, the advantages of larger address space can be leveraged by configuring IPv6 addresses on the management interfaces used for communication between the two nodes.
System Setup and Software Installation	
IPv6 Support for ZTP	From this release, the DHCP server supports Zero Touch Provisioning (ZTP) to bring up the NCS 1001 nodes with IPv6 addressing. The DHCP configuration file must be updated with the dhcp6.client id and IPv6 address-based bootfile URL. IPv6 addressing ensures efficient and secure management of the devices.
IPv6 Support for iPXE0	From this release, the DHCP server supports iPXE0 to bring up the NCS 1001 nodes with IPv6 addressing. The 'dhcp6.client-id' parameter of the DHCP configuration file must be updated with the DHCP unique identifier(DUID). If the running BIOS version is 15.30, the DUID must be derived from the chassis or from the serial number of the Route Processor. IPv6 addressing ensures efficient and secure management of the devices.

YANG Data Models Introduced and Enhanced

We have launched the Yang Explorer tool as an easy reference to view the Data Models (Native, Unified, OpenConfig) supported in IOS XR platforms and releases. You can explore the data model definitions, locate a specific model, and view the containers and their respective lists, leaves, leaf lists, Xpaths, and much more.

As we continue to enhance the tool, we would love to hear your feedback. You are welcome to drop us a note here.

Release 7.10.1 Packages

Warning Downgrading your software on an NCS 1010 device from a higher version to Cisco IOS XR Release 7.7.1 is a traffic-impacting operation.

Release 7.10.1 Packages for Cisco NCS 1010

The Cisco IOS XR chassis is composed of a base image (ISO) that provides the XR infrastructure. The ISO image is made up of a set of packages (also called RPMs). These packages are of three types:

- A mandatory package that is included in the ISO
- An optional package that is included in the ISO
- An optional package that is not included in the ISO

Table 1: Release 7.10.1 Packages for Cisco NCS 1010

Feature Set	Filename	Description
Composite Package		

Cisco IOS XR Core Bundle + Manageability Package	ncs1010-x64-7.10.1.iso	Contains required core packages, including operating system, Admin, Base, Forwarding, SNMP Agent, FPD, and Alarm Correlation and Netconf-yang, Telemetry, Extensible Markup Language (XML) Parser, HTTP server packages.
Individually Installable Packages		
Cisco IOS XR Telnet Package	xr-telnet-7.10.1.x86_64.rpm xr-telnet-ncs1010-7.10.1.x86_64.rpm	Install the xr-telnet-7.10.1.x86_64.rpm and xr-telnet-ncs1010-7.10.1.x86_64.rpm packages to support Telnet.
Cisco IOS XR Cisco Discovery Protocol (CDP) Package	xr-cdp-7.10.1.x86_64.rpm xr-cdp-ncs1010-7.10.1.x86_64.rpm	Install the xr-cdp-7.10.1.x86_64.rpm and xr-cdp-ncs1010-7.10.1.x86_64.rpm to support CDP.

See Install Packages and RPMs.

Table 2: Release 7.10.1 Packages for Cisco NCS 1004

Feature Set	Filename	Description
Composite Package		
Cisco IOS XR Core Bundle + Manageability Package	ncs1004-iosxr-px-k9-7.10.1.tar	Contains required core packages, including operating system, Admin, Base, Forwarding, SNMP Agent, FPD, and Alarm Correlation and Netconf-yang, Telemetry, Extensible Markup Language (XML) Parser, HTTP server packages.
Individually Installable Packages		
Cisco IOS XR Security Package	ncs1004-k9sec-1.0.0.0-r7101.x86_64.rpm	Support for Encryption, Decryption, IP Security (IPsec), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).
Cisco IOS XR OTN-XP DP Package	ncs1004-sysadmin-otn-xp-dp-7.10.1-r7101.x86_64.rpm (part of ncs1004-iosxr-px-k9-7.10.1.tar)	Install the ncs1004-sysadmin-otn-xp-dp-7.10.1-r7101.x86_64.rpm data path FPD package on the OTN-XP card. This package is mandatory for datapath bring up.
OpenROADM	ncs1004-tp-sw-1.0.0.0-r7101.x86_64.rpm	Install the ncs1004-tp-sw-1.0.0.0-r7101.x86_64.rpm package for OpenROADM configuration.
Optional Packages		

Cisco IOS XR MPLS Package	ncs1004-mpls-1.0.0.0-r7101.x86_64.rpm	Install the ncs1004-mpls-1.0.0.0-r7101.x86_64.rpm for Multiprotocol Label Switching (MPLS) configuration
Cisco IOS XR MPLS RSVP TE package	ncs1004-mpls-te-rsvp-1.0.0.0-r7101.x86_64.rpm	Install the ncs1004-mpls-te-rsvp-1.0.0.0-r7101.x86_64.rpm for MPLS RSVP-TE (Resource Reservation Protocol with Traffic Engineering extensions) configuration
Pre and Post-Upgrade Installation Health Checks	ncs1004-healthcheck-1.0.0.0-r7101.x86_64.rpm	Install the ncsncs1004-healthcheck-1.0.0.0-r7101.x86_64.rpm package for Pre and Post-Upgrade Installation Health Checks configuration

See Install Packages.

Table 3: Release 7.10.1 Packages for Cisco NCS 1001

Feature Set	Filename	Description
Composite Package		
Cisco IOS XR Core Bundle + Manageability Package	ncs1001-iosxr-px-k9-7.10.1.tar	Contains required core packages, including operating system, Admin, Base, Forwarding, SNMP Agent, FPD, and Alarm Correlation and Netconf-yang, Telemetry, Extensible Markup Language (XML) Parser, HTTP server packages.
Individually Installable Optional Packages		
Cisco IOS XR Security Package	ncs1001-k9sec-1.0.0.0-r7101.x86_64.rpm (part of ncs1k-iosxr-px-k9-7.10.1.tar)	Support for Encryption, Decryption, IP Security (IPsec), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).

See Install Packages.

Caveats

Open Caveats

NCS 1010

Important A kernel upgrade on the NCS 1010 platform has introduced some Cisco IOS XR Release 7.10.1-specific upgrade and downgrade caveats. For details, see Release 7.10.1 Caveats.

The following table lists the open caveats for NCS 1010:

Identifier	Headline
CSCwc44020	NCS1010 - OTDR commit is being rejected when otdr capture start is lesser that capture end.
CSCwb53528	No alarm being raised for tone pattern laser being ON.
CSCwe87948	NCS1010:Switch Ethernet link fault post software upgrade.
CSCwf83232	7.10.1.30I : OTDR scan status for Rx direction shows 'Stopped' post fpd upgrade.
CSCwf36662	Non-linear interactions between 5 Raman Pumps affect the C band Raman gain with ELAEF fiber.
CSCwd40632	Connection verification fails due to uppercase/lowercase mismatch.
CSCwd95713	FWM between pumps affects C+L Raman functionality in ELAEF and TW+ fiber.
CSCwf49437	'invalid_sensor_read_error' alarm reported during fpd upgrade.
CSCwe81683	Configurations lost after RP swap between nodes 7.7.1 & 7.10.1.15I image and 7.10.1-15i to 7.10.15i.
CSCwf12180	OLC crash post SU from 7101 to 791.
CSCwf47073	IPv6 PXE gets stuck while copying the image.

NCS 1004

The following table lists the open caveats for NCS 1004:

Identifier	Headline
CSCwe15890	OC Regen configuration not getting pushed to node and the LC card is not provisioning.
CSCwd91756	No configuration model is present for protection-group creation and deletion.
CSCwf72539	Observed traffic glitch during SU from 7101_29I to 7101_30I with gmpls circular configured.
CSCwf50748	j0 tti tx rx expected not displayed.
CSCwf12579	Traffic hit more than 50 msec (60-110 msecs) with PSM switching on trunk link.
CSCwf09352	Traffic hit more than 50 msec (2.6 to 2.7 secs) with PSM switching on trunk link.
CSCwf52463	B1 and B2 counters are toggling when errors are injected continuously.
CSCwf69472	[OC192] Delayed updation of PM counter values.

Identifier	Headline
CSCwf63195	SES not incrementing as expected.

NCS 1001

The following table lists the open caveats for NCS 1001:

Identifier	Headline
CSCwe27750	[NCS1001] Event Driven Telemetry not implemented for new SP (OTS and OTS-OCH).
CSCwe12163	[NCS1001] IPv6-PXE boot via http triggered from power cycle is not supported
CSCwe27410	[NCS 1001] Show telemetry output for EDT show is inconsistent.

Bug Search Tool

Cisco Bug Search Tool (BST) is a web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.

Using Bug Search Tool

You can use the Cisco Bug Search Tool to search for a specific bug or to search for all bugs in a release.

Procedure

Step 1 Go to the http://tools.cisco.com/bugsearch.

Step 2 Log in using your registered Cisco.com username and password.

The Bug Search page opens.

Step 3 Use any of these options to search for bugs, and then press Enter (Return) to initiate the search:

- To search for a specific bug, enter the bug ID in the Search For field.
- To search for bugs based on specific criteria, enter search criteria, such as a problem description, a feature, or a product name, in the Search For field.
- To search for bugs based on products, enter or select a product from the Product list. For example, if you enter “WAE,” you get several options from which to choose.
- To search for bugs based on releases, in the Releases list select whether to search for bugs affecting a specific release, bugs that were fixed in a specific release, or both. Then enter one or more release numbers in the Releases field.

Step 4 When the search results are displayed, use the filter tools to narrow the results. You can filter the bugs by status, severity, and so on.

To export the results to a spreadsheet, click **Export Results to Excel**.

Determine Software Version

NCS 1010

Log in to NCS 1010 and enter the **show version** command

```
RP/0/RP0/CPU0:ios#show version
Thu Aug 17 14:53:32.835 UTC
Cisco IOS XR Software, Version 7.10.1 LNT
Copyright (c) 2013-2023 by Cisco Systems, Inc.

Build Information:
 Built By     : deenayak
 Built On     : Wed Aug 16 23:51:31 UTC 2023
 Build Host   : iox-ucs-069
 Workspace    : /auto/srcarchive16/prod/7.10.1/ncs1010/ws/
 Version      : 7.10.1
 Label        : 7.10.1

cisco NCS1010 (C3758 @ 2.20GHz)
cisco NCS1010-SA (C3758 @ 2.20GHz) processor with 32GB of memory
System uptime is 4 hours, 51 minutes
```

NCS 1004

Log in to NCS 1004 and enter the **show version** command

```
RP/0/RP0/CPU0:ios#show version
Thu Aug 17 16:22:28.513 UTC
Cisco IOS XR Software, Version 7.10.1
Copyright (c) 2013-2023 by Cisco Systems, Inc.

Build Information:
 Built By     : deenayak
 Built On     : Wed Aug 16 21:37:45 PDT 2023
 Built Host   : iox-ucs-048
 Workspace    : /auto/srcarchive16/prod/7.10.1/ncs1004/ws
 Version      : 7.10.1
 Location     : /opt/cisco/XR/packages/
 Label        : 7.10.1

cisco NCS-1004 () processor
System uptime is 5 hours 17 minutes
```

NCS 1001

Log in to NCS 1001 and enter the **show version** command.

```
RP/0/RP0/CPU0:ios#show version
Tue Aug 22 08:51:15.964 CEST
Cisco IOS XR Software, Version 7.10.1
Copyright (c) 2013-2023 by Cisco Systems, Inc.

Build Information:
Built By     : deenayak
```

```
Built On     : Wed Aug 16 21:38:14 PDT 2023
Built Host   : iox-lnx-054
Workspace    : /auto/srcarchive16/prod/7.10.1/ncs1001/ws
Version      : 7.10.1
Location     : /opt/cisco/XR/packages/
Label        : 7.10.1

cisco NCS-1001 () processor
System uptime is 21 hours 17 minutes
```

Determine Firmware Version

Use the **show hw-module fpd** command in EXEC mode to view the hardware components with their current FPD version and status. The status of the hardware must be CURRENT; The Running and Programed version must be the same.

NCS 1010

Log in to OLT-C-R node and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Sat Mar 25 11:38:26.221 IST

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                                FPD Versions
                                                                               ==============
Location   Card type             HWver FPD device       ATR Status   Running Programd
Reload Loc
-------------------------------------------------------------------------------------------
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   ADMConfig            CURRENT    3.40    3.40
NOT REQ
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS             S   CURRENT    4.20    4.20
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS-Golden      BS  CURRENT            4.10
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpga          S   CURRENT    1.11    1.11
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpgaGolden    BS  CURRENT            1.01
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   SsdIntelS4510    S   CURRENT   11.32   11.32
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFw            S   CURRENT    6.13    6.13
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFwGolden      BS  CURRENT            6.11
  0/RP0
0/PM0      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM0      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/0/NXR0   NCS1K-OLT-R-C         1.0   OLT              S   CURRENT    1.12    1.12
NOT REQ
0/0/NXR0   NCS1K-OLT-R-C         1.0   Raman-1          S   CURRENT    1.04    1.04
NOT REQ
0/Rack     NCS1010-SA            1.0   EITU-ADMConfig       CURRENT    2.10    2.10
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpga           S   CURRENT    1.12    1.12
```

```
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpgaGolden     BS  CURRENT            1.01
NOT REQ
0/Rack     NCS1010-SA            1.0   SsdIntelS4510    S   CURRENT   11.32   11.32
 0/Rack
```

Log in to ILA-C-2R node and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Sat Mar 25 11:36:24.313 IST

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                          FPD Versions
                                                                          ==============
Location   Card type             HWver FPD device       ATR Status   Running Programd
Reload Loc
-----------------------------------------------------------------------------------------
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   ADMConfig            CURRENT    3.40    3.40
NOT REQ
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS             S   CURRENT    4.20    4.20
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS-Golden      BS  NEED UPGD          2.10
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpga          S   CURRENT    1.11    1.11
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpgaGolden    BS  CURRENT            1.01
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   SsdIntelS4510    S   CURRENT   11.32   11.32
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFw            S   CURRENT    6.13    6.13
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFwGolden      BS  CURRENT            6.11
  0/RP0
0/PM0      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM0      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/0/NXR0   NCS1K-ILA-2R-C        0.1   ILA              S   CURRENT    1.12    1.12
NOT REQ
0/0/NXR0   NCS1K-ILA-2R-C        0.1   Raman-1          S   CURRENT    1.04    1.04
NOT REQ
0/0/NXR0   NCS1K-ILA-2R-C        0.1   Raman-2          S   CURRENT    1.04    1.04
NOT REQ
0/Rack     NCS1010-SA            1.0   EITU-ADMConfig       CURRENT    2.10    2.10
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpga           S   CURRENT    1.12    1.12
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpgaGolden     BS  CURRENT            1.01
NOT REQ
0/Rack     NCS1010-SA            1.0   SsdIntelS4510    S   CURRENT   11.32   11.32
 0/Rack
```

Log in to ILA-C-R node and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Fri Jul 28 14:48:24.294 IST

Auto-upgrade:Enabled
```

```
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                                FPD Versions
                                                                               ==============
Location   Card type             HWver FPD device       ATR Status   Running Programd
Reload Loc
-----------------------------------------------------------------------------------------------
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   ADMConfig            CURRENT    3.40    3.40
NOT REQ
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS             S   CURRENT    4.50    4.50
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS-Golden      BS  CURRENT            4.10
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpga          S   CURRENT    1.11    1.11
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpgaGolden    BS  CURRENT            1.01
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   SsdIntelS4510    S   CURRENT   11.32   11.32
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFw            S   CURRENT    6.13    6.13
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFwGolden      BS  CURRENT            6.11
  0/RP0
0/PM0      NCS1010-AC-PSU        48.51 AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM0      NCS1010-AC-PSU        48.51 AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/PM1      NCS1010-AC-PSU        48.51 AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM1      NCS1010-AC-PSU        48.51 AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/0/NXR0   NCS1K-ILA-R-C         1.0   ILA              S   CURRENT    1.18    1.18
NOT REQ
0/0/NXR0   NCS1K-ILA-R-C         1.0   Raman-1          S   CURRENT    1.06    1.06
NOT REQ
0/Rack     NCS1010-SA            1.0   EITU-ADMConfig       CURRENT    2.10    2.10
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpga           S   CURRENT    1.16    1.16
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpgaGolden     BS  CURRENT            1.01
NOT REQ
0/Rack     NCS1010-SA            1.0   SsdIntelS4510    S   CURRENT   11.32   11.32
```

Log in to ILA-C node and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Sat Mar 25 11:40:24.679 IST

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                                FPD Versions
                                                                               ==============
Location   Card type             HWver FPD device       ATR Status   Running Programd
Reload Loc
-----------------------------------------------------------------------------------------------
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   ADMConfig            CURRENT    3.40    3.40
NOT REQ
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS             S   CURRENT    4.20    4.20
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   BIOS-Golden      BS  NEED UPGD          2.10
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpga          S   CURRENT    1.11    1.11
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   CpuFpgaGolden    BS  CURRENT            1.01
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   SsdIntelS4510    S   CURRENT   11.32   11.32
```

```
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFw            S   CURRENT    6.13    6.13
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.0   TamFwGolden      BS  CURRENT            6.11
  0/RP0
0/PM0      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM0      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/0/NXR0   NCS1K-ILA-C           0.1   ILA              S   CURRENT    1.12    1.12
NOT REQ
0/Rack     NCS1010-SA            1.0   EITU-ADMConfig       CURRENT    2.10    2.10
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpga           S   CURRENT    1.12    1.12
NOT REQ
0/Rack     NCS1010-SA            1.0   IoFpgaGolden     BS  CURRENT            1.01
NOT REQ
0/Rack     NCS1010-SA            1.0   SsdIntelS4510    S   CURRENT   11.32   11.32
 0/Rack
RP/0/RP0/CPU0:ios#
```

Log in to OLT-L node and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Mon Aug 14 05:37:30.558 UTC

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                                FPD Versions
                                                                               ==============
Location   Card type             HWver FPD device       ATR Status   Running Programd
Reload Loc
-----------------------------------------------------------------------------------------------
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  ADMConfig            CURRENT    3.40    3.40
NOT REQ
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  BIOS             S   CURRENT    4.20    4.20
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  BIOS-Golden      BS  CURRENT            4.10
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  CpuFpga          S   CURRENT    1.11    1.11
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  CpuFpgaGolden    BS  CURRENT            1.01
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  SsdMicron5300    S   CURRENT    0.01    0.01
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  TamFw            S   CURRENT    6.13    6.13
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  TamFwGolden      BS  CURRENT            6.11
  0/RP0
0/PM0      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM0      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/0/NXR0   NCS1K-E-OLT-R-C       1.0   OLT              S   CURRENT    1.16    1.16
NOT REQ
0/0/NXR0   NCS1K-E-OLT-R-C       1.0   Raman-1          S   CURRENT    1.04    1.04
NOT REQ
```

```
0/Rack     NCS1010-SA            2.1   EITU-ADMConfig       CURRENT    2.10    2.10
NOT REQ
0/Rack     NCS1010-SA            2.1   IoFpga           S   CURRENT    1.12    1.12
NOT REQ
0/Rack     NCS1010-SA            2.1   IoFpgaGolden     BS  CURRENT            1.01
NOT REQ
0/Rack     NCS1010-SA            2.1   SsdMicron5300    S   CURRENT    0.01    0.01
 0/Rack
RP/0/RP0/CPU0:ios#
```

Log in to ILA-L node and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Sat Mar 25 11:38:17.649 IST

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                          FPD Versions
                                                                          ==============
Location   Card type             HWver FPD device       ATR Status   Running Programd
Reload Loc
-----------------------------------------------------------------------------------------
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  ADMConfig            CURRENT    3.40    3.40
NOT REQ
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  BIOS             S   CURRENT    4.20    4.20
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  BIOS-Golden      BS  CURRENT            4.10
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  CpuFpga          S   CURRENT    1.11    1.11
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  CpuFpgaGolden    BS  CURRENT            1.01
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  SsdIntelS4510    S   CURRENT   11.32   11.32
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  TamFw            S   CURRENT    6.13    6.13
  0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9      1.11  TamFwGolden      BS  CURRENT            6.11
  0/RP0
0/PM0      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM0      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-PriMCU            CURRENT    1.03    1.03
NOT REQ
0/PM1      NCS1010-AC-PSU        0.0   AP-SecMCU            CURRENT    2.01    2.01
NOT REQ
0/0/NXR0   NCS1K-ILA-L           1.0   ILA              S   CURRENT    1.00    1.00
NOT REQ
0/Rack     NCS1010-SA            2.1   EITU-ADMConfig       CURRENT    2.10    2.10
NOT REQ
0/Rack     NCS1010-SA            2.1   IoFpga           S   CURRENT    1.12    1.12
NOT REQ
0/Rack     NCS1010-SA            2.1   IoFpgaGolden     BS  CURRENT            1.01
NOT REQ
0/Rack     NCS1010-SA            2.1   SsdIntelS4510    S   CURRENT   11.32   11.32
 0/Rack
RP/0/RP0/CPU0:ILA-L-1#
```

NCS 1004

Log in to NCS 1004 and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Thu Aug 17 16:22:56.279 UTC

Auto-upgrade:Enabled
                                                                                FPD Versions
                                                                                ==============
Location   Card type             HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/0        NCS1K4-OTN-XP         3.0   LC_CFP2_PORT_0        CURRENT     1.46      1.46

0/0        NCS1K4-OTN-XP         3.0   LC_CFP2_PORT_1        CURRENT     1.46      1.46

0/0        NCS1K4-OTN-XP         3.0   LC_CPU_MOD_FW         CURRENT    80.10     80.10

0/0        NCS1K4-OTN-XP         3.0   LC_DP_MOD_FW          CURRENT    14.10     14.10

0/1        NCS1K4-OTN-XP         3.0   LC_CFP2_PORT_0        CURRENT     1.46      1.46

0/1        NCS1K4-OTN-XP         1.0   LC_CFP2_PORT_1        CURRENT    38.27397  38.27397

0/1        NCS1K4-OTN-XP         3.0   LC_CPU_MOD_FW         CURRENT    80.10     80.10

0/1        NCS1K4-OTN-XP         3.0   LC_DP_MOD_FW          CURRENT    14.10     14.10

0/RP0      NCS1K4-CNTLR-K9       7.0   CSB_IMG            S  CURRENT     0.200     0.200

0/RP0      NCS1K4-CNTLR-K9       7.0   TAM_FW                CURRENT    36.08     36.08

0/RP0      NCS1K4-CNTLR-K9       1.14  BIOS               S  CURRENT     5.90      5.90

0/RP0      NCS1K4-CNTLR-K9       5.4   BP_SSD                CURRENT    75.00     75.00

0/RP0      NCS1K4-CNTLR-K9       7.0   CPU_FPGA              CURRENT     1.14      1.14

0/RP0      NCS1K4-CNTLR-K9       5.4   CPU_SSD               CURRENT    75.00     75.00

0/RP0      NCS1K4-CNTLR-K9       3.18  POWMAN_CFG            CURRENT     3.40      3.40

0/PM1      NCS1K4-AC-PSU         0.1   PO-PriMCU             CURRENT     2.70      2.70

0/SC0      NCS1004               2.0   BP_FPGA               CURRENT     1.25      1.25

0/SC0      NCS1004               2.0   XGE_FLASH             CURRENT    18.04     18.04

RP/0/RP0/CPU0:ios#

RP/0/RP0/CPU0: ios#show hw-module fpd
Thu Aug 17 21:53:25.228 IST

Auto-upgrade:Enabled
                                                                                FPD Versions
                                                                                ==============
Location   Card type             HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/0        NCS1K4-QXP-L-K9       1.0   LC_CPU_MOD_FW         CURRENT    80.10     80.10

0/0        NCS1K4-QXP-L-K9       2.0   LC_QSFPDD_PORT_0      CURRENT    61.2332   61.2332

0/0        NCS1K4-QXP-L-K9       2.0   LC_QSFPDD_PORT_10     CURRENT    61.2332   61.2332

0/0        NCS1K4-QXP-L-K9       2.0   LC_QSFPDD_PORT_2      CURRENT    61.2332   61.2332

0/0        NCS1K4-QXP-L-K9       2.0   LC_QSFPDD_PORT_4      CURRENT    61.2332   61.2332
```

```
0/0         NCS1K4-QXP-L-K9       2.0   LC_QSFPDD_PORT_6      CURRENT    61.2332   61.2332
0/1         NCS1K4-QXP-L-K9       1.0   LC_CPU_MOD_FW         CURRENT    80.10     80.10
0/1         NCS1K4-QXP-L-K9       2.0   LC_QSFPDD_PORT_2      CURRENT    61.2332   61.2332
0/1         NCS1K4-QXP-L-K9       2.0   LC_QSFPDD_PORT_6      CURRENT    61.2332   61.2332
0/3         NCS1K4-QXP-K9         1.0   LC_CPU_MOD_FW         CURRENT    80.10     80.10
0/3         NCS1K4-QXP-K9         3.0   LC_QSFPDD_PORT_0      CURRENT    70.13011  70.13011
0/3         NCS1K4-QXP-K9         3.0   LC_QSFPDD_PORT_10     CURRENT    70.13011  70.13011
0/3         NCS1K4-QXP-K9         3.0   LC_QSFPDD_PORT_14     CURRENT    70.13011  70.13011
0/3         NCS1K4-QXP-K9         3.0   LC_QSFPDD_PORT_4      CURRENT    70.13011  70.13011
0/3         NCS1K4-QXP-K9         2.0   LC_QSFPDD_PORT_8      CURRENT    61.2332   61.2332
0/RP0       NCS1K4-CNTLR-K9       8.0   CSB_IMG            S  CURRENT     0.200     0.200
0/RP0       NCS1K4-CNTLR-K9       8.0   TAM_FW                CURRENT    36.08     36.08
0/RP0       NCS1K4-CNTLR-K9       1.14  BIOS               S  CURRENT     5.90      5.90
0/RP0       NCS1K4-CNTLR-K9       1.1   BP_SSD                CURRENT   1132.00   1132.00
0/RP0       NCS1K4-CNTLR-K9       8.0   CPU_FPGA              CURRENT     1.14      1.14
0/RP0       NCS1K4-CNTLR-K9       5.5   CPU_SSD               CURRENT     1.00      1.00
0/RP0       NCS1K4-CNTLR-K9       3.18  POWMAN_CFG            CURRENT     3.40      3.40
0/PM0       NCS1K4-AC-PSU         0.1   PO-PriMCU             NEED UPGD   2.68      2.68
0/SC0       NCS1004-4S            16.0  BP_FPGA               CURRENT     1.25      1.25
0/SC0       NCS1004-4S            16.0  XGE_FLASH             CURRENT    18.04     18.04


RP/0/RP0/CPU0:ios#show hw-module fpd
Thu Aug 17 21:57:49.654 IST

Auto-upgrade:Enabled
                                                                          FPD Versions
                                                                          ==============
Location   Card type             HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/0        NCS1K4-2-QDD-C-K9     0.0   LC_CPU_MOD_FW        CURRENT    80.10     80.10
0/0        NCS1K4-2-QDD-C-K9     1.0   LC_OPT_MOD_FW        CURRENT     1.38      1.38
0/1        NCS1K4-1.2T-L-K9      2.0   LC_CPU_MOD_FW        CURRENT    80.10     80.10
0/1        NCS1K4-1.2T-L-K9      2.0   LC_OPT_MOD_FW        CURRENT     1.38      1.38
0/2        NCS1K4-1.2TL-K9       3.0   LC_CPU_MOD_FW        CURRENT    80.10     80.10
0/2        NCS1K4-1.2TL-K9       1.0   LC_OPT_MOD_FW        CURRENT     1.38      1.38
0/3        NCS1K4-2-QDD-CK9L     1.0   LC_CPU_MOD_FW        CURRENT    80.10     80.10
0/3        NCS1K4-2-QDD-CK9L     1.0   LC_OPT_MOD_FW        CURRENT     1.38      1.38
0/RP0      NCS1K4-CNTLR-K9       4.0   CSB_IMG           S  CURRENT     0.200     0.200
0/RP0      NCS1K4-CNTLR-K9       4.0   TAM_FW               CURRENT    36.08     36.08
0/RP0      NCS1K4-CNTLR-K9       1.14  BIOS              S  CURRENT     5.90      5.90
0/RP0      NCS1K4-CNTLR-K9       5.4   BP_SSD               CURRENT    75.00     75.00
0/RP0      NCS1K4-CNTLR-K9       4.0   CPU_FPGA             CURRENT     1.14      1.14
0/RP0      NCS1K4-CNTLR-K9       5.4   CPU_SSD              CURRENT    75.00     75.00
0/RP0      NCS1K4-CNTLR-K9       3.18  POWMAN_CFG           CURRENT     3.40      3.40
```

```
0/PM0      NCS1K4-AC-PSU               PO-PriMCU            NOT READY
0/PM1      NCS1K4-AC-PSU        0.1    PO-PriMCU            CURRENT     2.70      2.70
0/SC0      NCS1004              2.0    BP_FPGA              CURRENT     1.25      1.25
0/SC0      NCS1004              2.0    XGE_FLASH            CURRENT    18.04     18.04
```

NCS 1001

Log in to NCS 1001 and enter the **show hw-module fpd** command:

The following shows the output of show hw-module fpd command for NCS 1001 with PSMv1 in slot 2 EDFAv2 in slot 1 and slot 3.

```
RP/0/RP0/CPU0:ios#show hw-module fpd all
Tue Oct 25 15:01:40.230 CEST

Auto-upgrade:Disabled
                                                                                FPD Versions
                                                                               ==============
Location   Card type             HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/0        NCS1001-K9            0.1   Control_BKP      B   CURRENT              1.10
0/0        NCS1001-K9            0.1   Control_FPGA         CURRENT     1.10      1.10
0/1        NCS1K-EDFA            0.0   FW_EDFAv2            CURRENT     0.45      0.45
0/2        NCS1K-PSM             0.0   FW_PSMv1             CURRENT     1.51      1.51
0/3        NCS1K-EDFA            0.0   FW_EDFAv2            CURRENT     0.45      0.45
0/RP0      NCS1K-CNTLR2          0.1   BIOS_Backup      BS  CURRENT             15.10
0/RP0      NCS1K-CNTLR2          0.1   BIOS_Primary      S  CURRENT    15.30     15.30
0/RP0      NCS1K-CNTLR2          0.1   Daisy_Duke_BKP   BS  CURRENT              0.20
0/RP0      NCS1K-CNTLR2          0.1   Daisy_Duke_FPGA   S  CURRENT     0.20      0.20
```

The following shows the output of **show hw-module fpd** command for NCS 1001 with PSMv2 in slot 2 and EDFAv1 in slot 1 and slot 3.

```
RP/0/RP0/CPU0:ios#show hw-module fpd all
Tue Oct 25 15:03:08.681 CEST

Auto-upgrade:Disabled
                                                                                FPD Versions
                                                                               ==============
Location   Card type             HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/0        NCS1001-K9            0.1   Control_BKP      B   CURRENT              1.10
0/0        NCS1001-K9            0.1   Control_FPGA         CURRENT     1.10      1.10
0/1        NCS1K-EDFA            0.0   FW_EDFAv1            CURRENT     1.61      1.61
0/2        NCS1K-PSM             0.0   FW_PSMv2             CURRENT     0.16      0.16
0/3        NCS1K-EDFA            0.0   FW_EDFAv1            CURRENT     1.61      1.61
0/RP0      NCS1K-CNTLR2          0.1   BIOS_Backup      BS  CURRENT             15.10
0/RP0      NCS1K-CNTLR2          0.1   BIOS_Primary      S  CURRENT    15.30     15.30
0/RP0      NCS1K-CNTLR2          0.1   Daisy_Duke_BKP   BS  CURRENT              0.20
0/RP0      NCS1K-CNTLR2          0.1   Daisy_Duke_FPGA   S  CURRENT     0.20      0.20
```

The following shows the output of **show hw-module fpd** command for NCS 1001 with PSMv3 in slot 2, EDFAv2 in slot 1, and EDFAv1 in slot 3.

```
RP/0/RP0/CPU0:ios#sh hw-module fpd all
Thu Aug 24 08:14:12.199 CEST

Auto-upgrade:Disabled
                                                                                FPD Versions
                                                                               ==============
Location   Card type             HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
```

```
0/0         NCS1001-K9            0.1   Control_BKP       B   CURRENT              1.10
0/0         NCS1001-K9            0.1   Control_FPGA          CURRENT     1.10     1.10
0/1         NCS1K-EDFA            0.0   FW_EDFAv2             CURRENT     0.45     0.45
0/2         NCS1K-PSM             0.0   FW_PSMv3              CURRENT     1.64     1.64
0/3         NCS1K-EDFA            0.0   FW_EDFAv1             CURRENT     1.61     1.61
0/RP0       NCS1K-CNTLR2          0.1   BIOS_Backup       BS  CURRENT             15.10
0/RP0       NCS1K-CNTLR2          0.1   BIOS_Primary       S  CURRENT    15.30    15.30
0/RP0       NCS1K-CNTLR2          0.1   Daisy_Duke_BKP    BS  CURRENT              0.20
0/RP0       NCS1K-CNTLR2          0.1   Daisy_Duke_FPGA    S  CURRENT     0.20     0.20
```

The following shows the output of show hw-module fpd command for NCS 1001 with OTDR in slot 2.

```
RP/0/RP0/CPU0:ios#show hw-module fpd all
Tue Oct 25 15:04:12.208 CEST

Auto-upgrade:Disabled
                                                                          FPD Versions
                                                                          ==============
Location   Card type              HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/0        NCS1001-K9            0.1   Control_BKP      B   CURRENT              1.10
0/0        NCS1001-K9            0.1   Control_FPGA         CURRENT     1.10     1.10
0/1        NCS1K-EDFA            0.0   FW_EDFAv1            CURRENT     1.61     1.61
0/2        NCS1K-OTDR            0.0   FW_OTDR_p            CURRENT     6.03     6.03
0/2        NCS1K-OTDR            0.0   FW_OTDR_s            CURRENT     1.51     1.51
0/3        NCS1K-EDFA            0.0   FW_EDFAv1            CURRENT     1.61     1.61
0/RP0      NCS1K-CNTLR2          0.1   BIOS_Backup      BS  CURRENT             15.10
0/RP0      NCS1K-CNTLR2          0.1   BIOS_Primary      S  CURRENT    15.30    15.30
0/RP0      NCS1K-CNTLR2          0.1   Daisy_Duke_BKP   BS  CURRENT              0.20
0/RP0      NCS1K-CNTLR2          0.1   Daisy_Duke_FPGA   S  CURRENT     0.20     0.20
RP/0/RP0/CPU0:ios#
```

The following shows the output of show hw-module fpd command for NCS 1001 with AC Power Module.

```
sysadmin-vm:ios# show hw-module fpd
Tue Oct  25 14:03:46.799 UTC+00:00
                                                                    FPD Versions
                                                                    ==============
Location  Card type         HWver FPD device       ATR Status      Run     Programd
-------------------------------------------------------------------------------------
0/0       NCS1001-K9        0.1   Control_BKP      B   CURRENT               1.10
0/0       NCS1001-K9        0.1   Control_FPGA         CURRENT     1.10      1.10
0/RP0     NCS1K-CNTLR2      0.1   BIOS_Backup      BS  CURRENT              15.10
0/RP0     NCS1K-CNTLR2      0.1   BIOS_Primary      S  CURRENT    15.30     15.30
0/RP0     NCS1K-CNTLR2      0.1   Daisy_Duke_BKP   BS  CURRENT               0.20
0/RP0     NCS1K-CNTLR2      0.1   Daisy_Duke_FPGA   S  CURRENT     0.20      0.20
0/PM0     NCS1K-2KW-AC2     0.0   PO-PriMCU            CURRENT     4.00      4.00
0/PM1     NCS1K-2KW-AC2     0.0   PO-PriMCU            CURRENT     4.00      4.00
```

The following shows the output of show hw-module fpd command for NCS 1001 with DC Power Module.

```
sysadmin-vm:ios# show hw-module fpd
Tue Oct  25 13:53:59.265 UTC+00:00
                                                                    FPD Versions
                                                                    ==============
Location  Card type         HWver FPD device       ATR Status      Run     Programd
-------------------------------------------------------------------------------------
0/0       NCS1001-K9        0.1   Control_BKP      B   CURRENT               1.10
0/0       NCS1001-K9        0.1   Control_FPGA         CURRENT     1.10      1.10
0/RP0     NCS1K-CNTLR2      0.1   BIOS_Backup      BS  CURRENT              15.10
0/RP0     NCS1K-CNTLR2      0.1   BIOS_Primary      S  CURRENT    15.30     15.30
0/RP0     NCS1K-CNTLR2      0.1   Daisy_Duke_BKP   BS  CURRENT               0.20
0/RP0     NCS1K-CNTLR2      0.1   Daisy_Duke_FPGA   S  CURRENT     0.20      0.20
0/PM0     NCS1K-2KW-DC      0.2   PO-PriMCU            CURRENT     2.01      2.01
0/PM1     NCS1K-2KW-DC      0.2   PO-PriMCU            CURRENT     2.01      2.01
```

The preceding show output lists the hardware components that the current release supports with their status. The status of the hardware must be CURRENT; Running and Program version must be similar.

Supported MIBs

The following table lists the MIBs supported by NCS 1001, NCS 1004, and NCS 1010.

Note NCS 1010 MIBs can be accessed from the MIB Locator tool on Cisco Feature Navigator (CFN).

MIB	NCS 1010	NCS 1004	NCS 1001
CISCO-FLASH-MIB	Yes	Yes	Yes
CISCO-ENHANCED-MEMPOOL-MIB	Yes	Yes	Yes
ENTITY-MIB	Yes	Yes	Yes
CISCO-ENTITY-FRU-CONTROL-MIB	Yes	Yes	Yes
CISCO-IF-EXTENSION-MIB	Yes	Yes	Yes
CISCO-ENTITY-ASSET-MIB	Yes	Yes	Yes
CISCO-CONFIG-MAN-MIB	Yes	Yes	Yes
CISCO-ENTITY-REDUNDANCY-MIB	Yes	Yes	Yes
CISCO-SYSTEM-MIB	Yes	Yes	Yes
CISCO-SYSLOG-MIB	Yes	Yes	Yes
CISCO-ENTITY-SENSOR-MIB	Yes	Yes	Yes
CISCO-PROCESS-MIB	Yes	Yes	Yes
RMON-MIB	Yes	Yes	Yes
CISCO-ALARM-MIB	Yes	Yes	No
CISCO-AM-SNMP-MIB	No	Yes	No
EVENT-MIB	Yes	Yes	Yes
DISMAN-EXPRESSION-MIB	Yes	Yes	Yes
CISCO-FTP-CLIENT-MIB	Yes	Yes	Yes
NOTIFICATION-LOG-MIB	Yes	Yes	Yes
CISCO-RF-MIB	Yes	Yes	Yes
RADIUS-AUTH-CLIENT-MIB	No	Yes	No

MIB	NCS 1010	NCS 1004	NCS 1001
RADIUS-ACC-CLIENT-MIB	No	Yes	No
IEEE8023-LAG-MIB	No	Yes	No
CISCO-TCP-MIB	Yes	Yes	Yes
UDP-MIB	Yes	Yes	Yes
CISCO-BULK-FILE-MIB	No	Yes	No
CISCO-CONTEXT-MAPPING-MIB	No	Yes	No
CISCO-OTN-IF-MIB	Yes	Yes	Yes
HC-RMON-MIB	No	Yes	No
CISCO-OPTICAL-MIB	Yes	Yes	Yes
LLDP-MIB	No	Yes	No
CISCO-OPTICAL-OTS-MIB	Yes	No	Yes
CISCO-OPTICAL-OLC-MIB	Yes*	No	No

Note * New SNMP MIB added as part of R7.10.1 release in NCS 1010.