

# Release Notes for Cisco NCS 1000 Series, IOS XR Release 7.7.1

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## Network Convergence System 1000 Series

### NCS 1010 Optical Line System

Optical transport networks are evolving to address an exponential increase in network traffic faced by Service Providers. There is a growing need to support both digital coherent optics and high-performance transponders. This release introduces a new generation of Optical Line System (OLS), NCS 1010.

NCS 1010 OLS platform is an integral component of Routed Optical Networking solution. It provides point-to-point connectivity between routers with ZR/ZR+ optics and multiplexes signals from multiple routers over a single fiber. The OLS platform supports ROADMs of up to eight degrees using the NCS 1000 Breakout Patch Panel. NCS 1010 supports C-band WDM transmission in this release.

The NCS 1010 OLS platform provides::

- Versatility by supporting multiple coherent sources such as:
  - 400G digital coherent ZR/ZR+ optics (-10dBm output power)
  - High-performance DCO transponders such as 1.2T and 2-QDD-C cards that use high GBaud rates.
- Simplicity by using integrated Optical line cards that minimize fiber patching and cabling errors in the field.
- Automation through IOS XR operating system that provides a rich suite of automation features including Zero Touch Provisioning (ZTP), open config YANG model support with NETCONF, and streaming telemetry.
- Network Monitoring through a combination of probes based on OTDR, OSC, OCM, and telemetry data.

The NCS 1010 OLS platform comprises of:

- Network Convergence System (NCS 1010) chassis
- Cisco NCS 1000 Breakout Patch Panel
- Cisco NCS 1000 32-Channel Mux/Demux Patch Panels

#### NCS 1010 Chassis

Cisco NCS 1010 is a 3RU modular chassis that has an in-built External Interface Timing Unit (EITU) and multiple field-replaceable modules.

NCS 1010 supports five different variants of the line card:

- OLT-C Line Card: C-band Optical Line Terminal without Raman
- OLT-R-C Line Card: C-band Optical Line Terminal with Raman
- ILA-C Line Card: C-band In-Line Amplifier without Raman
- ILA-R-C Line Card: C-band In-Line Amplifier with one side Raman
- ILA-2R-C Line Card: C-band In-Line Amplifier with both sides Raman

For more information about the NCS 1010 chassis, see the [data sheet](#).

### Cisco NCS 1000 Breakout Patch Panel

It is a colorless breakout patch panel that enables you to implement long-haul topologies. These topologies use high TX power transponders such as the 1.2T or 2-QDD-C line card.

Cisco NCS 1000 breakout patch panel supports up to 72 Mux/Demux channels and eight ROADM degrees using the following breakout modules:

- NCS1K-BRK-8 (used as Express interconnect)
- NCS1K-BRK-24 (used for colorless topology)

For more information about the NCS 1000 breakout patch panel, see the [data sheet](#).

### Cisco NCS 1000 32-Channel Mux/Demux Patch Panels

These patch panels support colored channels that enables you to implement metro topologies. These topologies use low TX power modules such as 400G ZR/ZR+ coherent optics. This patch panel also supports the Routed Optical Networking solution.

The two Mux/Demux patch panels (NCS1K-MD-32O-C and NCS1K-MD32E-C) support 32 channels and work as an add/drop unit for the OLT-C and OLT-R-C line cards.

For more information about the NCS 1000 Mux/Demux patch panels, see the [data sheet](#).

### Software Functionalities

NCS 1010 supports a host of software features making it a potent optical platform. The key features, which are broadly categorized into three categories are:

- System Setup and Software Installation
  - Multiple Boot Options
  - Health check for ISO images
- Data Path
  - ROADM express support of up to 8 degrees
  - Controllers
    - Optical channel power monitoring at up to 37 measuring points at a node.
    - Improves system stability using noise loader to maintain full channel configuration.
- Verify Connection between line cards and patch panel

- Optical Applications for Automatic Network Turn Up
  - Link Tuner to configure Power Spectral Densities (PSD)
  - Span Loss Calculation
  - Automatic Raman Tuning
  - Amplified Spontaneous Emission
  - Gain Estimator sets the gain mode of EDFA amplifiers

### Open Configuration Support

Cisco NCS 1010 is configurable using data models. In this release these open config models are supported:

- openconfig-optical-amplifier for Booster Amplifier
- openconfig-optical-attenuator for Variable Optical Attenuator

For more details, see [Data Models Configuration Guide for Cisco NCS 1010](#).

## What's New in Cisco NCS 1001 and NCS 1004, IOS XR Release 7.7.1

### NCS 1004

Feature	Description
<b>Software</b>	
<a href="#">10x10G + 1x100G Hybrid Mode for OTN-XP Card</a>	A new hybrid mode 10x10G + 1x100G over 200G trunk rate is introduced for OTN-XP card. This mode is configurable on both slice 1 and slice 0. This feature provides you the flexibility to choose a combination of 10G and 100G client rates simultaneously on both slices of the OTN-XP card.
<a href="#">Daisy Chain Support on Management Ports</a>	In a daisy chain arrangement, multiple NCS 1004 nodes across two sites are linearly connected to each other over the management ports. As a result, when the TOR switches at a site are down, the NCS 1004 nodes of that site are still reachable from the NCS 1004 nodes at the other site. You can daisy chain up to five NCS 1004 nodes in the network.
<a href="#">32G FC-MXP Mode Support on the OTN-XP Card</a>	The OTN-XP card now supports 32G FC-MXP LC mode for Fiber Channel (FC) support, in addition to the 16G FC-MXP mode that was supported already. You can configure 32G FC with 400G trunk rate on slice 0.
<a href="#">FC Mode Support on DP04CFP2-M25-K9 Pluggable</a>	The 16G FC and 32G FC muxponder modes support is added to the trunk pluggable DP04CFP2-M25-K9 on the OTN-XP card. This is in addition to the 4x100 muxponder and 400G-TXP modes that were supported previously.
<a href="#">PM History Persistence</a>	PM history parameters for Optics, Ethernet, and coherent DSP controllers are now retained even after operation disruptive events like: Various reload procedures, Power cycle, and OS upgrade of the NCS 1004 chassis. This functionality maintains prolonged access to performance history that is useful for device health monitoring.

Feature	Description
<b>Data Models</b>	
<a href="#">OC Support for TXP and MXP Data Paths using ZRP</a>	<p>From this release onwards, in NCS1K4-OTN-XP line cards, you can configure the 2x100GE-MXP-DD, 3x100GE-MXP-DD, 4x100GE-MXP-DD, and 400GE-TXP-DD card modes using ZR+ pluggable via OpenConfig.</p> <p>This enhancement improves efficiency, performance, and flexibility for customer networks allowing 2x100GE, 3x100GE, 400GE, and 4x100GE client transport over 400GE WDM wavelength.</p>

Feature	Description
<b>Hardware</b>	
<a href="#">Attention LED</a>	The attention LED is available on all ports of the NCS 1004 line cards. This LED can be selectively turned on for a specific QSFP port or simultaneously on all of the QSFP ports using the hw-module location command. When turned on, the LED flashes yellow. This LED flashing functionality helps field engineers quickly identify a specific port on the line card for troubleshooting, especially in a cluttered environment.
<a href="#">NCS1K4-QXP-K9 Line Card</a>	<p>NCS1K4-QXP-K9 line card delivers low cost 100G and 400G DWDM transmission with ZR+ optics on a router. This line card can be used in both traditional Optical Networking solution and in Routed Optical Networking solution. This line card has 16 pluggable ports with eight QSFP-DD client ports and eight QSFP-DD trunk ports. NCS1K4-QXP-K9 card supports the following key features:</p> <ul style="list-style-type: none"> <li>• Client rates: 400GE, 4x100GE, and 100GE Ethernet</li> <li>• Modulation formats: 16 QAM for 400GE Txp/4x100GE Mxp and QPSK for 100GE Txp</li> <li>• Smart licensing: The license calculation is based on the number of trunk slices provisioned.</li> </ul>

**NCS 1001**

There are no new features introduced in this release.

**New Openroadm Alarms in Release 7.7.1**

- circuitPackActivateFailed
- firmwareDownloadOrActivationFailure
- certificateNotInstalled
- softwareVersionMismatch
- vendorExtension

See [OpenROADM Configuration Guide for Cisco NCS 1004](#).

## Release 7.7.1 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 7.7.1 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

```
RP/0/RP0/CPU0:ios#show install active
Fri Jul 29 10:47:24.514 UTC
```

```
Software Hash: 166bf5e91386580c0b8cdb712199d67e5f3ddeca3269af709f621831c61d2537
Package                                                                                               Version
-----
xr-aaa                                                                                               7.7.1v1.0.0-1
xr-acl                                                                                               7.7.1v1.0.0-1
xr-apphosting                                                                                       7.7.1v1.0.0-1
xr-appmgr                                                                                           7.7.1v1.0.0-1
xr-bcdl                                                                                             7.7.1v1.0.0-1
xr-bfd                                                                                              7.7.1v1.0.0-1
xr-bgp                                                                                              7.7.1v1.0.0-1
xr-bgputil                                                                                         7.7.1v1.0.0-1
xr-bng-stubs                                                                                       7.7.1v1.0.0-1
xr-bundles                                                                                         7.7.1v1.0.0-1
xr-cal-pi                                                                                          7.7.1v1.0.0-1
xr-cds                                                                                              7.7.1v1.0.0-1
xr-cfgmgr                                                                                          7.7.1v1.0.0-1
xr-cofo                                                                                             7.7.1v1.0.0-1
xr-core                                                                                             7.7.1v1.0.0-1
xr-core-calv                                                                                       7.7.1v1.0.0-1
xr-cpa-common                                                                                      7.7.1v1.0.0-1
xr-cpa-common-optics                                                                              7.7.1v1.0.0-1
xr-cpa-common-psu                                                                                7.7.1v1.0.0-1
xr-cpa-driver-devobj-misc                                                                        7.7.1v1.0.0-1
xr-cpa-driver-devobj-npu                                                                        7.7.1v1.0.0-1
xr-cpa-driver-devobj-phy                                                                        7.7.1v1.0.0-1
xr-cpa-driver-devobj-sensors                                                                    7.7.1v1.0.0-1
xr-cpa-driver-devobj-storage                                                                    7.7.1v1.0.0-1
xr-cpa-driver-devobj-test                                                                        7.7.1v1.0.0-1
xr-cpa-driver-devobj-timing                                                                      7.7.1v1.0.0-1
xr-cpa-driver-fpgalib-access                                                                    7.7.1v1.0.0-1
xr-cpa-driver-fpgalib-common                                                                    7.7.1v1.0.0-1
xr-cpa-driver-fpgalib-infra                                                                      7.7.1v1.0.0-1
xr-cpa-driver-fpgalib-kmod                                                                        7.7.1v1.0.0-1
xr-cpa-driver-fpgalib-misc                                                                        7.7.1v1.0.0-1
xr-cpa-driver-omi                                                                                7.7.1v1.0.0-1
xr-cpa-driver-optics                                                                              7.7.1v1.0.0-1
xr-cpa-ethsw                                                                                     7.7.1v1.0.0-1
xr-cpa-idprom                                                                                     7.7.1v1.0.0-1
```

xr-cpa-tamlib	7.7.1v1.0.0-1
xr-ctc	7.7.1v1.0.0-1
xr-debug	7.7.1v1.0.0-1
xr-dhcp	7.7.1v1.0.0-1
xr-diskboot	7.7.1v1.0.0-1
xr-drivers	7.7.1v1.0.0-1
xr-eem	7.7.1v1.0.0-1
xr-ema	7.7.1v1.0.0-1
xr-enhancedmanageability	7.7.1v1.0.0-1
xr-erp	7.7.1v1.0.0-1
xr-featurecapability	7.7.1v1.0.0-1
xr-fib	7.7.1v1.0.0-1
xr-foundation-ncs1010	7.7.1v1.0.0-1
xr-fpd	7.7.1v1.0.0-1
xr-ha-infra	7.7.1v1.0.0-1
xr-host-core	7.7.1v1.0.0-1
xr-httpclient	7.7.1v1.0.0-1
xr-icpe-eth	7.7.1v1.0.0-1
xr-icpe-opt	7.7.1v1.0.0-1
xr-identifier	7.7.1v1.0.0-1
xr-infra-sla	7.7.1v1.0.0-1
xr-install	7.7.1v1.0.0-1
xr-ip-apps	7.7.1v1.0.0-1
xr-ip-core	7.7.1v1.0.0-1
xr-ip-infra-vrf	7.7.1v1.0.0-1
xr-ip-mibs	7.7.1v1.0.0-1
xr-ip-static	7.7.1v1.0.0-1
xr-ipc	7.7.1v1.0.0-1
xr-ipsla	7.7.1v1.0.0-1
xr-is-is	7.7.1v1.0.0-1
xr-l2snooptransport	7.7.1v1.0.0-1
xr-l2vpn	7.7.1v1.0.0-1
xr-ldp	7.7.1v1.0.0-1
xr-licensing	7.7.1v1.0.0-1
xr-line-pm-alarm	7.7.1v1.0.0-1
xr-link-oam	7.7.1v1.0.0-1
xr-linuxnetworking	7.7.1v1.0.0-1
xr-linuxsecurity	7.7.1v1.0.0-1
xr-lldp	7.7.1v1.0.0-1
xr-lpts	7.7.1v1.0.0-1
xr-manageabilityxml	7.7.1v1.0.0-1
xr-mandatory	7.7.1v1.0.0-1
xr-mcastl2snoop	7.7.1v1.0.0-1
xr-mda	7.7.1v1.0.0-1
xr-mps	7.7.1v1.0.0-1
xr-mps-oam	7.7.1v1.0.0-1
xr-mps-oam-client	7.7.1v1.0.0-1
xr-mps-static	7.7.1v1.0.0-1
xr-ncs1010-card-support	7.7.1v1.0.0-1
xr-ncs1010-core	7.7.1v1.0.0-1
xr-ncs1010-cpa	7.7.1v1.0.0-1
xr-ncs1010-cpa-devobj-misc	7.7.1v1.0.0-1
xr-ncs1010-cpa-ethsw	7.7.1v1.0.0-1
xr-ncs1010-forwarder	7.7.1v1.0.0-1
xr-ncs1010-fpd	7.7.1v1.0.0-1
xr-ncs1010-mcast	7.7.1v1.0.0-1
xr-ncs1010-omi	7.7.1v1.0.0-1
xr-ncs1010-os	7.7.1v1.0.0-1
xr-ncs1010-osa-cma	7.7.1v1.0.0-1
xr-ncs1010-routing	7.7.1v1.0.0-1
xr-ncs1010-timing	7.7.1v1.0.0-1
xr-netsim	7.7.1v1.0.0-1
xr-ntp	7.7.1v1.0.0-1
xr-olc	7.7.1v1.0.0-1

xr-orrspf	7.7.1v1.0.0-1
xr-os-apps	7.7.1v1.0.0-1
xr-os-core	7.7.1v1.0.0-1
xr-os-hardware	7.7.1v1.0.0-1
xr-osa-cma	7.7.1v1.0.0-1
xr-ospf	7.7.1v1.0.0-1
xr-p4rt	7.7.1v1.0.0-1
xr-perfmgmt	7.7.1v1.0.0-1
xr-pfi	7.7.1v1.0.0-1
xr-pird-stubs	7.7.1v1.0.0-1
xr-pkt-trace	7.7.1v1.0.0-1
xr-procmgr	7.7.1v1.0.0-1
xr-python	7.7.1v1.0.0-1
xr-qos	7.7.1v1.0.0-1
xr-routing	7.7.1v1.0.0-1
xr-rpl	7.7.1v1.0.0-1
xr-security	7.7.1v1.0.0-1
xr-security-tams	7.7.1v1.0.0-1
xr-servicelayer	7.7.1v1.0.0-1
xr-snmp	7.7.1v1.0.0-1
xr-snmp-hw	7.7.1v1.0.0-1
xr-span	7.7.1v1.0.0-1
xr-spi-core	7.7.1v1.0.0-1
xr-spi-hw	7.7.1v1.0.0-1
xr-spp	7.7.1v1.0.0-1
xr-sr	7.7.1v1.0.0-1
xr-stats	7.7.1v1.0.0-1
xr-stp	7.7.1v1.0.0-1
xr-stubs	7.7.1v1.0.0-1
xr-sysdb	7.7.1v1.0.0-1
xr-syslog	7.7.1v1.0.0-1
xr-telemetry	7.7.1v1.0.0-1
xr-telnet	7.7.1v1.0.0-1
xr-timing	7.7.1v1.0.0-1
xr-track	7.7.1v1.0.0-1
xr-transport	7.7.1v1.0.0-1
xr-tty	7.7.1v1.0.0-1
xr-tunnel-ip	7.7.1v1.0.0-1
xr-udld	7.7.1v1.0.0-1
xr-upgradematrix	7.7.1v1.0.0-1
xr-utils	7.7.1v1.0.0-1
xr-vether	7.7.1v1.0.0-1
xr-vpnmib	7.7.1v1.0.0-1
xr-xmlinfra	7.7.1v1.0.0-1
xr-xr-libcurl	7.7.1v1.0.0-1
xr-ztp	7.7.1v1.0.0-1

Table 1: Release 7.7.1 Packages for Cisco NCS 1004

Feature Set	Filename	Description
<b>Composite Package</b>		
Cisco IOS XR Core Bundle + Manageability Package	ncs1004-iosxr-px-k9-7.7.1.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.
<b>Individually Installable Packages</b>		

Cisco IOS XR Security Package	ncs1004-k9sec-1.0.0.0-r771.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-7.7.1-r771.x86_64.rpm (part of ncs1004-iosxr-px-k9-7.7.1.tar)	Install the ncs1004-sysadmin-otn-xp-dp-7.7.1-r771.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-r771.rpm	Install the ncs1004-tp-sw-1.0.0.0-r771.rpm package for OpenROADM configuration.

**Table 2: Release 7.7.1 Packages for Cisco NCS 1001**

Feature Set	Filename	Description
<b>Composite Package</b>		
Cisco IOS XR Core Bundle + Manageability Package	ncs1001-iosxr-px-k9-7.7.1.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.
<b>Individually Installable Optional Packages</b>		
Cisco IOS XR Security Package	ncs1001-k9sec-1.0.0.0-r771.x86_64.rpm	Support for Encryption, Decryption, IP Security (IPsec), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).

See [Install Packages](#).

### System Requirement

At least 32 GB RAM for NCS 1010, and at least 16 GB RAM for NCS 1001 and NCS 1004.

## Caveats

### Open Caveats

#### NCS 1010

The following table lists the open caveats for NCS 1010:



Identifier	Headline
<a href="#">CSCwc35450</a>	NCS1010 - After enabling auto-link-bringup, RAMAN-TUNE-IN-PROGRESS alarm is raised at non-Raman OTS
<a href="#">CSCwb35405</a>	oc-amplifier: No amplifier data over get/get-config operation
<a href="#">CSCwa17334</a>	Expand the supported range in gain configuration
<a href="#">CSCwc03248</a>	[APC] - APC detects discrepancies in steady state condition
<a href="#">CSCwc53465</a>	[Link Tuner] wrong tilt setting during system bring up
<a href="#">CSCwb89850</a>	Ots oper: Discrepancy in otdr-info-rx/tx detected-event
<a href="#">CSCwb60362</a>	Docker image does not change upon software upgrade
<a href="#">CSCwc09026</a>	Provisioning in progress alarm on ots-och on shut and no shut of ots0/0/0/0
<a href="#">CSCwb95116</a>	Missing OTDR action model
<a href="#">CSCwc26961</a>	APC regulation info CLI output returns OOR while domain status is IDLE
<a href="#">CSCwd26658</a>	Raman tuning in progress alarm raised on non Raman PID
<a href="#">CSCwc54528</a>	During Fiber restore WSS attenuation is set to 0 dB for 10 channels
<a href="#">CSCwb92347</a>	After Power Cycle APC shows IDLE state even if channels are not yet equalized.
<a href="#">CSCwc44787</a>	NCS1010-C: Gain-estimator underestimates the gain and gain-range, which resulted in APC to go OOR
<a href="#">CSCwc48335</a>	NCS1010 - APC going OOR due to unsatisfied tilt requirement associated to gain value at ILA
<a href="#">CSCwb95962</a>	NCS1k-BRK-SA is throwing errors in "show diag" - Recovered after RP reload
<a href="#">CSCwb53528</a>	No alarm being raised for tone pattern laser being ON
<a href="#">CSCwa84795</a>	NCS1010 - Reporting of TCA events as part of alarms
<a href="#">CSCwc29057</a>	continuous OLC crash due to 193 channels (25GHz channel plan) with APC enabled
<a href="#">CSCwb99273</a>	"Transmit-shutdown" on OSC controller is not working
<a href="#">CSCwc11094</a>	Alarm statistics is disappeared when the controller state is in administratively down state
<a href="#">CSCwb01620</a>	NCS1010 - ILA L band port - Not raising any LOS alarm

#### NCS 1004

The following table lists the open caveats for NCS 1004:

Identifier	Headline
<a href="#">CSCwb93440</a>	PSM switch time is high (3-10s) in NCS1K4-OTN-XP with ZRP
<a href="#">CSCwb92379</a>	oc_transceiver_telemetry traces flooding show logging
<a href="#">CSCwb75984</a>	[ncs1001] CLI command "flow" conf is wrongly available (in previous releases was not authorized)
<a href="#">CSCwb88471</a>	PSM switch time is high (250ms) for 4x100G MXP in NCS1K4-QXP-K9
<a href="#">CSCwa65834</a>	SkinnyBO : OSA MEA support for QDD-4X100G-LR-S pluggable and 4x100G case for LR-4
<a href="#">CSCwc01165</a>	PSM switch time is high (3s) for 100G TXP in NCS1K4-QXP-K9
<a href="#">CSCwc30144</a>	[771/781 OC ] LC stuck in "Provisioning In Progress" after osa driver restart
<a href="#">CSCwb90010</a>	[ncs1001] show telemetry output with wrong indication of "no data instances"(OC chan mon SP)
<a href="#">CSCwb51694</a>	Transient CD/DGD/HI-LASER alarms seen on collecting showtech

### NCS 1001

The following table lists the open caveats for NCS 1001:

Identifier	Headline
<a href="#">CSCwc35820</a>	[ncs1001] After FPD upgrade - Traffic affected, missing channels
<a href="#">CSCwb75984</a>	[ncs1001] CLI command "flow" conf is wrongly available (in previous releases was not authorized)
<a href="#">CSCwb90010</a>	[ncs1001] show telemetry output with wrong indication of "no data instances"(OC chan mon SP)
<a href="#">CSCwb86946</a>	[ncs1001] Eqpt Failure alarm is cleared after card reoad or ots-driver restart

## 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
Fri Jul 29 10:44:22.829 UTC
Cisco IOS XR Software, Version 7.7.1 LNT
Copyright (c) 2013-2022 by Cisco Systems, Inc.

Build Information:
Built By      : ingunawa
Built On     : Mon Jul 25 06:07:25 UTC 2022
Build Host   : iox-lnx-109
Workspace    : /auto/srcarchive12/prod/7.7.1/ncs1010/ws
Version      : 7.7.1
Label       : 7.7.1

cisco NCS1010 (C3758 @ 2.20GHz)
cisco NCS1010-SA (C3758 @ 2.20GHz) processor with 32GB of memory
IOS uptime is 1 day, 1 hour, 5 minutes
NCS 1010 - Chassis
```

### NCS 1004

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

```
RP/0/RP0/CPU0:ios#show version
Mon Jul 25 14:35:02.884 UTC
Cisco IOS XR Software, Version 7.7.1
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

```
Build Information:
Built By      : ingunawa
Built On     : Mon Jul 25 01:18:00 PDT 2022
Built Host   : iox-ucs-068
Workspace    : /auto/srcarchive12/prod/7.7.1/ncs1004/ws
Version      : 7.7.1
Location     : /opt/cisco/XR/packages/
Label        : 7.7.1
cisco NCS-1004 () processor
System uptime is 18 minutes
```

### NCS 1001

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

```
RP/0/RP0/CPU0:ios#show version
Tue Jul 26 14:56:49.398 UTC
Cisco IOS XR Software, Version 7.7.1
Copyright (c) 2013-2022 by Cisco Systems, Inc.
```

```
Build Information:
Built By      : ingunawa
Built On     : Mon Jul 25 01:33:20 PDT 2022
Built Host   : iox-ucs-043
Workspace    : /auto/srcarchive12/prod/7.7.1/ncs1001/ws
Version      : 7.7.1
Location     : /opt/cisco/XR/packages/
Label        : 7.7.1
```

```
cisco NCS-1001 () processor
System uptime is 3 minutes
```

## Determine Firmware Support

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; Running and Programed version must be the same.

### NCS 1010

Log in to NCS 1010 and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Mon Jul 18 11:13:15.887 UTC
Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure
FPD Versions
=====
Location   Card type           HWver FPD device      ATR Status  Running Programd
Reload Loc
0/RP0/CPU0 NCS1010-CNTLR-K9  1.0  ADMConfig          CURRENT    3.40    3.40
NOT REQ
0/RP0/CPU0 NCS1010-CNTLR-K9  1.0  BIOS                S CURRENT    4.10    4.10
0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9  1.0  BIOS-Golden        BS CURRENT    4.10
0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9  1.0  CpuFpga            S CURRENT    1.02    1.02
0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9  1.0  CpuFpgaGolden      BS CURRENT    1.01
0/RP0
0/RP0/CPU0 NCS1010-CNTLR-K9  1.0  SsdIntelS4510     S CURRENT   11.32   11.32
```

```

0/RP0
0/RP0/CPU0 NCS1010-CNTRLR-K9 1.0 TamFw S CURRENT 6.13 6.13
0/RP0
0/RP0/CPU0 NCS1010-CNTRLR-K9 1.0 TamFwGolden BS CURRENT 6.11
0/RP0
0/PM0 NCS1010-AC-PSU 0.0 AP-PrimMCU 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-PrimMCU CURRENT 1.03 1.03
NOT REQ
0/PM1 NCS1010-AC-PSU 0.0 AP-SecMCU CURRENT 2.01 2.01
NOT REQ
0/0/NXR0 NCS1K-ILA-C 1.0 ILA S CURRENT 1.00 1.00
NOT REQ
0/Rack NCS1010-SA 1.0 EITU-ADMConfig CURRENT 2.10 2.10
NOT REQ
0/Rack NCS1010-SA 1.0 IoFpga S CURRENT 1.12 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#
    
```

**NCS 1004**

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

```

RP/0/RP0/CPU0:ios#show hw-module fpd
Tue Jul 26 06:53:05.654 UTC
    
```

Auto-upgrade:Disabled

Location	Card type	HWver	FPD device	ATR	Status	FPD Versions	
						Running	Programd
0/2	NCS1K4-OTN-XP	2.0	LC_CFP2_PORT_0	CURRENT		1.60	1.60
0/2	NCS1K4-OTN-XP	2.0	LC_CFP2_PORT_1	CURRENT		1.60	1.60
0/2	NCS1K4-OTN-XP	3.0	LC_CPU_MOD_FW	CURRENT		77.10	77.10
0/2	NCS1K4-OTN-XP	2.0	LC_DP_MOD_FW	CURRENT		11.10	11.10
0/3	NCS1K4-OTN-XP	2.0	LC_CFP2_PORT_0	CURRENT		1.60	1.60
0/3	NCS1K4-OTN-XP	3.0	LC_CFP2_PORT_1	CURRENT		1.25	1.25
0/3	NCS1K4-OTN-XP	3.0	LC_CPU_MOD_FW	CURRENT		77.10	77.10
0/3	NCS1K4-OTN-XP	2.0	LC_DP_MOD_FW	CURRENT		11.10	11.10
0/RP0	NCS1K4-CNTRLR-K9	5.0	CSB_IMG	S	CURRENT	0.200	0.200
0/RP0	NCS1K4-CNTRLR-K9	5.0	TAM_FW		CURRENT	36.08	36.08
0/RP0	NCS1K4-CNTRLR-K9	1.14	BIOS	S	CURRENT	5.80	5.80
0/RP0	NCS1K4-CNTRLR-K9	5.4	BP_SSD		CURRENT	75.00	75.00
0/RP0	NCS1K4-CNTRLR-K9	5.0	CPU_FPGA		CURRENT	1.14	1.14
0/RP0	NCS1K4-CNTRLR-K9	5.4	CPU_SSD		CURRENT	75.00	75.00
0/RP0	NCS1K4-CNTRLR-K9	3.18	POWMAN_CFG		CURRENT	3.40	3.40
0/PM0	NCS1K4-DC-PSU	0.1	PO-PrimMCU		CURRENT	1.12	1.12
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#

**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 EDFA (slot 1 and 3) and PSM (slot 2) of vendor 1.

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

```
Fri Jul 8 13:34:52.951 CEST
```

```
Auto-upgrade:Disabled
```

Location	Card type	HWver	FPD device	ATR	Status	FPD Versions	
						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_PSMv1		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	15.10	15.10
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 EDFA (slot 1 and 3) and PSM (slot 2) of vendor 2.

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

```
Fri Jul 8 13:27:49.689 CEST
```

```
Auto-upgrade:Disabled
```

Location	Card type	HWver	FPD device	ATR	Status	FPD Versions	
						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	0.43	0.43
0/2	NCS1K-PSM	0.0	FW_PSMv2		CURRENT	0.16	0.16
0/3	NCS1K-EDFA	0.0	FW_EDFAv2		CURRENT	0.43	0.43
0/RP0	NCS1K-CNTLR2	0.1	BIOS_Backup	BS	CURRENT		15.10
0/RP0	NCS1K-CNTLR2	0.1	BIOS_Primary	S	CURRENT	15.10	15.10
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 EDFA vendor 1 (slot 1 and 3) and OTDR (slot 2).

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

```
Fri Jul 8 13:30:34.400 CEST
```

```
Auto-upgrade:Disabled
```

Location	Card type	HWver	FPD device	ATR	Status	FPD Versions	
						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	15.10	15.10

```

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 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

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	No	Yes	Yes
DISMAN-EXPRESSION-MIB	No	Yes	Yes
CISCO-FTP-CLIENT-MIB	No	Yes	Yes
NOTIFICATION-LOG-MIB	No	Yes	Yes
CISCO-RF-MIB	No	Yes	Yes
RADIUS-AUTH-CLIENT-MIB	No	Yes	No
RADIUS-ACC-CLIENT-MIB	No	Yes	No

<b>MIB</b>	<b>NCS 1010</b>	<b>NCS 1004</b>	<b>NCS 1001</b>
IEEE8023-LAG-MIB	No	Yes	No
CISCO-TCP-MIB	No	Yes	Yes
UDP-MIB	No	Yes	Yes
CISCO-BULK-FILE-MIB	No	Yes	No
CISCO-CONTEXT-MAPPING-MIB	No	Yes	No
CISCO-OTN-IF-MIB	No	Yes	Yes
HC-RMON-MIB	No	Yes	No
CISCO-OPTICAL-MIB	No	Yes	Yes
LLDP-MIB	No	Yes	No
CISCO-OPTICAL-OTS-MIB	No	No	Yes



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