

Release Notes for Cisco NCS 1001, IOS XR Release 6.3.2

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Note *This software release has reached end-of-life status. For more information, see the [End-of-Life and End-of-Sale Notices](#).*

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 is optimized for point-to-point applications at maximum capacity. Cisco NCS 1001 supports up to three optical modules. The modules can be 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.

For all the versions of the Release Notes for Cisco NCS 1001, see the [Release Notes](#) URL.

Features Introduced in Release 6.3.2

Cisco ONS 15216-MD48-CME2

Cisco ONS 15216-MD48-CME2 is a 2x2 dual coupler and splitter module, that have the MUX and the DEMUX functions implemented as two different sections. The DEMUX section includes an optical splitter to split the optical signal evenly into two different output ports: EVEN-TX port and ODD-TX port. The optical coupler provides the MUX section and combines even and odd channels signals at 100 GHz spacing (EVEN-RX and ODD-RX ports respectively) into a signal of 50 GHz channel spacing. The DEMUX section also provides the input signal to dual monitor ports. The MUX section also duplicates the combined spectrum on two output ports.

For more information on the Cisco ONS 15216-MD48-CME2 module, see the *Installing the Cisco ONS 15216-MD-48-CM Interleaver and Deinterleaver Pluggable and Cisco ONS 15216-MD-48-CME, 15216-MD48-CME2 Coupler and Splitter Pluggable* document.

Event Driven Telemetry

NCS 1001 supports Event-based telemetry. The following sensor paths are supported for Event-based telemetry in NCS 1001:

- Cisco-IOS-XR-controller-optics-oper:optics-oper/optics-ports/optics-port/optics-info
- Cisco-IOS-XR-pmengine-oper:performance-management-history/global/periodic/optics-history/optics-port-histories/optics-port-history/optics-second30-history
- Cisco-IOS-XR-pmengine-oper:performance-management-history/global/periodic/optics-history/optics-port-histories/optics-port-history/optics-minute15-history
- Cisco-IOS-XR-pmengine-oper:performance-management-history/global/periodic/optics-history/optics-port-histories/optics-port-history/optics-hour24-history

For more information, see the *Telemetry Configuration Guide for Cisco NCS 1000 Series*.

ILA Configuration

The optical amplifier module (NCS1K-EDFA) can be configured in In-line amplifier (ILA) mode. ILA mode is used when it is not possible to connect to terminal nodes with a single span. ILA mode is supported only in slots 1 and 3.

ILA mode supports only the operation of preamplifier in the two directions. The booster module is switched off in ILA mode. ILA mode supports gain range 1 and 2 of the preamplifier and provides 23dBm output power pre-amplification.

To configure the optical modules in ILA mode, see the Configure Optical Modules chapter in *Configuration Guide for Cisco NCS 1001*.

Network Topology Discovery

Network topology discovery feature based on OSPF protocol, allows to discover NCS 1001 nodes connected to each other through OSC links without configuring the static routes.

OSPF must be properly configured on the NCS 1001 nodes by defining the name, router ID, interfaces in the Area 0 section, and optionally, configuring the interfaces as passive. OSPF and OSPFv3 protocols are supported.

The following network topologies are supported:

- Point to Point
- Point to Point with ILA (up to three ILA nodes)

For more information on network topology discovery, see the *Configure Optical Modules chapter in Configuration Guide for Cisco NCS 1001*.

OSC for Remote Management

Remote Management feature allows to configure the IP addresses of the local and remote nodes, to remotely manage NCS 1001.

Three OSC interfaces are configured to support remote management. The OSC interfaces are configured to provide static routes to remote nodes. Each OSC interface is statically associated with a slot (OSC1 to slot 1, OSC2 to slot 2, and OSC3 to slot3).

To configure OSC for remote management, see the *Configure Optical Modules chapter in Configuration Guide for Cisco NCS 1001*.

Open Config Optical Model

The open config optical model is a cross-connect model that provides a unique way to provision Cisco NCS 1001 using YANG models that are defined for configuration data and operational data. The gRPC (google-defined Remote Procedure Calls) and NETCONF (Network Configuration Protocol) communication protocols are used to establish connection between the client and Cisco NCS 1001.

Cisco NCS 1001 supports open config models according to the optical transport functions available on system. The following are the open config supported models.

- Amplifier model, supported by NCS1001 EDFA modules.
- Transport Line Protection model, supported by NCS 1001 PSM modules.
- Channel Monitoring model, supported by NCS1001 EDFA by means of its OCM capability.

For more information, see the *Configuring NCS 1001 Using OpenConfig Data Model chapter in the Data Models Configuration Guide for the Cisco NCS 1001*.

PSM Autothreshold

NCS 1001 supports autothreshold for Protection Switching Module (PSM). RX Power is the optical power reading from a photodiode, and is a total power on the path where the photodiode is placed. The RX-low-threshold is available in the show controller ots Parameter Statistics. Two RX low thresholds can be set on the PSM-one for RX working port (W-RX), and another for RX protected port (P-RX). When auto-threshold is not enabled, the RX-low threshold value active on PSM working and protected RX-ports are the default values or the values set by the user manually. If auto-threshold is enabled on the PSM, the RX-low thresholds values for port 1 and 2 configured by the user are ignored.

The PSM Auto-threshold configuration is highly recommended for a three-way topology.

For more information, see the *Configuration Guide for Cisco NCS 1001, IOS XR Release 6.3.2*.

PSM Virtual Diode

Protection Switching Module (PSM) Virtual diode provides an optical power reading even if PSM does not have a photodiode on COM-RX. The value of the virtual COM-RX is calculated using the power provided by the photodiodes on Working-TX and Protected-TX. PSM does not have photodiode on COM-RX. There are two photodiodes on Working-TX and Protected-TX present after the VOA.

For more information, see the *Configuration Guide for Cisco NCS 1001, IOS XR Release 6.3.2*.

PSM Path Protection

NCS 1001 supports Protection Switching Module (PSM) Path Protection. When the path protection is configured with a manual threshold, you must ensure that:

- During the first installation, the value on the PSM RX-low Threshold should be set as 3dB below the minimum power for a single channel. The value must ensure that the PSM is able to switch on with a single channel or when the EDFA is in APR (+8dBm).
- When the system is up and running with the final number of channels, the PSM RX-low Threshold must be set 3dB below the target power.
- After a fiber cut and restore, in order to ensure that the PSM is able to switch on, it is necessary to set the value of PSM RX-low Threshold similar to the value set during the installation.

The PSM Auto-threshold configuration is highly recommended for a three-way topology.

In a three-way topology, when the path protection is configured with a manual threshold, you must follow the above steps. If you did not configure all the above steps properly, you may encounter the following issues:

- Switch may not be bidirectional.
- Double switch on PSM in path protection, when set in 3 way configuration.

For more information, see the *Configuration Guide for Cisco NCS 1001, IOS XR Release 6.3.2*.

PSM 3 way Protection

NCS 1001 supports PSM 3 way protection scheme formed by combining a Section Protection scheme with a Path Protection scheme. There is no configuration change required in PSM to implement the PSM 3 way protection scheme. The Path protection scheme is in the middle of one of the two paths of Section Protection scheme.

For more information, see the *Configuration Guide for Cisco NCS 1001, IOS XR Release 6.3.2*.

Release Packages for Cisco NCS 1001

Feature Set	Filename	Description
Composite Package		
Cisco IOS XR Core Bundle + Manageability Package	ncs1001-mini-x	Contains required core packages, including OS, 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	Support for Encryption, Decryption, IP Security (IPSec), Secure Shell (SSH), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).

Determine Software Version

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

```
RP/0/RP0/CPU0:MYS-237#show version
Wed Mar  7 10:03:23.449 CET

Cisco IOS XR Software, Version 6.3.2.32I
Copyright (c) 2013-2017 by Cisco Systems, Inc.

Build Information:
  Built By       : ahoang
  Built On       : Wed Feb 28 12:21:34 PST 2018
  Build Host     : iox-ucs-022
  Workspace      : /auto/iox-ucs-022-san2/prod/6.3.2.32I.SIT_IMAGE/ncs1001/ws
  Version        : 6.3.2.32I
  Location       : /opt/cisco/XR/packages/

cisco NCS-1001 () processor
System uptime is 1 day, 23 hours, 50 minutes
```

Determine Firmware Support

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

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.

```
Sun Mar  5 02:10:42.676 UTC
```

Location	Card type	HWver	FPD device	ATR	Status	FPD Versions	
						Run	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	1.43	1.43
0/2	NCS1K-PSM	0.0	FW_PSMv1		CURRENT	1.45	1.45
0/3	NCS1K-EDFA	0.0	FW_EDFAv1		CURRENT	1.43	1.43
0/RP0	NCS1K-CNTLR2	0.1	BIOS_Backup	BS	CURRENT		14.20
0/RP0	NCS1K-CNTLR2	0.1	BIOS_Primary	S	CURRENT	14.20	14.20
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
0/PM0	NCS1K-2KW-AC2	0.0	PO-PrimMCU		CURRENT	4.00	4.00
0/PM1	NCS1K-2KW-AC2	0.0	PO-PrimMCU		CURRENT	4.00	4.00

When the user upgrades the FPD on the PSM module (FW_PSMv1) from 1.43 and 1.44 to 1.45 version, traffic is impacted. All the other FPD upgrades do not impact the traffic.

Open Caveats for NCS 1001

Table 1: Caveats for 6.3.2

Caveat ID Number	Description
CSCvg02949	Install add or activate commands randomly fails to complete with error message <code>/usr/sbin/sshd NOT running at xr-vm Connection refused at xr (default-sdr)</code>
CSCvg95792	Codenomincon Defensics NETCONF basic suite for security crashes during security-stress testing.
CSCvh95474	Pre-shutdown of 3 way-protection after switching, due to an anomalous AVS set by the PSM.
CSCvi60589	Upgrade fail message is found during BIOS Backup upgrade.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see [What's New in Cisco Product Documentation](#).

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