Release Notes for Network Convergence System, Release 25.2.1

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Cisco NCS 1000 series, IOS XR release 25.2.1

Cisco IOS XR Release 25.2.1 is a new feature release for Cisco NCS 1000 Series.

For more details on the Cisco IOS XR release model and associated support, see Software Lifecycle Support Statement - IOS XR.

New software features

This section provides a brief description of the new software features introduced in this release.

Table 1. New software features for Cisco NCS 1014, Release 25.2.1

Product impact	Feature	Description
Software Reliability	NCS1K14-FAN-P Enhanced Fan Profile Support	This release introduces enhanced fan profile management for NCS 1014 platform, enabling improved power efficiency and flexibility for various use cases. The system automatically adjusts the fan profile based on the line cards inserted in the chassis. For example, • if one or more transponder cards are detected, the fans maintain a high-power fan profile automatically. • if a combination of any NCS1K14-EDFA2, NCS1K14-CCMD-16-x or filler card alone, the fans maintain a low-profile fan profile automatically. This dynamic fan profile enables optical power consumption for Metro Open Line System (MOLS) 2.0 and NCS1K14-CCMD-16-x configurations.
Software Reliability	NCS1K14-FAN-P Smart Fan Implementation for Pluggable modules	The NCS1K14-FAN-P programmable fans provide dynamic cooling support to the NCS 1014 chassis. The programmable fans change cooling profiles **based on the on the status o**f the NCS 1014 chassis, installed line cards and pluggable modules. The cooling profiles of the programmable fans are: • Low cooling: from 3500 to 12800 rpm • High cooling: from 3500 to 17000 rpm The programmable fans run at low cooling profile consuming low power around 1 kW.
Software Reliability	Pluggable support	The NCS1K4-QXP-K9 line card now supports the new ONS-QDD-OLS optical amplifier pluggable. It is supported independently on all 16 ports of the QXP card and offers various channel breakout options to combine or separate each channel from a coherent DWDM optical source using these breakout cables. • ONS-BRK-CS-8LC • ONS-BRK-CS-16LC • ONS-CAB-CS-LC-5 This pluggable increases fiber bandwidth and lowers power

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Product impact	Feature	Description
		dissipation. CLI: These keywords are added to the **hw-module location** command • ols-port <*port number*> • mode edfa
Software Reliability	OTNSec encryption on the NCS1K14-2.4T-K9 card	The 2.4T line card now supports AES-256 GCM authenticated OTNSec encryption using pre-shared keys or Certificate-authority (CA), ensuring data confidentiality across optical links. Additionally, PPP over GCC enables secure transmission of control and encryption messages such as IKEv2 exchanges over built-in optical channels, enhancing security and manageability without relying on external interfaces.
Software Reliability	Automatic OTDR scan	An OTDR scan is automatically triggered in both Rx and Tx directions whenever events such as span fault, span restoration, device power cycling, or line card cold reload occur. The automatic scan enables quick identification of the fiber failure type, fault location, and fiber failure resolution while preventing any collisions during the bidirectional autoscan. Commands added to enable auto OTDR scan and view its results: • otdr auto-scan • show olc otdr-status
Software Reliability	OTDR Baseline	OTDR saves a baseline with the scan results the first time a link is up. This baseline captures essential data about the fiber characteristics at the time of initial installation. The baseline is used as a benchmark for future OTDR scans to identify changes or degradation in the optical fiber span, facilitating maintenance and troubleshooting efforts. It helps verify the integrity and performance of the optical fiber span. Command added: **otdr save baseline controller ots**
Software Reliability	OTDR negotiation	The OTDR scan process has been enhanced to include negotiation with a remote peer before initiating the scan. This negotiation helps prevent simultaneous scans on the same fiber, thereby avoiding measurement conflicts and ensuring accurate scan results. The force option can be used to start a scan without negotiation. However, it should be used carefully to avoid simultaneous scans between the near-end and far-end nodes on the same fiber. Command modified: The keyword **force** has been added to the **otdr-start controller ots_R/S/I/P** direction_ command.
Software Reliability	Automatic Power Control support for NCS1K14-EDFA2	Automatic power control maintains all channels at a consistent Power Spectral Density (PSD) target by regulating optical components. It keeps all channels at the same Power Spectral Density (PSD) target, ensuring equalized channel power regardless of different input powers. It compensates for changes in span loss over time by adjusting amplifier gain and variable optical attenuator (VOA) attenuation, maintaining stable total

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Product impact	Feature	Description
		transmit and receive power.
Software Reliability	gNOI Healthz	The gNOI Healthz sub-functions monitor and manage the state of a device by leveraging telemetry within the network. These sub-functions help determine the device's system state and facilitate the collection of relevant debug logs based on that state, using the OpenConfig Healthz model.
Software Reliability	Event-Driven Telemetry enhancements	This feature notifies you of deletions and updates for all components removed from or inserted into the system through Event-Driven Telemetry (EDT). These notifications are included under the OpticalChannel component of the EDT output for the sensor path **openconfig-platform:components/component/state**.
Software Reliability	Enhancement in OC support for EDFA2 card	The EDFA2 card now supports these OpenConfig models for retrieving operational and real-time telemetry data. • openconfig-channel-monitor.yang • openconfig-transport-line-common.yang In addition to the previously supported operational and telemetry data retrieval, these models now support configuration on the EDFA2 cards. • openconfig-optical-amplifier.yang • openconfig-optical-attenuator.yang • openconfig-wavelength-router.yang

New hardware features

This section provides a brief description of the new hardware features introduced in this release.

Table 2. New hardware features for Cisco NCS 1000 Series, Release 25.2.1

Product impact	Feature	Description
Hardware Reliability	NCS1K14-FAN-P Programmable Fan Support	The NCS1K14-FAN-P programmable fans provide dynamic cooling support to the NCS 1014 chassis. The programmable fans change cooling profiles based on the on the status of the NCS 1014 chassis, installed line cards and pluggable modules. The cooling profiles of the programmable fans are: • Low cooling: from 3500 to 12800 rpm • High cooling: from 3500 to 17000 rpm The programmable fans run at low cooling profile consuming low power around 1 kW.
Hardware Reliability	NCS1K4-2-QDD-C-K9 C-Band Line Card	NCS 1014 now supports the NCS1K4-2-QDD-C-K9 C-Band line card. This card features eight client ports (QSFP28 and QSFP-DD) and two software-configurable DWDM dual sub-channel module trunk ports. Each trunk port supports line rates of 200, 300, and 400 Gbps with precise control over modulation format, baud rate, and forward error correction. Additionally, the line card supports both module and slice

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Product impact	Feature	Description
		configurations, enhancing network flexibility and performance
Hardware Reliability	Pluggable support	The NCS1K4-QXP-K9 card now supports the new ONS-QDD-OLS optical amplifier pluggable.

Open issues

This table lists the open issues in this specific software release.

Note: This software release may contain open bugs first identified in other releases. To see additional information, click the bug ID to access the Cisco Bug Search Tool.

Table 3. Open issues for Cisco NCS 1014, Release 25.2.1

Bug ID	Description
CSCwo54286	[Encryption] Observing Netio and Cef drop counters during continuous GCC0 ping
CSCwo76421	The Amplifier telemetry data for Ingres should not display ORL; only the egress should
CSCwo80611	A power fluctuation left the 2.4T card in shutdown, preventing it from returning to operation
CSCwo81618	Removing Coherent optics doesn't delete OpticalChannel
CSCwo85668	Gnoi healthz doesn't work without origin in the path
CSCwp00064	Artifacts are saved for automatic process crash when the system is 100% full
CSCwp16095	The error 'otn_ma API invoked outside commit window' is observed after configuring GCC0

Table 4. Open issues for Cisco Optical Site Manager, Release 25.2.1

Bug ID	Description
CSCwp20432	[COSM] RX/TX high/low threshold power values do not match between COSM and native NETCONF XR
CSCwp25859	[COSM] ZR+ TCAs persist even after the card mode is removed from the XR configuration on the QXP card
CSCwp26647	[COSM] SD/SF-BER values are missing for 400G/100G cardmodes under ZR+ interface

Supported hardware

These hardware components are supported from Release 25.2.1.

- Fan tray: NCS1K14-FAN-P
- Line card: NCS1K4-2-QDD-C-K9 C
- Pluggable: ONS-QDD-OLS

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Supported software packages

This section provides information about the release packages associated with NCS 1014.

Note: The NCS 1014 packages include Cisco Optical Site Manager Software.

Table 5. Software packages for Cisco NCS 1014, Release 25.2.1

Feature Set	Filename	Description
Composite package		
Cisco IOS XR Core Bundle + Manageability Package	ncs1010-x64-25.2.1.iso	IOS 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. XR Base Image
Individually installable packages		
Cisco IOS XR Telnet Packages	xr-telnet-25.2.1v1.0.0-1.x86_64.rpm xr-telnet-ncs1014-25.2.1v1.0.0-1.x86_64.rpm	Install these packages to support Telnet.
Cisco IOS XR Security Package	xr-k9sec-pid-eb216ea0977bb9c7-25.2.1.38lv1.0.0-1.x86_64.rpm xr-k9sec-25.2.1.38lv1.0.0-1.x86_64.rpm xr-k9sec-pid-ncs1014-25.2.1.38lv1.0.0-1.x86_64.rpm xr-k9sec-f544c7c7d37890ec-25.2.1.38lv1.0.0-1.x86_64.rpm	Support for Encryption, Decryption, IP Security (IPsec), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).
Cisco IOS XR Cisco Discovery Protocol (CDP) Packages	xr-cdp-25.2.1v1.0.0-1.x86_64.rpm xr-cdp-ncs1014-25.2.1v1.0.0-1.x86_64.rpm xr-cdp-f544c7c7d37890ec-25.2.1v1.0.0-1.x86_64.rpm xr-telnet-f544c7c7d37890ec-25.2.1v1.0.0-1.x86_64.rpm	Install these packages to support CDP.

Determine software version

Log into the node and enter the **show version** command.

NCS 1014

```
RP/0/RP0/CPU0:ios#show version
Mon Jun 16 21:22:50.401 IST
Cisco IOS XR Software, Version 25.2.1 LNT
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Build Information:
```

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```
Built By : cisco
Built On : Sat Jun 14 01:14:18 UTC 2025
Build Host : iox-lnx-083
Workspace : /auto/srcarchive11/prod/25.2.1/ncs1010/ws/
Version : 25.2.1
Label : 25.2.1
cisco NCS1010 (C3758R @ 2.40GHz)
cisco NCS1014 (C3758R @ 2.40GHz) processor with 32GB of memory
ios  uptime is 8 minutes
NCS 1014 - Chassis
```

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 Programmed version must be the same.

Log into the node and enter the **show hw-module fpd** command.

NCS 1014

2.4T and 2.4T-X cards

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Mon Jun 16 21:23:01.682 IST
Auto-upgrade:Enabled,PM included
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 NCS1K14-CNTLR-K9  1.0 ADM-DB CURRENT 2.10 2.10 NOT REQ
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 ADM-MB CURRENT 2.30 2.30 NOT REQ
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 BIOS S CURRENT 5.00 5.00 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 BIOS-Golden BS CURRENT 4.70 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 CpuFpga S CURRENT 1.17 1.17 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 CpuFpgaGolden BS CURRENT 1.09 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 SsdIntelSCKKBGZ S CURRENT 1.30 1.30 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 TamFw S CURRENT 9.04 9.04 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 TamFwGolden BS CURRENT 9.04 0/RP0
0/PM0      NCS1K4-AC-PSU-2   1.1 PO-PriMCU CURRENT 1.03 1.03 NOT REQ
0/PM0      NCS1K4-AC-PSU-2   1.1 PO-SecMCU CURRENT 1.05 1.05 NOT REQ
0/PM1      NCS1K4-AC-PSU-2   0.1 PO-PriMCU CURRENT 1.03 1.03 NOT REQ
0/PM1      NCS1K4-AC-PSU-2   0.1 PO-SecMCU CURRENT 1.05 1.05 NOT REQ
0/1/NXR0   NCS1K14-2.4T-K9   0.1 CpuModFw S CURRENT 252.100 252.100 NOT REQ
0/3/NXR0   NCS1K14-2.4T-X-K9 1.0 CpuModFw S CURRENT 252.100 252.100 NOT REQ
0/Rack     NCS1014           1.1 ADM-CHASSIS CURRENT 0.21 0.21 NOT REQ
```

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```
0/Rack     NCS1014           1.1 IoFpga S CURRENT 2.26 2.26 NOT REQ
0/Rack     NCS1014           1.1 IoFpgaGolden BS CURRENT 1.05 NOT REQ
0/Rack     NCS1014           1.1 SsdIntelSC2KB S CURRENT 1.30 1.30 0/Rack
0/4        NCS1K-MD-32E-CE   0.2 MD-32-LUM S CURRENT 2.20 2.20 NOT REQ
```

QXP card

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Mon Jun 16 21:23:01.682 IST
Auto-upgrade:Enabled,PM included
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 NCS1K14-CNTLR-K9  1.0 ADM-DB CURRENT 2.10 2.10 NOT REQ
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 ADM-MB CURRENT 2.30 2.30 NOT REQ
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 BIOS S CURRENT 5.00 5.00 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 BIOS-Golden BS CURRENT 4.70 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 CpuFpga S CURRENT 1.17 1.17 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 CpuFpgaGolden BS CURRENT 1.09 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 SsdIntelSCKKBGZ S CURRENT 1.30 1.30 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9      1.0 TamFw S CURRENT 9.04 9.04 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 TamFwGolden BS CURRENT 9.04 0/RP0
0/PM0      NCS1K4-AC-PSU-2   1.1 PO-PriMCU CURRENT 1.03 1.03 NOT REQ
0/PM0      NCS1K4-AC-PSU-2   1.1 PO-SecMCU CURRENT 1.05 1.05 NOT REQ
0/PM1      NCS1K4-AC-PSU-2   0.1 PO-PriMCU CURRENT 1.03 1.03 NOT REQ
0/PM1      NCS1K4-AC-PSU-2   0.1 PO-SecMCU CURRENT 1.05 1.05 NOT REQ
0/2/NXR0   NCS1K4-QXP-K9     0.2 CpuModFw S CURRENT 252.100 252.100 NOT REQ
0/Rack     NCS1014           1.1 ADM-CHASSIS CURRENT 0.21 0.21 NOT REQ
0/Rack     NCS1014           1.1 IoFpga S CURRENT 2.26 2.26 NOT REQ
0/Rack     NCS1014           1.1 IoFpgaGolden BS CURRENT 1.05 NOT REQ
0/Rack     NCS1014           1.1 SsdIntelSC2KB S CURRENT 1.30 1.30 0/Rack
0/4        NCS1K-MD-32E-CE   0.2 MD-32-LUM S CURRENT 2.20 2.20 NOT REQ
```

EDFA2 card

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Mon Jun 16 21:23:01.682 IST
Auto-upgrade:Enabled,PM included
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
```

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```
--------------------------------------------------------------------------------------------
-----
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 ADM-DB CURRENT 2.10 2.10 NOT REQ
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 ADM-MB CURRENT 2.30 2.30 NOT REQ
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 BIOS S CURRENT 5.00 5.00 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 BIOS-Golden BS CURRENT 4.70 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 CpuFpga S CURRENT 1.17 1.17 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 CpuFpgaGolden BS CURRENT 1.09 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 SsdIntelSCKKBGZ S CURRENT 1.30 1.30 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 TamFw S CURRENT 9.04 9.04 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 TamFwGolden BS CURRENT 9.04 0/RP0
0/PM0      NCS1K4-AC-PSU-2   1.1 PO-PriMCU CURRENT 1.03 1.03 NOT REQ
0/PM0      NCS1K4-AC-PSU-2   1.1 PO-SecMCU CURRENT 1.05 1.05 NOT REQ
0/PM1      NCS1K4-AC-PSU-2   0.1 PO-PriMCU CURRENT 1.03 1.03 NOT REQ
0/PM1      NCS1K4-AC-PSU-2   0.1 PO-SecMCU CURRENT 1.05 1.05 NOT REQ
0/0/NXR0   NCS1K14-EDFA2     0.1 CpuModFw S CURRENT 252.100 252.100 NOT REQ
0/0/NXR0   NCS1K14-EDFA2     0.1 OptModFw S CURRENT 2.04 2.04 NOT REQ
0/Rack     NCS1014           1.1 ADM-CHASSIS CURRENT 0.21 0.21 NOT REQ
0/Rack     NCS1014           1.1 IoFpga S CURRENT 2.26 2.26 NOT REQ
0/Rack     NCS1014           1.1 IoFpgaGolden BS CURRENT 1.05 NOT REQ
0/Rack     NCS1014           1.1 SsdIntelSC2KB S CURRENT 1.30 1.30 0/Rack
0/4        NCS1K-MD-32E-CE   0.2 MD-32-LUM S CURRENT 2.20 2.20 NOT REQ
2-QDD-C-K9 C
RP/0/RP0/CPU0:ios#show hw-module fpd
Mon Jun 16 21:23:01.682 IST
Auto-upgrade:Enabled,PM included
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 NCS1K14-CNTLR-K9  1.0 ADM-DB CURRENT 2.10 2.10 NOT REQ
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 ADM-MB CURRENT 2.30 2.30 NOT REQ
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 BIOS S CURRENT 5.00 5.00 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 BIOS-Golden BS CURRENT 4.70 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 CpuFpga S CURRENT 1.17 1.17 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 CpuFpgaGolden BS CURRENT 1.09 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 SsdIntelSCKKBGZ S CURRENT 1.30 1.30 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 TamFw S CURRENT 9.04 9.04 0/RP0
0/RP0/CPU0 NCS1K14-CNTLR-K9  1.0 TamFwGolden BS CURRENT 9.04 0/RP0
0/PM0      NCS1K4-AC-PSU-2   1.1 PO-PriMCU CURRENT 1.03 1.03 NOT REQ
```

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```
0/PM0       NCS1K4-AC-PSU-2    1.1 PO-SecMCU CURRENT 1.05 1.05 NOT REQ
0/PM1       NCS1K4-AC-PSU-2    0.1 PO-PriMCU CURRENT 1.03 1.03 NOT REQ
0/PM1       NCS1K4-AC-PSU-2    0.1 PO-SecMCU CURRENT 1.05 1.05 NOT REQ
0/3/NXR0    NCS1K4-2-QDD-C-K9 0.1 CpuModFw S CURRENT 252.100 252.100 NOT REQ
0/Rack      NCS1014            1.1 ADM-CHASSIS CURRENT 0.21 0.21 NOT REQ
0/Rack      NCS1014            1.1 IoFpga S CURRENT 2.26 2.26 NOT REQ
0/Rack      NCS1014            1.1 IoFpgaGolden BS CURRENT 1.05 NOT REQ
0/Rack      NCS1014            1.1 SsdIntelSC2KB S CURRENT 1.30 1.30 0/Rack
0/4         NCS1K-MD-32E-CE    0.2 MD-32-LUM S CURRENT 2.20 2.20 NOT REQ
```

Related resources

These links provide access to related documents and resources associated with this release:

- For the supported upgrade and downgrade paths, see Software Upgrade and Downgrade Matrix.
- For the complete list of documentation for the release, see Cisco Network Convergence System 1000 Series.

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