Release Notes for Cisco NCS 1000 Series, IOS XR Release 7.8.1

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What's New in Cisco NCS 1000 Series, IOS XR Release 7.8.1

NCS 1004

Feature	Description
System Setup and Software Installation	
Pre and Post-Upgrade Install Health Checks using Profile	This feature allows you to create profiles that define the actions performed during pre and post-upgrade installation checks. You can configure the default actions for: • Pre-upgrade check failure • Upgrade failure • Revert after post-installation check failure
Configuration	
Automatic Protection Switching (APS) on OTN XP Card	APS provides protection mechanism against optical fiber faults or signal failure. In case a failure is detected, live traffic is automatically moved from the working path to the protection path to prevent any data loss. You can enable this feature using the **protected** keyword of the **hw-module** command.
Configuration Alarms for Loopback	A configuration alarm is now triggered whenever there is a change in the loopback configuration. This alarm helps in improving loopback status monitoring. You can now view the alarm details such as, the configuration time and date, description, severity, and location using the **show alarms brief system active** command.
Digital-to-Analog (DAC) support for NCS1K4-QXP-K9 card	DAC support is now enabled on NCS1K4-QXP-K9 card for 2x100G,3x100G, 4x100G and 400G operating modes. DAC helps in the optimization of digital-to-analog signal conversion.
Encryption Support on OTN-XP Card	AES 256-GCM authenticated OTNSec encryption is supported on the OTN-XP card. The encryption is enabled on the ODUC4 controller. This encryption secures the data across different datapaths of the OTN-XP card.

Feature	Description
Forward Error Correction (FEC) support on QXP card for Ethernet controllers	FEC is now supported by the 100GE Ethernet controller on the NCS1K4-QXP-K9 card. FEC is supported for all pluggables except QSFP-100G-LR4-S and ONS-QSFP28-LR4.
Idle insertion on NCS1K4-QXP-K9 card	Idle insertion refers to the idles that are inserted in the traffic stream from the trunk port to the client port for the duration of the configured holdoff-time. Whenever a fault occurs on the trunk port, you can hold the propagation of local faults using idle insertion. Idle insertion is now enabled on 100GE or 400GE controllers for the NCS1K4-QXP-K9 card.
Laser Squelching	Laser Squelching is now triggered using a new interrupt mechanism to detect faults in the client or trunk connections. Compared to the earlier poll-based triggers, the new interrupt-based mechanism makes the protection switching considerably faster. This feature is supported on the following line cards with 100GE client rate with the ONS-QSFP28-LR4 pluggable: • NCS1K4-1.2T-K9 • NCS1K4-1.2TL-K9 • NCS1K4-OTN-XP • NCS1K4-2-QDD-C-K9
NCS1K4-OTN-XP Line Card Interoperability	This feature allows the NCS1K4-OTN-XP card with CFP2-DCO 200G pluggable to interoperate with the NCS2K-400G-XP and NCS4K-4H-OPW-QC2 cards. Using the new 2x100GE-TXP-MXP mode for the OTN-XP card, you can configure 1x100GE or 2x100GE payloads over 100G or 200G DWDM on the line side, respectively. The interoperation improves customer networks' efficiency, performance, and flexibility, allowing 100GE-TXP traffic over 100G DWDM or 2x100GE-MXP traffic over 200G DWDM wavelengths on each slice.
NCS1K4-QXP-K9 card support for 2x100GE and 3x100GE operating mode configurations	Support is enabled for 2x100GE and 3x100GE operating mode configurations through Open Config and CLI on NCS1K4-QXP-K9 card.
Smart Licensing for OTN-XP Card in Regen Mode	Now the OTN-XP Line Card supports the smart licensing feature in Regen mode. Regen is a signal regenerator and it sits between two nodes to regenerate the signal. it enables you to automate the time-consuming manual licensing tasks and allows you to easily track the status of your license and software usage trends. Supported modes: • 200G • 400G

Feature	Description
Sub-sea Enhancement	A new NLEQ mode is introduced to enhance the Sub-sea performance.
Telemetry	
Event Driven Telemetry Support for Online Insertion and Removal (OIR) of Pluggables	A new sensor path in the OpenConfig model type is introduced to support EDT in NCS 1004 during OIR of the pluggables. It triggers telemetry data such as form factor, SONET-SDH compliance code, FEC corrected bits during removal, and state, channel data during insertion of the NCS 1004 chassis. This telemetry data helps you to track the pluggables present in the NCS 1004 chassis.

NCS 1001

Feature	Description
System Setup and Software Installation	
Console Swap for NCS 1001	Console swap feature provides a quicker and simpler way to toggle between the following console sessions using a keyboard shortcut: • from XR to Admin console • from Admin to Host console • from Host to XR console
FPD Upgrade Enhancement	FPD upgrade is made easy with a new command **upgrade hw-module location all fpd all**. It performs the end-to-end upgrade of all FPD modules with a single execution. As a result, the need to make progressive upgrades is eliminated.
Configuration	
Troubleshooting User Data Channel (UDC) Port Configurations	The **hw-module** and **show hw-module** commands have been enhanced with additional keywords to improve the troubleshooting of issues on UDC ports. Apart from viewing the UDC port state, VLAN list, and port statistics, you can clear UDC port configurations and enable or disable configurations on each UDC port.

YANG Data Models Introduced and Enhanced

We have launched the 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.

New Alarm in Release 7.8.1

Line Loopback Configured

Release 7.8.1 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.

Table 1: Release 7.8.1 Packages for Cisco NCS 1004

Feature Set	Filename	Description
Composite Package		
Cisco IOS XR Core Bundle + Manageability Package	ncs1004-iosxr-px-k9-7.8.1.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-r781.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-7.8.1-r781.x86_64.rpm (part of ncs1004-iosxr-px-k9-7.8.1.tar)	Install the ncs1004-sysadmin-otn-xp-dp-7.8.1-r781.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-r781.rpm	Install the ncs1004-tp-sw-1.0.0.0-r781.rpm package for OpenROADM configuration.
Pre and Post-Upgrade Installation Health Checks	ncs1004-healthcheck-1.0.0.0-r781.x86_64.rpm	Install the ncs1004-healthcheck-1.0.0.0-r781.x86_64.rpm package for Pre and Post-Upgrade Installation Health Checks configuration.

Table 2: Release 7.8.1 Packages for Cisco NCS 1001

Feature Set	Filename	Description
Composite Package		

Cisco IOS XR Core Bundle + Manageability Package	ncs1001-iosxr-px-k9-7.8.1.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-1.1.0.0r781_x86_64.rpm (part of ncs1k-iosxr-px-k9-7.8.1.tar)	Support for Encryption, Decryption, IP Security (IPsec), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).

See Install Packages.

System Requirement

At least 16 GB RAM

Caveats

Open Caveats

NCS 1004

The following table lists the open caveats for NCS 1004:

Identifier	Headline
CSCwd13387	Cfp2 Optics data coming "N/A" after a CFP2 OIR/Cfp2 swap in "show inventory"
CSCwd08103	[781-BOEncryptionProtection] Traffic should remain in protect protect after delete otnsec on W on NE
CSCwc97880	Protection :Traffic should come up while deleting and configuring all the client in single commit
CSCwd04214	LOP goes to previous state after loopback is applied on Work Port
CSCwd29150	inst_mgr crash seen during weekend soak

NCS 1001

The following table lists the open caveats for NCS 1001:

Identifier	Headline
CSCwd23699	[ncs1001] show telemetry output with wrong indication of "no data instances"(OC chan mon SP)
CSCwd33933	[ncs1001] The command "upgrade hw-module location all fpd all force" not working while removing card

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 1004

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

```
RP/0/RP0/CPU0:ios#show version
Thu Dec  1 14:06:44.504 IST
Cisco IOS XR Software, Version 7.8.1
Copyright (c) 2013-2022 by Cisco Systems, Inc.

Build Information:
Built By     : ingunawa
Built On     : Wed Nov 30 07:34:09 PST 2022
Built Host   : iox-lnx-022
Workspace    : /auto/srcarchive13/prod/7.8.1/ncs1004/ws
Version      : 7.8.1
Location     : /opt/cisco/XR/packages/
Label        : 7.8.1

cisco NCS-1004 () processor
System uptime is 12 minutes
```

NCS 1001

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

```
RP/0/RP0/CPU0:ios# show version
Thu Dec  1 09:57:13.737 CET
Cisco IOS XR Software, Version 7.8.1
Copyright (c) 2013-2022 by Cisco Systems, Inc.

Build Information:
 Built By     : ingunawa
 Built On     : Wed Nov 30 07:18:02 PST 2022
 Built Host   : iox-lnx-042
 Workspace    : /auto/srcarchive13/prod/7.8.1/ncs1001/ws
 Version      : 7.8.1
 Location     : /opt/cisco/XR/packages/
 Label        : 7.8.1

cisco NCS-1001 () processor
System uptime is 28 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 1004

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

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Thu Dec  1 14:07:06.757 IST
Auto-upgrade:Enabled                                                FPD Versions
```

```
                                                                                 ==============
Location   Card type              HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/0        NCS1K4-OTN-XP          1.0   LC_CFP2_PORT_0       CURRENT    38.27397  38.27397
0/0        NCS1K4-OTN-XP          3.0   LC_CFP2_PORT_1       CURRENT     1.40      1.40
0/0        NCS1K4-OTN-XP          3.0   LC_CPU_MOD_FW        CURRENT    78.10     78.10
0/0        NCS1K4-OTN-XP          9.0   LC_DP_MOD_FW         CURRENT     1.10      1.10
0/1        NCS1K4-OTN-XP          3.0   LC_CFP2_PORT_0       CURRENT     1.40      1.40
0/1        NCS1K4-OTN-XP          3.0   LC_CFP2_PORT_1       CURRENT     1.40      1.40
0/1        NCS1K4-OTN-XP          3.0   LC_CPU_MOD_FW        CURRENT    78.10     78.10
0/1        NCS1K4-OTN-XP          2.0   LC_DP_MOD_FW         CURRENT    12.10     12.10
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     5.80      5.80
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     .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

Thu Dec  1 10:04:04.400 CET

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_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
                                                                                  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     0.43      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

                                                                          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    15.10      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 1004	NCS 1001
CISCO-FLASH-MIB	Yes	Yes
CISCO-ENHANCED-MEMPOOL-MIB	Yes	Yes
ENTITY-MIB	Yes	Yes
CISCO-ENTITY-FRU-CONTROL-MIB	Yes	Yes
CISCO-IF-EXTENSION-MIB	Yes	Yes
CISCO-ENTITY-ASSET-MIB	Yes	Yes
CISCO-CONFIG-MAN-MIB	Yes	Yes
CISCO-ENTITY-REDUNDANCY-MIB	Yes	Yes
CISCO-SYSTEM-MIB	Yes	Yes
CISCO-SYSLOG-MIB	Yes	Yes
CISCO-ENTITY-SENSOR-MIB	Yes	Yes

MIB	NCS 1004	NCS 1001
CISCO-PROCESS-MIB	Yes	Yes
RMON-MIB	Yes	Yes
CISCO-ALARM-MIB	Yes	No
CISCO-AM-SNMP-MIB	Yes	No
EVENT-MIB	Yes	Yes
DISMAN-EXPRESSION-MIB	Yes	Yes
CISCO-FTP-CLIENT-MIB	Yes	Yes
NOTIFICATION-LOG-MIB	Yes	Yes
CISCO-RF-MIB	Yes	Yes
RADIUS-AUTH-CLIENT-MIB	Yes	No
RADIUS-ACC-CLIENT-MIB	Yes	No
IEEE8023-LAG-MIB	Yes	No
CISCO-TCP-MIB	Yes	Yes
UDP-MIB	Yes	Yes
CISCO-BULK-FILE-MIB	Yes	No
CISCO-CONTEXT-MAPPING-MIB	Yes	No
CISCO-OTN-IF-MIB	Yes	Yes
HC-RMON-MIB	Yes	No
CISCO-OPTICAL-MIB	Yes	Yes
LLDP-MIB	Yes	No
CISCO-OPTICAL-OTS-MIB	No	Yes