Release Notes for Cisco NCS 1002, IOS XR Release 6.3.2

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Network Convergence System 1002

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The Cisco Network Convergence System (NCS) 1002 is a 2 RU system that delivers fully programmable, high-bandwidth capacity (up to 250 Gbps) wavelengths over distances exceeding 3000 km using existing fiber. Powered by the industry-leading Cisco IOS XR operating system, Cisco NCS 1002 offers robust functions such as third party application hosting, machine-to-machine interface, and telemetry.

NCS 1002 delivers the following benefits:

- Supports up to 2 Tbps capacity.
- Transports 100, 200, or 250Gbps per wavelength on the same platform through software provisioning.
- Transports 10 GE, 40 GE, and 100 GE on the same platform through software provisioning.
- Supports grid-less tuning for flex-grid dense wavelength-division multiplexing (DWDM).
- Supports different modulation formats (PM-QPSK or PM-16QAM).
- Supports 7% or 20% Soft Decision (SD) FEC for maximum optical performance.
- Allows for automated installation, configuration and monitoring.
- Supports Machine-to-machine (M2M) APIs based on YANG models for ease of configuration.
- Supports a telemetry agent for a pub-sub model of device monitoring.

This latest release of Cisco IOS XR operating system opens up the architecture of Cisco IOS XR using a 64-bit Linux-based operating system to deliver greater agility, automation and simplicity, while reducing the cost of operating the networks.

The new innovations in this release enable incremental builds, agile workflows, and modular delivery of software, while also offering the capability to host third-party applications on Cisco routers. These innovations deliver these benefits by enabling traditional and web service providers to converge their data centers and wide area network (WAN) architectures, by making networks more programmable, and by facilitating tighter integration with popular IT configuration and management tools.

For all the versions of the Release Notes for Cisco NCS 1002, see the Release Notes URL.

Hardware

Supported Pluggables

The following pluggables are supported in R6.3.2.

- ONS-CFP2-WDM-1KL
- ONS-CFP2-WDM-1KE

To view the list of pluggables supported in NCS 1002, see the Cisco NCS 1002 Overview chapter in Hardware Installation Guide for Cisco NCS 1002.

Software Features Introduced in Release 6.3.2

These are the software features introduced in R6.3.2:

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GMPLS UNI Flexible Grid

The user can create a GMPLS optical channel trail (OCH Trail) in a network where the NCS 1002 node is connected to a NCS 2000 series node. The OCH trail circuit originates from a NCS 1002 trunk interface (UNI-C) on the source NCS 1002 node and terminates on the NCS 2000 series interface (UNI-N) on the destination NCS 2000 series node to create an optical connection. In a ROADM network, the wavelengths can be automatically configured using GMPLS UNI.

GMPLS UNI is supported only on the 100G and 200G trunk ports of the NCS 1002 node until R6.2.1. GMPLS UNI is supported on the 250G trunk port of the NCS 1002 node from R6.3.2.

GMPLS UNI is supported only for fixed grid until R6.2.1. Hence, 250G channels from NCS 1002 node cannot pass through the NCS 2000 series node because of spectral issues of 50 GHz channel spacing. GMPLS UNI flexible grid is supported from R6.3.2 that supports 250G channels and 6.25 GHz channel spacing.

To configure GMPLS UNI, see the Configuring GMPLS UNI chapter in the Configuration Guide for Cisco NCS 1002.

IPv6 ACL

NCS 1002 supports the following IP Acces List (ACL):

- Ingress ACL for both IPv4 and IPv6.
- Egress ACL: Self-Originated Packet is not supported by ACL, as this is already controlled by user. Only forwarded packets or traffic is classified under ACL. This rule is applicable for both IPv4 and IPv6 ACL.

To configure IPv6 ACL, see the Configuring IP Access List chapter in the Configuration Guide for Cisco NCS 1002.

MACsec SNMP

The following MIB is supported in NCS 1002.

IEEE8021-SECY-MIB (only SNMP read-only operations are supported for this MIB).

To view the list of MIBs supported in NCS 1002, see the Configuring SNMP chapter in the Configuration Guide for Cisco NCS 1002.

MACsec Threshold Crossing Alerts

The user can configure MACsec Threshold Crossing Alerts (TCA) at mac-sec ether, secy-if (interface), secy-tx,and secy-tx. There is no default threshold, minimum, or maximum threshold to configure MACsec TCA. The user must enable MACsec controllers to view MACsec performance.

To configure MACsec threshold crossing alerts and the performance monitoring parameters, see the Configuring MACsec Encryption chapter in the Configuration Guide for Cisco NCS 1002.

MACsec MKA Using EAP-TLS Authentication

Using IEEE 802.1X port-based authentication with Extensible Authentication Protocol (EAP-TLS), MACsec MKA can be configured between two NCS 1002 device ports. EAP-TLS allows mutual authentication and obtains MSK (master session key). Both Connectivity Association Key Name (CKN) and connectivity association key (CAK) are derived from MSK for MKA operations. The device certificates are carried for authentication to the external AAA server using EAP-TLS.

To configure MACsec MKA using EAP-TLS Authentication, see the Configuring MACsec Encryption chapter in the Configuration Guide for Cisco NCS 1002.

Mixed Mode Configuration

The first three client ports of a slice can be configured at 100G bitrate and the last two client ports can be configured at 10G bitrate per lane. This feature is called mixed mode configuration.

To configure NCS 1002 with mixed mode, see the Configuration Guide for Cisco NCS 1002 and Data Models Configuration Guide for the Cisco NCS 1002.

PRBS

Pseudo Random Binary Sequence (PRBS) feature allows the user to perform data integrity checks between the trunk links of NCS 1002 without enabling the client traffic. PRBS generator generates a bit pattern on the device and sends it to the peer device, where PRBS analyzer detects if the transmitted bit pattern is preserved.

The user can configure the trunk port in one of the following modes for PRBS.

- Source Mode
- Sink Mode
- Source-Sink Mode

To Configure the trunk port with PRBS, see the Configuring Pseudo Random Binary Sequence chapter in the Configuration Guide for Cisco NCS 1002.

System Requirement

Memory Configuration

At least 16 GB RAM

Supported Hardware

For a complete list of supported optics, hardware and ordering information, see the Cisco NCS 1002 Data Sheet.

To install Cisco NCS 1002, see the Installation Checklist section in the Hardware Installation Guide for Cisco NCS 1002.

Determine Software Version

Log in to NCS 1002 and enter the **show version** command.

```
RP/0/RP0/CPU0:ios# show version
Thu Mar 29 15:41:32.532 IST

Cisco IOS XR Software, Version 6.3.2
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Build Information:
 Built By     : ahoang
 Built On     : Mon Mar 26 03:38:22 PDT 2018
 Build Host   : iox-ucs-023
 Workspace    : /auto/srcarchive17/prod/6.3.2/ncs1k/ws
 Version      : 6.3.2
 Location     : /opt/cisco/XR/packages/

cisco NCS-1002 () processor
System uptime is 1 day, 27 minutes
```

Determine Firmware Support

Log in to NCS 1002 and enter the **show hw-module fpd** command:

```
RP/0/RP0/CPU0:ios#show hw-module fpd
Thu Mar 29 15:41:51.520 IST
                                                                 FPD Versions
                                                                =================
Location   Card type        HWver FPD device       ATR Status   Running Programd
-------------------------------------------------------------------------------
0/0        NCS1002-K9       1.2   CDSP_PORT_05         CURRENT    3.77    3.77
0/0        NCS1002-K9       1.2   CDSP_PORT_06         CURRENT    3.77    3.77
0/0        NCS1002-K9       1.2   CDSP_PORT_12         CURRENT    3.77    3.77
```

```
0/0       NCS1002-K9        1.2   CDSP_PORT_13          CURRENT    3.77    3.77
0/0       NCS1002-K9        1.2   CDSP_PORT_19          CURRENT    3.77    3.77
0/0       NCS1002-K9        1.2   CDSP_PORT_20          CURRENT    3.77    3.77
0/0       NCS1002-K9        1.2   CDSP_PORT_26          CURRENT    3.77    3.77
0/0       NCS1002-K9        1.2   CDSP_PORT_27          CURRENT    3.77    3.77
0/0       NCS1002-K9        2.1   CFP2_PORT_05          CURRENT    5.23    5.23
0/0       NCS1002-K9        2.1   CFP2_PORT_06          CURRENT    5.23    5.23
0/0       NCS1002-K9        2.1   CFP2_PORT_12          CURRENT    5.23    5.23
0/0       NCS1002-K9        4.2   CFP2_PORT_13          CURRENT    3.20    3.20
0/0       NCS1002-K9        2.1   CFP2_PORT_19          CURRENT    5.23    5.23
0/0       NCS1002-K9        2.1   CFP2_PORT_20          CURRENT    5.23    5.23
0/0       NCS1002-K9        2.1   CFP2_PORT_26          CURRENT    5.23    5.23
0/0       NCS1002-K9        2.1   CFP2_PORT_27          CURRENT    5.23    5.23
0/0       NCS1002-K9        0.1   CTRL_BKP_LOW      B   CURRENT            2.23
0/0       NCS1002-K9        0.1   CTRL_BKP_UP       B   CURRENT            2.23
0/0       NCS1002-K9        0.1   CTRL_FPGA_LOW         CURRENT    2.23    2.23
0/0       NCS1002-K9        0.1   CTRL_FPGA_UP          CURRENT    2.23    2.23
0/RP0     NCS1K-CNTLR       0.1   BIOS_Backup       BS  CURRENT           14.00
0/RP0     NCS1K-CNTLR       0.1   BIOS_Primary       S  CURRENT   14.20   14.20
0/RP0     NCS1K-CNTLR       0.1   Daisy_Duke_BKP    BS  CURRENT            0.15
0/RP0     NCS1K-CNTLR       0.1   Daisy_Duke_FPGA    S  CURRENT    0.17    0.17
0/PM0     NCS1K-2KW-AC      0.0   PO-PriMCU             CURRENT    4.00    4.00
0/PM1     NCS1K-2KW-AC      0.0   PO-PriMCU             CURRENT    4.00    4.00
```

The above show output lists the hardware components that are supported in current release with their status. The status of the hardware must be CURRENT; Running and Programd version must be similar.

Open Caveats for NCS 1002

Table 1: Caveats for 6.3.2

Caveat ID Number	Description
CSCvg22049	NCS1002: Tams process restarts continously with CRYPTO_INTEGRITY_FAIL errors.
CSCvh96826	NCS1002: NCS1K-Continuous link flaps with N7K/N3K 100G.
CSCvi57999	NCS1002: XR is no longer accessible via console or management after upgrading to 6.3.2 35i from 631 CCO+ SMUs.
CSCve60630	NCS1002: Daisy_Duke_FPGA did not come out of RLOAD REQ state after 0/RP0 reload.
CSCvg34337	NCS1002: Device is inaccessible by Management or Console (XR and Calvados).
CSCvg80151	NCS1002: Elements shown in the error path of error message is not matching with actual problem in the configuration.
CSCvh86304	NCS1002: Description set on optics controller through oc-interface model is not shown in run-cfg and show ctrlr outputs.

Caveat ID Number	Description
CSCvh94263	NCS1002: Slice configuration through OC models is failing when logical channel index is zero.
CSCvi52371	NCS1002: 13.41 BIOS crash is seen once on *hw-module location all reload*command.
CSCvi53833	NCS1002: SU from 632/651 to 612 gets aborted due to the presence of soft links.
CSCvf62820	NCS1002: CFP2 on trunk port 12 is having Tx power -40dBm.
CSCvi60432	NCS1002: After DaisyDuke downgrade and hw-module location, all reload calvados and XR did not boot up.

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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