Release Notes for Cisco NCS 4000 Series, Cisco IOS XR Release 6.5.25

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The release notes contain information about the new features introduced in the Cisco NCS 4000 Series. For detailed information regarding features, capabilities, hardware, and software introduced with this release, see the guides listed in the *Additional References* section.

Revision History

Date	Notes
Jan 2019	This is the first release of this publication.

Software and Hardware Requirements

Before you begin to install the software, you must check whether your system meets the minimum software and hardware requirements.

- Hardware—Intel Core i5, i7, or faster processor. A minimum of 4 GB RAM, 100 GB hard disk with 250 MB of available hard drive space.
- One of these operating System:
  - Windows 7, Windows Server 2008, or later.
  - Apple Mac OS X
  - UNIX workstation with Solaris Version 9 or 10 on an UltraSPARC-III or faster processor, with a minimum of 1 GB RAM and a minimum of 250 MB of available hard drive space.

- Ubuntu 12.10

- Java Runtime Environment—Java Runtime Environment Version 1.8.
- Browser:
  - Internet Explorer
  - Mozilla
  - Safari
  - Google Chrome

New Features for Release 6.5.25

Note Before you dive into this release's features, we invite you to content.cisco.com to experience the features of the Cisco Content Hub. Here, you can, among other things:

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This section highlights new NCS 4000 features for Release 6.5.25:

Software

The following software features have been introduced in Release 6.5.25:

1+1+R

In 1+1+R protection mechanism, a circuit is protected by two redundant paths, one is the protect path and the other one is the restore path. When a failure occurs on the working and the protect paths, then the restore path takes over. Wait to Restore (WTR) timers are available on both the working and protect paths. Restoration path signaling is triggered as soon as a defect is detected on either of the paths (working or protect). When the working path fails, the traffic shifts to the protect path. In this period of time, the restore path is also ready to take over, if the protect path fails.

Affinity Support for OTN GMPLS

The Affinity Support for OTN GMPLS feature steers the selection of paths for MPLS TE tunnel, adhering to affinity constraints.The feature enables you to handle ISSU (OLR) upgrades on NCS4K more gracefully.

AINS Support for Controllers

The automatic-In-Service (AINS) state with a soak time period can be configured on a controller so that after the completion of a maintenance window, the controller can be removed from the maintenance state without manual intervention. After the expiry of the soak time period, the state automatically goes to the normal or the In-Service state.

BGP Labeled Unicast and Prefix Independent Convergence

BGP labeled unicast (LU) enables MPLS transport across IGP boundaries. By advertising loopbacks and label bindings across IGP boundaries, we can communicate with other routers in remote areas that are not part of the local IGP. BGP LU advertisements impact edge routers and border routers. The Border Gateway Protocol Prefix Independent Convergence Unipath (BGP PIC Unipath) primary/backup feature provides the capability to install a backup path into the forwarding table. Installing the backup path provides prefix independent convergence in the event of a primary PE–CE link failure. The primary/backup path provides a mechanism for BGP to determine the best backup path.

Cable Management Utility

The cable management wizard can be used to make CXP connections between the fabric cards of the FCCs and LCCs in a multi-shelf configuration. The CXP connections are color coded.

FAT Pseudo wire

FAT pseudo wires are used to load balance traffic in the core. A flow label is a unique identifier to distinguish a flow within the pseudowire and is derived from the payload of a packet. On the imposition PE node, the flow label is inserted. At the disposition PE node, hashing is performed using the terminated headers, including the flow label to balance traffic across bundle members.

Inter-rack RP pairing

In a multi chassis (MC) system, there is a possibility that the rack which houses the active RP and standby RP may go down. This results in the reboot of all the line card chassis, thus impacting traffic of the MC system. Inter-rack (or cross-rack) pairing allows pairing route processors (RP) between racks to provide high availability (HA) against rack failures. The RP of one rack is paired with an RP in the next rack. In case of failure of the rack which houses the active RP, the standby RP which is in another rack takes over.

Inter-rack Timing

In a multi chassis (MC) system, the source and destination ports of the cross connect can be across racks. Inter-rack (or cross-rack) timing allows the timing information to be passed across racks for segmentation and re-assembly needs.

L3 Link Aggregation

Link Aggregation (LAG) is a mechanism used to aggregate physical interfaces or ports to create a logical entity called link bundle. LAG is a trunking technology that groups together multiple full-duplex Ethernet interfaces to provide fault-tolerant high-speed links between switches, routers, and servers. LAG is supported for both L2 and L3 interfaces.

Low rate on 24LR card

To handle low rate client signal on NCS4K, this feature provides low rate (OC3/OC12/STM1/STM4) data path support on NCS4K-24LR-O-S line card.

Migration from NCS4K-ECU to NCS4K-ECU2

ECU2 is the external connection unit intoduced to support NCS4K Multi Chassis environment. The procedure provides steps to migrate from NCS4K-ECU to NCS4K-ECU2.

For more information on the above software features, see the *Configuration Guide for Cisco NCS 4000 Series*.

Single Chassis to Multi Chassis Migration

Multiple Cisco NCS 4016 single chassis (SC) are connected to one or more NCS 4000 fabric card chassis (FCC) to form a multi chassis (MC) system. This enables scalability with single admin and control plane. The MC system contains two types of chassis - line card chassis (LCC) which is the NCS 4016, and the FCC. The supported MC configurations are:

- 1 LCC and 1 FCC (1+1)
- 2 LCCs and 1 FCC (2+1)
- 3 LCCs and 1 FCC (3+1)
- 4 LCCs and 1 FCC (4+1)
- 1 LCC and 2 FCCs (1+2)
- 2 LCCs and 2 FCCs (2+2)
- 3 LCCs and 2 FCCs (3+2)
- 4 LCCs and 2 FCCs (4+2)
- 1 LCC and 3 FCCs (1+3)
- 2 LCCs and 3 FCCs (2+3)
- 3 LCCs and 3 FCCs (3+3)
- 4 LCCs and 3 FCCs (4+3)
- 4 LCCs and 4 FCCs (4+4)

For more information on the above software features, see the *Migration of Single Chassis to Multi Chassis for Cisco NCS 4000 Series*.

Support TCA as an Alarm

Threshold Cross Alert (TCA)started when the Performance Monitoring (PM) counters cross the predefined threshold values. For details about this alarm, see the *Alarms Troubleshooting Guide for Cisco NCS 4000 Series* .

Limitations

Following are the limitations of the software features in Release 6.5.25:

- Inter-rack pairing does not support rack reload.
- Multi Chassis OLR with bundles is not supported.

External Caveats

External Bugs in Release 6.5.25

The following list contains known issues for Release 6.5.25:

Caveat ID Number	Description
CSCvj63160	Otn_framer_400gig process blocked on PTAH, MC went into inconsistent state
CSCvn18334	200-500ms convergence on interface shut with tunnel BFD (FIB PD/HW programming delay)
CSCvn68432	FIA PON on HA events due to random WB update
CSCvn82797	IRP - fia_driver crash just after the lead rack reload (during xconnect get)
CSCvo21721	Solution Bring-up:Flex LSPs down due to 'wait BFD session up'
CSCvo25926	ISIS neighbour on rack 3 flapped on removal of non lead rack (rack 0) on a MC setup

Supported FPD Versions

The following table lists the FPD versions supported in Release 6.5.25

FPD	FPD Description	Req. Reload	S/W Version	Min. Req. S/W Version
NCS4009-FC-S	CCC-FPGA	No	1.05	1.05
	CCC-Power-On	No	1.03	1.03
	PLX-8608	Yes	0.03	0.03
NCS4009-FC2-S	CCC-FPGA	No	2.05	2.05
	CCC-Power-On	No	1.03	1.03
	PLX-8714	Yes	0.04	0.04
NCS4009-FC2-SP	CCC-FPGA	No	1.11	1.11
	CCC-Power-On	No	1.03	1.03
	PLX-8608	Yes	0.03	0.03
NCS4009-FC2F-S	CCC-FPGA	No	2.05	2.05
	CCC-Power-On	No	1.03	1.03
	PLX-8714	Yes	0.04	0.04

NCS4016-FC-M	CCC-FPGA	No	4.40	4.40
	CCC-Power-On	No	1.14	1.14
	PLX-8649	Yes	0.08	0.08
NCS4016-FC-S	CCC-FPGA	No	5.07	5.07
	CCC-Power-On	No	1.01	1.01
	PLX-8649	Yes	0.08	0.08
NCS4016-FC-S	CCC-FPGA	Yes	0.05	0.01
	CCC-Power-On	Yes	1.12	1.08
	PLX-8649	Yes	0.08	0.08
NCS4016-FC2-M	CCC-FPGA	No	1.35	1.35
	CCC-Power-On	No	1.03	1.03
	PLX-8649	Yes	1.00	1.00
NCS4K-2OT-O-S	CCC-FPGA	No	3.27	3.27
	CCC-Power-On	No	1.19	1.19
	Ethernet - Switch	Yes	1.41	1.41
	PLX-8618	Yes	0.09	0.09
NCS4K-24LR-O-S	CCC-FPGA	No	4.39	4.39
	CCC-Power-On	No	1.21	1.21
	Ethernet - Switch	Yes	1.38	1.38
	PLX-8618	Yes	0.11	0.11
NCS4K-2H-O-K	CCC-FPGA	No	3.38	3.38
	CCC-Power-On	No	1.19	1.19
	Ethernet - Switch	Yes	1.41	1.41
	PLX-8618	Yes	0.10	0.10
NCS4K-2H-W	CCC-FPGA	No	4.34	4.34
	CCC-Power-On	No	1.20	1.20
	Ethernet - Switch	Yes	1.35	1.35
	PLX-8608	Yes	0.10	0.10
NCS4K-2H10T-OP-KS	CCC-FPGA	No	1.50	1.50
	CCC-Power-On	No	1.14	1.14
	Ethernet - Switch	Yes	1.02	1.02
	PLX-8649	Yes	0.11	0.11

NCS4K-4H-OP-K	CCC-FPGA	Yes	2.02	2.02
	CCC-Power-On	Yes	1.09	1.09
	Ethernet - Switch	Yes	1.01	1.01
	PLX-8649	Yes	0.01	0.01
NCS4K-4H-OPW-QC2	CCC-FPGA	No	0.29	0.29
	CCC-Power-On	No	1.12	1.12
	Ethernet-Switch	Yes	1.51	1.51
	PLX-8750	Yes	0.10	0.10
NCS4K-AC-PSU	AB-PriMCU	No	1.31	1.31
	AB-Sec54vMCU	No	1.49	1.49
	AB-Sec5vMCU	No	1.43	1.43
	DT-PriMCU	No	3.00	3.00
	DT-PriMCU	No	1.06	1.06
	DT-PriMCU	No	2.01	2.01
	DT-Sec54vMCU	No	4.00	4.00
	DT-Sec54vMCU	No	2.03	2.03
	DT-Sec54vMCU	No	3.02	3.02
	DT-Sec5vMCU	No	3.01	3.01
	DT-Sec5vMCU	No	1.09	1.09
	DT-Sec5vMCU	No	2.02	2.02
NCS4K-CRAFT	Craft-NCS4009	No	1.04	1.04
	Craft-NCS4016	No	1.04	1.04

NCS4K-DC-PSU-V1	AB-PriMCU	No	4.01	4.01
	AB-Sec54vMCU	No	4.02	4.02
	AB-Sec5vMCU	No	4.01	4.01
	DT-Pri2MCU	No	3.02	3.02
	DT-Pri2MCU	No	2.02	2.02
	DT-PriMCU	No	3.02	3.02
	DT-PriMCU	No	2.02	2.02
	DT-Sec54v2MCU	No	3.01	3.00
	DT-Sec54v2MCU	No	2.05	2.05
	DT-Sec54vMCU	No	3.01	3.00
	DT-Sec54vMCU	No	2.05	2.05
	DT-Sec5vMCU	No	3.04	3.02
	DT-Sec5vMCU	No	2.06	2.06
NCS4K-ECU	ECU-FPGA	No	3.01	3.01
NCS4K-ECU2	ECU-FPGA	No	4.08	4.08
NCS4K-FTA	Fantray-FPGA	No	3.01	3.01
NCS4K-RP	BACKUP-BIOS	Yes	14.04	1.00
	Backup-CCC-PwrOn	Yes	1.22	1.00
	Backup-Ethswitch	Yes	1.36	1.00
	Backup-Timing	Yes	3.95	3.00
	BP-FPGA	No	3.21	3.21
	CCC-Bootloader	Yes	4.29	4.08
	CCC-FPGA	Yes	4.29	4.29
	CCC-Power-On	Yes	1.23	1.23
	CPU-Complex-Boot	Yes	2.09	2.04
	CPU-Complex-FPGA	Yes	2.09	2.09
	Ethernet - Switch	Yes	1.36	1.36
	PLX-8649	Yes	0.08	0.08
	PLX-8696	Yes	0.05	0.05
	Primary-BIOS	Yes	14.04	14.04
	SMART - iSATA	No	7.05	7.05
	SMART - SATA	No	7.05	7.05
	Timing FPGA	Yes	3.95	3.95

NCS4KF-CRAFT	Craft-NCS4K-FCC	No	1.07	1.07
NCS4KF-FC2-C	Back-CRE-FPGA-MB	Yes	1.05	1.05
	CCC-FPGA	Yes	1.26	1.26
	CCC-Power-On	Yes	1.05	1.05
	CRE-FPGA-MB	Yes	1.05	1.05
	PLX-8713	Yes	0.06	0.06
NCS4KF-FTA	Backup-Fantray	No	2.03	2.03
	Fantray-FPGA	No	2.04	2.04
NCS4KF-RPMC	Backup-BIOS	Yes	14.00	14.09
	Backup-CCC-PwrOn	No	2.01	1.38
	Backup-EthSwitch	Yes	1.33	1.33
	CCC-Bootloader	Yes	3.07	2.01
	CCC-FPGA	Yes	3.07	3.07
	CCC-Power-On	No	2.01	2.01
	CPU-Complex-BOOT	Yes	4.09	4.04
	CPU-Complex-FPGA	Yes	4.09	4.09
	Ethernet-Switch	Yes	1.33	1.33
	PLX-8625	Yes	0.05	0.05
	Primary-BIOS	Yes	14.09	14.09
	SMART-iSATA	No	7.05	7.05
	SMART-SATA	No	7.05	7.05
NCS4KF-RPMC (SW)	CCC-FPGA	Yes	2.06	2.06
	CCC-Power-On	No	2.01	2.01
	PLX-8614	Yes	0.06	0.06
P-S-FANTRAY	Fantray-FPGA	No	2.04	2.04

Supported Craft Firmware Version

The following table lists the Craft firmware versions supported in Release 6.5.25

Craft	Firmware Version
NCS4K-CRAFT	2.9.46
NCS4KF-CRAFT	2.9.46

Cisco Bug Search Tool

Use the Bug Search Tool (BST) to view the list of outstanding and resolved bugs in a release.

BST, the online successor to Bug Toolkit, is designed to improve the effectiveness in network risk management and device troubleshooting. The tool allows partners and customers to search for software bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. The tool has provision to filter bugs based on credentials to provide external and internal bug views for the search input.

Search Bugs in BST

Procedure

Step 1 Go to https://tools.cisco.com/bugsearch/. You will be prompted to log into Cisco.com. After successful login, the Bug Toolkit page open.

Step 2 Enter the bug ID in the Search For: field. To search for release bugs, enter the following parameters in the page:

a) Search For — Enter NCS4k in the text box.
b) Releases — Enter the release number.
c) Show Bugs — Select Affecting or Fixed in these Releases

Step 3 Press Enter.

- By default, the search results include bugs with all severity levels and statuses, and bugs that were modified during the life cycle of the bug. After you perform a search, you can filter your search results to meet your search requirements.
- An initial set of 25 search results is shown in the bottom pane. Drag the scroll bar to display the next set of 25 results. Pagination of search results is not supported.

Additional References

Related Documentation

Use the release notes with the following publications:

Document Title	Description
Hardware Installation Guide for Cisco NCS 4000 Series	Provides installation information about the Cisco NCS 4009 and Cisco NCS 4016 chassis.
Cisco Network Convergence System 4000 Series Unpacking, Moving, and Securing Guide	Provides instructions for unpacking the Cisco NCS 4009 and Cisco NCS 4016 chassis, moving the chassis to its permanent location, and mounting the chassis in a rack.

Document Title	Description
Regulatory Compliance and Safety Information for the Cisco NCS 4000 Series	Provides the international agency compliance, safety, and statutory information that apply to Cisco NCS 4009 and Cisco NCS 4016 chassis.
Configuration Guide for Cisco NCS 4000 Series	Provides background and reference material, procedures to configure and maintain the Cisco NCS 4009 and Cisco NCS 4016 chassis.
Command Reference for Cisco NCS 4000 Series	Provides the various commands available to configure and maintain the Cisco NCS 4009 and Cisco NCS 4016 chassis.
System Setup and Software Installation Guide for Cisco NCS 4000 Series	Provides instructions to set up the system and perform software installation.
Alarms Troubleshooting Guide for Cisco NCS 4000 Series	Provides a description, severity, and troubleshooting procedure for each commonly encountered NCS 4000 alarm and condition.
Cisco IOS XR System Error Message Reference Guide	Provides a list of the Cisco IOS XR system error messages for all Cisco IOS XR platforms
Quality of Service Configuration Guide for Cisco NCS 4000 Series	Provides features available to configure and maintain Quality of Service (QoS) for the Cisco NCS 4000 Series Routers.
Quality of Service Command Reference for Cisco NCS 4000 Series	Provides various commands available to configure and maintain Quality of Service (QoS) for the Cisco NCS 4000 Series Routers.
Migration of Single Chassis to Multi Chassis for Cisco NCS 4000 Series	Provides configuration procedures for the supported multi chassis configurations.

Technical Assistance

Link	Description
http://www.cisco.com/cisco/web/support/index.html	The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.