Cisco Nexus 3000 Series NX-OS Release Notes, Release 6.0(2)U4(1)

Release Date: September 18, 2014
Current Release: Cisco NX-OS Release 6.0(2)U4(1)

This document describes the features, caveats, and limitations for Cisco Nexus 3000 Series and Cisco Nexus 3100 Series switches. Use this document in combination with documents listed in the "Obtaining Documentation and Submitting a Service Request" section on page 29.

Note Release notes are sometimes updated with new information about restrictions and caveats. See the following website for the most recent version of the Cisco Nexus 3000 Series release notes: http://www.cisco.com/c/en/us/support/switches/nexus-3000-series-switches/products-release-notes-list.html

Note Table 1 shows the online change history for this document.

Table 1 Online History Change

Revision	Date	Description
A0	September 18, 2014	Created NX-OS Release 6.0(2)U4(1) release notes.
B0	May 12, 2015	Added Known Behaviors in Cisco NX-OS Release 6.0(2)U4(1), page 28.
C0	November 12, 2015	Added the following note: GLC-SX-MMD is supported on all Cisco Nexus 3000 Series Switches except for the Cisco Nexus 3064-T. Please refer to the comparability matrix for all the supported platforms.
D0	January 7, 2016	Removed bug Id (CSCuq92481) from "Limitations".

Contents

This document includes the following sections:

Introduction

Several new hardware and software features are introduced for the Cisco Nexus 3000 Series and Cisco Nexus 3100 Series devices to improve the performance, scalability, and management of the product line. Cisco NX-OS Release 6.x also supports all hardware and software supported in Cisco NX-OS Release 5.1 and Cisco NX-OS Release 5.0.

Cisco NX-OS offers the following benefits:

- Cisco NX-OS runs on all Cisco data center switch platforms: Cisco Nexus 7000, Nexus 5000, Nexus 4000, Nexus 3000, Nexus 2000, and Nexus 1000V Series switches.
- Cisco NX-OS software interoperates with Cisco products that run any variant of Cisco IOS software and also with any networking operating system that conforms to common networking standards.
- Cisco NX-OS modular processes are triggered on demand, each in a separate protected memory space. Processes are started and system resources are allocated only when a feature is enabled. The modular processes are governed by a real-time preemptive scheduler that helps ensure timely processing of critical functions.
- Cisco NX-OS provides a programmatic XML interface that is based on the NETCONF industry standard. The Cisco NX-OS XML interface provides a consistent API for devices. Cisco NX-OS also provides support for Simple Network Management Protocol (SNMP) Versions 1, 2, and 3 MIBs.
- Cisco NX-OS enables administrators to limit access to switch operations by assigning roles to users. Administrators can customize access and restrict it to the users who require it.

Cisco Nexus 3000 Series Switches

The Cisco Nexus 3000 Series switches are high-performance, high-density, ultra-low-latency Ethernet switches that provide line-rate Layer 2 and Layer 3 switching. The Cisco Nexus 3000 Series includes the following switches:

- The Cisco Nexus 3064 switch is a 1 RU switch that supports 48 1- or 10-Gigabit downlink ports, four Quad Small Form-Factor Pluggable (QSFP+) ports that can be used as a 40 Gigabit Ethernet port or 4 x10-Gigabit Ethernet ports, one 10/100/1000 management port, and one console port.
- The Cisco Nexus 3048 switch is a 1 rack unit (RU) switch that supports 48 10/100/1000 Ethernet server-facing (downlink) ports, four 10-Gigabit network-facing (uplink) ports, one 100/1000 management port, and one console port.

- The Cisco Nexus 3016 is a 1 RU, 16-port QSFP+ switch. Each QSFP+ port can be used as a 40-Gigabit Ethernet port or 4 x10-Gigabit Ethernet ports.

Each switch includes one or two power supply units and one fan tray module, and each switch can be ordered with either forward (port-side exhaust) airflow or reverse (port-side intake) airflow for cooling. All platforms support both AC and DC power supplies. All combinations of power (AC/DC) and airflow (forward/reverse) are available. The Cisco Nexus 3000 Series switches run the Cisco NX-OS software.

For information about the Cisco Nexus 3000 Series, see the *Cisco Nexus 3000 Series Hardware Installation Guide.*

Cisco Nexus 3100 Series Switches

The Cisco Nexus 3100 Series switches are high-performance, high-density, ultra-low-latency Ethernet switches that provide line-rate Layer 2 and Layer 3 switching. In Cisco NX-OS Release 6.0(2)U2(2), the Cisco Nexus 3100 Series includes the Cisco Nexus 3132 and Nexus 3172 switches.

The Cisco Nexus 3172PQ switch is a 10-Gbps Enhanced Small Form-Factor Pluggable (SFP+)–based ToR switch with 48 SFP+ ports and 6 Enhanced Quad SFP+ (QSFP+) ports.

The Cisco Nexus 3172TQ switch is a 10GBASE-T switch with 48 10GBASE-T ports and 6 Quad SFP+ (QSFP+) ports.

Each SFP+ port can operate in 100-Mbps, 1-Gbps, or 10-Gbps mode, and each QSFP+ port can operate in native 40-Gbps or 4 x 10-Gbps mode. This switch is a true physical-layer-free (phy-less) switch that is optimized for low latency and low power consumption.

The Cisco Nexus 3132Q switch is a 1RU, 40-Gbps QSFP-based switch that supports 32 fixed 40-Gbps QSFP+ ports. It also has 4 SFP+ ports that can be internally multiplexed with the first QSFP port. Each QSFP+ port can operate in the default 40-Gbps mode or 4 x 10-Gbps mode, up to a maximum of 104 10-Gbps ports.

Each switch includes dual redundant power supply units, four redundant fans, one 10/100/1000 management port, and one console port. Each switch can be ordered with either forward (port-side exhaust) airflow or reverse (port-side intake) airflow for cooling. It supports both AC and DC power supplies. All combinations of power (AC/DC) and airflow (forward/reverse) are available. The Cisco Nexus 3100 Series switches run the Cisco NX-OS software.

For information about the Cisco Nexus 3100 Series, see the *Cisco Nexus 3000 Series Hardware Installation Guide.*

System Requirements

This section includes the following topics:

Memory Requirements

The Cisco NX-OS Release 6.0(2)U4(1) software requires 135 MB of flash memory.

Hardware Supported

Cisco NX-OS Release 6.0(2)U4(1) supports the Cisco Nexus 3000 Series switches. You can find detailed information about supported hardware in the *Cisco Nexus 3000 Series Hardware Installation Guide*.

Table 2 shows the hardware supported by the Cisco NX-OS Release 6.x software. Table 3 shows the hardware supported by the Cisco NX-OS 5.x releases.

Table 4 shows the transceivers supported by the Cisco NX-OS Release 6.x software. Table 5 shows transceivers supported by the Cisco NX-OS 5.x releases.

Table 2 Hardware Supported by Cisco NX-OS Release 6.x Software

Hardware	Part Number	Supported Cisco NX-OS Release 6.0(2)U1(3) 6.0(2)U1(2) 6.0(2)U1(1a) 6.0(2)U1(1)	Supported Cisco NX-OS Release 6.0(2)U2(5) 6.0(2)U2(4) 6.0(2)U2(3) 6.0(2)U2(2) 6.0(2)U2(1)	Supported Cisco NX-OS Release 6.0(2)U3(2) 6.0(2)U3(1)	Supported Cisco NX-OS Release 6.0(2)U4(1)
Cisco Nexus 3132Q-X switch	N3K-C3132Q-40GX				X
Cisco Nexus 3172TQ switch	N3K-C3172TQ-10GT		X	X	X
Cisco Nexus 3172PQ switch	N3K-C3172PQ-10GE		X	X	X
Cisco Nexus 3132Q switch	N3K-C3132Q-40GE		X	X	X
Cisco Nexus 3016 switch	N3K-C3016Q-40GE	X	X	X	X
Cisco Nexus 3048 switch	N3K-C3048TP-1GE	X	X	X	X
Cisco Nexus 3064-TQ switch	N3K-C3064TQ-10GT	X	X	X	X
Cisco Nexus 3064-X switch	N3K-C3064PQ-10GX	X	X	X	X
Cisco Nexus 3064-E switch	N3K-C3064PQ-10GE	X	X	X	X
Cisco Nexus 3064 switch	N3K-C3064PQ	X	X	X	X
Cisco Nexus 3048 fan module with forward airflow (port-side exhaust)	N3K-C3048-FAN	X	X	X	X
Cisco Nexus 3048 fan module with reverse airflow (port-side intake)	N3K-C3048-FAN-B	X	X	X	X
Cisco Nexus 3064-T 500W forward airflow (port-side exhaust) AC power supply	NXA-PAC-500W	X	X	X	X
Cisco Nexus 3064-T 500W reverse airflow (port-side intake) AC power supply	NXA-PAC-500W-B	X	X	X	X
Cisco Nexus 3064-X forward airflow (port-side exhaust) AC power supply	N3K-C3064-X-FA-L3	X	X	X	X
Cisco Nexus 3064-X reversed airflow (port-side intake) AC power supply	N3K-C3064-X-BA-L3	X	X	X	X

Hardware	Part Number	Supported Cisco NX-OS Release 6.0(2)U1(3) 6.0(2)U1(2) 6.0(2)U1(1a) 6.0(2)U1(1)	Supported Cisco NX-OS Release 6.0(2)U2(5) 6.0(2)U2(4) 6.0(2)U2(3) 6.0(2)U2(2) 6.0(2)U2(1)	Supported Cisco NX-OS Release 6.0(2)U3(2) 6.0(2)U3(1)	Supported Cisco NX-OS Release 6.0(2)U4(1)
Cisco Nexus 3064-X forward airflow (port-side exhaust) DC power supply	N3K-C3064-X-FD-L3	X	X	X	X
Cisco Nexus 3064-X forward airflow (port-side intake) DC power supply	N3K-C3064-X-BD-L3	X	X	X	X
Cisco Nexus 3064 fan module with forward airflow (port-side exhaust); also used in the Cisco Nexus 3016	N3K-C3064-FAN	X	X	X	X
Cisco Nexus 3064 fan module with reverse airflow (port-side intake); also used in the Cisco Nexus 3016	N3K-C3064-FAN-B	X	X	X	X
Cisco Nexus 3000 power supply with forward airflow (port-side exhaust)	N2200-PAC-400W	X	X	X	X
Cisco Nexus 3000 power supply with reverse airflow (port-side intake)	N2200-PAC-400W-B	X	X	X	X
Cisco Nexus 2000 power supply with forward airflow (port-side exhaust)	N2200-PDC-400W	X	X	X	X
Cisco Nexus 2000 DC power supply with reverse airflow (port-side intake)	N3K-PDC-350W-B	X	X	X	X

Table 3 Hardware Supported by Cisco NX-OS Release 5.x Software

Hardware	Part Number	Supported Cisco NX-OS Release 5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2d) 5.0(3)U2(2c) 5.0(3)U2(2b)	5.0(3)U2(2a)	5.0(3)U2(2) 5.0(3)U2(1) 5.0(3)U1(2a) 5.0(3)U1(2)	5.0(3)U1(1d)
Cisco Nexus 3016 switch	N3K-C3016Q-40GE	X	X	X	X	X	—	—
Cisco Nexus 3048 switch	N3K-C3048TP-1GE	X	X	X	X	—	—	—
Cisco Nexus 3064-TQ switch	N3K-C3064TQ-10GT	X[1]	—	—	—	—	—	—

Table 3 Hardware Supported by Cisco NX-OS Release 5.x Software (continued)

Hardware	Part Number	Supported Cisco NX-OS Release						
		5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2d) 5.0(3)U2(2c) 5.0(3)U2(2b)	5.0(3)U2(2a)	5.0(3)U2(2) 5.0(3)U2(1) 5.0(3)U1(2a) 5.0(3)U1(2)	5.0(3)U1(1d)
Cisco Nexus 3064-X switch	N3K-C3064P10GX	X	X	X	—	—	—	—
Cisco Nexus 3064-E switch	N3K-C3064PQ-10GE	X	X	X	X	X	X	—
Cisco Nexus 3064 switch	N3K-C3064PQ	X	X	X	X	X	X	X
Cisco Nexus 3048 fan module with forward airflow (port-side exhaust)	N3K-C3048-FAN	X	X	X	X	—	—	—
Cisco Nexus 3048 fan module with reverse airflow (port-side intake)	N3K-C3048-FAN-B	X	X	X	X	—	—	—
Nexus 3064-T 500W forward airflow (port side exhaust) AC power supply	NXA-PAC-500W	X	X	—	—	—	—	—
Nexus 3064-T 500 W reverse airflow (port side intake) AC power supply	NXA-PAC-500W-B	X	X	—	—	—	—	—

Table 3 Hardware Supported by Cisco NX-OS Release 5.x Software (continued)

Hardware	Part Number	Supported Cisco NX-OS Release						
		5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2d) 5.0(3)U2(2c) 5.0(3)U2(2b)	5.0(3)U2(2a)	5.0(3)U2(2) 5.0(3)U2(1) 5.0(3)U1(2a) 5.0(3)U1(2)	5.0(3)U1(1d)
Cisco Nexus 3064-X forward airflow (port-side exhaust) AC power supply	N3K-C3064-X-FA-L3	X	X	X	—	—	—	—
Cisco Nexus 3064-X reversed airflow (port-side intake) AC power supply	N3K-C3064-X-BA-L3	X	X	X	—	—	—	—
Cisco Nexus 3064-X forward airflow (port-side exhaust) DC power supply	N3K-C3064-X-FD-L3	X	X	X	—	—	—	—
Cisco Nexus 3064-X forward airflow (port-side intake) DC power supply	N3K-C3064-X-BD-L3	X	X	X	—	—	—	—

Table 3 Hardware Supported by Cisco NX-OS Release 5.x Software (continued)

Hardware	Part Number	Supported Cisco NX-OS Release						
		5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2d) 5.0(3)U2(2c) 5.0(3)U2(2b)	5.0(3)U2(2a)	5.0(3)U2(2) 5.0(3)U2(1) 5.0(3)U1(2a) 5.0(3)U1(2)	5.0(3)U1(1d)
Cisco Nexus 3064 fan module with forward airflow (port-side exhaust); also used in the Cisco Nexus 3016	N3K-C3064-FAN	X	X	X	X	X	X	X
Cisco Nexus 3064 fan module with reverse airflow (port-side intake); also used in the Cisco Nexus 3016	N3K-C3064-FAN-B	X	X	X	X	X	X	X
Cisco Nexus 3000 power supply with forward airflow (port-side exhaust)	N2200-PAC-400W	X	X	X	X	X	X	X
Cisco Nexus 3000 power supply with reverse airflow (port-side intake)	N2200-PAC-400W-B	X	X	X	X	X	X	X

Table 3 Hardware Supported by Cisco NX-OS Release 5.x Software (continued)

Hardware	Part Number	Supported Cisco NX-OS Release						
		5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2d) 5.0(3)U2(2c) 5.0(3)U2(2b)	5.0(3)U2(2a)	5.0(3)U2(2) 5.0(3)U2(1) 5.0(3)U1(2a) 5.0(3)U1(2)	5.0(3)U1(1d)
Cisco Nexus 2000 power supply with forward airflow (port-side exhaust)	N2200-PDC-400W	X	X	X	X	X	X	X
Cisco Nexus 2000 DC power supply with reverse airflow (port-side intake)	N3K-PDC-350W-B	X	X	X	X	X	X	X

1. Recommended release for Cisco Nexus 3064-TQ switch is Cisco NX-OS Release 5.0(3)U5(1c) or later releases.

Table 4 Transceivers Supported by Cisco NX-OS Release 6.x Software

Transceivers[1]	Part Number	Supported Cisco NX-OS Release		
		6.0(2)U1(3) 6.0(2)U1(2) 6.0(2)U1(1a) 6.0(2)U1(1)	6.0(2)U2(5) 6.0(2)U2(4) 6.0(2)U2(3) 6.0(2)U2(2) 6.0(2)U2(1)	6.0(2)U4(1) 6.0(2)U3(2) 6.0(2)U3(1)
QSFP				
40GBASE-LR4 QSFP40G transceiver module (SMF)	QSFP-40G-LR4			X
40GBASE-CR4 QSFP+ direct-attach copper cable, 7 meters active	QSFP-H40G-ACU7M			X
40GBASE-CR4 QSFP+ direct-attach copper cable, 8 meters active	QSFP-H40G-ACU8M			X

Table 4 Transceivers Supported by Cisco NX-OS Release 6.x Software (continued)

Transceivers[1]	Part Number	Supported Cisco NX-OS Release		
		6.0(2)U1(3) 6.0(2)U1(2) 6.0(2)U1(1a) 6.0(2)U1(1)	6.0(2)U2(5) 6.0(2)U2(4) 6.0(2)U2(3) 6.0(2)U2(2) 6.0(2)U2(1)	6.0(2)U4(1) 6.0(2)U3(2) 6.0(2)U3(1)
40GBASE-CR4 QSFP+ direct-attach copper cable, 9 meters active	QSFP-H40G-ACU9M			X
40GBASE-CR4 QSFP+ direct-attach copper cable, 10 m active	QSFP-H40G-ACU10M			X
40G QSFP direct-attach Active Optical cable, 15 m	QSFP-H40G-AOC15M			X
QSFP to 4 x SFP 10Gbps active optical cable 15 m	QSFP-4X10G-AOC15M			X
QSFP 40G Bidirectional short-reach transceiver	QSFP-40G-SR-BD	X	X	X
QSFP 40G active optical cable 1 m	QSFP-H40G-AOC1M	X	X	X
QSFP 40G active optical cable 2 m	QSFP-H40G-AOC2M	X	X	X
QSFP 40G active optical cable 3 m	QSFP-H40G-AOC3M	X	X	X
QSFP 40G active optical cable 5 m	QSFP-H40G-AOC5M	X	X	X
QSFP 40G active optical cable 7 m	QSFP-H40G-AOC7M	X	X	X
QSFP 40G active optical cable 10 m	QSFP-H40G-AOC10M	X	X	X
QSFP to 4 x SFP 10Gbps active optical cable 1 m	QSFP-4X10G-AOC1M	X	X	X
QSFP to 4 x SFP 10Gbps active optical cable 2 m	QSFP-4X10G-AOC2M	X	X	X
QSFP to 4 x SFP 10Gbps active optical cable 3 m	QSFP-4X10G-AOC3M	X	X	X
QSFP to 4 x SFP 10Gbps active optical cable 5 m	QSFP-4X10G-AOC5M	X	X	X
QSFP to 4 x SFP 10Gbps active optical cable 7 m	QSFP-4X10G-AOC7M	X	X	X
QSFP to 4 x SFP 10Gbps active optical cable 10 m	QSFP-4X10G-AOC10M	X	X	X
Active copper splitter cable 7 m	QSFP-4x10G-AC7M[2]	X	X	X
Active copper splitter cable 10 m	QSFP-4x10G-AC10M[1]	X	X	X
Active copper QSFP transceiver module 7 m	QSFP-H40G-ACU7M[1]	X	X	X
Active copper QSFP transceiver module 10 m	QSFP-H40G-ACU10M[1]	X	X	X

Table 4 Transceivers Supported by Cisco NX-OS Release 6.x Software (continued)

Transceivers[1]	Part Number	Supported Cisco NX-OS Release 6.0(2)U1(3) 6.0(2)U1(2) 6.0(2)U1(1a) 6.0(2)U1(1)	 6.0(2)U2(5) 6.0(2)U2(4) 6.0(2)U2(3) 6.0(2)U2(2) 6.0(2)U2(1)	 6.0(2)U4(1) 6.0(2)U3(2) 6.0(2)U3(1)
40GBASE-CSR4 QSFP transceiver module with multifiber push-on (MPO) connector 300 m	QSFP-40G-CSR4[1]	X	X	X
40GBASE-CSR4 QSFP transceiver module with MPO connector 300 m (using fiber splitter cables)	QSFP-40G-CSR4[1]	X	X	X
40GBASE-SR4 QSFP transceiver module with MPO connector 100 m	QSFP-40G-SR4[1]	X	X	X
40GBASE-SR4 QSFP transceiver module with MPO connector 100 m (using fiber splitter cables)	QSFP-40G-SR4[1]	X	X	X
40GBASE-LR4 QSFP transceiver module with LC connector 10 km (using single mode fiber)	QSFP-40GE-LR4	X	X	X
QSFP to SFP/SFP+ adapter	CVR-QSFP-SFP10G	X	X	X
40GBASE-CR4 passive copper cable, 1 m	QSFP-H40G-CU1M	X	X	X
40GBASE-CR4 passive copper cable, 3 m	QSFP-H40G-CU3M	X	X	X
40GBASE-CR4 passive copper cable, 5 m	QSFP-H40G-CU5M	X	X	X
QSFP to 4xSFP10G passive copper splitter cable, 1 m	QSFP-4SFP10G-CU1M	X	X	X
QSFP to 4xSFP10G passive copper splitter cable, 3 m	QSFP-4SFP10G-CU3M	X	X	X
QSFP to 4xSFP10G passive copper splitter cable, 5 m	QSFP-4SFP10G-CU5M	X	X	X
Revision 2 copper splitter cables 3 m	QSFP-4SFP10G-CU3 (Rev. 2)	X	X	X
Revision 2 copper splitter cables 5 m	QSFP-4SFP10G-CU5 (Rev. 2)	X	X	X
10-Gigabit				
10 db attenuator	FA-920-073-12310			X
10GBASE-ZR SFP+ module (single-mode fiber [SMF])	SFP-10G-ZR			X
Cisco QSFP to SFP/SFP+ Adapter (QSA) module	CVR-QSFP-SFP10G			X

Table 4 Transceivers Supported by Cisco NX-OS Release 6.x Software (continued)

Transceivers[1]	Part Number	Supported Cisco NX-OS Release		
		6.0(2)U1(3) 6.0(2)U1(2) 6.0(2)U1(1a) 6.0(2)U1(1)	6.0(2)U2(5) 6.0(2)U2(4) 6.0(2)U2(3) 6.0(2)U2(2) 6.0(2)U2(1)	6.0(2)U4(1) 6.0(2)U3(2) 6.0(2)U3(1)
Cisco QSFP to SFP/SFP+ Adapter (QSA) module with 10GBASE-DWDM	QSA w/ DWDM			X
10GBASE-DWDM 1558.98 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-58.98			X
10GBASE-DWDM 1539.77 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-39.77			X
10GBASE-DWDM 1561.41 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-61.41			X
10GBASE-DWDM 1542.94 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-42.94			X
10GBASE-DWDM 1553.33 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-53.33			X
10GBASE-DWDM 1537.40 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-37.40			X
10GBASE-DWDM 1542.14 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-42.14			X
10GBASE-DWDM 1556.55 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-56.55			X
10GBASE-DWDM 1550.92 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-50.92			X
10GBASE-DWDM 1531.12 nm SFP+ (100-GHz ITU grid)	DWDM-SFP10G-31.12			X
10GBASE-DWDM long-range transceiver module 80 km with single mode duplex fiber	DWDM-SFP10G-C			X
10GBASE-DWDM long-range transceiver module 80 km with single mode duplex fiber	DWDM-SFP10G	X	X	X
10GBASE-SR SFP+ module (multimode fiber [MMF])	SFP-10G-SR	X	X	X
10GBASE-LR SFP+ module (single-mode fiber [SMF])	SFP-10G-LR	X	X	X
10GBASE-ER SFP+ module (single-mode fiber [SMF])	SFP-10G-ER	X	X	X
10GBASE-ZR SFP+ module (single-mode fiber [SMF])[3]	SFP-10G-ZR[2]	X	X	X
10GBASE-DWDM SFP+ module (single-mode fiber [SMF])[2]	10-2767-01[2]	X	X	X

Table 4 Transceivers Supported by Cisco NX-OS Release 6.x Software (continued)

Transceivers[1]	Part Number	Supported Cisco NX-OS Release		
		6.0(2)U1(3) 6.0(2)U1(2) 6.0(2)U1(1a) 6.0(2)U1(1)	6.0(2)U2(5) 6.0(2)U2(4) 6.0(2)U2(3) 6.0(2)U2(2) 6.0(2)U2(1)	6.0(2)U4(1) 6.0(2)U3(2) 6.0(2)U3(1)
Active Twinax cable assembly, 7 m	SFP-H10GB-ACU7M	X	X	X
Active Twinax cable assembly, 10 m	SFP-H10GB-ACU10M	X	X	X
10GBASE-CU SFP+ cable 1 m (Twinax cable)	SFP-H10GB-CU1M	X	X	X
10GBASE-CU SFP+ cable 1.5 m (Twinax cable)	SFP-H10GB-CU1-5M	X	X	X
10GBASE-CU SFP+ cable 2 m (Twinax cable)[3]	SFP-H10GB-CU2M[4]	X	X	X
10GBASE-CU SFP+ cable 3 m (Twinax cable)	SFP-H10GB-CU3M	X	X	X
10GBASE-CU SFP+ cable 5 m (Twinax cable)	SFP-H10GB-CU5M	X	X	X
10GBASE-CU SFP+ cable 2.5 m (Twinax cable)[3]	SFP-H10GB-CU2-5M[3]	X	X	X
Active optical cable 1 m	SFP-10G-AOC1M[4]	X	X	X
Active optical cable 2 m	SFP-10G-AOC2M	X	X	X
Active optical cable 3 m	SFP-10G-AOC3M[4]	X	X	X
Active optical cable 5 m	SFP-10G-AOC5M[4]	X	X	X
Active optical cable 7 m	SFP-10G-AOC7M[4]	X	X	X
Active optical cable 10 m	SFP-10G-AOC10M	X	X	X
1-Gigabit Ethernet				
Gigabit Ethernet SFP, LC connector SX transceiver (MMF)	GLC-SX-MMD[5]			X
Gigabit Ethernet SFP, LC connector LX/LH transceiver (SMF)	GLC-LH-SMD			X
Cisco QSFP to SFP/SFP+ Adapter (QSA) module with GLC-T	QSA w/ GLC-T			X
1000BASE-T SFP	GLC-TE			X
Cisco QSFP to SFP/SFP+ Adapter (QSA) module with GLC-TE	QSA w/ GLC-TE			X
Cisco QSFP to SFP/SFP+ Adapter (QSA) module with SFP-GE-T	QSA w/SFP-GE-T			X
1000Base-BX fiber transceiver	GLC-BX-D[4]	X	X	X
1000Base-BX fiber transceiver	GLC-BX-U[4]	X	X	X

Table 4 Transceivers Supported by Cisco NX-OS Release 6.x Software (continued)

Transceivers[1]	Part Number	Supported Cisco NX-OS Release		
		6.0(2)U1(3) 6.0(2)U1(2) 6.0(2)U1(1a) 6.0(2)U1(1)	6.0(2)U2(5) 6.0(2)U2(4) 6.0(2)U2(3) 6.0(2)U2(2) 6.0(2)U2(1)	6.0(2)U4(1) 6.0(2)U3(2) 6.0(2)U3(1)
1000BASE-EX fiber transceiver module, SMF	GLC-EX-SMD	X	X	X
Gigabit Ethernet SFP, LC connector LX/LH transceiver (SMF)	GLC-LH-SM[4]	X	X	X
1000BASE-LX/LH SFP transceiver module for MMF and SMF	GLC-LH-SMD[4]	X	X	X
Gigabit Ethernet SFP, LC connector SX transceiver (MMF)	GLC-SX-MM[3]	X	X	X
Gigabit Ethernet SFP, LC connector SX transceiver (MMF)	GLC-SX-MMD[5]	X	X	X
1000BASE-T SFP[6]	GLC-T[4]	X	X	X
1000BASE-ZX fiber transceiver module, SMF, 1550 nm	GLC-ZX-SMD	X	X	X
1000BASE-T SFP transceiver module with extended operating temperature range	SFP-GE-T[4]	X	X	X
100-Mbps Ethernet				
100BASE-FX SFP module for Gigabit Ethernet ports GLC-GE-100FX[7]	10-2019-02[5] GLC-GE-100FX	X	X	X

1. OIR is supported for all optical modules and transceivers in Cisco NX-OS Release 6.02 and later releases.
2. Supported on the Cisco Nexus 3016, Cisco Nexus 3064-X, Cisco Nexus 3064-TQ, Cisco Nexus 3064, Cisco Nexus 3064-E, and all Cisco Nexus 3100 Series switches.
3. Supported on the Cisco Nexus 3064-E and Cisco Nexus 3064-X switches.
4. Supported on the Cisco Nexus 3048, Cisco Nexus 3064-X, Cisco Nexus 3064, and Cisco Nexus 3064-E switches.
5. GLC-SX-MMD is supported on all Cisco Nexus 3000 Series Switches except for the Cisco Nexus 3064-T. Please refer to the comparability matrix for all the supported platforms.
6. Supported on the Cisco Nexus 3048, Cisco Nexus 3064-E, and Cisco Nexus 3064-X switches. Not supported on Cisco Nexus 3132Q-X
7. Supported on the Cisco Nexus 3064, Cisco Nexus 3064-E, and Cisco Nexus 3064-X switches. For the GLC-GE-100FX, only part number 10-2019-02 is supported.

Note The Cisco Nexus 3000 supports 1,000 and 10,000 speeds while using SFP+ with Cisco QSA [CVR-QSFP-SFP10G] (and a maximum of 6 QSAs). The 100 speed is not supported on the SFP+ along with QSA, but using any speed 100 is supported on the SFP+.

Table 5 Transceivers Supported by Cisco NX-OS Release 5.x Software

Transceivers	Part Number	Supported Cisco NX-OS Release						
		5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2c) 5.0(3)U2(2b) 5.0(3)U2(2a) 5.0(3)U2(2)	5.0(3) U2(1)	5.0(3)U1(2) 5.0(3)U1(2a)	5.0(3)U1(1a) 5.0(3)U1(1b) 5.0(3)U1(1d)
QSFP								
Active copper splitter cable 7 m	QSFP-4x10G-AC7M[1]	X	—	—	—	—	—	—
Active copper splitter cable 10 m	QSFP-4x10G-AC10M[1]	X	—	—	—	—	—	—
Active copper QSFP transceiver module 7 m	QSFP-H40G-ACU7M[1]	X	—	—	—	—	—	—
Active copper QSFP transceiver module 10 m	QSFP-H40G-ACU10M[1]	X	—	—	—	—	—	—
40GBASE-CSR4 QSFP transceiver module with MPO connector 300 m	QSFP-40G-CSR4[1]	X	X	—	—	—	—	—
40GBASE-CSR4 QSFP transceiver module with MPO connector 300 m (using fiber splitter cables)	QSFP-40G-CSR4[1]	X	X	—	—	—	—	—
40GBASE-SR4 QSFP transceiver module with MPO connector 100 m	QSFP-40G-SR4[1]	X	X	X	X	X	X	X
40GBASE-SR4 QSFP transceiver module with MPO connector 100 m (using fiber splitter cables)	QSFP-40G-SR4[1]	X	X	X	X	X	X	X
40GBASE-CR4 passive copper cable, 1 m	QSFP-H40G-CU1M	X	X	X	X	X	X	X
40GBASE-CR4 passive copper cable, 3 m	QSFP-H40G-CU3M	X	X	X	X	X	X	X

Table 5 Transceivers Supported by Cisco NX-OS Release 5.x Software (continued)

Transceivers	Part Number	Supported Cisco NX-OS Release						
		5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2c) 5.0(3)U2(2b) 5.0(3)U2(2a) 5.0(3)U2(2)	5.0(3) U2(1)	5.0(3)U1(2) 5.0(3)U1(2a)	5.0(3)U1(1a) 5.0(3)U1(1b) 5.0(3)U1(1d)
40GBASE-CR4 passive copper cable, 5 m	QSFP-H40G-CU5M	X	X	X	X	X	X	X
QSFP to 4xSFP10G passive copper splitter cable, 1 m	QSFP-4SFP10G-CU1M	X	X	X	X	X	X	X
QSFP to 4xSFP10G passive copper splitter cable, 3 m	QSFP-4SFP10G-CU3M	X	X	X	X	X	X	X
QSFP to 4xSFP10G passive copper splitter cable, 5 m	QSFP-4SFP10G-CU5M	X	X	X	X	X	X	X
Revision 2 copper splitter cables 3 m	QSFP-4SFP10G-CU3 (Rev. 2)	X	—	—	—	—	—	—
Revision 2 copper splitter cables 5 m	QSFP-4SFP10G-CU5 (Rev. 2)	X	—	—	—	—	—	—
10-Gigabit								
10GBASE-SR SFP+ module (multimode fiber [MMF])	SFP-10G-SR	X	X	X	X	X	X	X
10GBASE-LR SFP+ module (single-mode fiber [SMF])	SFP-10G-LR	X	X	X	X	X	X	X
10GBASE-ER SFP+ module (single-mode fiber [SMF])	SFP-10G-ER	X	X	X	X	X	X	X
10GBASE-ZR SFP+ module (single-mode fiber [SMF])[2]	SFP-10G-ZR[2]	X	X	X	—	—	—	—

Table 5 Transceivers Supported by Cisco NX-OS Release 5.x Software (continued)

Transceivers	Part Number	Supported Cisco NX-OS Release						
		5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2c) 5.0(3)U2(2b) 5.0(3)U2(2a) 5.0(3)U2(2)	5.0(3) U2(1)	5.0(3)U1(2) 5.0(3)U1(2a)	5.0(3)U1(1a) 5.0(3)U1(1b) 5.0(3)U1(1d)
10GBASE-DWDM SFP+ module (single-mode fiber [SMF])[2]	10-2767-01[2]	X	X	X	—	—	—	—
10GBASE-CU SFP+ cable 1 m (Twinax cable)	SFP-H10GB-CU1M	X	X	X	X	X	X	X
10GBASE-CU SFP+ cable 3 m (Twinax cable)	SFP-H10GB-CU3M	X	X	X	X	X	X	X
10GBASE-CU SFP+ cable 5 m (Twinax cable)	SFP-H10GB-CU5M	X	X	X	X	X	X	X
10GBASE-CU SFP+ cable 2 m (Twinax cable)[3]	SFP-H10GB-CU2M[3]	X	X	—	—	—	—	—
10GBASE-CU SFP+ cable 2.5 m (Twinax cable)[3]	SFP-H10GB-CU2-5M[3]	X	X	—	—	—	—	—
Active optical cable 1 m	SFP-10G-AOC1M[4]	X	—	—	—	—	—	—
Active optical cable 3 m	SFP-10G-AOC3M[4]	X	—	—	—	—	—	—
Active optical cable 5 m	SFP-10G-AOC5M[4]	X	—	—	—	—	—	—
Active optical cable 7 m	SFP-10G-AOC7M[4]	X	—	—	—	—	—	—
1-Gigabit Ethernet								
1000BASE-T SFP[4]	GLC-T[4]	X	X	X	X	X	X	X
Gigabit Ethernet SFP, LC connector SX transceiver (MMF)	GLC-SX-MM[3]	X	X	X	X	X	X	X

Table 5 Transceivers Supported by Cisco NX-OS Release 5.x Software (continued)

Transceivers	Part Number	Supported Cisco NX-OS Release						
		5.0(3)U5(1f) 5.0(3)U5(1e) 5.0(3)U5(1d) 5.0(3)U5(1c) 5.0(3)U5(1b) 5.0(3)U5(1a) 5.0(3)U5(1)	5.0(3)U4(1)	5.0(3)U3(2b) 5.0(3)U3(2a) 5.0(3)U3(2) 5.0(3)U3(1)	5.0(3)U2(2c) 5.0(3)U2(2b) 5.0(3)U2(2a) 5.0(3)U2(2)	5.0(3) U2(1)	5.0(3)U1(2) 5.0(3)U1(2a)	5.0(3)U1(1a) 5.0(3)U1(1b) 5.0(3)U1(1d)
Gigabit Ethernet SFP, LC connector SX transceiver (MMF)	GLC-SX-MMD[5]	X	X	—	—	—	—	—
Gigabit Ethernet SFP, LC connector LX/LH transceiver (SMF)	GLC-LH-SM[4]	X	X	X	X	X	X	X
1000BASE-LX/LH SFP transceiver module for MMF and SMF	GLC-LH-SMD[4]	X	—	—	—	—	—	—
1000Base-BX fiber transceiver	GLC-BX-U[4]	X	—	—	—	—	—	—
1000Base-BX fiber transceiver	GLC-BX-D[4]	X	—	—	—	—	—	—
1000BASE-T SFP transceiver module with extended operating temperature range	SFP-GE-T[4]	X	—	—	—	—	—	—
100-Mbps Ethernet								
100BASE-FX SFP module for Gigabit Ethernet ports GLC-GE-100FX[5]	10-2019-02[5] GLC-GE-100FX	X	X	X	X	X	X	X

1. Supported on the Cisco Nexus 3016, Cisco Nexus 3064-X, Cisco Nexus 3064-TQ, Cisco Nexus 3064, and Cisco Nexus 3064-E switches.
2. Supported on the Cisco Nexus 3064-E and Cisco Nexus 3064-X switches.
3. Supported on the Cisco Nexus 3048, Cisco Nexus 3064-X, Cisco Nexus 3064, and Cisco Nexus 3064-E switches.
4. Supported on the Cisco Nexus 3048, Cisco Nexus 3064-E, and Cisco Nexus 3064-X switches.
5. Supported on the Cisco Nexus 3064, Cisco Nexus 3064-E, and Cisco Nexus 3064-X switches. For the GLC-GE-100FX, only part number 10-2019-02 is supported.

Twinax Cable Support on Cisco Nexus 3000 Switches

Starting with Cisco Release NX-OS 5.0(3)U1(1), the following algorithm is used to detect copper SFP+ twinax, QSFP+ twinax, and QSFP+ splitter cables on Cisco Nexus 3000 Series switches.

If the attached interconnect (transceiver) is a copper SFP+ twinax or QSFP+ twinax cable:

- Verify the transceiver SPROM to match the Cisco magic code.
- If the check succeeds, bring up the interface. Otherwise, print the following warning message appears stating that a non-Cisco transceiver is attached and that you should try to bring up the port.

```
2009 Oct 9 01:46:42 switch %ETHPORT-3-IF_NON-CISCO_TRANSCEIVER: Non-Cisco transceiver
on interface Ethernet1/18 is detected.
```

If the attached transceiver is a QSFP+ splitter cable, then no special check is performed. The Cisco NX-OS software tries to bring up the port.

The following disclaimer applies to non-Cisco manufactured and non-Cisco certified QSFP copper splitter cables:

If a customer has a valid support contract for Cisco Nexus switches, Cisco TAC will support twinax cables that are a part of the compatibility matrix for the respective switches. However, if the twinax cables are not purchased through Cisco, a customer cannot return these cables through an RMA to Cisco for replacement.

If a twinax cable that is not part of the compatibility matrix is connected into a system, Cisco TAC will still debug the problem, provided the customer has a valid support contract on the switches. However TAC may ask the customer to replace the cables with Cisco qualified cables if there is a situation that points to the cables possibly being faulty or direct the customer to the cable provider for support. Cisco TAC cannot issue an RMA against uncertified cables for replacement.

Cisco QSFP 40-Gbps Bidirectional Short-Reach Transceiver

The Cisco QSFP 40-Gbps Bidirectional (BiDi) transceiver is a short-reach pluggable optical transceiver with a duplex LC connector for 40-GbE short-reach data communications and interconnect applications by using multimode fiber (MMF). The Cisco QSFP 40-Gbps BiDi transceiver offers a solution that uses existing duplex MMF infrastructure for 40-GbE connectivity. With the Cisco QSFP 40-Gbps BiDi transceiver, customers can upgrade their network from 10-GbE to 40-GbE without incurring any fiber infrastructure upgrade cost. The Cisco QSFP 40-Gbps BiDi transceiver can enable 40-GbE connectivity in a range of up to 100 meters over OM3 fiber, which meets most data center reach requirements. It complies with the Multiple Source Agreement (MSA) QSFP specification and enables customers to use it on all Cisco QSFP 40-Gbps platforms and achieve high density in a 40-GbE network. It can be used in data centers, high-performance computing (HPC) networks, enterprise and distribution layers, and service provider transport applications.

New and Changed Features

This section describes the new features introduced in Cisco NX-OS Release 6.0(2)U4(1). This section includes the following topics:

- New Supported Hardware, page 19
- New Software Features, page 20

New Supported Hardware

Cisco NX-OS Release 6.0(2)U4(1) supports the new hardware listed in this section.

Cisco Nexus 3132Q-X Switch

The Cisco Nexus 3132Q-X switch has the following hardware specifications:

- 32 fixed 40 Gigabit Ethernet QSFP+ ports (each QSFP+ port can handle four 10 Gigabit Ethernet connections)
- One port LED for each QSFP port
- One QSFP port LED lane selector switch
- Dual redundant power supplies
- Redundant (3+1) fans
- One 10/100/1000-Mbps management port
- One RS-232 serial console port
- One USB port
- Locator LED

New Software Features

All Cisco Nexus 3000 Series switches are supported by Cisco NX-OS Release 6.0(2)U4(1). Cisco NX-OS interoperates with any networking operating system, including Cisco IOS software, that conforms to the networking standards listed in the product data sheet.

Cisco NX-OS Release 6.0(2)U4(1) includes the following new software features:

BFD with IPv6

Cisco NX-OS Release 6.0(2)U4(1) introduces support for BFD with IPv6 addresses.

RFC 5549

With the introduction of RFC 5549 in Cisco NX-OS Release 6.0(2)U4(1), you can configure an IPv4 address family for a neighbor with an IPv6 address.

Support for NX-API

On Cisco Nexus devices, command-line interfaces (CLIs) are run only on the device. NX-API improves the accessibility of these CLIs by making them available outside of the switch by using HTTP/HTTPS. You can use this extension to the existing Cisco Nexus CLI system on the Cisco Nexus 3000 Series devices. NX-API supports show commands, configurations, and Linux Bash.

NX-API supports JSON-RPC.

Support for XML and JSON Output

Cisco NX-OS Release 6.0(2)U4(1) introduces support for XML and JSON output for several commands. See the *Cisco Nexus 3000 Series NX-OS Programmability Guide* for a complete list of supported commands.

QoS Enhancement

Cisco NX-OS Release 6.0(2)U4(1) introduces the **show queuing** command to display the queuing information configured for all interfaces. It includes shaper configuration information for each class, the control queue Tx and drop statistics for each port, and WRED drop packet counts. This release also supports the output of this command in XML.

Python Enhancements

Starting with Cisco NX-OS Release 6.0(2)U4(1), Cisco Nexus 3000 Series switches support Python version 2.7.5

This release also introduces protection for Cisco NX-OS resources through the Cisco NX-OS Sandbox layer of software and through the CLI role-based access control (RBAC).

DHCP Client Discovery with IPv6

You can now configure the IPv4 or IPv6 address of a DHCP client on a management interface, or a physical Ethernet interface.

Statistics Collection on Interfaces

You can use the **load-interval** command to obtain bit-rate and packet-rate statistics for three different durations.

You can set the statistics collection intervals on the following types of interfaces:

- Ethernet interfaces
- Port-channel interfaces
- VLAN network interfaces

This command sets the sampling interval for such statistics as packet rate and bit rate on the specified interface.

You can use the **show interface brief** command to display a brief summary of the interface configuration information.

BGP Enhancements

The following enhancements were made to BGP:

- Added the ability to advertise newly learned BGP routes (IPv4 and IPv6) only after these routes are confirmed by the Forwarding Information Base (FIB) and programmed in the hardware.
- Added the ability to configure the interval after which a BGP connection can reconnect.
- Added the ability to delay route deletion from the hardware.
- Added the ability to configure BGP prefix peering wait timers.
- Added the ability to configure BGP to shrink ECMP groups in an accelerated way when a session goes down.
- Added the ability to configure a minimum route advertisement interval (MRAI) between the sending of BGP routing updates.
- Added a command to treat all paths as ECMP during best path calculation.

- Added a command to exempt a BGP neighbor from a possible shutdown due to a low memory condition.
- Added the ability to configure the site of origin BGP extended community value.
- Modified the **soft-reconfiguration inbound** command, which was used to configure a soft reconfiguration for inbound policy changes. The modified command is **soft-reconfiguration inbound always**. The **always** option was added in this release and must be used for complete soft-reconfiguration inbound functionality.

Copy Command Enhancements

Cisco NX-OS Release 6.0(2)U4(1) supports the following **copy** command enhancements:

- While copying a file to an HTTP server, you can use any valid character, such as ~, in the directory or filename. You can also access public_html directories.
- You can configure a non-default port when copying a file to an HTTP server.
- You can directly copy configuration files, through FTP or SCP, to the startup configuration without reloading the switch.

LLDP TLV Enhancement

Cisco NX-OS Release 6.0(2)U4(1) introduces support for two TLVs, IPv4 and IPv6.

You can explicitly specify the management IPv4 or IPv6 address to be sent in the LLDP management TLV. This address can be one of the following:

- IPv4 or IPv6 address of a port
- IPv4 or IPv6 address of a VLAN (SVI)

MAC-Embedded IPv6 Address

Beginning with Cisco NX-OS Release 6.0(2)U4(1), BGP allows an IPv4 prefix to be carried over an IPv6 next-hop. The IPv6 next-hop is leveraged to remove neighbor discovery (ND) related traffic from the network. To do this, the MAC address is embedded in the IPv6 address. Such an address is called a MAC Embedded IPv6 (MEv6) address.

Fast Reboot Enhancements

Cisco NX-OS Release 6.0(2)U4(1) allows you to enable BGP graceful restarts (GR) with fast reboot. You can now use the **fast-reload trigger-gr** command to enable BGP GR. Use this command only when all BGP peers are GR-capable.

This release also supports the use of non-interruptive fast reboot. You can now use the **fast-reload non-interruptive** command to run fast-reload without any prompts.

POAP Enhancement

Beginning with Cisco NX-OS Release 6.0(2)U4(1), you can bypass password and basic POAP configuration by using the **skip** option at the POAP prompt.

When you use the **skip** option, no password will be configured for the admin user. The **copy running-config startup-config** command will be blocked until a valid password is set for the admin user.

Ethanalyzer Enhancement

You can now filter out the IPv6 packets that are captured by using the **ethanalyzer local interface inbound-low capture-filter "ip6"** command.

Configuration Synchronization

The configuration synchronization (config-sync) feature allows you to configure one switch profile and have the configuration be automatically synchronized to the peer switch.

Support for In-band or Out-band Addresses as Source IP Address

You can configure the source interface to be used with the following:

- Copy
- TACACS
- NTP
- Logging
- ICMP
- Ping
- Traceroute
- DNS
- SNMP
- SSH
- Telnet

The source interface can be:

- Ethernet
- Loopback
- Management
- Port-channel
- VLAN

Bash Support

In addition to the NX-OS CLI, Cisco Nexus 3000 Series switches support access to the Bourne-Again SHell (Bash). Bash interprets commands that you enter or commands that are read from a shell script. Using Bash enables access to the underlying Linux system on the switch and to manage the system.

Cisco Plug-in for OpenFlow Release 1.1.5

Cisco NX-OS Release 6.0(2)U4(1) supports Cisco Plug-in Version 1.1.5 for OpenFlow. Cisco Plug-in for OpenFlow creates TCP/IP connections to controllers based on OpenFlow Switch Specification Version 1.0.1 (Wire Protocol 0x01) and OpenFlow Switch Specification Version 1.3.0 (Wire Protocol 0x04).

Cisco Plug-in for OpenFlow resides on the switch and the controllers reside on a server, external to the switch. Flow management and any network management are either part of the controller or accomplished through the controller. Cisco Plug-in for OpenFlow maintains databases for configurations on the logical switch, OpenFlow-enabled interfaces, and flows. The interface database contains the list of OpenFlow-enabled interfaces on the logical switch, and the flow database contains the list of flows on the logical switch as well as the interface programmed to forward traffic.

This release includes all the necessary infrastructure to support the OpenFlow Switch Specification Version 1.3.0. This release also includes the following enhancements:

- Support for the following command:

  protocol-version *version-info*

  This command configures the protocol version. The supported values for *version-info* are:

  - **1.0**—Configures device to connect to 1.0 controllers only
  - **1.3**—Configures device to connect to 1.3 controllers only
  - **negotiate**—Negotiates the protocol version with the controller. The device uses 1.3 for negotiation.

  The default value is **negotiate**.
- MAC source address and MAC destination address are match criteria for the Layer 3 ACL forwarding table.
- A new double-wide TCAM carving option called **ifacl double-wide** is added to support a 12-tuple match.
- Ethertype is now an optional field with additional match fields of source and destination MAC for Pipeline 201 and only source MAC for Pipeline 202. You can now use the Ethertype field as a wildcard match criteria when the size of the TCAM is configured for double wide interface ACLs.
- All unmatched packets are punted to the controller by default when TCAM carving is set to **ifacl double-wide**.

One Platform Kit (onePK)

Cisco NX-OS Release 6.0(2)U4(1) does not support onePK.

Upgrade and Downgrade Guidelines

Ensure that you use the **install all** command to upgrade the switch software from one Cisco NX-OS release to another.

Upgrade Path to Release 6.0(2)U4(1)

Cisco Nexus 3000 Series switches that use software versions older than Cisco NX-OS Release 5.0(3)U5(1) need to be updated to Cisco NX-OS Release 5.0(3)U5(1) before they are upgraded to Cisco NX-OS Release 6.0(2).

Cisco NX-OS Release 5.0(3)U3(1) does not support a software upgrade from Cisco NX-OS Release 5.0(3)U2(2c). If you want to upgrade through this path, see CSCty75328 for details about how to work around this issue.

Note It is recommended that you upgrade to Cisco NX-OS Release 6.0(2)U4(1) by using Cisco NX-OS install procedures.

In Cisco NX-OS Release 5.0(3)U3(1), support for IPv6 has been added in Control Plane Policing (CoPP). To enable redirection of IPv6 control packets to the CPU, you must configure IPv6 CoPP on the system. Entering the **write erase** command on a device that runs Release 5.0(3)U3(1) automatically applies CoPP on the device and ensures that all IPv4 and IPv6-related CoPP configuration is set up correctly.

If you upgrade from a Cisco NX-OS release that does not support the CoPP feature to a release that does support the CoPP feature, you must run the setup utility after the upgrade to enable CoPP on the device.

If you upgrade from Cisco NX-OS Release 5.0(3)U2(2), which supports the CoPP feature, to Cisco NX-OS Release 5.0(3)U3(1), which adds CoPP classes for IPv6 support, you must run the setup script to enable the IPv6 CoPP feature on the device.

In Cisco NX-OS Release 6.0(2)U2(2), the default interface name in LLDP MIB is in short form. To make it long form, you must set **lldp portid-subtype** to 1. In Cisco NX-OS Release 6.0(2)U2(3), this behavior was reversed. The default interface name in LLDP MIB is now in long form. To make it short form, you must set **lldp portid-subtype** to 0.

If you have set **lldp port-subtype** to 1 and you are upgrading to Cisco NX-OS Release 6.0(2)U2(4), ensure that you set **lldp port-subtype** to 0.

Limitations

The following are the known limitations for Cisco NX-OS Release 6.0(2)U4(1):

- While installing the NXAPI https certificate that is present in the device, the following error message can appear if the user does not have the permission to install this certificate (See CSCup72219):

```
Certificate file read error.Please re-check permissions.
```

- After configuring the NXAPI feature, the default http port (port 80) is still in the listening state even after we run the **no nxapi http** command. This results in the sandbox becoming accessible. Although the sandbox becomes accessible, HTTP requests from the sandbox to the device do not go through. Thus, the functionality is not affected. (See CSCup77051).
- Chunking is enabled while displaying XML output for any CLI, and html tags (& lt; and & gt;) are displayed instead of < and > both on the sandbox and while running the Python script (See CSCup84801).

This is expected behavior. Each chunk should be in XML format for you to parse it and extract everything inside the <body> tag. This is done so that it can be later concatenated with similar output from all the chunks of the CLI XML output. After all the chunks are concatenated to get the complete XML output for the CLI, this complete XML output can be parsed for any parameter.

The following workaround is recommended to address this issue:

- Concatenate the <body> outputs from each chunk
- Replace all the html tags (& lt; and & gt;) with < and >
- Parse for any XML tag needed

- If you use the **write erase** command, you cannot view the output for the **show startup** *feature* command. To view the startup configuration, you must then use the **show startup-config** command. This limitation will remain until you run the **copy running-config startup-config** command. After that, the **show startup-config** *feature* command will display the feature-only configuration output as expected (See CSCuq15638).
- A Python traceback is seen while running the **show xml** command by using the Python shell. The exception type is httplib.IncompleteRead. This happens when you use Python scripts to leverage the NXAPI for retrieving switch data through XML or JSON. You should handle the exceptions in your Python scripts (See CSCuq19257).
- While upgrading to a new release, when you create a checkpoint without running the **setup** script, the checkpoint file does not contain the **copp-s-mpls** class. After you run the **write erase** command and reload the switch, the **copp-s-mpls** class is created when the default configuration is applied. When a rollback is done to this checkpoint file, it detects a change in the CoPP policy and tries to delete all class-maps. Because you cannot delete static class-maps, this operation fails and, in turn, the rollback also fails.

  This can also happen if you create a checkpoint, then create a new user-defined class and insert the new class before any other existing class (See CSCup56505).

  The following workarounds are recommended to address this issue:

  - Run **setup** after upgrading to a new release.
  - Always insert the new classes at the end before a rollback.
- After an interface is shut down and restarted, and after the device is reloaded, the following are observed (See CSCuh69660):

  - Any trunk port in the VLAN is treated as an IGMP snooping Active Port.
  - Access ports in the VLAN are not treated as IGMP snooping Active ports.
  - The FWM multicast flood-list for VLAN contains all trunk ports and mrouter ports.

  The following workarounds are recommended to address this issue:

  - Use the **show ip igmp snooping vlan** *x* command to see the Active Ports.
  - Use the **show platform fwm info vlan** *x* command to see the flood-list.
- When both the **ip icmp-errors source** and **ip source** *intf* **icmp error** commands are configured, then the command that is configured last takes effect.

  Thereafter, if the last configured command is removed, the switch does not get configured with the command that was configured first.
- Processes with a bigger memory footprint crash, cores will be split into multiple files. For example:

  1405964207_0x101_fwm_log.3679.tar.gzaa

  1405964207_0x101_fwm_log.3679.tar.gzab

1405964207_0x101_fwm_log.3679.tar.gzac

As a workaround, the following UNIX command combines the files into a single file:

cat 1405964207_0x101_fwm_log.3679.tar.gz* > 1405964207_0x101_fwm_log.3679.tar.gz

Subsequently, .**tar.gz** can be used as a normal core tar ball file.

- Link Level Flow Control (LLFC) is not supported on Cisco Nexus 3000 series and Cisco Nexus 3100 series switches.

Caveats

Open and resolved caveat record numbers are provided with links to the Bug Search page where you can find details about each caveat.

This section includes the following topics:

Resolved Caveats in Cisco NX-OS Release 6.0(2)U4(1)

Table 6 lists descriptions of resolved caveats in Cisco NX-OS Release 6.0(2)U4(1). The record ID links to the Cisco Bug Search page where you can find details about the caveat.

Table 6 Cisco NX-OS Release 6.0(2)U4(1) —Resolved Caveats

Record Number	Resolved Caveat Headline
CSCun84984	Cisco Nexus 3172TQ: After access switch reload, VPCs take a long time to stabilize.

Open Caveats in Cisco NX-OS Release 6.0(2)U4(1)

Table 7 lists descriptions of open caveats in Cisco NX-OS Release 6.0(2)U4(1). The record ID links to the Cisco Bug Search page where you can find details about the caveat.

Table 7 Cisco NX-OS Release 6.0(2)U4(1) —Open Caveats

Record Number	Open Caveat Headline
CSCuq01107	Traffic flooded when VPC Po is down with a static MAC entry configured for it.
CSCuq08099	Cisco NX-OS Release 6.0(2)U4(1): List of non-supported commands may show improper XML or JSON output
CSCuq47293	IPv6 link-local not advertised in CDP by using the **ipv6 add use-link**.
CSCuq73255	IPv6 route incorrect programming on add/remove next-hop from iBGP session.
CSCuq74050	100M SFP-FX CISCO-OPNEXT link flaps on N3K-C3132Q-40GX.
CSCuq76001	Login fails with the **skip** option in POAP in a particular scenario with invalid password.
CSCuq89687	40G Spirent test center connected port sometimes goes to linkFlapErrDisabled.

Known Behaviors in Cisco NX-OS Release 6.0(2)U4(1)

Large core files are split into 3 or more files. For example:

- 1405964207_0x101_fwm_log.3679.tar.gzaa
- 1405964207_0x101_fwm_log.3679.tar.gzab
- 1405964207_0x101_fwm_log.3679.tar.gzac

To decode the multiple core files, first club the files to a single file as demonstrated below:

$ cat 1405964207_0x101_fwm_log.3679.tar.gz* > 1405964207_0x101_fwm_log.3679.tar.gz

MIB Support

The Cisco Management Information Base (MIB) list includes Cisco proprietary MIBs and many other Internet Engineering Task Force (IETF) standard MIBs. These standard MIBs are defined in Requests for Comments (RFCs). To find specific MIB information, you must examine the Cisco proprietary MIB structure and related IETF-standard MIBs supported by the Cisco Nexus 3000 Series switch. The MIB Support List is available at the following FTP sites:

ftp://ftp.cisco.com/pub/mibs/supportlists/nexus3000/Nexus3000MIBSupportList.html

Related Documentation

Documentation for the Cisco Nexus 3000 Series Switch is available at the following URL:

http://www.cisco.com/en/US/products/ps11541/tsd_products_support_series_home.html

The documentation set is divided into the following categories:

Release Notes

The release notes are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/prod_release_notes_list.html

Installation and Upgrade Guides

The installation and upgrade guides are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/prod_installation_guides_list.html

Command References

The command references are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/prod_command_reference_list.html

Technical References

The technical references are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/prod_technical_reference_list.html

Configuration Guides

The configuration guides are available at the following URL:

http://www.cisco.com/en/US/products/ps11541/products_installation_and_configuration_guides_list.html

Error and System Messages

The system message reference guide is available at the following URL:

http://www.cisco.com/en/US/products/ps11541/products_system_message_guides_list.html

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