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Cisco Nexus 3000 Series NX-OS Release Notes, Release 5.0(3)U1(1a)

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This document describes the features, caveats, and limitations for Cisco Nexus 3000 Series switches. Use this document in combination with documents listed in the “[Obtaining Documentation and Submitting a Service Request](#)” section on page 12.



Note

[Table 1-1](#) shows the online change history for this document.

Table 1-1 *Online History Change*

Revision	Date	Description
A0	April 22, 2011	Created NX-OS Release 5.0(3)U1(1a) release notes. Added CSCto50828 to Resolved Caveats section.
B0	April 25, 2011	Added CSCto90147 to Open Caveats section.
C0	November 28, 2013	Updated resolved caveat CSCuh79034.

Contents

This document includes the following sections:

- [Introduction, page 2](#)
- [System Requirements, page 2](#)
- [New and Changed Features, page 4](#)
- [Limitations, page 9](#)



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Introduction

The Cisco NX-OS software is a data center-class operating system built with modularity, resiliency, and serviceability at its foundation. Based on the industry-proven Cisco MDS 9000 SAN-OS software, Cisco NX-OS helps ensure continuous availability and sets the standard for mission-critical data center environments. The highly modular design of Cisco NX-OS makes zero-effect operations a reality and enables exceptional operational flexibility. Cisco NX-OS software offers the following benefits:

- Cisco NX-OS runs on all Cisco data center switch platforms: Cisco Nexus 7000, 5000, 4000, 2000, and 1000V Series.
- Cisco NX-OS interoperates with Cisco products running any variant of Cisco IOS software and also with any networking operating system (OS) 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 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 3064PQ switch is a high-performance, high-density, ultra-low-latency Ethernet switch that is part of the new Cisco Nexus 3000 Series Switches. This compact one-rack-unit (1 RU) form factor 1- and 10-Gigabit Ethernet switch provides line-rate Layer 2 and 3 switching. The switch runs the industry-leading Cisco NX-OS Software operating system. The Cisco Nexus 3064PQ is well suited for financial co-location deployments that require support for robust unicast and multicast routing protocol features at ultra-low latencies.

For information about the new Cisco Nexus 3064PQ switch, see the [“New Hardware Features” section on page 4](#). For information about the Cisco Nexus 3000 Series, see the *Cisco Nexus 3000 Series Hardware Installation Guide*.

System Requirements

This section includes the following topics:

- [Memory Requirements, page 3](#)
- [Hardware Supported, page 3](#)

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Memory Requirements

The Cisco NX-OS Release 5.0(3)U1(1a) software requires 135MB of flash memory.

Hardware Supported

Cisco NX-OS Release 5.0(3)U1(1a) 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 1-2 shows the hardware supported by Cisco NX-OS Release 5.0(3)U1(1a) software.

Table 1-2 Hardware Supported by Cisco NX-OS Release 5.0(3)U1(1a) Software

Hardware	Part Number	Supported Release
		5.0(3)U1(1a)
Cisco Nexus 3000 Series		
Cisco Nexus 3064PQ switch	N3K-C3064PQ	X
Cisco Nexus 3064PQ fan module, front-to-back airflow	N3K-C3064-FAN	X
Cisco Nexus 3000 power supply, front-to-back airflow	N2200-PAC-400W	X
Transceivers		
QSFP		
QSFP to 4xSFP10G passive copper splitter cable, 5 m	QSFP-4SFP10G-CU5M	X
10-Gigabit		
10GBASE-SR SFP+ module (multimode fiber [MMF])	SFP-10G-SR	X
10GBASE-LR SFP+ module (single-mode fiber [SMF])	SFP-10G-LR	X
10GBASE-CU SFP+ cable 1 m (Twinax cable)	SFP-H10GB-CU1M	X
10GBASE-CU SFP+ cable 3 m (Twinax cable)	SFP-H10GB-CU3M	X
10GBASE-CU SFP+ cable 5 m (Twinax cable)	SFP-H10GB-CU5M	X
Active Twinax cable assembly, 7 m	SFP-H10GB-ACU7M	X
Active Twinax cable assembly, 10 m	SFP-H10GB-ACU10M	X
1-Gigabit Ethernet		
1000BASE-T SFP	GLC-T	X
Gigabit Ethernet SFP, LC connector SX transceiver (MMF)	GLC-SX-MM	X
Gigabit Ethernet SFP, LC connector LX/LH transceiver (SMF)	GLC-LH-SM	X

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New and Changed Features

This section describes the new features introduced in Cisco NX-OS Release 5.0(3)U1(1a). This section includes the following topics:

- [New Hardware Features, page 4](#)
- [New Software Features, page 5](#)

New Hardware Features

The Cisco Nexus 3000 Series switch available in this release provides the following benefits:

- Ultra-low latency

The Cisco Nexus 3064PQ delivers ultra-low nominal latency that enables you to implement high-performance infrastructures for high-frequency trading workloads.
- Wire-rate Layer 2 and 3 switching on all 64 10-Gigabit Ethernet ports

Layer 2 and 3 switching of up to 1.2 terabits per second (Tbps) and more than 950 million packets per second (mpps) in a compact 1 RU form-factor switch
- Purpose-built on Cisco NX-OS operating system with comprehensive, proven innovations
 - Modular OS built for resiliency
 - Full Layer 3 routing protocol suites, including Border Gateway Protocol (BGP), Open Shortest path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), and Routing Information Protocol Version 2 (RIPv2)
 - Rich feature set including IP multicast, High Availability, Security, and IP services.

This section describes the following new hardware:

- [Cisco Nexus 3064PQ switch, page 4](#)

Cisco Nexus 3064PQ switch

The Cisco Nexus 3064PQ switch includes the following features:

- 1 RU fixed form-factor 1-, 10-Gigabit Ethernet switch offering a throughput of up to 1.28 TBps
- 64 10-Gigabit Ethernet ports (48 SFP+ and 4 QSFP+)
- 48 fixed 1/10 Gigabit Ethernet Enhanced Small Form-Factor Pluggable (SFP+) ports
- 4 fixed Quad SFP+ (QSFP+) ports (each QSFP+ port is 4 x 10-Gigabit Ethernet capable)
- Locator LED
- Dual-redundant power supplies
- Hot-swappable fan tray with redundant fans that can function with up to one failed fan
- One 10/100/1000 management ports
- One RS-232 serial console port
- One USB port
- 1.28-Tbps switching capacity
- Forwarding rate of 950 mpps

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- Line-rate traffic throughput (both Layer 2 and 3) on all ports
- Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames)



Note

The Cisco Nexus 3064PQ switch includes two management ports; however, Cisco NX-OS Release 5.0(3)U1(1a) provides support for one management port.

Transceiver and Cabling

The Cisco Nexus 3064PQ switch supports 1- and 10-Gigabit Ethernet connectivity options using SFP+ transceivers in the first 48 ports, and 4 x 10-Gigabit Ethernet connectivity is achieved using QSFP+ transceivers in the last 4 ports.

QSFP+ technology allows smooth transition from 10- to 40-Gigabit Ethernet infrastructure in data centers. The Cisco Nexus 3064PQ switch supports connectivity over copper and fiber cables, providing excellent physical-layer flexibility. For low-cost cabling, copper-based 40-Gbps Twinax cables can be used.

Connectivity can be established from the QSFP ports to an upstream 10-Gigabit Ethernet switch using a cable that has a QSFP transceiver on one end and four SFP+ transceivers on the other end. Similar capability can be achieved using optical transceivers by procuring third-party optical branching cables.

New Software Features

Cisco NX-OS Release 5.0(3)U1(1a) includes the software features described in this section. The Cisco Nexus 3000 Series switches are supported by Cisco NX-OS Release 5.0(3)U1(1a). Cisco NX-OS interoperates with any networking OS, including Cisco IOS software, that conforms to the networking standards mentioned in this data sheet.

This section includes the following topics:

- [Layer 2 Features, page 5](#)
- [Layer 3 Features, page 6](#)
- [Multicast Features, page 6](#)
- [Quality of Service Features, page 7](#)
- [Security Features, page 7](#)
- [System Management Features, page 7](#)
- [Licensing, page 8](#)

Layer 2 Features

The following Layer 2 software features are available in this release:

- Layer 2 switch ports and VLAN trunks
- IEEE 802.1Q VLAN encapsulation
- Support for up to 4096 VLANs
- Rapid Per-VLAN Spanning Tree Plus (PVRST+) (IEEE 802.1w compatible)
- Multiple Spanning Tree Protocol (MSTP) (IEEE 802.1s)—64 instances
- Spanning Tree PortFast

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- Spanning Tree Root Guard
- Spanning Tree Bridge Assurance
- Cisco EtherChannel technology (up to 16 ports per EtherChannel)
- Link Aggregation Control Protocol (LACP), IEEE 802.3ad
- Advanced port channel hashing based on Layer 2, 3, and 4 information
- Jumbo frames on all ports (up to 9216 bytes)
- Storm control (unicast, multicast, and broadcast)
- Private VLANs

Layer 3 Features

The following Layer 3 software features are available in this release:

- Layer 3 interfaces—Routed ports on interfaces, switch virtual interfaces (SVIs), port channels, and subinterfaces (Total 1024)
- 32-way Equal-Cost Multipath (ECMP)
- 2000 ingress and 1000 egress ACL entries
- Routing protocols—Static, Routing Information Protocol Version 2 (RIPv2), EIGRP, OSPFv2, and Border Gateway Protocol (BGP)
- High availability with Hot Standby Router Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP)
- ACL—Routed ACL with Layer 3 and 4 options to match ingress and egress ACLs
- Virtual Route Forwarding (VRF)—VRF-lite (IP VPN), VRF-aware unicast (BGP, OSPF, and RIP), and VRF-aware multicast
- Unicast Reverse-Path Forwarding (uRPF) with ACL; strict and loose modes
- Jumbo frame support (up to 9216 bytes)
- Ability to increase unicast LPM route entries to a maximum of 16,000 by disabling the uRPF feature using the **system urpf disable** command, and then entering the **copy running-config startup-config** command followed by the **reload** command.

Multicast Features

The following multicast features are available in this release:

- Multicast—Protocol Independent Multicast Version 2 (PIMv2) sparse mode (PIM-SM) and Source-Specific Multicast (SSM)
- Bootstrap router (BSR), Auto-RP and Static RP
- Multicast Source Discovery Protocol (MSDP) and Anycast RP
- Internet Group Management Protocol (IGMP) Versions 1, 2, and 3
- Ability to increase the multicast table to 4000 entries. Each Layer 3 multicast route takes 2 entries in the host table.

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Quality of Service Features

The following QoS features are available in this release:

- Layer 2 IEEE 802.1p (class of service [CoS])
- 8 hardware queues per port
- Per-port QoS configuration
- Class of Service (CoS) trust
- Port-based CoS assignment
- Modular QoS CLI (MQC) compliance
- ACL-based QoS classification (Layers 2, 3, and 4)
- MQC CoS marking
- Differentiated services code point (DSCP) marking
- Weighted Random Early Detection (WRED)
- CoS-based egress queuing
- Egress strict-priority queuing
- Egress port-based scheduling—Weighted Round-Robin (WRR)
- Explicit Congestion Notification (ECN)

Security Features

The following security features are available in this release:

- Ingress ACLs (standard and extended) on Ethernet and virtual Ethernet ports
- Standard and extended Layer 2 ACLs
- Standard and extended Layer 3 to 4 ACLs—IPv4, Internet Control Message Protocol (ICMP), TCP, User Datagram Protocol (UDP), and so on
- VLAN-based ACLs (VACLs)
- Port-based ACLs (PACLs)
- Named ACLs
- ACLs on virtual terminals (VTYs)
- Dynamic Host Configuration Protocol (DHCP) snooping with option 82 DHCP relay
- Dynamic Address Resolution Protocol (ARP) inspection

System Management Features

The following system management features are available in this release:

- Switch management using 10/100/1000-Mbps management or console ports
- CLI-based console to provide detailed out-of-band management
- In-band switch management
- Locator and beacon LEDs
- Port-based locator and beacon LEDs

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- Secure Shell Protocol Version 2 (SSHv2)
- Telnet
- Authentication, authorization, and accounting (AAA)
- AAA with role-based access control (RBAC)
- RADIUS
- TACACS+
- Syslog
- Embedded packet analyzer
- SNMP v1, v2, and v3
- Enhanced SNMP MIB support
- XML (NETCONF) support
- Remote monitoring (RMON)
- Advanced Encryption Standard (AES) for management traffic
- Unified username and passwords across CLI and SNMP
- Microsoft Challenge Handshake Authentication Protocol (MS-CHAP)
- Digital certificates for management between switch and RADIUS server
- Cisco Discovery Protocol Versions 1 and 2
- RBAC
- Switched Port Analyzer (SPAN) on physical, port channel, and VLAN interfaces; 18 SPAN sessions configurable with up to 4 active sessions at the same time
- Ingress and egress packet counters per interface
- Network Time Protocol (NTP)
- Cisco OHMS
- Comprehensive bootup diagnostic tests
- Call Home
- Smart Call Home
- Cisco Data Center Network Manager (DCNM)

Licensing

The Cisco NX-OS licensing feature allows you to access premium features on the device after you install the appropriate license for that feature. Any feature not included in a license package is bundled with the Cisco NX-OS software and is provided to you at no extra charge.

You must purchase and install a license for each device.

For a Cisco Nexus 3000 Series switch running Cisco NX-OS Release 5.0(3)U1(1a), two Layer 3 licenses are available:

- [Nexus 3000 Layer 3 Base License, page 9](#)
- [Nexus 3000 Layer 3 LAN-Enterprise License, page 9](#)

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Nexus 3000 Layer 3 Base License

The Nexus 3000 Layer 3 Base License (N3K-BAS1K9) is included with the Cisco Nexus 3000 Series switch. The license provides the following support:

Connected, Static, RIPv2, OSPF (256 Dynamically Learnt Routes), EIGRP-Stub, HSRP, VRRP, IGMPv2/3, PIMv2, ACLs, uRPF.

Nexus 3000 Layer 3 LAN-Enterprise License

The Nexus 3000 LAN Enterprise license (N3K-LAN1K9) includes the following:

- All base license features.
- Full EIGRP.
- Unrestricted OSPF routes.
- BGP.
- VRF-Lite.



Note

The Layer 3 features require an installed Layer 3 Base license or LAN-Enterprise license.

For detailed information about the features that require licensing and Cisco NX-OS license installation, see the *Cisco NX-OS Licensing Guide*.

For information about troubleshooting licensing issues, see the *Cisco Nexus 3000 Series NX-OS Troubleshooting Guide*.

Limitations

This section describes the limitations for Cisco NX-OS Release 5.0(3)U1(1a).

- When a private VLAN port is configured as a TX (egress) SPAN source, the traffic seen at the SPAN destination port is marked with the VLAN of the ingress frame. There is no workaround.
- Multiple **boot kickstart** statements in the configuration are not supported.

Caveats

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

This section includes the following topics:

- [Open Caveats, page 9](#)
- [Resolved Caveats, page 10](#)

Open Caveats

[Table 1-3](#) lists descriptions of open caveats in Cisco NX-OS Release 5.0(3)U1(1a). The record ID links to the Cisco Bug Toolkit where you can find details about the caveat.

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The caveats are listed in the following categories:

- [Cisco NX-OS Release 5.0\(3\)U1\(1a\)—Open Caveats](#)

Table 1-3 *Cisco NX-OS Release 5.0(3)U1(1a)—Open Caveats*


Record Number	Open Caveat Headline
CSCt194539	SVI counters do not display values in the show interface vlan xyz counters command output even when member ports show the packet counts correctly in the show interface ethernet xyz counters command output.
CSCtn10660	When a monitor session is created with a source interface on the STP blocked source port, the transmitted packets are spanned when no packets are actually transmitted out of the STP blocked port.
CSCtn95676	Failed to allocate shared memory <code>mfwd_mrrib_get_route_buffer</code> .
CSCtn99196	The show spanning tree command output shows ports which are not part of the VLAN.
CSCto07020	The transmit SPAN is always tagged even when egress is untagged it will show tagged with VLAN 1.
CSCto26494	The clear mac command clears some MAC addresses from the hardware and not in the software; the MAC addresses in hardware and software are not synchronized.
CSCto26707	The mac add count and show mac add commands do not show MAC addresses learned on some interfaces.
CSCto27430	CRC errors are not seen when packets larger than the programmed MTU value traverse from a 12 trunk port to an other port.
CSCto32375	When untagged packets are sent with a packet size greater than the system MTU, they are not truncated to the programmed MTU value.
CSCto48220	The banner motd configuration change is not reflected in the running configuration.
CSCto53539	The interface discard counters increment even when packets are not forwarded.
CSCto57493	When STP mode is changed MST mode, MAC addresses are not synchronized.
CSCto62445	Packets on the TX SPAN destination are incorrectly trunked for untagged traffic if the packet size is greater than an MTU of +22.
CSCto67340	There are forwarding issues on Layer 3 subinterfaces with HSRP enabled.
CSCto90147	In rare instances, when a Cisco Nexus 3000 Series switch reloads or a process causes the system to reset, the switch will go down and may not come up again.

Resolved Caveats

[Table 1-4](#) lists descriptions of resolved caveats in Cisco NX-OS Release 5.0(3)U1(1a). The record ID links to the Cisco Bug Toolkit where you can find details about the caveat.

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Table 1-4 Cisco NX-OS Release 5.0(3)U1(1a)—Resolved Caveats

Record Number	Open Caveat Headline
CSCto50828	Use BIOS version 2.0.3 and change the copyright boot message to reflect 2011.
CSCuh79034	High CPU utilization due to bcm_usd and syslogd causing protocol flaps.
	 Note This caveat was resolved in Cisco NX-OS Release 5.0(3)U5(1g)

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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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* at: <http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>.

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