



# Cisco Nexus 3500 Series NX-OS Release Notes, Release 5.0(3)A1(1)

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**Release Date:** November 5, 2012  
**Part Number:** OL-27844-01 C0  
**Current Release:** Cisco NX-OS Release 5.0(3)A1(1)

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**

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

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**Table 1-1**      *Online History Change*

Revision	Date	Description
A0	November 5, 2012	Created NX-OS Release 5.0(3)A1(1) release notes.
B0	November 6, 2012	Added open caveats CSCud01408 and CSCud08375.
C0	November 27, 2012	Added GLC-SX-MMD and GLC-LH-SMD transceivers to <a href="#">Table 1-2</a> .

## Contents

This document includes the following sections:

- [Introduction, page 2](#)
- [System Requirements, page 3](#)
- [New and Changed Features, page 4](#)
- [Limitations, page 8](#)
- [Caveats, page 8](#)



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- [Obtaining Documentation and Submitting a Service Request, page 12](#)

## 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 is designed to support distributed multithreaded processing. Cisco NX-OS modular processes are instantiated on demand, each in a separate protected memory space. Processes are started and system resources 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 3500 Series Switches

The Cisco Nexus 3500 platform is an extension of the Cisco Nexus 3000 Series of 1, 10, and 40 Gigabit Ethernet switches built from a switch-on-a-chip (SoC) architecture. Switches in the Cisco Nexus 3500 series include the innovative Algorithm Boost (or Algo Boost) technology that is built into the switch application specific integrated circuit (ASIC). Algo Boost allows the Cisco Nexus 3548 switch to achieve Layer 2 and Layer 3 switching latencies of less than 200 nanoseconds (ns). In addition, Algo Boost contains several innovations for latency, forwarding features, and performance visibility:

- Two configurable modes for low latency:
  - Normal mode: This mode is suitable for environments needing low latency and high scalability. In this mode, latencies as low as 250 ns can be paired with the higher of the Layer 2 and Layer 3 scaling values listed later in this document in Table 5.
  - Warp mode: this mode consolidates forwarding operations within the switching ASIC, lowering latency by up to an additional 20 percent compared to normal operation. In this mode, latencies as low as 190 ns can be paired with the smaller of the Layer 2 and Layer 3 scaling values listed later in this document in Table 5.
- Active buffer monitoring: Even on the lowest-latency switches, data packets can incur a millisecond or more of latency during periods of congestion. Previous buffer utilization monitoring techniques were based entirely on software polling algorithms with polling intervals higher than 100ms, which can miss important congestion events. In contrast, Algo Boost accelerates the collection of buffer utilization data in hardware, allowing sampling intervals of 10 ns or less.

## Cisco Nexus 3548 Switch

The Cisco Nexus 3548 switch is the first member of the Cisco Nexus 3500 platform. As a compact one-rack-unit (1RU) form-factor 10 Gigabit Ethernet switch, the Cisco Nexus 3548 switch provides line-rate Layer 2 and 3 switching at ultra low latency. The switch runs Cisco NX-OS software that has comprehensive features and functions that are widely deployed globally. The Cisco Nexus 3548 contains no physical layer (PHY) chips, which allows low latency and low power consumption. The switch supports both forward and reversed airflow and both AC and DC power inputs.

For information about the new Cisco Nexus 3548 switch, see the [“New Hardware Features” section on page 4](#). For information about the Cisco Nexus 3500 Series, see the *Cisco Nexus 3500 Series Hardware Installation Guide*.

## System Requirements

This section includes the following topics:

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

## Memory Requirements

The Cisco NX-OS Release 5.0(3)A1(1) software requires 135MB of flash memory.

## Hardware Supported

Cisco NX-OS Release 5.0(3)A1(1) supports the Cisco Nexus 3500 Series switches. You can find detailed information about supported hardware in the *Cisco Nexus 3500 Series Hardware Installation Guide*.

[Table 1-2](#) shows the hardware supported by Cisco NX-OS Release 5.0(3)A1(1) software.

**Table 1-2 Hardware Supported by Cisco NX-OS Release 5.0(3)A1(1) Software**

Hardware	Part Number	Supported Software Release
<b>Cisco Nexus 3500 Series</b>		
Cisco Nexus 3548 switch	N3K-C3548P-10G	5.0(3)A1(1)
Cisco Nexus 2000 or Nexus 3000 individual fan, forward airflow (port side exhaust)	NXA-FAN-30CFM-F	5.0(3)A1(1)
Cisco Nexus 2000 or Nexus 3000 individual fan, reversed airflow (port side intake)	NXA-FAN-30CFM-B	5.0(3)A1(1)
Cisco Nexus 2000 or Nexus 3000 400W AC power supply, forward airflow (port side exhaust)	N2200-PAC-400W	5.0(3)A1(1)
Cisco Nexus 2000 or Nexus 3000 400W AC power supply, reversed airflow (port side intake)	N2200-PAC-400W-B	5.0(3)A1(1)
Cisco Nexus 2000 or Nexus 3000 400W DC power supply, forward airflow (port side exhaust)	N2200-PDC-400W	5.0(3)A1(1)

**Table 1-2** Hardware Supported by Cisco NX-OS Release 5.0(3)A1(1) Software (continued)

Hardware	Part Number	Supported Software Release
Cisco Nexus 2000 or Nexus 3000 350W DC power supply, reversed airflow (port side intake)	N3K-PDC-350W-B	5.0(3)A1(1)
<b>Transceivers</b>		
<b>10-Gigabit</b>		
10GBASE-SR SFP+ module (multimode fiber [MMF])	SFP-10G-SR	5.0(1)A1(1)
10GBASE-LR SFP+ module (single-mode fiber [SMF])	SFP-10G-LR	5.0(1)A1(1)
Cisco 10GBASE-ER SFP+ Module for SMF	SFP-10G-ER	5.0(1)A1(1)
10GBASE-CU SFP+ cable 1 m (Twinax cable)	SFP-H10GB-CU1M	5.0(1)A1(1)
10GBASE-CU SFP+ cable 3 m (Twinax cable)	SFP-H10GB-CU3M	5.0(1)A1(1)
10GBASE-CU SFP+ cable 5 m (Twinax cable)	SFP-H10GB-CU5M	5.0(1)A1(1)
Active Twinax cable assembly, 7 m	SFP-H10GB-ACU7M	5.0(1)A1(1)
Active Twinax cable assembly, 10 m	SFP-H10GB-ACU10M	5.0(1)A1(1)
<b>1-Gigabit Ethernet</b>		
1000BASE-T SFP	GLC-T	5.0(1)A1(1)
Gigabit Ethernet SFP, LC connector SX transceiver (MMF)	GLC-SX-MM	5.0(1)A1(1)
Gigabit Ethernet SFP, LC connector SX transceiver (MMF)	GLC-SX-MMD	5.0(1)A1(1)
Gigabit Ethernet SFP, LC connector LX/LH transceiver (SMF)	GLC-LH-SM	5.0(1)A1(1)
Gigabit Ethernet SFP, LC connector LX/LH transceiver (SMF)	GLC-LH-SMD	5.0(1)A1(1)

## New and Changed Features

This section describes the new features introduced in Cisco NX-OS Release 5.0(3)A1(1). This section includes the following topics:

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

## New Hardware Features

This section describes the following new hardware:

- [Cisco Nexus 3548 Switch, page 5](#)

## Cisco Nexus 3548 Switch

The Cisco Nexus 3548 switch includes the following features:

- 48 fixed enhanced Small Form-Factor Pluggable (SFP+) ports (1 Gbps or 10 Gbps)
- Dual redundant, hot-swappable power supplies
- Four individual, redundant, hot-swappable fans
- One 1-PPS timing port, with the RF1.0/2.3 QuickConnect connector type
- Two 10/100/1000 management ports
- One RS-232 serial console port
- One USB port
- Locator LED
- Locator LED button
- Forward (port-side exhaust) and reverse (port-side intake) airflow. Colored handles on each fan or power supply clearly indicate the airflow direction.

## New Software Features

Cisco NX-OS Release 5.0(3)A1(1) includes the software features described in this section. The Cisco Nexus 3500 Series switches are supported by Cisco NX-OS Release 5.0(3)A1(1). 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](#)
- [Security Features, page 6](#)
- [System Management Features, page 7](#)
- [Licensing, page 7](#)



### Note

The following features are not available in Cisco NX-OS Release 5.0(3)A1(1): IPv6, ERSPAN, PTP, BFD, POAP, PVLAN, Priority Flow Control (PFC), sFlow, vPC, Unicast RPF, ARP Inspection, DCHP snooping, and CoPP.

## Layer 2 Features

The following Layer 2 software features are supported:

- 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)
- MSTP (IEEE 802.1s): 64 instances

- Spanning Tree PortFast
- Spanning Tree Root Guard
- Spanning Tree Bridge Assurance
- Cisco EtherChannel technology (up to 24 ports per EtherChannel)
- 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 (multicast, and broadcast)

## Layer 3 Features

The following Layer 3 software features are supported

- Layer 3 interfaces: routed ports on interfaces, switch virtual interfaces (SVIs), port channels, and subinterfaces (total 1024)
- 32-way Equal-Cost Multipath (ECMP)
- 4096 ACL entries
- Routing protocols: static, RIPv2, EIGRP, OSPF, and BGP
- HSRP and VRRP
- ACL: routed ACL with Layer 3 and 4 options to match ingress and egress ACLs
- VRF: VRF-Lite (IP VPN), VRF-aware unicast (BGP, OSPF, and RIP), and VRF-aware multicast
- Jumbo frame support (up to 9216 bytes)

## Multicast Features

The following multicast features are supported:

- Multicast: Protocol Independent Multicast Version 2 (PIMv2), PIM 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 2 and 3

## Security Features

The following security features are supported:

- 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

- ACL logging and statistics
- ACLs on virtual terminals (VTYs)
- Dynamic Host Configuration Protocol (DHCP) relay

## System Management Features

The following system management features are supported:

- Python scripting
- 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
- Configuration rollback
- 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

## 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 3548Series switch running Cisco NX-OS Release 5.0(3)A1(1), the following software features and licenses are available:

- [System Default, page 7](#)
- [Base License, page 8](#)
- [LAN Enterprise License, page 8](#)
- [Algo Boost License, page 8](#)

## System Default

The following features do not require a license and are included as the system default on the device:

- Comprehensive Layer 2 feature set: VLAN, IEEE 802.1Q trunking, Link Aggregation Control Protocol (LACP), Unidirectional Link Detection (UDLD) (Standard and Aggressive), Multiple Spanning Tree Protocol (MSTP), Rapid Spanning Tree Protocol (RSTP), Spanning Tree Protocol guards, and VLAN Trunk Protocol (VTP) Transparent
- Security: Authentication, authorization, and accounting (AAA), access control lists (ACL), Dynamic Host Configuration Protocol (DHCP) snooping, storm control, and configurable Control-Plane Policing (CoPP)
- Management features: Cisco Data Center Network Manager (DCNM) support, console, Secure Shell Version 2 (SSHv2) access, Cisco Discovery Protocol, SNMP, and syslog

## Base License

The Base License (N3K-BAS1K9) for the Cisco Nexus 3548 switch provides the following features:

- Layer 3 IP routing: Inter-VLAN routing, static routes, Routing Information Protocol Version 2 (RIPv2), ACLs, Open Shortest Path First Version 2 (OSPFv2; limited to 256 routes), Enhanced Interior Gateway Routing Protocol (EIGRP) stub, Hot Standby Router Protocol (HSRP), Virtual Router Redundancy Protocol (VRRP), and Unicast Reverse Path Forwarding (URPF)
- Multicast: Protocol-Independent Multicast Sparse Mode (PIM-SM), Source-Specific Multicast (SSM), and Multicast Source Discovery Protocol (MSDP)

## LAN Enterprise License

The LAN Enterprise license (N3K-LAN1K9) requires the Base License and includes the following features:

- Advanced Layer 3 IP Routing: OSPFv2, EIGRP, Border Gateway Protocol (BGP), and Virtual Routing and Forwarding Lite (VRF-Lite)

## Algo Boost License

The Algo Boost license (N3K-ALGK9) provides the following features:

- Algo Boost Features: NAT and warp mode

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 3500 Series NX-OS Troubleshooting Guide*.

# Limitations

There are no limitations for Cisco NX-OS Release 5.0(3)A1(1).

# 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](#)



## Open Caveats

[Table 1-3](#) lists descriptions of open caveats in Cisco NX-OS Release 5.0(3)A1(1). The record ID links to the Cisco Bug Toolkit where you can find details about the caveat.

The caveats are listed in the following categories:

- [Cisco NX-OS Release 5.0\(3\)A1\(1\)—Open Caveats](#)

**Table 1-3 Cisco NX-OS Release 5.0(3)A1(1)—Open Caveats**

<b>Record Number</b>	<b>Open Caveat Headline</b>
<a href="#">CSCua40331</a>	The IGMP snooping querier with the lowest address cannot win the querier selection when the SVI IGMP querier is active.
<a href="#">CSCua42953</a>	During a class-default MTU check, the system checks against itself.
<a href="#">CSCua47505</a>	There is inconsistent information for the MTU displayed in the output of the <b>show queueing interface</b> command and the <b>show policy network-qos</b> command.
<a href="#">CSCua66832</a>	The Open Shortest Path First (OSPF) protocol link state advertisement (LSA) is not advertised and the route is not in the forwarding information base (FIB) or the routing information base (RIB).
<a href="#">CSCub24649</a>	A syslog entry is not created when unicast routes in the route table hit the threshold set by the <b>hardware profile unicast syslog-threshold x</b> command.
<a href="#">CSCub32923</a>	NTP failed to configure the source interface message following a switch reload.
<a href="#">CSCub38034</a>	When a port channel is an active Multicast Source Discovery Protocol (MSDP) link, the sa-cache is empty.
<a href="#">CSCub46233</a>	A Multiple Spanning Tree Protocol (MSTP) instance does not get deleted, even though its VLANs are shut down.
<a href="#">CSCub59387</a>	The output of the <b>show forward multicast route</b> command has incorrect information.
<a href="#">CSCub64511</a>	Layer IPv6 traffic does not set or rewrite CoS correctly.
<a href="#">CSCub89134</a>	2-tuple is not displayed in the incompatibility check.
<a href="#">CSCuc02277</a>	Need to add support for the <b>hardware profile multicast prefer-source-tree</b> command.
<a href="#">CSCuc12318</a>	IGMP snooping v3 report suppression cannot be enabled.
<a href="#">CSCuc24329</a>	A port goes to an error disabled state on the port configured by the <b>switchport monitor</b> command when you try to change to Layer 3 using the <b>no switchport</b> command.
<a href="#">CSCuc38422</a>	While deleting NAT entries, the top entry in the TCAM gets reset first.
<a href="#">CSCuc49524</a>	The port status, port LED, and negotiate setting are inconsistent among Cisco Nexus 3000 Series switches.
<a href="#">CSCuc52002</a>	SFP, port LED, and status errors occur.
<a href="#">CSCuc64496</a>	The <b>pim register-policy</b> command does not work.
<a href="#">CSCuc75236</a>	The WARP_MCST_LPM_TBL_100_PERCENT_LIMIT: syslog message displays just once.
<a href="#">CSCuc86075</a>	When changing NAT inside or outside on SVIs, the switch displays a “service not responding” message.
<a href="#">CSCuc88840</a>	During switch bootup, usdk_isr_gpe_config_intr system messages are displayed, but there is no functional impact.
<a href="#">CSCuc89323</a>	When the <b>add-route</b> keyword is used for configuring NAT outside and the <b>shut</b> command followed by the <b>no shut</b> command is entered on the interfaces, the routes are incorrect.

**Table 1-3** Cisco NX-OS Release 5.0(3)A1(1)—Open Caveats (continued)

Record Number	Open Caveat Headline
CSCud01408	The NAT process fails when removing an outside translation or static route 0.0.0.0/32.
CSCud08375	A non-default route to the inside local address is needed for the NAT inside source translations to work.

## 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](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](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](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](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](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](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](http://www.cisco.com/en/US/products/ps11541/products_system_message_guides_list.html)

## Documentation Feedback

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

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