



Cisco Nexus 9000 Series NX-OS Release Notes, Release 7.0(3)I2(2a)

Due to [CSCux04393](#), Cisco NX-OS Releases 7.0(3)2(1a) and 7.0(3)I2(2) are no longer available for download. Cisco strongly recommends that customers running these releases move to the recommended release at a minimum. (See the [Recommended Cisco NX-OS Releases for Cisco Nexus 9000 Series Switches](#).)

This document describes the features, caveats, and limitations for Cisco NX-OS Release 7.0(3)I2(2a) software for use on the Cisco Nexus 9000 Series switches, the Cisco Nexus 31128PQ switch, and the Cisco Nexus 3164Q switch. Use this document in combination with documents listed in *Related Documentation*.

Note: Starting with Cisco NX-OS Release 7.0(3)I2(1), the Cisco NX-OS image filename has changed to start with "nxos" instead of "n9000."

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

Table 1. Online History Change

Date	Description
December 15, 2015	Created the release notes for Release 7.0(3)I2(2a).
December 16, 2015	Added CSCux48690 to <i>Resolved Caveats</i> .
January 11, 2016	Added a link to the ALE limitations in the <i>Limitations</i> section.
March 4, 2016	<ul style="list-style-type: none">■ Updated Limitations.■ Updated <i>Supported FEX Modules</i>.
March 23, 2016	Removed the bullets stating that private VLANs support PVLAN across switches: <ul style="list-style-type: none">■ Through a regular trunk port-channel■ Through a regular vPC-port
April 8, 2016	Added the following statement to <i>Limitations</i> : The N9K-X9408PC-CFP2 line card does not support port-channeling.

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Introduction

Cisco NX-OS software is a data center-class operating system designed for performance, resiliency, scalability, manageability, and programmability at its foundation. The Cisco NX-OS software provides a robust and comprehensive feature set that meets the requirements of virtualization and automation in mission-critical data center environments. The modular design of the Cisco NX-OS operating system makes zero-impact operations a reality and enables exceptional operational flexibility.

The Cisco Nexus 9000 Series uses an enhanced version of Cisco NX-OS software with a single binary image that supports every switch in the series, which simplifies image management.

System Requirements

This section includes the following sections:

- Supported Cisco Software Releases
- Supported Device Hardware
- Supported Optics
- Supported FEX Modules

Supported Cisco Software Releases

[Table 2](#) summarizes information about the Cisco Nexus platforms and software release versions that Cisco OpenFlow Plug-in supports.

Table 2. Cisco Plug-in for OpenFlow Compatibility Matrix

Switches	Cisco Plug-in for OpenFlow
Cisco Nexus 9300, Nexus 3000, and Nexus 3100 Series Switches, but not the N3164Q. NX-OS 7.0(3)I2(1)	ofa-2.1.0-r1-nxos-SPA-k9.ova
Cisco Nexus 3000 Series Switches and Cisco Nexus 3100 Series Switches NX-OS 6.0(2)U4(1)	ofa-1.1.5-r3-n3000-SPA-k9.ova
Cisco Nexus 3500 Series Switches NX-OS 6.0(2)A4(1) NX-OS 6.0(2)A6(2)—required by the Nexus 3548-X Switch	ofa-1.1.5-r3-n3000-SPA-k9.ova

System Requirements

Switches	Cisco Plug-in for OpenFlow
Cisco Nexus 3000 Series Switches NX-OS 6.0(2)U3(1) NX-OS 6.0(2)U3(2)	ofa-1.1.4-r3-n3000-SPA-k9.ova
Cisco Nexus 3000 Series Switches NX-OS 6.0(2)U2(2)	ofa-1.1.2-n3000-r2-SPA-k9.ova
Cisco Nexus 3000 Series Switches NX-OS 6.0(2)U2(1)	ofa-1.1.0-n3000-r2-SPA-k9.ova

Supported Device Hardware

Table 3 lists the Cisco Nexus 9000 Series hardware that Cisco NX-OS Release 7.0(3)I2(2a) supports. For additional information about the supported hardware, see the Hardware Installation Guide for your Cisco Nexus 9000 Series device.

Table 3. Cisco Nexus 9000 Series Hardware

Product ID	Hardware	Quantity
N9K-C9516	Cisco Nexus 9516 16-slot chassis	1
N9K-C9516-FM	Cisco Nexus 9500 Series fabric module	3-6 depending on the line card
N9K-C9516-FAN	Cisco Nexus 9516 fan trays	3
N9K-C9508	Cisco Nexus 9508 8-slot chassis	1
N9K-C9508-FM	Cisco Nexus 9508 Series fabric module	3-6 depending on the line card
N9K-C9508-FAN	Cisco Nexus 9508 fan trays	3

System Requirements

Product ID	Hardware	Quantity
N9K-X9564PX	Cisco Nexus 9500 Series 48-port, 1-/10-Gbps SFP+ plus 4-port QSFP I/O module	<ul style="list-style-type: none"> ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 8 in the Cisco Nexus 9508 ■ Up to 16 in the Cisco Nexus 9516
N9K-X9564TX	Cisco Nexus 9500 Series 48-port, 1-/10-Gbps BASE-T plus 4-port QSFP I/O module	<ul style="list-style-type: none"> ■ Up to 8 in the Cisco Nexus 9508 ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 16 in the Cisco Nexus 9516
N9K-X9536PQ	Cisco Nexus 9500 36-port, 40 Gigabit Ethernet QSFP aggregation module	<ul style="list-style-type: none"> ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 8 in the Cisco Nexus 9508 ■ Up to 16 in the Cisco Nexus 9516
N9K-X9636PQ	Cisco Nexus 9500 Series 36-port 40-Gigabit QSFP I/O module Note: Not supported on the Cisco Nexus 9516 switch (N9K-C9516).	<ul style="list-style-type: none"> ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 8 in the Cisco Nexus 9508

System Requirements

Product ID	Hardware	Quantity
N9K-X9464PX	Cisco Nexus 9500 Series 48-port 10-Gigabit SFP+ plus 4-port QSFP I/O module	<ul style="list-style-type: none"> ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 8 in the Cisco Nexus 9508 ■ Up to 16 in the Cisco Nexus 9516
N9K-X9464TX	Cisco Nexus 9500 Series 48-port 10-GBASE-T plus 4-port QSFP I/O module	<ul style="list-style-type: none"> ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 8 in the Cisco Nexus 9508 ■ Up to 16 in the Cisco Nexus 9516
N9K-X9432PQ	Cisco Nexus 9500 Series 32-port 40-Gigabit QSFP I/O module Note: The Cisco Nexus X9432PQ I/O module supports static breakout.	<ul style="list-style-type: none"> ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 8 in the Cisco Nexus 9508 ■ Up to 16 in the Cisco Nexus 9516
N9K-X9408PC-CFP2	Cisco Nexus 9500 Series 8-port 100-Gigabit CFP2 I/O module for the Cisco Nexus 9504, 9508, and 9516 modular switches	<ul style="list-style-type: none"> ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 8 in the Cisco Nexus 9508 ■ Up to 16 in the Cisco Nexus 9516
N9K-SC-A	Cisco Nexus 9500 Series System Controller Module	2
N9K-SUP-A	Cisco Nexus 9500 Series supervisor module	2

System Requirements

Product ID	Hardware	Quantity
N9K-SUP-B	Cisco Nexus 9500 Series supervisor B module	2
N9K-PAC-3000W-B	Cisco Nexus 9500 Series 3000 W AC power supply	<ul style="list-style-type: none"> ■ Up to 4 in the Cisco Nexus 9504 ■ Up to 8 in the Cisco Nexus 9508 ■ Up to 10 in the Cisco Nexus 9516
N9K-C9504	Cisco Nexus 9504 4-slot chassis	1
N9K-C9504-FM	Cisco Nexus 9504 fabric module	3 to 6 depending on line card
N9K-C9504-FAN	Cisco Nexus 9504 fan trays	3
N9K-C9396PX	Cisco Nexus 9300 48-port, 1/10-Gigabit Ethernet SFP+ and 12-port, 40-Gigabit Ethernet QSPF switch	1
N9K-C9396TX	Cisco Nexus 9300 48-port, 1/10-Gigabit Ethernet BASE-T and 12-port, 40-Gigabit Ethernet QSFP switch	1
N9K-C9372PX	Cisco Nexus 9300 48-port, 1/10-Gigabit Ethernet SFP+ and 6-port, 40-Gigabit Ethernet QSFP switch	1
N9K-C9372PX-E	An enhanced version of the N9K-C9372PX.	
N9K-C9372TX	Cisco Nexus 9300 48-port, 1/10-Gigabit Ethernet BASE-T and 6-port, 40-Gigabit Ethernet QSFP switch	1
N9K-C9332PQ	Cisco Nexus 9300 32-port, 40-Gigabit Ethernet QSFP switch with support for 4x10G breakout mode <ul style="list-style-type: none"> ■ Ports 1 to 26 (except 13 and 14) support 4x10G breakout mode. ■ Ports 27 to 32 (ALE uplink ports) support using QSA for 10G SFP/SFP+ transceivers in QSFP+ ports 	1
N9K-C93128TX	Cisco Nexus 9300 switch with 96 1-/10-Gigabit BASE-T ports and eight 40-Gigabit Ethernet QSPF ports (The 1-/10-Gigabit BASE-T ports also support a speed of 100 Megabits.)	1
N9K-C93120TX	Cisco Nexus 93120TX switch with 96 1-/10-Gigabit BASE-T ports and 6 QSFP uplink ports	

System Requirements

Product ID	Hardware	Quantity
N9K-PAC-650W	Cisco Nexus 9300 650 W AC power supply, hot air out (red) <i>Note:</i> For use with the Cisco Nexus 9396 switch (N9K-C9396PX).	2 or less
N9K-PAC-650W-B	Cisco Nexus 9300 650 W AC power supply, cold air in (blue) <i>Note:</i> For use with the Cisco Nexus 9396 switch (N9K-C9396PX).	2 or less
N9K-PAC-1200W	Cisco Nexus 9300 1200 W AC power supply, hot air out (red) <i>Note:</i> For use with the Cisco Nexus 93128 switch (N9K-C93128TX).	2 or less
N9K-PAC-1200W-B	Cisco Nexus 9300 1200 W AC power supply, cold air in (blue) <i>Note:</i> For use with the Cisco Nexus 93128 switch (N9K-C93128TX).	2 or less
N9K-C9300-FAN1	Cisco Nexus 9300 fan 1, hot air out (red) <i>Note:</i> For use with the Cisco Nexus 9396 switch (N9K-C9396PX).	3
N9K-C9300-FAN1-B	Cisco Nexus 9300 fan 1, cold air in (blue) <i>Note:</i> For use with the Cisco Nexus 9396 switch (N9K-C9396PX).	3
N9K-C9300-FAN2	Cisco Nexus 9300 fan 2, port side intake (red) <i>Note:</i> For use with the Cisco Nexus 93128 switch (N9K-C93128TX).	3
N9K-C9300-FAN2-B	Cisco Nexus 9300 fan 2, port side exhaust (blue) <i>Note:</i> For use with the Cisco Nexus 93128 switch (N9K-C93128TX).	3
NXA-FAN-30CFM-F ⁴	Cisco Nexus 9300 fan, port-side exhaust <i>Note:</i> For use with the Cisco Nexus 9332PQ, 9372PX, and 9372TX switches (N9K-C9332PQ, N9K-C9372PX, and N9K-9372TX).	4
NXA-FAN-30CFM-B	Cisco Nexus 9300 fan, port-side intake <i>Note:</i> For use with the Cisco Nexus 9332PQ, 9372PX, and 9372TX switches (N9K-C9332PQ, N9K-C9372PX, and N9K-9372TX).	4
N9K-M12PQ	Cisco Nexus GEM 9300 uplink module, 12-port, 40-Gigabit Ethernet QSPF <i>Note:</i> The front-panel ports on these GEM modules do not support auto negotiation with copper cables. Manually configure the speed on the peer switch.	1 (required)

System Requirements

Product ID	Hardware	Quantity
N9K-M6PQ	Cisco Nexus GEM 6-port 40-Gigabit Ethernet uplink module for the Cisco Nexus 9396PX, 9396TX, and 93128TX switches <i>Note:</i> The front-panel ports on these GEM modules do not support auto negotiation with copper cables. Manually configure the speed on the peer switch.	1
N9K-M6PQ-E	An enhanced version of the N9K-M6PQ.	
N9K-M4PC-CFP2	Cisco Nexus 9300 uplink module for the 93128TX (2 active ports), 9396PX (4 active ports), and 9396TX (4 active ports) Top-of-rack switches	1

[Table 4](#) lists the Cisco Nexus 3164Q switch hardware that Cisco NX-OS Release 7.0(3)I2(2a) supports.

Table 4. Cisco Nexus 3164Q Switch Hardware

Product ID	Hardware	Quantity
N3K-C3164Q-40GE	Cisco Nexus 3164Q switch	1
N9K-C9300-FAN3	Cisco Nexus 3164Q fan module	3
N9K-PAC-1200W	Cisco Nexus 3164Q 1200W AC power supply	2

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

[Table 5](#) lists the Cisco Nexus 31128PQ switch hardware that Cisco NX-OS Release 7.0(3)I2(2a) supports.

Table 5. Cisco Nexus 31128PQ Switch Hardware

Product ID	Hardware	Quantity
N3K-C31128PQ-10GE	Nexus 31128PQ, 96 SFP+ ports, 8 QSFP+ ports, 2RU switch	1

Supported Optics

See the [Cisco 10-Gigabit Ethernet Transceiver Modules Compatibility Matrix](#) for a list of supported optical components.

Supported FEX Modules

Cisco NX-OS Release 7.0(3)I2(2a) supports the following FEXes on Cisco Nexus 9332PQ (support for 2300 only), 9372PX, 9372PX-E, 9396PX and 9500 Series Switches:

- Cisco Nexus 2224TP
- Cisco Nexus 2232PP
- Cisco Nexus 2232TM and 2232TM-E
- Cisco Nexus 2248PQ
- Cisco Nexus 2248TP and 2248TP-E
- Cisco Nexus 2348UPQ
- Cisco Nexus B22Dell
- Cisco Nexus B22HP
- Cisco Nexus NB22FTS
- Cisco Nexus NB22IBM
- Cisco Nexus 2348TQ

Note: Please note the following:

- The 9408 line card is not supported with the 2300 FEX.
- Cisco Nexus 9300 Series switches do not support FEX on uplink modules (ALE).
- For FEX HIF port channels, Cisco recommends that you enable STP port type edge using the spanning tree port type edge [trunk] command.
- Cisco 2248PQ supports 4xQSFP (16x10GE SPF+) as network interfaces. To connect from the 2248PQ to the Nexus 9300 or 9500, use the supported QSPF+ to SFP+ breakout cables.

New and Changed Information

This section lists the following topics:

- New Hardware Features in Cisco NX-OS Release 7.0(3)I2(2a)
- New Software Features in Cisco NX-OS Release 7.0(3)I2(2a)

New Hardware Features in Cisco NX-OS Release 7.0(3)I2(2a)

Cisco NX-OS Release 7.0(3)I2(2a) does not include new hardware features.

New Software Features in Cisco NX-OS Release 7.0(3)I2(2a)

Cisco NX-OS Release 7.0(3)I2(2a) does not include new software features.

Caveats

This section includes the following topics:

- Resolved Caveats—Cisco NX-OS Release 7.0(3)I2(2a)
- Open Caveats—Cisco NX-OS Release 7.0(3)I2(2a)

Resolved Caveats—Cisco NX-OS Release 7.0(3)I2(2a)

Table 6 lists the Resolved Caveats in Cisco NX-OS Release 7.0(3)I2(2a). Click the bug ID to access the Bug Search tool and see additional information about the bug.

Table 6 Resolved Caveats in Cisco NX-OS Release 7.0(3)I2(2a)

Record Number	Description
CSCuI45084	Executing show ip int brief include-secondary might crash the Netstack service or make Netstack unstable. However, there are no issues with show ip int brief or with show ip interface brief include-secondary vrf <vrf-name> when ip forward is enabled on an interface.
CSCuM23724	When IPv6 router solicitation is received on a vPC peer-link, the Cisco Nexus 9000 Series switch replies with Routers Advertisements on the vPC peer-link (even though the vPC member is up), and this gets dropped on the vPC peer due to loop avoidance.
CSCuW66057	An interop issue with Intel NIC running on a certain server vendor links up at 1 G instead of 10 G.
CSCuX01970	A duplicate ping6 reply is seen when pinging a vPC VTEP's loopback in a VRF.
CSCuX04132	Password recovery as documented in the <i>Cisco Nexus 9000 Series NX-OS Troubleshooting Guide, Release 6.x</i> does not work at Step 14.
CSCuX03757	The fabric forwarding mode anycast-gateway command is gone after a software upgrade.
CSCuX04368	Flooded or broadcast traffic may be dropped on some FEX interfaces after a supervisor switchover followed by a FEX reload.
CSCuX04393	Cisco Nexus 9000 Series switches stop responding to packets sourced from the CPU over the SVI interface to a destination MAC address that has been associated with multiple IP addresses. The issue can be seen as hosts are enabled for the DHCP server. The issue can be seen more frequently if DHCP lease expiry timer is very aggressive.
CSCuX07377	Packet loss occurs for VXLAN encapsulated packets received on the NVE and destined for an end host connected to a 40 G uplink port.
CSCuX11617	ARP suppression may cause some ARP packets to be reflected back on the same interface they were received. This can create connectivity issues if there are L2 switches attached to the VXLAN fabric due to the MAC moves that will result from the reflection.
CSCuX15862	After completing a live vMotion between two hosts connected in Active/Active mode (LACP) to a different pair of VTEPs, traffic drop can be experienced for the migrated VM. Looking at the MAC table, a double entry is associated to the moved MAC address, whereas information in the MAC-IP table still points to the old location.

Caveats

Record Number	Description
CSCux18677	On system reload after EPLD upgrade, the reset reason from show version and show system reset-reason would show Unknown. This is a cosmetic issue and will be fixed in later releases.
CSCux19425	show install all impact nxos causes all EVPN VNI to go down with the VLAN/BD.
CSCux27489	When non-default BFD timers are configured, they are not inserted into the running configuration. Default BFD timers do not have any issues.
CSCux28935	On the N9K-C9332PQ switch, packet forwarding issues occur if a port-channel or a vPC build uses Et1/25 & E1/26 interfaces as a member.
CSCux40640	When ARP suppression is disabled, sometimes the Layer 3 interface class-id may not be set correctly. This could cause ARP packets coming into the interface to not be punted to software.
CSCux40643	Wrong information is shown in the L2RIB when a vPC member port is down.
CSCux44648	The Cisco Nexus 9000 Series switch does not respond to ARP requests for its IP if the ARP request comes in on a port that is in the LACP (I) state.
CSCux46952	VNI can get stuck in down state after an install or reload, which causes the peer-link to flap. The show nve vni command will indicate the status of the VNI.
CSCux48690	OID polling fails after configuring an RBAC rule to permit the OID.
CSCux52825	IPv6 NS packets from the host are dropped by the VTEP on some SVIs. ND packets do not get sent through inband to the switch CPU, and the gateway resolution fails. An ethanalyzer capture will show ND packets not received by the CPU.
CSCux52950	The IPv6 NS message fails for the VIP gateway resolution from the host through the LACP vPC PO.

Open Caveats—Cisco NX-OS Release 7.0(3)I2(2a)

Table 7 lists the open caveats in Cisco NX-OS Release 7.0(3)I2(2a). Click the bug ID to access the Bug Search tool and see additional information about the bug.

Table 7 Open Caveats in Cisco NX-OS Release 7.0(3)I2(2a)

Bug ID	Description
CSCuj51631	A DHCP relay to a subnet broadcast address does not work. Workaround: Configure “ip directed-broadcast.”
CSCun26726	HSRP packet decoding fails with an assertion error.

Caveats

Bug ID	Description
CSCun34856	All VLANs are suspended if one has a QoS policy, but the TCAM is not configured.
CSCuq03168	Microsoft NLB traffic being routed into the destination VLAN is experiencing packet loss.
CSCuq68788	Traffic is not spanned if SPAN ACL and policy-based routing are enabled.
CSCur22618	The show queuing interface command returns empty output when executed for FEX HIF interfaces.
CSCur30555	The show policy-map type queuing command does not show statistics for FEX HIF interfaces.
CSCur37816	When QoS Lite TCAM is configured, policer violated statistics shown as part of the show policy-map interface command are reported as 0 instead of NA (Not-Applicable).
CSCur46879	When copying the tunnel configuration file to running, the tunnel may flap before stabilizing.
CSCur59482	Policer action is not supported when a QoS policy of type "qos" is applied with the no-stats keyword.
CSCur61647	Even though there are no QoS classification policies currently active on any of the FEX HIF interfaces, the show incompatibility command still reports FEX QoS incompatibility during downgrade from 3.2 to earlier versions of software.
CSCur87839	Traffic cannot be routed using policy-based routing if the next-hop reachability is across the vPC peer link and the local vPC leg is down.
CSCus06693	ERPSAN sessions with a destination on the port-channel sub-interface is not supported.
CSCus07061	When a remote end of a vPC port channel member is shut down, the local end takes ~10 seconds to shut down. This only occurs when the port channel is 'active' (i.e., has LACP enabled).

Caveats

Bug ID	Description
CSCus58475	Vntag-mgr times out after changing VLANs for a range of 20 vPC port-channels.
CSCus63613	When a user reloads the active supervisor, the standby supervisor also reloads. During the reload process, the Service Policy Manager (SPM) cannot send data to the standby supervisor. A syslog is observed, notifying the active supervisor that the SPM has not successfully updated its data base to the standby supervisor. The active supervisor reloads the standby supervisor again, and the standby supervisor eventually reaches a good standby state.
CSCuu15598	When a QoS policy with a policer is applied on a FEX HIF port, the actual policing happens at the switch and not at the FEX. As a result, the internal VNTAG header of 6 bytes is also considered by the policer.
CSCuu31392	ERSPAN packets are dropped on the intermediate switches if more than one ERSPAN session resolves over 40 Gig uplinks on a ToR.
CSCuu33640	An ITD policy is shown in no shut state. However, no policy is actually applied to the ingress policy if an invalid ACL is used for "exclude."
CSCuu37225	Some show commands are having very slow reaction times and appear to hang with certain ITD configuration scenarios.
CSCuu87126	When access-list is configured for ITD service, this error is received: "ACL cannot apply when more than one node is active. "
CSCuv63473	MAC entries are not in sync between vPC peers. There are some MACs missing.
CSCuv90152	Packets are accepted on HIFPC members in suspended state.
CSCuv96382	For single label mpls/stripped tap-aggr packets, when the mpls strip dest-mac xxxx.xxxx.xxxx CLI is configured, dmac is not re-written on the modular (EOR) setup. The same will work on ToRs.
CSCuw02188	The Dynamic Twice NAT CLIs are not removable after upgrading the switch to 7.0(3)I2(1). Also, the Dynamic Twice NAT outside entry is not programmed in the hardware.

Upgrade Instructions

Bug ID	Description
CSCux15156	When policy-map is copied through qos copy policy-map, the newly created policy-map cannot be modified or deleted.
CSCux42376	Packets entering on NS-PO ports are encapsulated with inner dot1q.
CSCux52183	<p>Install may fail with the following message on Cisco Nexus 9500 switches if previous install attempts were aborted.</p> <pre> sys03-eor1(config)# install all nxos bootflash:nxos.7.0.3.I2.2a.bin parallel Installer will perform compatibility check first. Please wait. Installer is forced disruptive Pre-upgrade check failed. Return code 0x40930062 (free space in the filesystem is below threshold). sys03-eor1(config)# sys03-eor1(config)# </pre>

Upgrade Instructions

To perform a software upgrade, follow the installation instructions in the *Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide*.

Note: When upgrading to 7.0(3)I2(2a), Guest Shell automatically upgrades from 1.0 to 2.0. In the process, the contents of the guest shell 1.0 root filesystem will be lost. To keep from losing important content, copy any needed files to /bootflash or an off-box location before upgrading to 7.0(3)I2(2a).

Downgrade Instructions

Disable the Guest Shell if you need to downgrade from Cisco NX-OS Release 7.0(3)I2(2a) to an earlier release.

Note:

- Downgrading with PVLANS configured is only supported with 6.1(2)I3(4x) releases.
- For a boot-variable change and reload to a 7.0(3)I1(1x) release, the PVLAN process is not brought up, and the PVLAN ports are kept down. For a boot-variable change to the 6.1(2)I3(3) release and earlier, an ASCII replay will be tried, but feature PVLANS and other PVLAN configurations will fail.

Software Maintenance Upgrades

For information **about software maintenance upgrades**, see the “Performing Software Maintenance Upgrades” section in the Cisco Nexus 9000 Series NX-OS System Management Configuration Guide.

Note: If you perform a software maintenance upgrade (SMU) and later upgrade your device to a new Cisco NX-OS software release, the new image will overwrite both the previous Cisco NX-OS release and the SMU package file.

Limitations

This section lists limitations related to Cisco NX-OS Release 7.0(3)I2(2a).

- Generation 1 100G line cards (N9K-X9408PC-CFP2) and generic expansion modules (N9K-M4PC-CFP2) only support 40G flows.
- N9K-X9408PC-CFP2 line cards do not support port channeling.
- In-Service Software Upgrades (ISSU) are not supported on Cisco Nexus 9000 Series switches.
- CoPP (Control Plane Policing) cannot be disabled. If you attempt to disable it in Cisco NX-OS Release 7.0(3)I3(1), an error message appears. In previous releases, attempting to disable CoPP causes packets to be rate limited at 50 packets per seconds.
- The Skip CoPP policy option has been removed from the Cisco NX-OS initial setup utility because using it can impact the control plane of the network.
- The hardware profile front portmode command is not supported on the Cisco Nexus 9000.
- PV (Port VLAN) configuration through an interface range is not supported.
- Layer 3 routed traffic for missing Layer 2 adjacency information is not flooded back onto VLAN members of ingress units when the source MAC address of routed traffic is a non-VDC (Virtual Device Context) MAC address. This limitation is for hardware flood traffic and can occur when the SVI (Switched Virtual Interface) has a user-configured MAC address.
- neighbor-down fib-accelerate command is supported in a BGP (Border Gateway Protocol)-only environment.
- Uplink modules should not be removed from a Cisco Nexus 9300 Series switch that is running Cisco NX-OS Release 7.0(3)I1(1). The ports on uplink modules should be used only for uplinks.
- PortLoopback and BootupPortLoopback tests are not supported.
- PFC (Priority Flow Control) and LLFC (Link-Level Flow Control) are supported for all Cisco Nexus 9300 and 9500 Series hardware except for the 100G 9408PC line card and the 100G M4PC generic expansion module (GEM).
- FEXes configured with 100/full-duplex speed, without explicitly configuring the neighboring device with 100/full-duplex speed, will not pass data packet traffic properly. This occurs with or without the link appearing to be “up.”
 - no speed-Auto negotiates and advertises all speeds (only full duplex).
 - speed 100-Does not auto negotiate; pause cannot be advertised. The peer must be set to not auto negotiate (only 100 Mbps full duplex is supported).
 - speed 1000-Auto negotiates and advertises pause (advertises only for 1000 Mbps full duplex).
- Eight QoS groups are supported only on modular platforms with the Cisco Nexus 9300 N9K-M4PC-CFP2 uplink module, and the following Cisco Nexus 9500 Series line cards:
 - N9K-X9636PQ

Limitations

- N9K-X9464PX
 - N9K-X9464TX
 - N9K-X9432PQ
- Cisco NX-OS Release 7.0(3)|1(1) does not support the Cisco NX-OS to ACI conversion feature with the ability to boot the ACI image from Cisco NX-OS mode instead of from the loader> prompt (feature added in the Cisco Release 6.1(2)|3(3)).
- Cisco NX-OS Release 6.1(2)I2(2b) supports flooding for Microsoft Network Load Balancing (NLB) unicast mode on Cisco Nexus 9500 Series switches but not on Cisco Nexus 9300 Series switches. NLB is not supported in max-host system routing mode. NLB multicast mode is not supported on Cisco Nexus 9500 or 9300 Series switches.

Note: To work around the situation of Unicast NLB limitation, we can statically hard code the ARP and MAC address **pointing to the correct interface. Please refer to bug ID CSCuq03168 in detail in the “Open Caveats—Cisco NX-OS Release 7.0(3)I2(2a)” section.**

- TCAM resources are not shared when:
 - Routed ACL (Access Control List) is applied to multiple SVIs in the egress direction
 - Applying VACL (VLAN ACL) to multiple VLANs
- Cisco Nexus 9000 Series switch hardware does not support range checks (layer 4 operators) in egress TCAM. Because of this, ACL/QoS policies with layer 4 operations-based classification need to be expanded to multiple entries in the egress TCAM. Egress TCAM space planning should take this limitation into account.
- Applying the same QoS policy and ACL on multiple interfaces requires applying the qos-policy with the no-stats option to share the label.
- Multiple port VLAN mappings configured on an interface during a rollback operation causes the rollback feature to fail.
- The following switches support QSFP+ with the QSA (QSFP to SFP/SFP+ Adapter) (40G to 10G QSA):
 - N9K-C93120TX
 - N9K-C93128TX
 - N9K-C9332PQ
 - N9K-C9372PX
 - N9K-C9372PX-E
 - N9K-C9372TX
 - N9K-C9396PX
 - N9K-C9396TX

Note: The Nexus 9300 support for the QSFP+ breakout has the following limitations:

- Only 10G can be supported using QSA on 40G uplink ports on N9300 switches in NX-OS.
- 1G with QSA is not supported.

Guidelines and Limitations for Private VLANs

- For the Cisco Nexus 9332PQ switch, all ports except 13-14 and 27-32 can support breakout
 - All ports in the QSA speed group must operate at the same speed (see the configuration guide)
- The following switches support the breakout cable (40G ports to 4x10G ports):
 - N9K-C9332PQ
 - N9K-X9436PQ
 - N9K-X9536PQ
- Weighted ECMP (Equal-Cost Multi-Path) Nexus 3000 feature is not supported on the Cisco Nexus 9000 Series switch.
- Limitations for ALE (Application Link Engine) uplink ports are listed at the following URL:

https://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus9000/sw/ale_ports/b_Limitations_for_ALE_Uplink_Ports_on_Cisco_Nexus_9000_Series_Switches.html

Guidelines and Limitations for Private VLANs

This section provides guidelines and limitations for configuring private VLANs.

- Configuring Private VLANs
- Secondary and Primary VLAN Configuration
- Private VLAN Port Configuration
- Limitations with Other Features

Configuring Private VLANs

Private VLANs have the following configuration guidelines and limitations:

- Private VLANs must be enabled before the device can apply the private VLAN functionality.
- VLAN interface feature must be enabled before the device can apply this functionality.
- VLAN network interfaces for all VLANs that you plan to configure as secondary VLANs should be shut down before being configured.
- When a static MAC is created on a regular VLAN, and then that VLAN is converted to a secondary VLAN, the Cisco NX-OS maintains the MAC that was configured on the secondary VLAN as the static MAC.
- Private VLANs support port modes as follows:
 - Promiscuous
 - Promiscuous trunk
 - Isolated host
 - Isolated host trunk

- Community host
- When configuring PVLAN promiscuous or PVLAN isolated trunks, it is recommended to allow non-private VLANs in the list specified by the switchport private-vlan trunk allowed id command.
- Private VLANs are mapped or associated depending on the PVLAN trunk mode.
- Private VLANs support the following:
 - PACLs (Port Access Control Lists)
 - RACLs (Router Access Control Lists)
 - Layer 2 forwarding
 - PVLAN across switches through a regular trunk port
- Private VLANs support SVIs as follows:
 - SVI allowed only on primary VLANs
 - Primary and secondary IPs on the SVI
 - HSRP (Hot Standby Router Protocol) on the primary SVI
- Private VLANs port mode is not supported on the following:
 - 40G interfaces of the Cisco Nexus C9396PX or Cisco Nexus C93128TX
 - Cisco Nexus 3164Q
- Private VLANs do not provide port mode support for the following:
 - Port channels
 - vPCs (Virtual Port Channels) interfaces
- Private VLANs do not provide support on breakout.
- Private VLANs do not provide support for the following:
 - IP multicast or IGMP snooping
 - DHCP (Dynamic Host Channel Protocol) snooping
 - PVLAN QoS
 - VACLs
 - VLAN Trunk Protocol (VTP)
 - Tunnels
 - VXLANs
 - SPAN (Switch Port Analyzer) when the source is a PVLAN VLAN
- Shared interfaces cannot be configured to be part of a private VLAN. For more details, see the *Cisco Nexus 9000 Series NX-OS Interfaces Configuration Guide*.

- Configuring multiple isolated VLAN configurations per PVLAN group is allowed by the Cisco NX-OS CLI. However, such a configuration is not supported. A PVLAN group can have at most one isolated VLAN.

Secondary and Primary VLAN Configuration

Follow these guidelines when configuring secondary or primary VLANs in private VLANs:

- Default VLANs (VLAN1), or any of the internally allocated VLANs, cannot be configured as primary or secondary VLANs.
- VLAN configuration (config-vlan) mode must be used to configure private VLANs.
- Primary VLANs can have multiple isolated and community VLANs associated with it. An isolated or community VLAN can be associated with only one primary VLAN.
- Private VLANs provide host isolation at Layer 2. However, hosts can communicate with each other at Layer 3.
- PVLAN groups can have one isolated VLAN at most. Multiple isolated VLAN configurations per primary VLAN configurations are not supported.
- When a secondary VLAN is associated with the primary VLAN, the STP parameters of the primary VLAN, such as bridge priorities, are propagated to the secondary VLAN. However, STP parameters do not necessarily propagate to other devices. You should manually check the STP configuration to ensure that the spanning tree topologies for the primary, isolated, and community VLANs match exactly so that the VLANs can properly share the same forwarding database.
- For normal trunk ports, note the following:
 - There is a separate instance of STP for each VLAN in the private VLAN.
 - STP parameters for the primary and all secondary VLANs must match.
 - primary and all associated secondary VLANs should be in the same MST instance.
- For non-trunking ports, STP is aware only of the primary VLAN for any private VLAN host port; STP runs only on the primary VLAN for all private VLAN ports.

Note: Cisco recommends that you enable BPDU Guard on all ports that you configure as a host port; do not enable this feature on promiscuous ports.

- Private VLAN promiscuous trunk ports allow you to configure a maximum of 16 private VLAN primary and secondary VLAN pairs on each promiscuous trunk port.
- For private VLAN isolated trunk ports, note the following:
 - You can configure a maximum of 16 private VLAN primary and secondary VLAN pairs on each isolated trunk port.
 - The native VLAN must be either a normal VLAN or a private VLAN secondary VLAN. You cannot configure a private VLAN primary port as the native VLAN for a private VLAN isolated trunk port.
- Downgrading a system that has private VLAN ports configured requires unconfiguring the ports.
- Before configuring a VLAN as a secondary VLAN, you must shut down the VLAN network interface for the secondary VLAN.

Private VLAN Port Configuration

Follow these guidelines when configuring private VLAN ports:

- Use only the private VLAN configuration commands to assign ports to primary, isolated, or community VLANs.
- Layer 2 access ports that are assigned to the VLANs that you configure as primary, isolated, or community VLANs are inactive while the VLAN is part of the private VLAN configuration. Layer 2 trunk interfaces, which may carry private VLANs, are active and remain part of the STP database.
- Deleting a VLAN used in the private VLAN configuration causes private VLAN ports (promiscuous ports or host ports, not trunk ports) that are associated with the VLAN to become inactive.

Limitations with Other Features

Consider these configuration limitations with other features when configuring private VLANs:

Note: In some cases, the configuration is accepted with no error messages, but the commands have no effect.

- Ensure consistent PVLAN type, states and configuration across vPC peers. There is currently no PVLAN consistency check for vPC. Inconsistent PVLAN configs across vPV peers may end up in incorrect forwarding and impacts.
- Private VLAN ports can be configured as SPAN source ports.
- Private VLAN host or promiscuous ports cannot be SPAN destination ports.
- Destination SPAN ports cannot be isolated ports. However, a source SPAN port can be an isolated port.
- After configuring the association between the primary and secondary VLANs:
 - Dynamic MAC addresses that learned the secondary VLANs are aged out.
 - Static MAC addresses for the secondary VLANs cannot be created.
- After configuring the association between the primary and secondary VLANs and deleting the association, all static MAC addresses that were created on the primary VLANs remain on the primary VLAN only.
- In private VLANs, STP controls only the primary VLAN.

Note: See the *Cisco Nexus 9000 Series NX-OS Security Configuration Guide* for information on configuring static MAC addresses.

Unsupported Features

This section lists features that are not supported in the current release.

- VXLAN
- DHCP
- FEX
- Other Unsupported Features

VXLAN

This section lists VXLAN features that are not supported.

- TX SPAN (Switched Port Analyzer) for VXLAN traffic is not supported for the access-to-network direction.
- QoS classification is not supported for VXLAN traffic in the network-to-access direction.
- QoS buffer-boost is not applicable for VXLAN traffic.
- ACL and QoS for VXLAN traffic in the network-to-access direction is not supported.
- Native VLANs for VXLAN are not supported. All traffic on VXLAN Layer 2 trunks needs to be tagged.
- Consistency checkers are not supported for VXLAN tables.
- VXLAN routing and VXLAN Bud Nodes features on the 3164Q platform are not supported.
- DHCP snooping and DAI features are not supported on VXLAN VLANs.
- IGMP snooping is not supported on VXLAN VLANs.
- Static MAC pointing to remote VTEP is not supported with BGP EVPN.

VXLAN ACL Limitations

The following ACL related features are not supported:

- Ingress RACL that is applied on an uplink Layer 3 interface that matches on the inner or outer payload in the network-to-access direction (decapsulated path)
- Egress RACL that is applied on an uplink Layer 3 interface that matches on the inner or outer payload in the access-to-network direction (encapsulated path)
- Egress VACL for decapsulated VXLAN traffic

We recommend that you use a PACL or VACL on the access side to filter out traffic entering the overlay network.

DHCP

DHCP subnet broadcast is not supported.

FEX

- FEX is supported only on the Cisco Nexus 9332PQ, 9372PX, 9372PX-E and 9396PX and 9500 switches. It is not supported on the other Cisco Nexus 9300 Series.
- Cisco Nexus 9300 Series switches do not support FEX on uplink modules (ALE).
- FEX vPC is not supported between any model of FEX and the Nexus9300 (TOR) and 9500 Switches (EOR) as the parent switches
- ASCII replay with FEX needs be done twice for HIF configurations to be applied. The second time should be done after the FEXs have come up.

- IPSG is not supported on FEX ports.

Other Unsupported Features

The following lists other features not supported in the current release:

- Due to a Poodle vulnerability, SSLv3 is no longer supported.
- The Cisco Nexus 9300 Series switches do not support the 64-bit ALPM routing mode.
- IPSG is not supported on the following:
 - The last 6 40G physical ports on the 9372PX, 9372TX, and 9332PQ switches
 - All 40G physical ports on the 9396PX, 9396TX, and 93128TX switches

Related Documentation

The entire Cisco Nexus 9000 Series NX-OS documentation set is available at the following URL:

<http://www.cisco.com/c/en/us/support/switches/nexus-9000-series-switches/tsd-products-support-series-home.html>

The Cisco Nexus 3164Q Switch - Read Me First is available at the following URL:

http://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus3164/sw/6x/readme/b_Cisco_Nexus_3164Q_Switch_Read_Me_First.html

New Documentation

No new documentation for this release.

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This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

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