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Software Upgrade and Downgrade on Cisco Nexus 9300 Series Smart Switches

Nexus operating system on N9300 Series Smart Switches

Cisco N9300 Series Smart Switches, such as N9324C-SE1U, introduced in version 10.5(3s), and N9348Y2C6D-SE1U, introduced in version 10.6(1s), come with the Cisco Nexus operating system (NX-OS) software pre-installed.

This article gives a brief overview of the Cisco NX-OS software image and explains the upgrade and downgrade processes for Cisco N9300 Series Smart Switches. It covers the default disruptive upgrade method, the use of Power-On Auto Provisioning for easier initial setup, and Graceful Insertion and Removal, which allows you to perform maintenance without disrupting network traffic.

Software image for N9300 Series Smart Switches

The Cisco NX-OS software image for N9300 Smart Switches is a software image that

- is a 64-bit software image,
- has a file name that begins with the prefix `nxos64-s1-dpu`, for example, `nxos64-s1-dpu.10.6.1s.F.bin`, and
- includes both the operating system and the Electrically Programmable Logic Device (EPLD) image.

The EPLD image on all Cisco Nexus 9000 Series Switches is a bundled firmware package that updates several EPLD components in the switch hardware. However, if you prefer you can choose to skip the EPLD image update.

For more information about NX-OS upgrade and downgrade, refer to [Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide](#). For EPLD upgrade, see both [Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide](#) and [Cisco Nexus 9000 Series FPGA/EPLD Upgrade Release Notes](#).

Software upgrade options in NX-OS

In Cisco environments, software upgrades mean updating the software or firmware on devices to improve performance, fix bugs, enhance security, or add new features.

In NX-OS Release 10.6(1s), the N9300 Series Smart Switches support

- disruptive upgrades,
- Power-on Auto Provisioning (POAP), and
- Graceful Insertion and Removal (GIR).

These features help improve switch performance, enhance security, and enable smoother device maintenance.

Disruptive upgrade

The N9324C-SE1U and N9348Y2C6D-SE1U switches support disruptive upgrade only. Disruptive upgrade is a software upgrade that

- is a simplest upgrade and the default method in NX-OS,

- requires the switch to fully reload, causing temporary network downtime, and
- does not allow forwarding of traffic as the switch is unavailable until the reload and software installation is complete.

Before performing a disruptive upgrade, it is important to back up your configurations, review the release notes for compatibility and feature support, and notify network users about the planned downtime. The disruptive upgrade should be carefully planned and performed during a scheduled maintenance window to minimize impact on network operations.



Note

Upgrading the Cisco N9324C-SE1U switch from NX-OS Release 10.5(3s) to NX-OS Release 10.6(1s) is not recommended if you are using the service-acceleration feature, because this feature is not supported in NX-OS Release 10.6(1s). To upgrade or downgrade the software, follow the instructions in [Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide](#).

N9348Y2C6D-SE1U is introduced in 10.6(1s), so it does not require an upgrade.

Power-On Auto Provisioning

The N9324C-SE1U and N9348Y2C6D-SE1U switches support Power-On Auto Provisioning (POAP). POAP is a Cisco automation feature that

- automates the initial deployment,
- simplifies provisioning, and
- complements other automation and programmability features to support streamlined data center operations.

POAP automatically upgrades software images and installs configuration files on new network devices without manual steps. It allows switches to start up and configure themselves, significantly speeding up deployment and reducing the need for manual setup.

To configure POAP, see [Cisco Nexus 9000 Series NX-OS Fundamentals Configuration Guide](#).

Graceful Insertion and Removal

Graceful Insertion and Removal (GIR) is a maintenance feature that

- lets you isolate a switch from the network to perform upgrades or debugging without affecting production traffic,
- allows you to customize maintenance and normal mode profiles to isolate, shut down, or restore certain protocols and interfaces during maintenance, and
- supports snapshots, which capture the running state of selected features before and after maintenance to compare and verify changes in the operational state of the switch.

The N9324C-SE1U and N9348Y2C6D-SE1U switches support Graceful Insertion and Removal.

When a switch is placed in GIR maintenance mode:

1. All protocols are gracefully brought down or isolated from the network, effectively removing the switch from active forwarding paths.
2. Physical ports are shut down or isolated, disconnecting the switch from traffic forwarding.
3. After maintenance, the switch can be returned to normal mode, restoring all protocols and ports without disruption.

The GIR process ensures smooth switch removal and reinsertion with minimal impact on network operations.

To configure GIR, see [Cisco Nexus 9000 Series NX-OS System Management Configuration Guide](#).

Downgrade

Downgrade refers to the process of reverting the switch's NX-OS software to an earlier software release version.

To perform downgrade, see [Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide, Release 10.6\(x\)](#)