



# Upgrading and Downgrading the Cisco Nexus 3400-S Series NX-OS Software

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This chapter describes how to upgrade or downgrade the Cisco NX-OS software. It contains the following sections:

- [About the Software Image, on page 1](#)
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## About the Software Image

Each device is shipped with the Cisco NX-OS software preinstalled. The Cisco NX-OS software consists of one NX-OS software image. The image filename begins with "nxos" (for example, nxos.9.2.2.bin). Only this image is required to load the Cisco NX-OS operating system.



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**Note** Another type of binary file is the software maintenance upgrade (SMU) package file. SMUs contain fixes for specific defects. They are created to respond to immediate issues and do not include new features. SMU package files are available for download from Cisco.com and generally include the ID number of the resolved defect in the filename (for example, n3400-dk9.2.2.CSCab00001.gbin). For more information on SMUs, see the "Performing Software Maintenance Upgrades" chapter in the *Cisco Nexus 3400-S NX-OS System Management Configuration Guide*.

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**Note** Cisco also provides electronic programmable logic device (EPLD) image upgrades to enhance hardware functionality or to resolve known hardware issues. The EPLD image upgrades are independent from the Cisco NX-OS software upgrades. For more information on EPLD images and the upgrade process, see the [Cisco Nexus 3400-S Platform FPGA/EPLD Upgrade Release Notes](#).

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## Prerequisites for Upgrading the Cisco NX-OS Software

Upgrading the Cisco NX-OS software has the following prerequisites:

- Ensure that everyone who has access to the device or the network is not configuring the device or the network during this time. You cannot configure a device during an upgrade. Use the **show configuration session summary** command to verify that you have no active configuration sessions.
- Save, commit, or discard any active configuration sessions before upgrading or downgrading the Cisco NX-OS software image on your device. On a device with dual supervisors, the active supervisor module cannot switch over to the standby supervisor module during the Cisco NX-OS software upgrade if you have an active configuration session.
- Ensure that the device has a route to the remote server. The device and the remote server must be in the same subnetwork if you do not have a router to route traffic between subnets. To verify connectivity to the remote server, use the **ping** command.

```
switch# ping 172.18.217.1 vrf management
PING 172.18.217.1 (172.18.217.1): 56 data bytes
64 bytes from 172.18.217.1: icmp_seq=0 ttl=239 time=106.647 ms
64 bytes from 172.18.217.1: icmp_seq=1 ttl=239 time=76.807 ms
64 bytes from 172.18.217.1: icmp_seq=2 ttl=239 time=76.593 ms
64 bytes from 172.18.217.1: icmp_seq=3 ttl=239 time=81.679 ms
64 bytes from 172.18.217.1: icmp_seq=4 ttl=239 time=76.5 ms

--- 172.18.217.1 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 76.5/83.645/106.647 ms
```

## Cisco NX-OS Software Upgrade Guidelines and Limitations



**Note** The [Cisco Nexus 3400-S NX-OS Release Notes](#) contain specific upgrade guidelines for each release. See the Release Notes for the target upgrade release before starting the upgrade.

Before attempting to upgrade to any software image, note these guidelines and limitations:

- Schedule the upgrade when your network is stable and steady.
- Avoid any power interruption, which could corrupt the software image, during the installation procedure.
- On devices with dual supervisor modules, both supervisor modules must have connections on the console ports to maintain connectivity when switchovers occur during a software upgrade. See the [Hardware Installation Guide](#) for your specific chassis.
- Perform the installation on the active supervisor module, not the standby supervisor module.
- The **install all nxos** command is the recommended method for software upgrades because it performs configuration compatibility checks and BIOS upgrades automatically. In contrast, changing the boot variables and reloading the device bypasses these checks and the BIOS upgrade and therefore is not recommended.

- For secure POAP, ensure that DHCP snooping is enabled and set firewall rules to block unintended or malicious DHCP servers. For more information on POAP, see the "Using PowerOn Auto Provisioning" chapter in the *Cisco Nexus 3400-S NX-OS Fundamentals Configuration Guide*.
- By default, the software upgrade process is disruptive.
- For any prior release version upgrading to Cisco NX-OS Release 9.3(5) using ISSU, if the following logging level commands are configured, they are missing in the upgraded version and must be reconfigured:
  - **logging level evmc** *value*
  - **logging level mvsh** *value*
  - **logging level fs-daemon** *value*
- For any prior release version upgrading to Cisco NX-OS Release 9.3(6) using ISSU, if the following logging level commands are configured, they are missing in the upgraded version and must be reconfigured:
  - **logging level evmc** *value*
  - **logging level mvsh** *value*

The following describe the supported upgrade paths for the current release of the Cisco NX-OS software on the Cisco Nexus 3400-S platform switch:

- 9.2(2t) to 9.2(2v)
- 9.2(2t) to 9.2(2v) to 9.3(3)
- 9.2(2v) to 9.3(3)



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**Note** The only supported upgrade method for any of the above paths is the disruptive upgrade performed by the **install all nxos** command.

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## Upgrading the Cisco NX-OS Software

Use this procedure to upgrade to a Cisco NX-OS 9.2(x) release.



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**Note** If an error message appears during the upgrade, the upgrade will fail because of the reason indicated.

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### SUMMARY STEPS

1. **Read the release notes for the software image file for any exceptions to this upgrade procedure.** See the Cisco Nexus 3400-S NX-OS Release Notes.
2. Log in to the device on the console port connection.
3. Ensure that the required space is available for the image file to be copied.

4. If you need more space on the active supervisor module, delete unnecessary files to make space available.
5. Verify that there is space available on the standby supervisor module.
6. If you need more space on the standby supervisor module, delete any unnecessary files to make space available.
7. Log in to Cisco.com, choose the software image file for your device from the following URL, and download it to a file server: <http://software.cisco.com/download/navigator.html>.
8. Copy the software image to the active supervisor module using a transfer protocol. You can use FTP, TFTP, SCP, or SFTP.
9. Display the SHA256 checksum for the file to verify the operating system integrity and ensure that the downloaded image is safe to install and use.
10. Check the impact of upgrading the software before actually performing the upgrade.
11. Save the running configuration to the startup configuration.
12. Upgrade the Cisco NX-OS software using the **install all nxos bootflash:filename** [**no-reload** |**serial**] command.
13. (Optional) Display the entire upgrade process.
14. (Optional) Log in and verify that the device is running the required software version.
15. (Optional) If necessary, install any licenses to ensure that the required features are available on the device. See the [Cisco NX-OS Licensing Guide](#).

## DETAILED STEPS

**Step 1** Read the release notes for the software image file for any exceptions to this upgrade procedure. See the Cisco Nexus 3400-S NX-OS Release Notes.

**Step 2** Log in to the device on the console port connection.

**Step 3** Ensure that the required space is available for the image file to be copied.

```
switch# dir bootflash:
49152   Dec 10 14:43:39 2015 lost+found/
80850712 Dec 10 15:57:44 2015 n3400-s-dk9.9.2.2.bin
...

Usage for bootflash://sup-local
 4825743360 bytes used
16312102912 bytes free
21137846272 bytes total
```

**Note** We recommend that you have the image file for at least one previous release of the Cisco NX-OS software on the device to use if the new image file does not load successfully.

**Step 4** If you need more space on the active supervisor module, delete unnecessary files to make space available.

```
switch# delete bootflash:n3400-s-dk9.9.2.2.bin
```

**Step 5** Verify that there is space available on the standby supervisor module.

```
switch# dir bootflash://sup-standby/
49152   Dec 10 14:43:39 2015 lost+found/
80850712 Dec 10 15:57:44 2015 n3400-s-dk9.9.2.2.bin
...

Usage for bootflash://sup-standby
 4825743360 bytes used
```

```
16312102912 bytes free
21137846272 bytes total
```

**Step 6** If you need more space on the standby supervisor module, delete any unnecessary files to make space available.

```
switch# delete bootflash://sup-standby/n3400-s-dk9.9.2.2.bin
```

**Step 7** Log in to Cisco.com, choose the software image file for your device from the following URL, and download it to a file server: <http://software.cisco.com/download/navigator.html>.

**Step 8** Copy the software image to the active supervisor module using a transfer protocol. You can use FTP, TFTP, SCP, or SFTP.

```
switch# copy scp://user@scpserver.cisco.com//download/nxos.9.2.2.bin bootflash:nxos.9.2.2.bin
```

For software images requiring compaction, you must use SCP, HTTP, or HTTPS as the source and bootflash or USB as the destination. The following example uses SCP and bootflash:

```
switch# copy scp://user@scpserver.cisco.com//download/nxos.9.3.5.bin
bootflash:nxos.9.3.5.bin compact vrf management use-kstack
```

```
user1@10.65.42.196's password:
nxos.9.3.5.bin 100% 1887MB 6.6MB/s 04:47
Copy complete, now saving to disk (please wait)...
Copy complete.
```

The **compact** keyword compacts the NX-OS image prior to copying the file to the supervisor module.

**Note** Software image compaction is only supported on SCP, HTTP, or HTTPS. If you attempt compaction with any other protocol, the system returns the following error:

```
Compact option is allowed only with source as scp/http/https and destination
as bootflash or usb
```

**Note** Compacted images are not supported with LXC boot mode.

**Step 9** Display the SHA256 checksum for the file to verify the operating system integrity and ensure that the downloaded image is safe to install and use.

```
switch# show file bootflash://sup-1/nxos.9.2.2.bin sha256sum
5214d563b7985ddad67d52658af573d6c64e5a9792b35c458f5296f954bc53be
```

**Step 10** Check the impact of upgrading the software before actually performing the upgrade.

```
switch# show install all impact nxos bootflash:nxos.9.2.2.bin
```

**Step 11** Save the running configuration to the startup configuration.

```
switch# copy running-config startup-config
```

**Step 12** Upgrade the Cisco NX-OS software using the **install all nxos bootflash:filename [no-reload |serial]** command.

```
switch# install all nxos bootflash:nxos.9.2.2.bin
```

The following options are available:

- **no-reload**—Exits the software upgrade process before the device is reloaded.

- **serial**—Upgrades the I/O modules in Cisco Nexus 9500 Series switches one at a time. (By default, the I/O modules are upgraded in parallel, which reduces the overall upgrade time. Specifically, the I/O modules are upgraded in parallel in this order: the first half of the line cards and fabric modules, the second half of the line cards and fabric modules, the first system controller, the second system controller.)

**Note** If you enter the **install all** command without specifying a filename, the command performs a compatibility check, notifies you of the modules that will be upgraded, and confirms that you want to continue with the installation. If you choose to proceed, it installs the NXOS software image that is currently running on the switch and upgrades the BIOS of various modules from the running image if required.

**Step 13** (Optional) Display the entire upgrade process.

```
switch# show install all status
```

**Step 14** (Optional) Log in and verify that the device is running the required software version.

```
switch# show version
```

**Step 15** (Optional) If necessary, install any licenses to ensure that the required features are available on the device. See the [Cisco NX-OS Licensing Guide](#).

## NX-OS Upgrade History

During the life of a Cisco Nexus 3400-S switch, many upgrade procedures can be performed. Upgrades can occur for maintenance purposes or to update the operating system to obtain new features. Over time, switches may be updated on numerous occasions. Viewing the types of upgrades and when they occurred can help in troubleshooting issues or simply understanding the history of the switch.

Beginning with Cisco NX-OS Release 9.3(5), Cisco Nexus 3400-S switches log all upgrade activity performed over time providing a comprehensive history of these events. The stored upgrade history types are:

- Cisco NX-OS System Upgrades
- Electronic Programmable Logic Device (EPLD) Upgrades
- Software Maintenance Upgrade (SMU) Installations

View the Cisco NX-OS upgrade history by entering the **show upgrade history** command. The output displays any upgrade activity that previously occurred on the switch and defines the start and end times for each event. The following is an example output of the **show upgrade history** command:

```
switch# show upgrade history
TYPE          VERSION  DATE                STATUS
NXOS EPLD     n3400-   26 Apr 2020 11:37:16  EPLD Upgrade completed
               epld.9.3.4.img
NXOS EPLD     n3400-   26 Apr 2020 11:32:41  EPLD Upgrade started
               epld.9.3.4.img
NXOS system image 9.3(5)   24 Mar 2020 20:09:10  Installation End
NXOS system image 9.3(5)   24 Mar 2020 20:05:29  Installation started
NXOS SMU      9.3(5)   03 Mar 2020 23:34:15  Patch activation ended for
               nxos.libnbproxyccli_patch-n3400_
               ALL-1.0.0-9.3.5.lib32_n3400.rpm
NXOS SMU      9.3(5)   03 Mar 2020 23:34:03  Patch activation started for
```

```
nxos.libnproxycli_patch-n3400_  
ALL-1.0.0-9.3.5.lib32_n3400.rpm
```

