



Cisco Nexus 3500 Series NX-OS Software Upgrade and Downgrade Guide, Release 10.2(x)

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Preface

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Audience

This publication is for network administrators who install, configure, and maintain Cisco Nexus switches.

Document Conventions

Command descriptions use the following conventions:

Convention	Description
bold	Bold text indicates the commands and keywords that you enter literally as shown.
<i>Italic</i>	Italic text indicates arguments for which the user supplies the values.
[x]	Square brackets enclose an optional element (keyword or argument).
[x y]	Square brackets enclosing keywords or arguments separated by a vertical bar indicate an optional choice.
{x y}	Braces enclosing keywords or arguments separated by a vertical bar indicate a required choice.
[x {y z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.

Convention	Description
<i>variable</i>	Indicates a variable for which you supply values, in context where italics cannot be used.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

Examples use the following conventions:

Convention	Description
<code>screen font</code>	Terminal sessions and information the switch displays are in screen font.
boldface screen font	Information you must enter is in boldface screen font.
<i>italic screen font</i>	Arguments for which you supply values are in italic screen font.
<>	Nonprinting characters, such as passwords, are in angle brackets.
[]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Related Documentation for Cisco Nexus 3500 Series Switches

The entire Cisco Nexus 3500 Series switch documentation set is available at the following URL:

<https://www.cisco.com/c/en/us/support/switches/nexus-3000-series-switches/tsd-products-support-series-home.html>

Documentation Feedback

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[Cisco Bug Search Tool](#) (BST) is a web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.



CHAPTER 1

New and Changed Information

This chapter provides release-specific information for each new and changed feature in the *Cisco Nexus 3500 Series NX-OS Software Upgrade and Downgrade Guide, Release 10.2(x)*.

- [New and Changed Information, on page 1](#)

New and Changed Information

Table 1: New and Changed Features for Cisco NX-OS Release 10.2(x)

Feature	Description	Changed in Release	Where Documented
32 bit image	Added PID support to 32 bit image	10.2(1)F	Cisco NX-OS Software Upgrade Guidelines, on page 5



CHAPTER 2

Upgrading or Downgrading the Cisco Nexus 3500 Series NX-OS Software

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

- [About the Software Image, on page 3](#)
- [Recommendations for Upgrading the Cisco NX-OS Software, on page 3](#)
- [Prerequisites for Upgrading the Cisco NX-OS Software, on page 4](#)
- [Prerequisites for Downgrading the Cisco NX-OS Software, on page 4](#)
- [Cisco NX-OS Software Upgrade Guidelines, on page 5](#)
- [Cisco NX-OS Software Downgrade Guidelines, on page 5](#)
- [Booting the Switch from the USB, on page 6](#)
- [Upgrading the Cisco NX-OS Software, on page 6](#)
- [NX-OS Upgrade History, on page 8](#)
- [Downgrading to an Earlier Software Release, on page 8](#)

About the Software Image

Each device is shipped with the Cisco NX-OS software. The Cisco NX-OS software consists a single NXOS software image. Only this image is required to load the Cisco NX-OS operating system. This image runs on all Cisco Nexus 3500 Series switches.



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 more information on SMUs, see the *Cisco Nexus 3500 Series NX-OS System Management Configuration Guide*.

Recommendations for Upgrading the Cisco NX-OS Software

Cisco recommends performing a Nexus Health and Configuration Check before performing an upgrade. The benefits include identification of potential issues, susceptible Field Notices and Security Vulnerabilities,

missing recommended configurations and so on. For more information about the procedure, see [Perform Nexus Health and Configuration Check](#).

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
```

For more information on configuration sessions, see the *Cisco Nexus 3500 Series NX-OS System Management Configuration Guide*.

Prerequisites for Downgrading the Cisco NX-OS Software

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

- Verify the compatibility of the software using the **show incompatibility system bootflash:filename** command. If an incompatibility exists, disable any features that are incompatible with the downgrade image before downgrading the software.

Cisco NX-OS Software Upgrade Guidelines



Note The [Cisco Nexus 3500 Series NX-OS Release Notes](#) contain specific upgrade guidelines for each release. See the Release Notes for the target upgrade release before starting the upgrade. The [Cisco Nexus 9000 and 3000 ISSU Support Matrix](#) provides information about recommended paths for upgrades from your current to a target release.

Before attempting to upgrade to any software image, follow these guidelines:

- Cisco Nexus 3500 family switches support 32 bit image.
- An upgrade to Cisco NX-OS Release 10.1(1) is supported only for the Cisco Nexus C3548P-XL switch.
- Schedule the upgrade when your network is stable and steady.
- Avoid any power interruption, which could corrupt the software image, during the installation procedure.
- The supervisor module must have connection on the console ports to maintain connectivity when switchovers occur during a software upgrade. See the *Hardware Installation Guide* for your specific chassis.
- The following upgrade paths are supported for upgrading from an earlier release to Cisco NX-OS Release 10.1(1):
 - 9.2(4) and later → 10.1(1)
 - 9.3(6) → 10.1(1)

To upgrade from Cisco NX-OS Release 9.2(4) and later, we recommend that you use the **install all** command. To upgrade from Cisco NX-OS Release 9.3(6) you must copy the running configuration to the startup configuration and reload the device.

- Cisco Nexus 3500 family switches support 32-bit image.
- Ultra-low power mode is not support in DC devices.

Cisco NX-OS Software Downgrade Guidelines

Before attempting to downgrade to an earlier software release, follow these guidelines:

- The supervisor module must have connection on the console ports to maintain connectivity when switchovers occur during a software downgrade. See the *Hardware Installation Guide* for your specific chassis.
- Cisco NX-OS automatically installs and enables the guest shell by default. However, if the device is reloaded with a Cisco NX-OS image that does not provide guest shell support, the existing guest shell is automatically removed and a %VMAN-2-INVALID_PACKAGE message is issued. As a best practice, remove the guest shell with the **guestshell destroy** command before downgrading to an earlier Cisco NX-OS image.

- You can downgrade the switch software from Cisco NX-OS Release 10.1(1) to Cisco NX-OS Release 9.2(4) and later, or to 9.3(6) by using the **install all** command.

Booting the Switch from the USB

You can optionally choose to boot the switch from an external flash memory drive at the loader prompt. The supported BIOS version for the Cisco Nexus C3548P-XL switch is 5.4.1. Following are the various options for loading the image from an external flash memory drive:

- You can load the image from USB1 when either the USB1 slot is occupied or when both the USB slots are occupied.

```
Loader> boot usb1: <image>
```

- You can load the image from USB2 only when the USB2 slot is occupied.

```
Loader> boot usb2: <image>
```

- You can load the image from USB2 when both the USB slots are occupied.

```
Loader> boot usb2: <image>
```

- You can load the image from USB1 when only the USB1 slot is occupied or when both the USB slots are occupied.

- You can load the image from USB2 when only the USB2 slot is occupied.

- You can load the image from USB2 when both the USB slots are occupied.

Upgrading the Cisco NX-OS Software



Note To upgrade from Cisco NX-OS Release 9.2(4) and later, we recommend that you use the **install all** command. To upgrade from Cisco NX-OS Release 9.3(6) you must copy the running configuration to the startup configuration and reload the device.



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

SUMMARY STEPS

1. **Read the release notes for the software image file for any exceptions to this upgrade procedure.**
See the [Cisco Nexus 3500 Series 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 files to be copied.
4. If you need more space on the device, delete unnecessary files to make space available.
5. Upgrade the Cisco NX-OS software to new Cisco NX-OS Release.

6. Copy the software images to the device using a transfer protocol. You can use FTP, TFTP, SCP, or SFTP.
7. Check the impact of upgrading the software before actually performing the upgrade.
8. Save the running configuration to the startup configuration.
9. Upgrade the Cisco NX-OS software using the **install all nxos bootflash:filename [no-reload | non-interruptive | serial]** command.
10. (Optional) Log in and verify that the device is running the required software version.
11. (Optional) Verify the entire upgrade process.
12. (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

Procedure

Step 1 Read the release notes for the software image file for any exceptions to this upgrade procedure. See the [Cisco Nexus 3500 Series 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 files to be copied.

```
switch# dir bootflash:
```

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

Step 4 If you need more space on the device, delete unnecessary files to make space available.

Step 5 Upgrade the Cisco NX-OS software to new Cisco NX-OS Release.

Step 6 Copy the software images to the device using a transfer protocol. You can use FTP, TFTP, SCP, or SFTP.

```
switch# copy scp://user@server-ip/image-path/ bootflash: vrf management
```

```
switch# copy scp://user@scpserver.cisco.com/download/nxos.10.1.1.bin bootflash: vrf management
```

Step 7 Check the impact of upgrading the software before actually performing the upgrade.

```
switch# show install all impact nxos bootflash:nxos.10.1.1.bin
```

Step 8 Save the running configuration to the startup configuration.

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

Step 9 Upgrade the Cisco NX-OS software using the **install all nxos bootflash:filename [no-reload | non-interruptive | serial]** command.

```
switch# install all nxos bootflash:nxos.10.1.1.bin
```

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

```
switch# show version
```

Step 11 (Optional) Verify the entire upgrade process.

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

Step 12 (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 3548 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 3548 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
switch# show upgrade history
TYPE                VERSION DATE                STATUS
NXOS system image  9.3(6)  29 Jan 2021 05:41:11 Installation started
NXOS system image  9.3(6)  29 Jan 2021 05:55:13 Installation End
NXOS system image  10.1(1) 29 Jan 2021 05:56:06 Installation started
NXOS system image  10.1(1) 29 Jan 2021 14:59:05 Installation End
```

Downgrading to an Earlier Software Release



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

SUMMARY STEPS

1. **Read the release notes for the software image file for any exceptions to this downgrade procedure.** See the *Cisco Nexus 3500 Series NX-OS Release Notes*.
2. Log in to the device on the console port connection.
3. Verify that the image files for the downgrade are present on the device bootflash:.
4. If the software image file is not present, 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>.
5. Copy the software images to the device using a transfer protocol. You can use FTP, TFTP, SCP, or SFTP.
6. Check for any software incompatibilities.
7. Disable any features that are incompatible with the downgrade images.
8. Save the running configuration to the startup configuration.
9. Downgrade the Cisco NX-OS software.
10. (Optional) Log in and verify that the device is running the required software version.
11. (Optional) Display the entire downgrade process.

DETAILED STEPS

Procedure

Step 1 **Read the release notes for the software image file for any exceptions to this downgrade procedure.** See the *Cisco Nexus 3500 Series NX-OS Release Notes*.

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

Step 3 Verify that the image files for the downgrade are present on the device bootflash:.

```
switch# dir bootflash:  
...
```

Step 4 If the software image file is not present, 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>.

Note If you need more space on the device bootflash:, use the **delete** command to remove unnecessary files.

Step 5 Copy the software images to the device using a transfer protocol. You can use FTP, TFTP, SCP, or SFTP.

```
switch# copy scp://user@server-ip/image-path bootflash: vrf management
```

```
switch# copy scp://user@scpserver.cisco.com//download/nxos.9.2.4.bin bootflash: vrf management
```

Step 6 Check for any software incompatibilities.

```
switch# show incompatibility nxos bootflash:nxos.9.2.4.bin  
Checking incompatible configuration(s)  
No incompatible configurations
```

The resulting output displays any incompatibilities and remedies.

Step 7 Disable any features that are incompatible with the downgrade images.

Step 8 Save the running configuration to the startup configuration.

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

Step 9 Downgrade the Cisco NX-OS software.

```
switch# install all nxos bootflash:nxos.9.2.4.bin
```

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

```
switch# show version
```

Step 11 (Optional) Display the entire downgrade process.

Example:

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



CHAPTER 3

Migrating Switches in a vPC Topology

This chapter describes how to migrate from one pair of switches to another in a vPC topology. It contains the following sections:

- [vPC Forklift Upgrade, on page 11](#)
- [vPC Upgrade and Downgrade Process, on page 11](#)

vPC Forklift Upgrade

In a vPC topology, you can migrate from a pair of Cisco Nexus 3500 platform switches to a different pair of Cisco Nexus 3500 platform switches. For more information, see the *vPC Forklift Upgrade Scenario* section in the *Cisco Nexus 3500 Series NX-OS Interfaces Configuration Guide* on Cisco.com.

vPC Upgrade and Downgrade Process

The following list summarizes the upgrade and downgrade process in a vPC topology.



Note In vPC topologies, the two peer switches must be upgraded individually. An upgrade on one peer switch does not automatically update the vPC peer switch.

1. Switch A and B are running a Cisco NX-OS release. Switch A is the primary switch and switch B is the secondary switch. Use the **copy r s** command on both the switches.

```
secondary_switch# show vpc role
vPC Role status
-----
vPC role : secondary
vPC system-mac : 00:23:04:ee:be:64
vPC system-priority : 32667
vPC local system-mac : 70:df:2f:eb:1c:ab
vPC local role-priority : 100
vPC peer system-mac : 70:df:2f:eb:86:1f
vPC peer role-priority : 90
secondary_switch#

primary_switch# show vpc role
vPC Role status
```

```

-----
vPC role : primary
vPC system-mac : 00:23:04:ee:be:64
vPC system-priority : 32667
vPC local system-mac : 70:df:2f:eb:86:1f
vPC local role-priority : 90
vPC peer system-mac : 70:df:2f:eb:1c:ab
vPC peer role-priority : 100
BF-Leaf-2#

secondary_switch# copy r s v
[#####] 100%
Copy complete.

primary_switch# copy r s v
[#####] 100%
Copy complete.

```

2. Bring down the peer link (PL) on switch A. Switch B brings down its vPC legs.

```

primary_switch# conf t
Enter configuration commands, one per line. End with CNTL/Z.
primary_switch(config)# int port-channel 100
primary_switch(config-if)# shutdown

Reload switch B with H_dev image (change bootvar /reload)

secondary_switch(config)# boot nxos nxos.9.0.42.bin
Performing image verification and compatibility check, please wait....
secondary_switch(config)#
secondary_switch(config)# copy r s v
[#####] 100%
Copy complete.

secondary_switch# reload
This command will reboot the system. (y/n)? [n] y

```

```

After reload
-----
secondary_switch# show vpc
Legend:
(*) - local vPC is down, forwarding via vPC peer-link
vPC domain id : 100
Peer status : peer link is down
vPC keep-alive status : peer is alive
Configuration consistency status : failed
Per-vlan consistency status : success
Configuration inconsistency reason: Consistency Check Not Performed
Type-2 inconsistency reason : Consistency Check Not Performed
vPC role : none established
Number of vPCs configured : 20
Peer Gateway : Enabled
Dual-active excluded VLANs : -
Graceful Consistency Check : Disabled (due to peer configuration)
Auto-recovery status : Disabled
Delay-restore status : Timer is off.(timeout = 90s)
Delay-restore SVI status : Timer is off.(timeout = 10s)
Operational Layer3 Peer-router : Disabled
vPC Peer-link status
-----

id Port Status Active vlans
-- --
-----

```

```

1 Po100 down -

secondary_switch#

primary_switch(config-if)# show vpc
Legend:
(*) - local vPC is down, forwarding via vPC peer-link
vPC domain id : 100
Peer status : peer link is down
vPC keep-alive status : peer is alive
Configuration consistency status : success
Per-vlan consistency status : success
Type-2 consistency status : success
vPC role : primary
Number of vPCs configured : 20
Peer Gateway : Enabled
Peer gateway excluded VLANs : -
Dual-active excluded VLANs and BDs : -
Graceful Consistency Check : Enabled
Auto-recovery status : Enabled, timer is off.(timeout = 240s)
Operational Layer3 Peer-router : Disabled
vPC Peer-link status
-----
id Port Status Active vlans
-----
1 Po100 down -

```

3. Configure vPC auto-recovery under the vPC domain on switch B. Enable **vpc upgrade** (exec command).

```

secondary_switch(config)# vpc domain 100
secondary_switch(config-vpc-domain)# auto-recovery
secondary_switch(config-vpc-domain)# end

secondary_switch# show running-config vpc
!Command: show running-config vpc
!Running configuration last done at: Wed May 16 06:34:10 2018
!Time: Wed May 16 06:34:14 2018
version 7.0(3)IHD8(1) Bios:version 01.11
feature vpc
vpc domain 100
peer-switch
role priority 100
peer-keepalive destination 10.1.31.30 source 10.1.31.29
delay restore 90
peer-gateway
auto-recovery
ipv6 nd synchronize
ip arp synchronize
interface port-channel100
vpc peer-link
interface port-channel2001
vpc 101

secondary_switch# show vpc upgrade >> Hidden command
vPC upgrade : FALSE
SVI Timer : 10
Delay Restore Timer : 90
Delay Orphan Port Timer : 0

secondary_switch# vpc upgrade >> exec command

secondary_switch# show vpc upgrade

```

```
vPC upgrade : TRUE
SVI Timer : 0
Delay Restore Timer : 0
Delay Orphan Port Timer : 0
secondary_switch#
```

- After L3 routes are learned on switch B, reload switch A with the new release image. Switch B takes over the primary role and brings up its vPC legs in approximately 5 seconds.

```
primary_switch(config)# show boot
Current Boot Variables:
sup-1
NXOS variable = bootflash:/nxos.7.0.3.F3.4.bin
No module boot variable set
Boot Variables on next reload:
sup-1
NXOS variable = bootflash:/nxos.7.0.3.F3.4.bin_new_tor_source
No module boot variable set
primary_switch(config)# end
```

```
primary_switch# show boot
Current Boot Variables:
sup-1
NXOS variable = bootflash:/nxos.7.0.3.F3.4.bin_new_tor_source
No module boot variable set
Boot Variables on next reload:
sup-1
NXOS variable = bootflash:/nxos.7.0.3.F3.4.bin_new_tor_source
No module boot variable set
primary_switch# reload
This command will reboot the system. (y/n)? [n] y
```

```
secondary_switch# show vpc
Legend:
(*) - local vPC is down, forwarding via vPC peer-link
vPC domain id : 100
Peer status : peer link is down
vPC keep-alive status : peer is not reachable through peer-keepalive
Configuration consistency status : failed
Per-vlan consistency status : success
Configuration inconsistency reason: Consistency Check Not Performed
Type-2 inconsistency reason : Consistency Check Not Performed
vPC role : primary
Number of vPCs configured : 20
Peer Gateway : Enabled
Dual-active excluded VLANs : -
Graceful Consistency Check : Disabled (due to peer configuration)
Auto-recovery status : Enabled, timer is off.(timeout = 240s)
Delay-restore status : Timer is off.(timeout = 0s)
Delay-restore SVI status : Timer is off.(timeout = 0s)
Operational Layer3 Peer-router : Disabled
vPC Peer-link status
-----
id Port Status Active vlans
-- -----
1 Po100 down -
vPC status
```

- When switch A comes back up, it brings up the peer link on switch A.

```
primary_switch# show vpc
Legend:
(*) - local vPC is down, forwarding via vPC peer-link
```

```
vPC domain id : 100
Peer status : peer adjacency formed ok
vPC keep-alive status : peer is alive
Configuration consistency status : success
Per-vlan consistency status : success
Type-2 consistency status : success
vPC role : primary, operational secondary
Number of vPCs configured : 20
Peer Gateway : Enabled
Dual-active excluded VLANs : -
Graceful Consistency Check : Enabled
Auto-recovery status : Disabled
Delay-restore status : Timer is off.(timeout = 90s)
Delay-restore SVI status : Timer is off.(timeout = 10s)
Operational Layer3 Peer-router : Disabled
vPC Peer-link status
-----
id Port Status Active vlans
-- ---
1 Po100 up 1,101-400
```

6. For downgrade, reload both the switches at the same time.

