Upgrading the Cisco NX-OS Software Using Fast Reload

This chapter describes how to upgrade the Cisco NX-OS software on a switch using fast reload. It contains the following sections:

About Fast Reload

The fast reload feature enables you to reboot the switch faster than with the **reload** command. You can also use fast reload to upgrade the software on the switch.

During a fast reload, the NXOS software image that runs on the CPU reloads the new image and runs it without a CPU or firmware reset. Although traffic is briefly disrupted during a fast reload, this feature enables the switch to reload faster than during a cold reboot.

You can use fast reload in a non-interruptive mode, which runs the installation process without any prompts, or with BGP graceful restart for BGP-compatible peers.

Fast Reload Sequence of Events

The following sequence of events occurs when you perform a fast reload using the **fast-reload** command:

1. The switch loads the NXOS software image and upgrades the kernel. All applications undergo a stateless cold reboot and are restarted through the startup configuration.

2. The control plane is disrupted. During this disruption, all control protocol communication stops. The control plane disruption is less than 90 seconds.

3. After the control plane disruption, all control plane applications undergo a stateless cold reboot and do not retain their state. The new configuration is applied when the switch reloads.

4. The data plane is disrupted. The data plane disruption is less than 30 seconds.

5. On the forwarding plane, all links become unavailable, and the data plane does not retain its state after reload. Traffic forwarding is resumed within 30 seconds.

Prerequisites for Fast Reload

Fast reload has the following prerequisites:

- Verify that sufficient space is available in the bootflash.

- To allow a fast reload, make sure that Link Aggregation Control Protocol (LACP) fast timers are not configured.

Guidelines and Limitations for Fast Reload

Fast reload has the following guidelines and limitations:

- Only the Cisco Nexus 3164Q, 3264C-E, and 92304QC switches support fast reload.

- Beginning with Cisco NX-OS Release 9.3(10), Fast Reload support is "hidden" in the NX-OS CLI, but still available if the command is executed. Fast Reload feature is not in the Release 9.3(x) train going forward.

- Cisco removes any public documentation claiming fast reload performance of under 30 seconds for the Cisco Nexus 3164Q switches.

- Fast reload is supported from Cisco NX-OS Release 7.0(3)I7(4), 7.0(3)I7(5), or 9.2(x) to a Cisco NX-OS 9.3(x) release.

- Using fast reload to downgrade the Cisco NX-OS software is not supported. To downgrade the software, use the **install all** command.

- Ensure that everyone who has access to the switch or the network is not configuring the switch or the network during this time. You cannot configure the switch during a fast reload. 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 performing a fast reload. Any active configuration sessions will be deleted without warning.

- Make any topology changes (such as Spanning Tree Protocol changes) before you perform a fast reload. However, do not make changes to the Layer 2 and routing topologies.

- Do not insert or remove any fans or power supplies during a fast reload.

- Schedule the fast reload when your network is stable and steady.

- BIOS upgrades are not supported by fast reload.

- The CPU stops responding between control plane disruption and data plane disruption.

- The **copy** *configuration-file* **startup-config** command is supported with fast reload for a limited set of configurations.

- Ensure that the username is specified in the configuration file before you perform a **copy** *configuration-file* **startup-config** followed by the **fast-reload** or **reload** command. Otherwise, you will not be able to the access the switch and will need to complete the password recovery procedure to get the system back online. For information on the password recovery procedure, see the "Power Cycling the Device to Recover the Administrator Password" section in the Cisco Nexus 9000 Series NX-OS Troubleshooting Guide.

- Fast reload currently supports the following two configuration profiles:

  Fast-reload profile 1

  - 48 Layer 2 links

  - 1 VLAN and SVI

  - 16 Layer 3 ECMP links

  - 6000 IPv4 LPM routes, 3000 IPv6 LPM routes, 200 IPv4 VIPs, and 200 IPv6 VIPs

  - 2000 IPv4 ARPs and 2000 IPv6 neighbor discovery (ND)

  Fast-reload profile 2

  - 24 Layer 2 port channels with two members each

  - 24 VLANs and SVIs

  - 8 Layer 3 port-channel ECMPs with two members each

  - 6000 IPv4 LPM routes, 3000 IPv6 LPM routes, 50 IPv4 VIPs, and 50 IPv6 VIPs

  - 2000 IPv4 ARPs and 2000 IPv6 neighbor discovery (ND)

Performing a Fast Reload and Upgrading the Cisco NX-OS Software

You can use this procedure to reboot the device faster than during a cold reboot. If you specify a software image, the software on the switch is upgraded.

Before you begin

Ensure that you have a working software image and that you have analyzed the impact of the fast reload operation.

Procedure

Step 1   Log in to the switch.

Step 2   Use the **fast-reload** [**save-config**] [**trigger-gr**] [**nxos bootflash:***nxos-image-name*] [**non-interruptive**] command to perform a fast reload.

Example:

```
switch# fast-reload nxos bootflash:nxos.9.3.1.bin
```

The following options are available:

- **save-config**—Ensures that subsequent fast reload operations use the new NXOS software image as the boot variable. If you do not use the **save-config** option, this command does not save the boot variable, and subsequent fast reload operations use the old software image as the boot variable.

- **trigger-gr**—By default, the fast reload feature requires Border Gateway Protocol (BGP) peers to be graceful restart capable. The **trigger-gr** option adds support for restarts with aggressive timers.

- **nxos bootflash:***nxos-image-name*—Specifies the name of the NXOS software image. Make sure to specify a software version that supports the fast reload feature.

- **non-interruptive**—Performs a fast reload without any prompts. Before you choose this option, verify that fast reload works on your system because this option skips all error and sanity checks.

Example

This example shows how to use fast reload to upgrade the Cisco NX-OS software on the switch:

```
switch# fast-reload nxos bootflash:nxos.9.3.1.bin
```

Saving the Configuration with Fast Reload

This table shows the expected behavior for saving the configuration with different variations of the **fast-reload** command:

Command	Expected Behavior
fast-reload	Prompts you if there is a configuration change and performs a **copy running-config startup-config** based on your response.
fast-reload non-interruptive	No prompts appear, and the configuration is not saved. You need to save the configuration using the **save-config** option or the **copy running-config startup-config** command.
fast-reload nxos bootflash:*nxos-image-name* [**non-interruptive** | **trigger-gr**]	Implicitly performs a **copy running-config startup-config**, even if the image is the same image.
copy *configuration-file* **startup-config** **fast-reload**	After bootup, implicitly performs a **copy** *configuration-file* **startup-config** and sets the boot variable to the booted image.
copy *configuration-file* **startup-config** **fast-reload nxos bootflash:***nxos-image-name*	After bootup, implicitly sets the boot variable to the specified image and performs a **copy** *configuration-file* **startup-config**.

Note   Ensure that the username is specified in the configuration file before you perform a **copy** *configuration-file* **startup-config** followed by the **fast-reload** or **reload** command. Otherwise, you will not be able to the access the switch and will need to complete the password recovery procedure to get the system back online. For information on the password recovery procedure, see the "Power Cycling the Device to Recover the Administrator Password" section in the Cisco Nexus 9000 Series NX-OS Troubleshooting Guide.

Additional References

Related Documents

Related Topic	Document Title
reload command	Cisco Nexus 9000 Series NX-OS Fundamentals Configuration Guide