Upgrading the Switch Software

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Finding the Software Version

The package files for the Cisco IOS XE software are stored on the system board flash device (flash:).

You can use the **show version** privileged EXEC command to see the software version that is running on your switch.

Note Although the **show version** output always shows the software image running on the switch, the model name shown at the end of this display is the factory configuration and does not change if you upgrade the software license.

You can also use the **dir** *filesystem:* privileged EXEC command to see the directory names of other software images that you might have stored in flash memory.

Software Images

Release	Image Type	File Name
Cisco IOS XE Dublin 17.11.99SW[1]	CAT9K_IOSXE	cat9k_iosxe.17.11.99sw.SPA.bin
Cisco IOS XE Dublin 17.11.1	CAT9K_IOSXE	cat9k_iosxe.17.11.01.SPA.bin
	No Payload Encryption (NPE)	cat9k_iosxe_npe.17.11.01.SPA.bin

[1] • Targeted for limited deployments

- Cisco Technical Assistant (TAC) supported
- Consult your Cisco Sales team prior considering for network deployment

Upgrading the ROMMON

To know the ROMMON or bootloader version that applies to every major and maintenance release, see ROMMON and CPLD Versions.

You can upgrade the ROMMON before, or, after upgrading the software version. If a new ROMMON version is available for the software version you are upgrading to, proceed as follows:

- Upgrading the ROMMON in the primary SPI flash device

  This ROMMON is upgraded automatically. When you upgrade from an existing release on your switch to a later or newer release for the first time, and there is a new ROMMON version in the new release, the system automatically upgrades the ROMMON in the primary SPI flash device, based on the hardware version of the switch.

- Upgrading the ROMMON in the golden SPI flash device

  You must manually upgrade this ROMMON. Enter the **upgrade rom-monitor capsule golden switch** command in privileged EXEC mode.

Note

- Golden ROMMON upgrade is only applicable to Cisco IOS XE Amsterdam 17.3.5 and later releases.
- Golden ROMMON upgrade will fail if the FPGA version is 17101705 or older. To upgrade the FPGA version, see Upgrading the Complex Programmable Logic Device Version, on page 17.
- In case of a Cisco StackWise Virtual setup, upgrade the active and standby supervisor modules.
- In case of a High Availability set up, upgrade the active and standby supervisor modules.

After the ROMMON is upgraded, it will take effect on the next reload. If you go back to an older release after this, the ROMMON is not downgraded. The updated ROMMON supports all previous releases.

Software Installation Commands

Summary of Software Installation Commands
To install and activate the specified file, and to commit changes to be persistent across reloads: **`install add file`** *`filename`* [**`activate commit`**] To separately install, activate, commit, cancel, or remove the installation file: **`install ?`**

Summary of Software Installation Commands	
add file tftp: *filename*	Copies the install file package from a remote location to the device and performs a compatibility check for the platform and image versions.
activate [**auto-abort-timer**]	Activates the file, and reloads the device. The **auto-abort-timer** keyword automatically rolls back image activation.
commit	Makes changes persistent over reloads.
rollback to committed	Rolls back the update to the last committed version.
abort	Cancels file activation, and rolls back to the version that was running before the current installation procedure started.
remove	Deletes all unused and inactive software installation files.

Upgrading in Install Mode

Follow these instructions to upgrade from one release to another, in install mode. To perform a software image upgrade, you must be booted into IOS via **boot flash:packages.conf**.

Before you begin

Caution You must comply with these cautionary guidelines during an upgrade:

- Do not power cycle the switch.
- Do not disconnect power or remove the supervisor module.
- Do not perform an online insertion and replacement (OIR) of either supervisor (in a High Availability setup), if one of the supervisor modules in the chassis is in the process of a bootloader upgrade or when the switch is booting up.
- Do not perform an OIR of a switching module (linecard) when the switch is booting up.

Note Disconnecting and reconnecting power to a Cisco Catalyst 9400 Series Supervisor 1 Module within a 5-second window, can corrupt the boot SPI.

Note that you can use this procedure for the following upgrade scenarios.

When upgrading from ...	Permitted Supervisor Setup (Applies to the release you are upgrading from)	First upgrade to...	To upgrade to ...
Cisco IOS XE Everest 16.6.1[2]	Upgrade a single supervisor, and complete the boot loader and CPLD upgrade. After completing the first supervisor upgrade, remove and swap in the second supervisor. After both supervisors are upgraded, they can be inserted and booted in a high availability setup. **Note** Do not simultaneously upgrade dual supervisors from Cisco IOS XE Everest 16.6.1 to a later release. Doing so may cause hardware damage.	Cisco IOS XE Everest 16.6.3 Follow the upgrade steps as in the Release Notes for Cisco Catalyst 9400 Series Switches, Cisco IOS XE Everest 16.6.x → Upgrading the Switch Software → Upgrading in Install Mode	Cisco IOS XE Dublin 17.11.x
Cisco IOS XE Everest 16.6.2 and later releases	This procedure automatically copies the images to both active and standby supervisor modules. Both supervisor modules are simultaneously upgraded.	Not applicable	

[2] When upgrading from Cisco IOS XE Everest 16.6.1 to a later release, the upgrade may take a long time, and the system will reset three times due to rommon and complex programmable logic device (CPLD) upgrade. Stateful switchover is supported from Cisco IOS XE Everest 16.6.2

The sample output in this section displays upgrade from Cisco IOS XE Dublin 17.10.1 to Cisco IOS XE Dublin 17.11.1 using **install** commands.

Procedure

Step 1 Clean-up

install remove inactive

Use this command to clean-up old installation files in case of insufficient space and to ensure that you have at least 1GB of space in flash, to expand a new image.

The following sample output displays the cleaning up of unused files, by using the **install remove inactive** command:

```
Switch# install remove inactive
install_remove: START Mon Mar 27 14:14:40 UTC 2023
Cleaning up unnecessary package files
No path specified, will use booted path flash:packages.conf
Cleaning flash:
Scanning boot directory for packages ... done.
Preparing packages list to delete ...
cat9k-cc_srdriver.17.10.01.SPA.pkg
```

```
File is in use, will not delete.
cat9k-espbase.17.10.01.SPA.pkg
File is in use, will not delete.
cat9k-rpbase.17.10.01.SPA.pkg
File is in use, will not delete.
cat9k-rpboot.17.10.01.SPA.pkg
File is in use, will not delete.
cat9k-sipbase.17.10.01.SPA.pkg
File is in use, will not delete.
cat9k-sipspa.17.10.01.SPA.pkg
File is in use, will not delete.
cat9k-srdriver.17.10.01.SPA.pkg
File is in use, will not delete.
cat9k-webui.17.10.01.SPA.pkg
File is in use, will not delete.
packages.conf
File is in use, will not delete.
done.

The following files will be deleted:
[R0]:
/flash/cat9k-cc_srdriver.17.10.01.SPA.pkg
/flash/cat9k-espbase.17.10.01.SPA.pkg
/flash/cat9k-guestshell.17.10.01.SPA.pkg
/flash/cat9k-rpbase.17.10.01.SPA.pkg
/flash/cat9k-rpboot.17.10.01.SPA.pkg
/flash/cat9k-sipbase.17.10.01.SPA.pkg
/flash/cat9k-sipspa.17.10.01.SPA.pkg
/flash/cat9k-srdriver.17.10.01.SPA.pkg
/flash/cat9k-webui.17.10.01.SPA.pkg
/flash/cat9k-wlc.17.10.01.SPA.pkg
/flash/packages.conf
/flash/cat9k_iosxe.17.10.01.SPA.bin

Do you want to remove the above files? [y/n]y
[R0]:
Deleting file flash:cat9k-cc_srdriver.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-espbase.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-guestshell.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-rpbase.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-rpboot.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-sipbase.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-sipspa.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-srdriver.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-webui.17.10.01.SPA.pkg ... done.
Deleting file flash:cat9k-wlc.17.10.01.SPA.pkg ... done.
Deleting file flash:packages.conf ... done.
SUCCESS: Files deleted.
SUCCESS: Files deleted.
--- Starting Post_Remove_Cleanup ---
Performing Post_Remove_Cleanup on Active/Standby
[R0] Post_Remove_Cleanup package(s) on R0
[R0] Finished Post_Remove_Cleanup on R0
Checking status of Post_Remove_Cleanup on [R0]
Post_Remove_Cleanup: Passed on [R0]
Finished Post_Remove_Cleanup

SUCCESS: install_remove Mon Mar 27 14:16:29 UTC 2023
Switch#
```

Step 2 Copy new image to flash

a) **copy tftp:***[[//location]/directory]/filename***flash:**

Use this command to copy the new image from a TFTP server to flash memory. The location is either an IP address or a host name. The filename is specified relative to the directory used for file transfers. Skip this step if you want to use the new image from a TFTP server.

```
Switch# copy tftp://10.8.0.6/image/cat9k_iosxe.17.11.01.SPA.bin flash:
destination filename [cat9k_iosxe.17.11.01.SPA.bin]?
Accessing tftp://10.8.0.6/image/cat9k_iosxe.17.11.01.SPA.bin...
Loading /cat9k_iosxe.17.11.01.SPA.bin from 10.8.0.6 (via GigabitEthernet0/0):
!!!
```

```
   Standby BOOTMODE variable does not exist
   Standby IPXE_TIMEOUT variable does not exist
   Standby CONFIG_FILE variable =
```

Step 4 Install image to flash

install add file activate commit

Use this command to install the image.

The following sample output displays installation of the Cisco IOS XE Dublin 17.11.1 software image in the flash memory:

```
Switch# install add file flash:cat9k_iosxe.17.11.01.SPA.bin
 activate commit

install_add_activate_commit: START Mon Mar 27 22:49:41 UTC 2023

*Mar 27 22:49:42.772: %IOSXE-5-PLATFORM: Switch 1 R0/0: Mar 27 22:49:42 install_engine.sh:
 %INSTALL-5-INSTALL_START_INFO: Started install one-shot flash:cat9k_iosxe.17.11.01.SPA.bin

install_add_activate_commit: Adding PACKAGE

--- Starting initial file syncing ---
Info: Finished copying flash:cat9k_iosxe.17.11.01.SPA.bin
 to the selected switch(es)
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
[1] Add package(s) on switch 1
[1] Finished Add on switch 1
Checking status of Add on [1]
Add: Passed on [1]
Finished Add

install_add_activate_commit: Activating PACKAGE

/flash/cat9k-webui.17.11.01.SPA.pkg
/flash/cat9k-srdriver.17.11.01.SPA.pkg
/flash/cat9k-sipspa.17.11.01.SPA.pkg
/flash/cat9k-sipbase.17.11.01.SPA.pkg
/flash/cat9k-rpboot.17.11.01.SPA.pkg
/flash/cat9k-rpbase.17.11.01.SPA.pkg
/flash/cat9k-guestshell.17.11.01.SPA.pkg
/flash/cat9k-espbase.17.11.01.SPA.pkg
/flash/cat9k-cc_srdriver.17.11.01.SPA.pkg

This operation requires a reload of the system. Do you want to proceed? [y/n]y

--- Starting Activate ---
Performing Activate on all members
[1] Activate package(s) on switch 1
[1] Finished Activate on switch 1
Checking status of Activate on [1]
Activate: Passed on [1]
Finished Activate

--- Starting Commit ---
Performing Commit on all members
[1] Commit package(s) on switch 1
[1] Finished Commit on switch 1
Checking status of Commit on [1]
Commit: Passed on [1]
```

```
Finished Commit

Install will reload the system now!

Chassis 1 reloading, reason - Reload command
SUCCESS: install_add_activate_commit
/flash/cat9k-webui.17.11.01.SPA.pkg
/flash/cat9k-srdriver.17.11.01.SPA.pkg
/flash/cat9k-sipspa.17.11.01.SPA.pkg
/flash/cat9k-sipbase.17.11.01.SPA.pkg
/flash/cat9k-rpboot.17.11.01.SPA.pkg
/flash/cat9k-rpbase.17.11.01.SPA.pkg
/flash/cat9k-guestshell.17.11.01.SPA.pkg
/flash/cat9k-espbase.17.11.01.SPA.pkg
/flash/cat9k-cc_srdriver.17.11.01.SPA.pkg
Mar 27 11 22:53:58 UTC 2023
Switch#
```

Note
Old files listed in the logs will not be removed from flash.

Step 5 Verify installation

After the software has been successfully installed, check that the ten new `.pkg` files and two `.conf` are in the flash partition, and also check the version installed on the switch.

a) **dir flash:*.pkg**

The following is sample output of the **dir flash:*.pkg** command:

```
Switch# dir flash:*.pkg
Directory of flash:/*.pkg
Directory of flash:/
475140 -rw- 2012104     Nov 11 2022 09:52:41 -07:00 cat9k-cc_srdriver.17.10.01.SPA.pkg
475141 -rw- 70333380    Nov 11 2022 09:52:44 -07:00 cat9k-espbase.17.10.01.SPA.pkg
475142 -rw- 13256       Nov 11 2022 09:52:44 -07:00 cat9k-guestshell.17.10.01.SPA.pkg
475143 -rw- 349635524   Nov 11 2022 09:52:54 -07:00 cat9k-rpbase.17.10.01.SPA.pkg
475149 -rw- 24248187    Nov 11 2022 09:53:02 -07:00 cat9k-rpboot.17.10.01.SPA.pkg
475144 -rw- 25285572    Nov 11 2022 09:52:55 -07:00 cat9k-sipbase.17.10.01.SPA.pkg
475145 -rw- 20947908    Nov 11 2022 09:52:55 -07:00 cat9k-sipspa.17.10.01.SPA.pkg
475146 -rw- 2962372     Nov 11 2022 09:52:56 -07:00 cat9k-srdriver.17.10.01.SPA.pkg
475147 -rw- 13284288    Nov 11 2022 09:52:56 -07:00 cat9k-webui.17.10.01.SPA.pkg
475148 -rw- 13248       Nov 11 2022 09:52:56 -07:00 cat9k-wlc.17.10.01.SPA.pkg

491524 -rw- 25711568    Mar 27 2023 11:49:33 -07:00  cat9k-cc_srdriver.17.11.01.SPA.pkg
491525 -rw- 78484428    Mar 27 2023 11:49:35 -07:00  cat9k-espbase.17.11.01.SPA.pkg
491526 -rw- 1598412     Mar 27 2023 11:49:35 -07:00  cat9k-guestshell.17.11.01.SPA.pkg
491527 -rw- 404153288   Mar 27 2023 11:49:47 -07:00  cat9k-rpbase.17.11.01.SPA.pkg
491533 -rw- 31657374    Mar 27 2023 11:50:09 -07:00  cat9k-rpboot.17.11.01.SPA.pkg
491528 -rw- 27681740    Mar 27 2023 11:49:48 -07:00  cat9k-sipbase.17.11.01.SPA.pkg
491529 -rw- 52224968    Mar 27 2023 11:49:49 -07:00  cat9k-sipspa.17.11.01.SPA.pkg
491530 -rw- 31130572    Mar 27 2023 11:49:50 -07:00  cat9k-srdriver.17.11.01.SPA.pkg
491531 -rw- 14783432    Mar 27 2023 11:49:51 -07:00  cat9k-webui.17.11.01.SPA.pkg
491532 -rw- 9160        Mar 27 2023 11:49:51 -07:00  cat9k-wlc.17.11.01.SPA.pkg
11353194496 bytes total (8963174400 bytes free)
```

b) **dir flash:*.conf**

The following is sample output of the **dir flash:*.conf** command. It displays the .conf files in the flash partition; note the two .conf files:

```
Switch# dir flash:*.conf
```

```
Directory of flash:/*.conf
Directory of flash:/

16631  -rw- 4882 Mar 27 2023 05:39:42 +00:00  packages.conf
16634  -rw- 4882 Mar 27 2023 05:34:06 +00:00  cat9k_iosxe.17.11.01.SPA.conf
```

- `packages.conf`—the file that has been re-written with the newly installed .pkg files
- `cat9k_iosxe.17.11.01.SPA.conf`—a backup copy of the newly installed packages.conf file

c) **show install summary**

The following is sample output of the **show install summary** command:

```
Switch# show install summary

[ R0 ] Installed Package(s) Information:
State (St): I - Inactive, U - Activated & Uncommitted,
C - Activated & Committed, D - Deactivated & Uncommitted
--------------------------------------------------------------------------------
Type St Filename/Version
--------------------------------------------------------------------------------
IMG C 17.11.01.0.58

--------------------------------------------------------------------------------
Auto abort timer: inactive
--------------------------------------------------------------------------------
```

d) **show version**

After the image boots up, use this command to verify the version of the new image.

The following sample output of the **show version** command displays the Cisco IOS XE Dublin 17.11.1 image on the device:

```
Switch# show version

Cisco IOS XE Software, Version 17.11.01
Cisco IOS Software [Dublin], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 17.11.1,
 RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2023 by Cisco Systems, Inc.
<output truncated>
```

Downgrading in Install Mode

Follow these instructions to downgrade from one release to another, in install mode. To perform a software image downgrade, you must be booted into IOS via **boot flash:packages.conf** .

Before you begin

Note that you can use this procedure for the following downgrade scenarios:

When downgrading from ...	Permitted Supervisor Setup (Applies to the release you are downgrading from)	To ...
Cisco IOS XE Dublin 17.11.x	This procedure automatically copies the images to both active and standby supervisor modules. Both supervisor modules are simultaneously downgraded. **Note** Do not perform an Online Removal and Replacement (OIR) of either supervisor module during the process.	Cisco IOS XE Dublin 17.10.x or earlier releases.

Note New switch models that are introduced in a release cannot be downgraded. The release in which a module is introduced is the minimum software version for that model. We recommend upgrading all existing hardware to the same release as the latest hardware.

The sample output in this section shows downgrade from Cisco IOS XE Dublin 17.11.1 to Cisco IOS XE Dublin 17.10.1, using **install** commands.

Procedure

Step 1 Clean-up

install remove inactive

Use this command to clean-up old installation files in case of insufficient space and to ensure that you have at least 1GB of space in flash, to expand a new image.

The following sample output displays the cleaning up of unused files, by using the **install remove inactive** command:

```
Switch# install remove inactive
 install_remove: START Fri Mar 17 11:42:27 UTC 2023

Cleaning up unnecessary package files

No path specified, will use booted path bootflash:packages.conf

Cleaning bootflash:
  Scanning boot directory for packages ... done.
  Preparing packages list to delete ...
    cat9k-cc_srdriver.17.11.01.SSA.pkg
      File is in use, will not delete.
    cat9k-espbase.17.11.01.SSA.pkg
      File is in use, will not delete.
    cat9k-guestshell.17.11.01.SSA.pkg
      File is in use, will not delete.
    cat9k-rpbase.17.11.01.SSA.pkg
      File is in use, will not delete.
    cat9k-rpboot.17.11.01.SSA.pkg
      File is in use, will not delete.
```

```
    cat9k-sipbase.17.11.01.SSA.pkg
      File is in use, will not delete.
    cat9k-sipspa.17.11.01.SSA.pkg
      File is in use, will not delete.
    cat9k-srdriver.17.11.01.SSA.pkg
      File is in use, will not delete.
    cat9k-webui.17.11.01.SSA.pkg
      File is in use, will not delete.
    cat9k-wlc.17.11.01.SSA.pkg
      File is in use, will not delete.
    packages.conf
      File is in use, will not delete.
  done.
SUCCESS: No extra package or provisioning files found on media. Nothing to clean.

SUCCESS: install_remove  Fri Mar 17 11:42:39 UTC 2023

--- Starting Post_Remove_Cleanup ---
Performing Post_Remove_Cleanup on all members
[1] Post_Remove_Cleanup package(s) on switch 1
[1] Finished Post_Remove_Cleanup on switch 1
Checking status of Post_Remove_Cleanup on [1]
Post_Remove_Cleanup: Passed on [1]
Finished Post_Remove_Cleanup

SUCCESS: install_remove Fri Mar 17 19:52:25 UTC 2023
Switch#
```

Step 2 Copy new image to flash

a) **copy tftp:***[[//location]/directory]/filename***flash:**

Use this command to copy the new image from a TFTP server to flash memory. The location is either an IP address or a host name. The filename is specified relative to the directory used for file transfers. Skip this step if you want to use the new image from a TFTP server.

```
Switch# copy tftp://10.8.0.6/image/cat9k_iosxe.17.10.01.SPA.bin flash:
Destination filename [cat9k_iosxe.17.10.01.SPA.bin]?
Accessing tftp://10.8.0.6//cat9k_iosxe.17.10.01.SPA.bin...
Loading /cat9k_iosxe.17.10.01.SPA.bin from 10.8.0.6 (via GigabitEthernet0/0):
!!!
```

```
Switch(config)# boot system flash:packages.conf
```

b) **no boot manual**

Use this command to configure the switch to auto-boot. Settings are synchronized with the standby switch, if applicable.

```
Switch(config)# no boot manual
Switch(config)# exit
```

c) **write memory**

Use this command to save boot settings.

```
Switch# write memory
```

d) **show bootvar**

Use this command to verify the boot variable (packages.conf) and manual boot setting (no):

```
Switch# show bootvar
BOOT variable = bootflash:packages.conf
MANUAL_BOOT variable = no
BAUD variable = 9600
ENABLE_BREAK variable = yes
BOOTMODE variable does not exist
IPXE_TIMEOUT variable does not exist
CONFIG_FILE variable =

Standby BOOT variable = bootflash:packages.conf
Standby MANUAL_BOOT variable = no
Standby BAUD variable = 9600
Standby ENABLE_BREAK variable = yes
Standby BOOTMODE variable does not exist
Standby IPXE_TIMEOUT variable does not exist
Standby CONFIG_FILE variable =
```

Step 4 Downgrade software image

Use one of these options, to downgrade:

- **install add file activate commit**
- **install rollback to committed**

The following example displays the installation of the `cat9k_iosxe.17.10.01.SPA.bin` software image to flash, to downgrade the switch by using the **install add file activate commit** command. You can point to the source image on your tftp server or in flash if you have it copied to flash.

```
Switch# install add file flash:cat9k_iosxe.17.10.01.SPA.bin activate commit

install_add_activate_commit: START Fri  11 Nov 22:49:41 UTC 2023

*Mar 17 22:49:42.772: %IOSXE-5-PLATFORM: Switch 1 R0/0: Mar 17 22:49:42 install_engine.sh:
%INSTALL-5-INSTALL_START_INFO: Started install one-shot
flash:cat9k_iosxe.17.10.01.SPA.bininstall_add_activate_commit: Adding PACKAGE

--- Starting initial file syncing ---
Info: Finished copying flash:cat9k_iosxe.17.10.01.SPA.bin to the selected switch(es)
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
[1] Add package(s) on switch 1
[1] Finished Add on switch 1
```

```
Checking status of Add on [1]
Add: Passed on [1]
Finished Add

install_add_activate_commit: Activating PACKAGE

/flash/cat9k-webui.17.10.01.SPA.pkg
/flash/cat9k-srdriver.17.10.01.SPA.pkg
/flash/cat9k-sipspa.17.10.01.SPA.pkg
/flash/cat9k-sipbase.17.10.01.SPA.pkg
/flash/cat9k-rpboot.17.10.01.SPA.pkg
/flash/cat9k-rpbase.17.10.01.SPA.pkg
/flash/cat9k-espbase.17.10.01.SPA.pkg
/flash/cat9k-cc_srdriver.17.10.01.SPA.pkg

This operation requires a reload of the system. Do you want to proceed? [y/n]y

--- Starting Activate ---
Performing Activate on all members
[1] Activate package(s) on switch 1
[1] Finished Activate on switch 1
Checking status of Activate on [1]
Activate: Passed on [1]
Finished Activate

--- Starting Commit ---
Performing Commit on all members
[1] Commit package(s) on switch 1
[1] Finished Commit on switch 1
Checking status of Commit on [1]
Commit: Passed on [1]
Finished Commit

Install will reload the system now!

Chassis 1 reloading, reason - Reload command
SUCCESS: install_add_activate_commit
/flash/cat9k-webui.17.10.01.SPA.pkg
/flash/cat9k-srdriver.17.10.01.SPA.pkg
/flash/cat9k-sipspa.17.10.01.SPA.pkg
/flash/cat9k-sipbase.17.10.01.SPA.pkg
/flash/cat9k-rpboot.17.10.01.SPA.pkg
/flash/cat9k-rpbase.17.10.01.SPA.pkg
/flash/cat9k-guestshell.17.10.01.SPA.pkg
/flash/cat9k-espbase.17.10.01.SPA.pkg
/flash/cat9k-cc_srdriver.17.10.01.SPA.pkg
Fri Mar 17 22:53:58 UTC 2023
Switch#
```

The following example displays sample output when downgrading the switch by using the **install rollback to committed** command.

Caution
Use the **install rollback to committed** command for downgrading, *only* if the version you want to downgrade to, is committed.

```
Switch# install rollback to committed

install_rollback: START Fri  11 Nov 14:24:56 UTC 2023

This operation requires a reload of the system. Do you want to proceed? [y/n]
*Mar 17 14:24:57.555: %IOSXE-5-PLATFORM: R0/0: Mar 17 14:24:57 install_engine.sh:
%INSTALL-5-INSTALL_START_INFO: Started install rollbacky
```

```
--- Starting Rollback ---
Performing Rollback on Active/Standby

WARNING: Found 55 disjoint TDL objects.
[R0] Rollback package(s) on R0
--- Starting rollback impact ---

Changes that are part of this rollback
Current : rp 0 0 rp_boot cat9k-rpboot.17.11.01.SPA.pkg
Current : rp 1 0 rp_boot cat9k-rpboot.17.11.01.SPA.pkg
Replacement: rp 0 0 rp_boot cat9k-rpboot.17.10.01.SPA.pkg
Replacement: rp 1 0 rp_boot cat9k-rpboot.17.10.01.SPA.pkg
Current : cc 0  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 0  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 0  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 1  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 1  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 1  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 10 0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 10 0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 10 0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 2  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 2  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 2  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 3  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 3  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 3  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 4  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 4  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 4  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 5  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 5  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 5  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 6  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 6  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 6  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 7  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 7  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 7  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 8  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 8  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 8  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : cc 9  0 cc_srdriver cat9k-cc_srdriver.17.11.01.SPA.pkg
Current : cc 9  0 cc cat9k-sipbase.17.11.01.SPA.pkg
Current : cc 9  0 cc_spa cat9k-sipspa.17.11.01.SPA.pkg
Current : fp 0  0 fp cat9k-espbase.17.11.01.SPA.pkg
Current : fp 1  0 fp cat9k-espbase.17.11.01.SPA.pkg
Current : rp 0  0 guestshell cat9k-guestshell.17.11.01.SPA.pkg
Current : rp 0  0 rp_base cat9k-rpbase.17.11.01.SPA.pkg
Current : rp 0  0 rp_daemons cat9k-rpbase.17.11.01.SPA.pkg
Current : rp 0  0 rp_iosd cat9k-rpbase.17.11.01.SPA.pkg
Current : rp 0  0 rp_security cat9k-rpbase.17.11.01.SPA.pkg
Current : rp 0  0 rp_webui cat9k-webui.17.11.01.SPA.pkg
Current : rp 0  0 rp_wlc cat9k-wlc.17.11.01.SPA.pkg
Current : rp 0  0 srdriver cat9k-srdriver.17.11.01.SPA.pkg
Current : rp 1  0 guestshell cat9k-guestshell.17.11.01.SPA.pkg
Current : rp 1  0 rp_base cat9k-rpbase.17.11.01.SPA.pkg
Current : rp 1  0 rp_daemons cat9k-rpbase.17.11.01.SPA.pkg
Current : rp 1  0 rp_iosd cat9k-rpbase.17.11.01.SPA.pkg
Current : rp 1  0 rp_security cat9k-rpbase.17.11.01.SPA.pkg
Current : rp 1  0 rp_webui cat9k-webui.17.11.01.SPA.pkg
Current : rp 1  0 rp_wlc cat9k-wlc.17.11.01.SPA.pkg
Current : rp 1  0 srdriver cat9k-srdriver.17.11.01.SPA.pkg
Replacement: cc 0  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
```

```
Replacement: cc 0  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 0  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 1  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 1  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 1  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 10 0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 10 0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 10 0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 2  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 2  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 2  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 3  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 3  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 3  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 4  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 4  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 4  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 5  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 5  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 5  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 6  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 6  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 6  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 7  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 7  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 7  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 8  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 8  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 8  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: cc 9  0 cc_srdriver cat9k-cc_srdriver.17.10.01.SPA.pkg
Replacement: cc 9  0 cc cat9k-sipbase.17.10.01.SPA.pkg
Replacement: cc 9  0 cc_spa cat9k-sipspa.17.10.01.SPA.pkg
Replacement: fp 0  0 fp cat9k-espbase.17.10.01.SPA.pkg
Replacement: fp 1  0 fp cat9k-espbase.17.10.01.SPA.pkg
Replacement: rp 0  0 guestshell cat9k-guestshell.17.10.01.SPA.pkg
Replacement: rp 0  0 rp_base cat9k-rpbase.17.10.01.SPA.pkg
Replacement: rp 0  0 rp_daemons cat9k-rpbase.17.10.01.SPA.pkg
Replacement: rp 0  0 rp_iosd cat9k-rpbase.17.10.01.SPA.pkg
Replacement: rp 0  0 rp_security cat9k-rpbase.17.10.01.SPA.pkg
Replacement: rp 0  0 rp_webui cat9k-webui.17.10.01.SPA.pkg
Replacement: rp 0  0 srdriver cat9k-srdriver.17.10.01.SPA.pkg
Replacement: rp 1  0 guestshell cat9k-guestshell.17.10.01.SPA.pkg
Replacement: rp 1  0 rp_base cat9k-rpbase.17.10.01.SPA.pkg
Replacement: rp 1  0 rp_daemons cat9k-rpbase.17.10.01.SPA.pkg
Replacement: rp 1  0 rp_iosd cat9k-rpbase.17.10.01.SPA.pkg
Replacement: rp 1  0 rp_security cat9k-rpbase.17.10.01.SPA.pkg
Replacement: rp 1  0 rp_webui cat9k-webui.17.10.01.SPA.pkg
Replacement: rp 1  0 srdriver cat9k-srdriver.17.10.01.SPA.pkg

Finished rollback impact
[R0] Finished Rollback on R0
Checking status of Rollback on [R0]
Rollback: Passed on [R0]
Finished Rollback

Install will reload the system now!
SUCCESS: install_rollback Fri  11 Nov 14:26:35 UTC 2023

Switch#
*Mar 17 14:26:35.880: %IOSXE-5-PLATFORM: R0/0: Mar 17 14:26:35 install_engine.sh:
%INSTALL-5-INSTALL_COMPLETED_INFO: Completed install rollback PACKAGE
*Mar 17 14:26:37.740: %IOSXE_OIR-6-REMCARD: Card (rp) removed from slot R1
*Mar 17 14:26:39.253: %IOSXE_OIR-6-INSCARD: Card (rp) inserted in slot R1 Mar 17 14:26:5
```

```
Initializing Hardware...

System Bootstrap, Version 17.3.1r
Compiled Tue 03/14/2023 10:19:23.77 by rel

Current image running:
Primary Rommon Image

Last reset cause: SoftwareResetTrig
C9400-SUP-1 platform with 16777216 Kbytes of main memory

Preparing to autoboot. [Press Ctrl-C to interrupt] 0
attempting to boot from [bootflash:packages.conf]

Located file packages.conf
#
################################################################################################################################


Warning: ignoring ROMMON var "BOOT_PARAM"
Warning: ignoring ROMMON var "USER_BOOT_PARAM"

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software.

FIPS: Flash Key Check : Begin
FIPS: Flash Key Check : End, Not Found, FIPS Mode Not Enabled

This product contains cryptographic features and is subject to United
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compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
```

```
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco C9410R (X86) processor (revision V00) with 868521K/6147K bytes of memory.
Processor board ID FXS2118Q1GM
312 Gigabit Ethernet interfaces
40 Ten Gigabit Ethernet interfaces
4 Forty Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
15958516K bytes of physical memory.
11161600K bytes of Bootflash at bootflash:.
1638400K bytes of Crash Files at crashinfo:.
0K bytes of WebUI ODM Files at webui:.

%INIT: waited 0 seconds for NVRAM to be available

Press RETURN to get started!
```

Step 5 Verify version

show version

After the image boots up, use this command to verify the version of the new image.

Note
When you downgrade the software image, the ROMMON version does not downgrade. It remains updated.

The following sample output of the **show version** command displays the Cisco IOS XE Dublin 17.10.1 image on the device:

```
Switch# show version
Cisco IOS XE Software, Version 17.10.01
Cisco IOS Software [Dublin], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 17.10.1,
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2023 by Cisco Systems, Inc.
<output truncated>
```

Upgrading the Complex Programmable Logic Device Version

You can trigger a CPLD version upgrade after upgrading the software image. During CPLD upgrade, the supervisor module automatically power cycles which may cause a temporary loss of uplink connectivity. This completes the CPLD upgrade process for the supervisor module. Auto-upgrade of CPLD is not supported, and so you must manually perform CPLD upgrade.

Upgrading the CPLD Version: High Availability Setup

Beginning in the privileged EXEC mode, complete the following steps:

Before you begin

When performing the CPLD version upgrade as shown, the **show platform** command can be used to confirm the CPLD version after the upgrade. This command output shows the CPLD version on all modules. However, the CPLD upgrade only applies to the supervisors, not the line cards. The line cards CPLD version is a cosmetic display. After the upgrade is completed in a high availability setup, the supervisors will be upgraded, but the line cards will still show the old CPLD version. The version mismatch between the supervisors and line cards is expected until a chassis reload.

Procedure

Step 1 Upgrade the CPLD Version of the standby supervisor module

Enter the following commands on the active supervisor:

a) `Device# configure terminal`
b) `Device(config)# service internal`
c) `Device(config)# exit`
d) `Device# upgrade hw-programmable cpld filename bootflash: rp standby`

The standby supervisor module reloads automatically and the upgrade occurs in ROMMON. During the upgrade, the supervisor module automatically power cycles and remains inactive for approximately 5 minutes.

Wait until the standby supervisor module boots up and the SSO has formed (HOT) before you proceed to the next step; this takes approximately 17 minutes.

Step 2 Perform a switch over

a) `Device# redundancy force-switchover`

This causes the standby supervisor (on which you have completed the CPLD upgrade in Step 1) to become the active supervisor module

Step 3 Upgrade the CPLD Version of the new standby supervisor module

Repeat Step 1 and all its substeps.

Note
Do not operate an HA system with mismatched FPGA versions. FPGA version should be upgraded on both the supervisors one at a time.

Upgrading the CPLD Version: Cisco StackWise Virtual Setup

Beginning in the privileged EXEC mode, complete the following steps:

Procedure

Step 1 Upgrade the CPLD version of the standby supervisor module

Enter the following commands on the active supervisor:

a) `Device# configure terminal`
b) `Device(config)# service internal`
c) `Device(config)# exit`
d) `Device# upgrade hw-programmable cpld filename bootflash: switch standby [r0 | r1]`

Use **r0** if the targeted Supervisor is on the lower slot of the chassis, and **r1** if the targeted Supervisor is on the upper slot of the chassis.

Note
For the **upgrade hw-programmable cpld filename bootflash** command, configure with the **switch** keyword only. The other available keywords are not applicable when upgrading with Cisco StackWise Virtual.

Step 2 Reload the standby supervisor module

a) `Device# redundancy reload peer`

The upgrade occurs in ROMMON. During the upgrade, the supervisor module automatically power cycles and remains inactive for approximately 5 minutes.

Wait until the standby supervisor module boots up and the SSO has formed (HOT) before you proceed to the next step; this takes approximately 17 minutes.

Step 3 Perform a switch over

a) `Device# redundancy force-switchover`

This causes the standby supervisor (on which you have completed the CPLD upgrade in step 1) to become the active supervisor module

Step 4 Upgrade the CPLD version of the new standby supervisor module

Perfom Steps 1 and 2, including all substeps, on the new standby supervisor module

Upgrading the CPLD Version: Single Supervisor Module Setup

Beginning in the privileged EXEC mode, complete the following steps:

Procedure

Upgrade the CPLD version of the active supervisor module

Enter the following commands on the active supervisor:

a) `Device# configure terminal`
b) `Device(config)# service internal`
c) `Device(config)# exit`
d) `Device# upgrade hw-programmable cpld filename bootflash: rp active`

The supervisor module reloads automatically and the upgrade occurs in ROMMON. During the upgrade, the supervisor module automatically power cycles and remains inactive for approximately 5 minutes.