



## Upgrading the Switch Software

- [Finding the Software Version, on page 1](#)
- [Software Images, on page 1](#)
- [Upgrading the ROMMON, on page 2](#)
- [Software Installation Commands, on page 3](#)
- [Upgrading in Install Mode, on page 4](#)
- [Downgrading in Install Mode, on page 12](#)
- [Field-Programmable Gate Array Version Upgrade, on page 19](#)

## 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 Cupertino 17.9.5	CAT9K_IOSXE	cat9k_iosxe.17.09.05.SPA.bin
	No Payload Encryption (NPE)	cat9k_iosxe_npe.17.09.05.SPA.bin
Cisco IOS XE Cupertino 17.9.4	CAT9K_IOSXE	cat9k_iosxe.17.09.04.SPA.bin
	No Payload Encryption (NPE)	cat9k_iosxe_npe.17.09.04.SPA.bin

Release	Image Type	File Name
Cisco IOS XE Cupertino 17.9.3	CAT9K_IOSXE	cat9k_iosxe.17.09.03.SPA.bin
	No Payload Encryption (NPE)	cat9k_iosxe_npe.17.09.03.SPA.bin
Cisco IOS XE Cupertino 17.9.2	CAT9K_IOSXE	cat9k_iosxe.17.09.02.SPA.bin
	No Payload Encryption (NPE)	cat9k_iosxe_npe.17.09.02.SPA.bin
Cisco IOS XE Cupertino 17.9.1	CAT9K_IOSXE	cat9k_iosxe.17.09.01.SPA.bin
	No Payload Encryption (NPE)	cat9k_iosxe_npe.17.09.01.SPA.bin

## Upgrading the ROMMON

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

- In case of a switch stack, perform the upgrade on the active switch and all members of the stack.

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	
<b>Supported starting from Cisco IOS XE Everest 16.6.2 and later releases</b>	
To install and activate the specified file, and to commit changes to be persistent across reloads: <b>install add file</b> <i>filename</i> [ <b>activate commit</b> ]	
To separately install, activate, commit, cancel, or remove the installation file: <b>install ?</b>	
<b>add file tftp:</b> <i>filename</i>	Copies the install file package from a remote location to the device and performs a compatibility check for the platform and image versions.
<b>activate</b> [ <b>auto-abort-timer</b> ]	Activates the file, and reloads the device. The <b>auto-abort-timer</b> keyword automatically rolls back image activation.
<b>commit</b>	Makes changes persistent over reloads.
<b>rollback to committed</b>	Rolls back the update to the last committed version.
<b>abort</b>	Cancels file activation, and rolls back to the version that was running before the current installation procedure started.
<b>remove</b>	Deletes all unused and inactive software installation files.



**Note** The **request platform software** commands are deprecated starting from Cisco IOS XE Gibraltar 16.10.1. The commands are visible on the CLI in this release and you can configure them, but we recommend that you use the **install** commands to upgrade or downgrade.

Summary of request platform software Commands	
Device# <b>request platform software package ?</b>	
<b>clean</b>	Cleans unnecessary package files from media
<b>copy</b>	Copies package to media
<b>describe</b>	Describes package content
<b>expand</b>	Expands all-in-one package to media
<b>install</b>	Installs the package
<b>uninstall</b>	Uninstalls the package
<b>verify</b>	Verifies In Service Software Upgrade (ISSU) software package compatibility

# 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 through **boot flash:packages.conf**.

## Before you begin

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

When upgrading from ...	Use these commands...	To upgrade to...
Cisco IOS XE Everest 16.5.1a or Cisco IOS XE Everest 16.6.1	Only <b>request platform software</b> commands	Cisco IOS XE Cupertino 17.9.x
Cisco IOS XE Everest 16.6.2 and all later releases	Either <b>install</b> commands or <b>request platform software</b> commands <sup>1</sup> .	

<sup>1</sup> The **request platform software** commands are deprecated. So although they are still visible on the CLI, we recommend that you use **install** commands.

The sample output in this section displays upgrade from Cisco IOS XE Cupertino 17.8.1 to Cisco IOS XE Cupertino 17.9.1 using **install** commands only.

## 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 Jul 25 19:51:48 PDT 2022
Cleaning up unnecessary package files
Scanning boot directory for packages ... done.
Preparing packages list to delete ...
  cat9k-cc_srdriver.17.08.01.SPA.pkg
    File is in use, will not delete.
  cat9k-espbase.17.08.01.SPA.pkg
    File is in use, will not delete.
  cat9k-guestshell.17.08.01.SPA.pkg
    File is in use, will not delete.
  cat9k-rpbase.17.08.01.SPA.pkg
    File is in use, will not delete.
  cat9k-rpboot.17.08.01.SPA.pkg
    File is in use, will not delete.
  cat9k-sipbase.17.08.01.SPA.pkg
    File is in use, will not delete.
  cat9k-sipspa.17.08.01.SPA.pkg
    File is in use, will not delete.
  cat9k-srdriver.17.08.01.SPA.pkg
```

```

File is in use, will not delete.
cat9k-webui.17.08.01.SPA.pkg
File is in use, will not delete.
cat9k-wlc.17.08.01.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:
[switch 1]:
/flash/cat9k-cc_srdriver.17.08.01.SPA.pkg
/flash/cat9k-espbase.17.08.01.SPA.pkg
/flash/cat9k-guestshell.17.08.01.SPA.pkg
/flash/cat9k-rpbase.17.08.01.SPA.pkg
/flash/cat9k-rpboot.17.08.01.SPA.pkg
/flash/cat9k-sipbase.17.08.01.SPA.pkg
/flash/cat9k-sipspa.17.08.01.SPA.pkg
/flash/cat9k-srdriver.17.08.01.SPA.pkg
/flash/cat9k-webui.17.08.01.SPA.pkg
/flash/cat9k-wlc.17.08.01.SPA.pkg
/flash/packages.conf

Do you want to remove the above files? [y/n]y

[switch 1]:
Deleting file flash:cat9k-cc_srdriver.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-espbase.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-guestshell.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-rpbase.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-rpboot.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-sipbase.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-sipspa.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-srdriver.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-webui.17.08.01.SPA.pkg ... done.
Deleting file flash:cat9k-wlc.17.08.01.SPA.pkg ... done.
Deleting file flash:packages.conf ... done.
SUCCESS: Files deleted.
--- 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 Mon Jul 25 19:52:25 PDT 2022
Switch#
<output truncated>

```

## Step 2 Copy new image to flash

### a) copy tftp:[//location]/directory/filenameflash:

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.17.09.01.SPA.bin flash:
destination filename [cat9k_iosxe.17.09.01.SPA.bin]?
Accessing tftp://10.8.0.6/image/cat9k_iosxe.17.09.01.SPA.bin...
Loading /cat9k_iosxe.17.09.01.SPA.bin from 10.8.0.6 (via GigabitEthernet0/0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 601216545 bytes]

```

```
601216545 bytes copied in 50.649 secs (11870255 bytes/sec)
```

b) **dir flash:**

Use this command to confirm that the image has been successfully copied to flash.

```
Switch# dir flash:*.bin
Directory of flash:/*.bin

Directory of flash:/

434184 -rw- 601216545   Jul 25 2022 10:18:11 -07:00 cat9k_iosxe.17.09.01.SPA.bin
11353194496 bytes total (8976625664 bytes free)
```

**Step 3** Set boot variable

a) **no boot system**

Use this command to reset the boot variable. This command removes the startup system image specification. Otherwise, the switch may boot a previously configured boot image.

```
Switch(config)# no boot system
```

b) **boot system flash:packages.conf**

Use this command to set the boot variable to **flash:packages.conf**.

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

c) **no boot manual**

Use this command to configure the switch to auto-boot.

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

d) **write memory**

Use this command to save boot settings.

```
Switch# write memory
```

e) **show boot**

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

```
Switch# show boot
Current Boot Variables:
BOOT variable = flash:packages.conf;

Boot Variables on next reload:
BOOT variable = flash:packages.conf;
Manual Boot = no
Enable Break = yes
Boot Mode = DEVICE
iPXE Timeout = 0
```

**Step 4** Install image to flash

**install add file activate commit**

Use this command to install the image.

We recommend that you point to the source image on your TFTP server or the flash drive of the *active* switch, if you have copied the image to flash memory. If you point to an image on the flash or USB drive of a member switch (instead of the active), you must specify the exact flash or USB drive - otherwise installation fails. For example, if the image is on the flash drive of member switch 3 (flash-3):

```
Switch# install add file
flash-3:cat9k_iosxe.17.09.01.SPA.bin activate commit.
```

The following sample output displays installation of the Cisco IOS XE Cupertino 17.9.1 software image in the flash memory:

```
Switch# install add file flash:cat9k_iosxe.17.09.01.SPA.bin activate commit

install_add_activate_commit: START Mon Jul 25 15:37:20 PDT 2022
install_add_activate_commit: Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ....

--- Starting initial file syncing ---
[2]: Copying flash:cat9k_iosxe.17.09.01.SPA.bin from switch 2 to switch 1 3 4
[1 3 4]: Finished copying to switch 1 switch 3 switch 4
Info: Finished copying flash:cat9k_iosxe.17.09.01.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
  [2] Add package(s) on switch 2
  [2] Finished Add on switch 2
  [3] Add package(s) on switch 3
  [3] Finished Add on switch 3
  [4] Add package(s) on switch 4
  [4] Finished Add on switch 4
Checking status of Add on [1 2 3 4]
Add: Passed on [1 2 3 4]
Finished Add

Image added. Version: 17.09.01
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:
/flash/cat9k-wlc.17.09.01.SPA.pkg
/flash/cat9k-webui.17.09.01.SPA.pkg
/flash/cat9k-srdriver.17.09.01.SPA.pkg
/flash/cat9k-sipspa.17.09.01.SPA.pkg
/flash/cat9k-sipbase.17.09.01.SPA.pkg
/flash/cat9k-rpboot.17.09.01.SPA.pkg
/flash/cat9k-rpbase.17.09.01.SPA.pkg
/flash/cat9k-lni.17.09.01.SPA.pkg
/flash/cat9k-guestshell.17.09.01.SPA.pkg
/flash/cat9k-espbase.17.09.01.SPA.pkg
/flash/cat9k-cc_srdriver.17.09.01.SPA.pkg
--- Starting Activate ---
Performing Activate on all members
  [1] Activate package(s) on switch 1
    --- Starting list of software package changes ---
    Old files list:
      Removed cat9k-cc_srdriver.17.08.01.SPA.pkg
      Removed cat9k-espbase.17.08.01.SPA.pkg
      Removed cat9k-guestshell.17.08.01.SPA.pkg
      Removed cat9k-rpbase.17.08.01.SPA.pkg
      Removed cat9k-rpboot.17.08.01.SPA.pkg
      Removed cat9k-sipbase.17.08.01.SPA.pkg
      Removed cat9k-sipspa.17.08.01.SPA.pkg
      Removed cat9k-srdriver.17.08.01.SPA.pkg
      Removed cat9k-webui.17.08.01.SPA.pkg
```

```

Removed cat9k-wlc.17.08.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.09.01.SPA.pkg
Added cat9k-espbase.17.09.01.SPA.pkg
Added cat9k-guestshell.17.09.01.SPA.pkg
Added cat9k-lni.17.09.01.SPA.pkg
Added cat9k-rpbase.17.09.01.SPA.pkg
Added cat9k-rpboot.17.09.01.SPA.pkg
Added cat9k-sipbase.17.09.01.SPA.pkg
Added cat9k-sipspa.17.09.01.SPA.pkg
Added cat9k-srdriver.17.09.01.SPA.pkg
Added cat9k-webui.17.09.01.SPA.pkg
Added cat9k-wlc.17.09.01.SPA.pkg
Finished list of software package changes
[1] Finished Activate on switch 1
[2] Activate package(s) on switch 2
--- Starting list of software package changes ---
Old files list:
Removed cat9k-cc_srdriver.17.08.01.SPA.pkg
Removed cat9k-espbase.17.08.01.SPA.pkg
Removed cat9k-guestshell.17.08.01.SPA.pkg
Removed cat9k-rpbase.17.08.01.SPA.pkg
Removed cat9k-rpboot.17.08.01.SPA.pkg
Removed cat9k-sipbase.17.08.01.SPA.pkg
Removed cat9k-sipspa.17.08.01.SPA.pkg
Removed cat9k-srdriver.17.08.01.SPA.pkg
Removed cat9k-webui.17.08.01.SPA.pkg
Removed cat9k-wlc.17.08.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.09.01.SPA.pkg
Added cat9k-espbase.17.09.01.SPA.pkg
Added cat9k-guestshell.17.09.01.SPA.pkg
Added cat9k-lni.17.09.01.SPA.pkg
Added cat9k-rpbase.17.09.01.SPA.pkg
Added cat9k-rpboot.17.09.01.SPA.pkg
Added cat9k-sipbase.17.09.01.SPA.pkg
Added cat9k-sipspa.17.09.01.SPA.pkg
Added cat9k-srdriver.17.09.01.SPA.pkg
Added cat9k-webui.17.09.01.SPA.pkg
Added cat9k-wlc.17.09.01.SPA.pkg
Finished list of software package changes
[2] Finished Activate on switch 2
[3] Activate package(s) on switch 3
--- Starting list of software package changes ---
Old files list:
Removed cat9k-cc_srdriver.17.08.01.SPA.pkg
Removed cat9k-espbase.17.08.01.SPA.pkg
Removed cat9k-guestshell.17.08.01.SPA.pkg
Removed cat9k-rpbase.17.08.01.SPA.pkg
Removed cat9k-rpboot.17.08.01.SPA.pkg
Removed cat9k-sipbase.17.08.01.SPA.pkg
Removed cat9k-sipspa.17.08.01.SPA.pkg
Removed cat9k-srdriver.17.08.01.SPA.pkg
Removed cat9k-webui.17.08.01.SPA.pkg
Removed cat9k-wlc.17.08.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.09.01.SPA.pkg
Added cat9k-espbase.17.09.01.SPA.pkg
Added cat9k-guestshell.17.09.01.SPA.pkg
Added cat9k-lni.17.09.01.SPA.pkg
Added cat9k-rpbase.17.09.01.SPA.pkg
Added cat9k-rpboot.17.09.01.SPA.pkg
Added cat9k-sipbase.17.09.01.SPA.pkg
Added cat9k-sipspa.17.09.01.SPA.pkg

```



```
Added cat9k-srdriver.17.09.01.SPA.pkg
Added cat9k-webui.17.09.01.SPA.pkg
Added cat9k-wlc.17.09.01.SPA.pkg
Finished list of software package changes
[3] Finished Activate on switch 3
[4] Activate package(s) on switch 4
--- Starting list of software package changes ---
Old files list:
  Removed cat9k-cc_srdriver.17.08.01.SPA.pkg
  Removed cat9k-espbases.17.08.01.SPA.pkg
  Removed cat9k-guestshell.17.08.01.SPA.pkg
  Removed cat9k-rpbases.17.08.01.SPA.pkg
  Removed cat9k-rpboot.17.08.01.SPA.pkg
  Removed cat9k-sipbase.17.08.01.SPA.pkg
  Removed cat9k-sipspace.17.08.01.SPA.pkg
  Removed cat9k-srdriver.17.08.01.SPA.pkg
  Removed cat9k-webui.17.08.01.SPA.pkg
  Removed cat9k-wlc.17.08.01.SPA.pkg
New files list:
  Added cat9k-cc_srdriver.17.09.01.SPA.pkg
  Added cat9k-espbases.17.09.01.SPA.pkg
  Added cat9k-guestshell.17.09.01.SPA.pkg
  Added cat9k-lni.17.09.01.SPA.pkg
  Added cat9k-rpbases.17.09.01.SPA.pkg
  Added cat9k-rpboot.17.09.01.SPA.pkg
  Added cat9k-sipbase.17.09.01.SPA.pkg
  Added cat9k-sipspace.17.09.01.SPA.pkg
  Added cat9k-srdriver.17.09.01.SPA.pkg
  Added cat9k-webui.17.09.01.SPA.pkg
  Added cat9k-wlc.17.09.01.SPA.pkg
Finished list of software package changes
[4] Finished Activate on switch 4
Checking status of Activate on [1 2 3 4]
Activate: Passed on [1 2 3 4]
Finished Activate

--- Starting Commit ---
Performing Commit on all members
[1] Commit package(s) on switch 1
[1] Finished Commit on switch 1
[2] Commit package(s) on switch 2
[2] Finished Commit on switch 2
[3] Commit package(s) on switch 3
[3] Finished Commit on switch 3
[4] Commit package(s) on switch 4
[4] Finished Commit on switch 4
Checking status of Commit on [1 2 3 4]
Commit: Passed on [1 2 3 4]
Finished Commit

Send model notification for install_add_activate_commit before reload
[1 2 3 4]: Performing Upgrade_Service

*Jul 25 15:47:28.095: %IOSXEBOOT-4-BOOTLOADER_UPGRADE: (local/local): Starting boot preupgrade
300+0 records in
300+0 records out
307200 bytes (307 kB, 300 KiB) copied, 0.315817 s, 973 kB/s

AppGigabitEthernet port has the latest Firmware

MM [1] MCU version 191 sw ver 196
MM [2] MCU version 191 sw ver 196

Front-end Microcode IMG MGR: found 4 microcode images for 1 device.
```

```

Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_0 update needed: no
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_1 update needed: yes
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_2 update needed: yes
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_3 update needed: no
Front-end Microcode IMG MGR: Preparing to program device microcode...
Front-end Microcode IMG MGR: Preparing to program device[0], index=0 ...594412 bytes....
Skipped[0].
Front-end Microcode IMG MGR: Preparing to program device[0], index=1 ...440976 bytes.
Front-end Microcode IMG MGR: Programming device 0...rwRrrrrrrw..
0%.....10%
.....20%
.....30%
.....40%
.....50%
.....60%
.....70%
.....80%
.....90%
.....100%
Front-end Microcode IMG MGR: Preparing to program device[0], index=2 ...24506 bytes.
Front-end Microcode IMG MGR: Programming device
0...rrrrrw..0%....10%....20%.....30%...40%....50%.....60%....70%....80%....90%....100%w
Waiting for MCU to come up ....Rr!
Front-end Microcode IMG MGR: Microcode programming complete for device 0.
Front-end Microcode IMG MGR: Preparing to program device[0], index=3 ...90974 bytes....
Skipped[3].
Front-end Microcode IMG MGR: Microcode programming complete in 298 seconds

MCU UPGRADE COMPLETED!!... SUCCESS: Upgrade_Service finished
Install will reload the system now!
SUCCESS: install_add_activate_commit Mon Jul 25 15:52:33 PDT 2022
Switch#
Chassis 2 reloading, reason - Reload command
Jul 25 15:52:36.588: %PMAN-5-EXITACTION: F0/0: pvp: Process manager is exiting: reload fp
action requested
Jul 25 15:52:38.199: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: rp processes
exit with reload switch code

Initializing Hardware.....

System Bootstrap, Version 17.3.1r[FC2], RELEASE SOFTWARE (P)
Compiled Wed 04/29/2022 12:55:25.08 by rel

Current ROMMON image : Primary
Last reset cause      : SoftwareReload
C9300-48P platform with 8388608 Kbytes of main memory

Preparing to autoboot. [Press Ctrl-C to interrupt] 0
boot: attempting to boot from [flash:packages.conf]
boot: reading file packages.conf
#####
#####

Waiting for 120 seconds for other switches to boot
#####
Switch number is 2
<output truncated>

```

**Note** The system reloads automatically after executing the **install add file activate commit** command. You do not have to manually reload the system.

## Step 5 Verify installation

After the software has been successfully installed, use the **dir flash:** command to verify that the flash partition has ten new `.pkg` files and two `.conf` files.

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

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

```
Switch# dir flash:*.pkg

Directory of flash:/
475140 -rw- 2012104      Mar 17 2022 09:52:41 -07:00 cat9k-cc_srdriver.17.08.01.SPA.pkg
475141 -rw- 70333380     Mar 17 2022 09:52:44 -07:00 cat9k-espbase.17.08.01.SPA.pkg
475142 -rw- 13256       Mar 17 2022 09:52:44 -07:00 cat9k-guestshell.17.08.01.SPA.pkg
475143 -rw- 349635524    Mar 17 2022 09:52:54 -07:00 cat9k-rpbase.17.08.01.SPA.pkg
475149 -rw- 24248187    Mar 17 2022 09:53:02 -07:00 cat9k-rpboot.17.08.01.SPA.pkg
475144 -rw- 25285572    Mar 17 2022 09:52:55 -07:00 cat9k-sipbase.17.08.01.SPA.pkg
475145 -rw- 20947908    Mar 17 2022 09:52:55 -07:00 cat9k-sipspa.17.08.01.SPA.pkg
475146 -rw- 2962372     Mar 17 2022 09:52:56 -07:00 cat9k-srdriver.17.08.01.SPA.pkg
475147 -rw- 13284288   Mar 17 2022 09:52:56 -07:00 cat9k-webui.17.08.01.SPA.pkg
475148 -rw- 13248      Mar 17 2022 09:52:56 -07:00 cat9k-wlc.17.08.01.SPA.pkg

491524 -rw- 25711568   Jul 25 2022 11:49:33 -07:00 cat9k-cc_srdriver.17.09.01.SPA.pkg
491525 -rw- 78484428   Jul 25 2022 11:49:35 -07:00 cat9k-espbase.17.09.01.SPA.pkg
491526 -rw- 1598412    Jul 25 2022 11:49:35 -07:00 cat9k-guestshell.17.09.01.SPA.pkg
491527 -rw- 404153288  Jul 25 2022 11:49:47 -07:00 cat9k-rpbase.17.09.01.SPA.pkg
491533 -rw- 31657374    Jul 25 2022 11:50:09 -07:00 cat9k-rpboot.17.09.01.SPA.pkg
491528 -rw- 27681740    Jul 25 2022 11:49:48 -07:00 cat9k-sipbase.17.09.01.SPA.pkg
491529 -rw- 52224968   Jul 25 2022 11:49:49 -07:00 cat9k-sipspa.17.09.01.SPA.pkg
491530 -rw- 31130572   Jul 25 2022 11:49:50 -07:00 cat9k-srdriver.17.09.01.SPA.pkg
491531 -rw- 14783432   Jul 25 2022 11:49:51 -07:00 cat9k-webui.17.09.01.SPA.pkg
491532 -rw- 9160       Jul 25 2022 11:49:51 -07:00 cat9k-wlc.17.09.01.SPA.pkg

11353194496 bytes total (9544245248 bytes free)
Switch#
```

### 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:

- `packages.conf`—the file that has been re-written with the newly installed `.pkg` files
- `cat9k_iosxe.17.09.01.SPA.conf`— a backup copy of the newly installed `packages.conf` file

```
Switch# dir flash:*.conf

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

434197 -rw- 7406 Jul 25 2022 10:59:16 -07:00 packages.conf
516098 -rw- 7406 Jul 25 2022 10:58:08 -07:00 cat9k_iosxe.17.09.01.SPA.conf
11353194496 bytes total (8963174400 bytes free)
```

## Step 6 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 Cupertino 17.9.1 image on the device:

```
Switch# show version
Cisco IOS XE Software, Version 17.09.01
Cisco IOS Software [Cupertino], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 17.9.1,
  RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2022 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 through **boot flash:packages.conf**.

### Before you begin

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

When downgrading from ...	Use these commands...	To downgrade to...
Cisco IOS XE Cupertino 17.9.x	Either <b>install</b> commands or <b>request platform software</b> command <sup>2</sup> .	Cisco IOS XE Cupertino 17.8.x or earlier releases.

<sup>2</sup> The **request platform software** commands are deprecated. So although they are still visible on the CLI, we recommend that you use **install** commands.



**Note** New switch models that are introduced in a release cannot be downgraded. The release in which a switch model is introduced is the minimum software version for that model.

The sample output in this section shows downgrade from Cisco IOS XE Cupertino 17.9.1 to Cisco IOS XE Cupertino 17.8.1, using **install** commands.

### Microcode Downgrade Prerequisite:

Starting from Cisco IOS XE Gibraltar 16.12.1, a new microcode is introduced to support IEEE 802.3bt Type 3 standard for UPOE switches in the series (C9300-24U, C9300-48U, C9300-24UX, C9300-48UXM, C9300-48UN). The new microcode is not backward-compatible with some releases, because of which you must also downgrade the microcode when you downgrade to one of these releases. If the microcode is not downgraded, PoE features will be impacted after the downgrade.

Depending on the *release* you are downgrading to and the *commands* you use to downgrade, review the table below for the action you may have to take:

When downgrading from ...	To one of These Releases	by Using...	Action For Microcode Downgrade
...			

Cisco IOS XE Gibraltar 16.12.1 or a later release	Cisco IOS XE Everest 16.6.1 through Cisco IOS XE Everest 16.6.6	<b>install</b> commands	Microcode will roll back automatically as part of the software installation. No further action is required.
	Cisco IOS XE Fuji 16.9.1 through Cisco IOS XE Fuji 16.9.2	<b>request platform software</b> commands or or bundle boot	Manually downgrade the microcode before downgrading the software image.  Enter the <b>hw-module mcu rollback</b> command in global configuration mode, to downgrade microcode.

## 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 Apr 4 19:51:48 PDT 2022
Cleaning up unnecessary package files
Scanning boot directory for packages ... done.
  Preparing packages list to delete ...
    cat9k-cc_srdriver.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-espbase.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-guestshell.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-rpbase.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-rpboot.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-sipbase.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-sipspa.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-srdriver.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-webui.17.09.01.SSA.pkg
      File is in use, will not delete.
    cat9k-wlc.17.09.01.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 Mon Apr 4 11:42:39 PDT 2022
```

### Step 2 Copy new image to flash

a) **copy tftp:[//location/]directory/filenameflash:**

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.17.08.01.SPA.bin flash:
Destination filename [cat9k_iosxe.17.08.01.SPA.bin]?
Accessing tftp://10.8.0.6/cat9k_iosxe.17.08.01.SPA.bin...
Loading /cat9k_iosxe.17.08.01.SPA.bin from 10.8.0.6 (via GigabitEthernet0/0):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 508584771 bytes]
508584771 bytes copied in 101.005 secs (5035244 bytes/sec)
```

b) **dir flash:**

Use this command to confirm that the image has been successfully copied to flash.

```
Switch# dir flash:*.bin
Directory of flash:/*.bin

Directory of flash:/

434184 -rw- 508584771 Apr 4 2022 13:35:16 -07:00 cat9k_iosxe.17.08.01.SPA.bin
11353194496 bytes total (9055866880 bytes free)
```

**Step 3** Set boot variable

a) **boot system flash:packages.conf**

Use this command to set the boot variable to **flash:packages.conf**.

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

b) **no boot manual**

Use this command to configure the switch to auto-boot.

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

c) **write memory**

Use this command to save boot settings.

```
Switch# write memory
```

d) **show boot**

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

```
Switch# show boot
Current Boot Variables:
BOOT variable = flash:packages.conf;

Boot Variables on next reload:
BOOT variable = flash:packages.conf;
Manual Boot = no
Enable Break = yes
Boot Mode = DEVICE
iPXE Timeout = 0
```

**Step 4** Downgrade software image  
**install add file activate commit**

Use this command to install the image.

We recommend that you point to the source image on your TFTP server or the flash drive of the *active* switch, if you have copied the image to flash memory. If you point to an image on the flash or USB drive of a member switch (instead of the active), you must specify the exact flash or USB drive - otherwise installation fails. For example, if the image is on the flash drive of member switch 3 (flash-3): `Switch# install add file flash-3:cat9k_iosxe.17.08.01.SPA.bin activate commit`.

The following example displays the installation of the Cisco IOS XE Cupertino 17.8.1 software image to flash, by using the `install add file activate commit` command.

```
Switch# install add file flash:cat9k_iosxe.17.08.01.SPA.bin activate commit
install_add_activate_commit: START Mon Apr 4 14:59:46 PDT 2022
install_add_activate_commit: Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ....

--- Starting initial file syncing ---
[1]: Copying flash:cat9k_iosxe.17.08.01.SPA.bin from switch 1 to switch 2 3 4
[2 3 4]: Finished copying to switch 2 switch 3 switch 4
Info: Finished copying flash:cat9k_iosxe.17.08.01.SPA.bin to the selected switch(es)
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
^[A [1] Add package(s) on switch 1
  [1] Finished Add on switch 1
  [2] Add package(s) on switch 2
  [2] Finished Add on switch 2
  [3] Add package(s) on switch 3
  [3] Finished Add on switch 3
  [4] Add package(s) on switch 4
  [4] Finished Add on switch 4
Checking status of Add on [1 2 3 4]
Add: Passed on [1 2 3 4]
Finished Add

Image added. Version: 17.08.01.0.306
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:
/flash/cat9k-wlc.17.08.01.SPA.pkg
/flash/cat9k-webui.17.08.01.SPA.pkg
/flash/cat9k-srdriver.17.08.01.SPA.pkg
/flash/cat9k-sipsa.17.08.01.SPA.pkg
/flash/cat9k-sipbase.17.08.01.SPA.pkg
/flash/cat9k-rpboot.17.08.01.SPA.pkg
/flash/cat9k-rpbase.17.08.01.SPA.pkg
/flash/cat9k-guestshell.17.08.01.SPA.pkg
/flash/cat9k-espbase.17.08.01.SPA.pkg
/flash/cat9k-cc_srdriver.17.08.01.SPA.pkg
--- Starting Activate ---
Performing Activate on all members
  [1] Activate package(s) on switch 1
    --- Starting list of software package changes ---
    Old files list:
      Removed cat9k-cc_srdriver.17.09.01.SPA.pkg
      Removed cat9k-espbase.17.09.01.SPA.pkg
      Removed cat9k-guestshell.17.09.01.SPA.pkg
      Removed cat9k-lni.17.09.01.SPA.pkg
      Removed cat9k-rpbase.17.09.01.SPA.pkg
      Removed cat9k-rpboot.17.09.01.SPA.pkg
      Removed cat9k-sipbase.17.09.01.SPA.pkg
      Removed cat9k-sipsa.17.09.01.SPA.pkg
      Removed cat9k-srdriver.17.09.01.SPA.pkg
```

```

Removed cat9k-webui.17.09.01.SPA.pkg
Removed cat9k-wlc.17.09.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.08.01.SPA.pkg
Added cat9k-espbases.17.08.01.SPA.pkg
Added cat9k-guestshell.17.08.01.SPA.pkg
Added cat9k-rpbase.17.08.01.SPA.pkg
Added cat9k-rpboot.17.08.01.SPA.pkg
Added cat9k-sipbase.17.08.01.SPA.pkg
Added cat9k-sipspace.17.08.01.SPA.pkg
Added cat9k-srdriver.17.08.01.SPA.pkg
Added cat9k-webui.17.08.01.SPA.pkg
Added cat9k-wlc.17.08.01.SPA.pkg
Finished list of software package changes
[1] Finished Activate on switch 1
[2] Activate package(s) on switch 2
--- Starting list of software package changes ---
Old files list:
Removed cat9k-cc_srdriver.17.09.01.SPA.pkg
Removed cat9k-espbases.17.09.01.SPA.pkg
Removed cat9k-guestshell.17.09.01.SPA.pkg
Removed cat9k-lni.17.09.01.SPA.pkg
Removed cat9k-rpbase.17.09.01.SPA.pkg
Removed cat9k-rpboot.17.09.01.SPA.pkg
Removed cat9k-sipbase.17.09.01.SPA.pkg
Removed cat9k-sipspace.17.09.01.SPA.pkg
Removed cat9k-srdriver.17.09.01.SPA.pkg
Removed cat9k-webui.17.09.01.SPA.pkg
Removed cat9k-wlc.17.09.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.08.01.SPA.pkg
Added cat9k-espbases.17.08.01.SPA.pkg
Added cat9k-guestshell.17.08.01.SPA.pkg
Added cat9k-rpbase.17.08.01.SPA.pkg
Added cat9k-rpboot.17.08.01.SPA.pkg
Added cat9k-sipbase.17.08.01.SPA.pkg
Added cat9k-sipspace.17.08.01.SPA.pkg
Added cat9k-srdriver.17.08.01.SPA.pkg
Added cat9k-webui.17.08.01.SPA.pkg
Added cat9k-wlc.17.08.01.SPA.pkg
Finished list of software package changes
[2] Finished Activate on switch 2
[3] Activate package(s) on switch 3
--- Starting list of software package changes ---
Old files list:
Removed cat9k-cc_srdriver.17.09.01.SPA.pkg
Removed cat9k-espbases.17.09.01.SPA.pkg
Removed cat9k-guestshell.17.09.01.SPA.pkg
Removed cat9k-lni.17.09.01.SPA.pkg
Removed cat9k-rpbase.17.09.01.SPA.pkg
Removed cat9k-rpboot.17.09.01.SPA.pkg
Removed cat9k-sipbase.17.09.01.SPA.pkg
Removed cat9k-sipspace.17.09.01.SPA.pkg
Removed cat9k-srdriver.17.09.01.SPA.pkg
Removed cat9k-webui.17.09.01.SPA.pkg
Removed cat9k-wlc.17.09.01.SPA.pkg
New files list:
Added cat9k-cc_srdriver.17.08.01.SPA.pkg
Added cat9k-espbases.17.08.01.SPA.pkg
Added cat9k-guestshell.17.08.01.SPA.pkg
Added cat9k-rpbase.17.08.01.SPA.pkg
Added cat9k-rpboot.17.08.01.SPA.pkg
Added cat9k-sipbase.17.08.01.SPA.pkg
Added cat9k-sipspace.17.08.01.SPA.pkg

```



```

    Added cat9k-srdriver.17.08.01.SPA.pkg
    Added cat9k-webui.17.08.01.SPA.pkg
    Added cat9k-wlc.17.08.01.SPA.pkg
  Finished list of software package changes
[3] Finished Activate on switch 3
[4] Activate package(s) on switch 4
  --- Starting list of software package changes ---
  Old files list:
    Removed cat9k-cc_srdriver.17.09.01.SPA.pkg
    Removed cat9k-espbase.17.09.01.SPA.pkg
    Removed cat9k-guestshell.17.09.01.SPA.pkg
    Removed cat9k-lni.17.09.01.SPA.pkg
    Removed cat9k-rpbase.17.09.01.SPA.pkg
    Removed cat9k-rpboot.17.09.01.SPA.pkg
    Removed cat9k-sipbase.17.09.01.SPA.pkg
    Removed cat9k-sipspa.17.09.01.SPA.pkg
    Removed cat9k-srdriver.17.09.01.SPA.pkg
    Removed cat9k-webui.17.09.01.SPA.pkg
    Removed cat9k-wlc.17.09.01.SPA.pkg
  New files list:
    Added cat9k-cc_srdriver.17.08.01.SPA.pkg
    Added cat9k-espbase.17.08.01.SPA.pkg
    Added cat9k-guestshell.17.08.01.SPA.pkg
    Added cat9k-rpbase.17.08.01.SPA.pkg
    Added cat9k-rpboot.17.08.01.SPA.pkg
    Added cat9k-sipbase.17.08.01.SPA.pkg
    Added cat9k-sipspa.17.08.01.SPA.pkg
    Added cat9k-srdriver.17.08.01.SPA.pkg
    Added cat9k-webui.17.08.01.SPA.pkg
    Added cat9k-wlc.17.08.01.SPA.pkg
  Finished list of software package changes
[4] Finished Activate on switch 4
Checking status of Activate on [1 2 3 4]
Activate: Passed on [1 2 3 4]
Finished Activate

  --- Starting Commit ---
Performing Commit on all members
  [1] Commit package(s) on switch 1
  [1] Finished Commit on switch 1
  [2] Commit package(s) on switch 2
  [2] Finished Commit on switch 2
  [3] Commit package(s) on switch 3
  [3] Finished Commit on switch 3
  [4] Commit package(s) on switch 4
  [4] Finished Commit on switch 4
Checking status of Commit on [1 2 3 4]
Commit: Passed on [1 2 3 4]
Finished Commit

Send model notification for install_add_activate_commit before reload
[1 2 3 4]: Performing Upgrade_Service
300+0 records in
300+0 records out
307200 bytes (307 kB, 300 KiB) copied, 0.316195 s, 972 kB/s
MM [1] MCU version 196 sw ver 191
MM [2] MCU version 196 sw ver 191

MCU UPGRADE IN PROGRESS... PLEASE DO NOT POWER CYCLE!!

Front-end Microcode IMG MGR: found 4 microcode images for 1 device.
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_0 update needed: no
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_1 update needed: yes
Image for front-end 0: /tmp/microcode_update/front_end/fe_type_6_2 update needed: yes

```



Press RETURN to get started.

**Note** The system reloads automatically after executing the **install add file activate commit** command. You do not have to manually reload the system.

**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 Cupertino 17.8.1 image on the device:

```
Switch# show version
Cisco IOS XE Software, Version 17.08.01
Cisco IOS Software [Cupertino], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 17.8.1,
  RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2022 by Cisco Systems, Inc.
<output truncated>
```

---

## Field-Programmable Gate Array Version Upgrade

A field-programmable gate array (FPGA) is a type of programmable memory device that exists on Cisco switches. They are re-configurable logic circuits that enable the creation of specific and dedicated functions.

To check the current FPGA version, enter the **version -v** command in ROMMON mode.



- 
- Note**
- Not every software release has a change in the FPGA version.
  - The version change occurs as part of the regular software upgrade and you do not have to perform any other additional steps.
-

