

Performing Software Maintenance Upgrades (SMUs)

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About SMUs

A software maintenance upgrade (SMU) is a package file that contains fixes for a specific defect. SMUs are created to respond to immediate issues and do not include new features. Typically, SMUs do not have a large impact on device operations. SMU versions are synchronized to the package major, minor, and maintenance versions they upgrade.

The effect of an SMU depends on its type:

- Process restart SMU-Causes a process or group of processes to restart on activation.
- Reload SMU-Causes a parallel reload of supervisors and line cards.

SMUs are not an alternative to maintenance releases. They provide a quick resolution of immediate issues. All defects fixed by SMUs are integrated into the maintenance releases.

For information on upgrading your device to a new feature or maintenance release, see the *Cisco Nexus 3500 Series NX-OS Software Upgrade and Downgrade Guide*.

Note Activating an SMU does not cause any earlier SMUs, or the package to which the SMU applies, to be automatically deactivated.

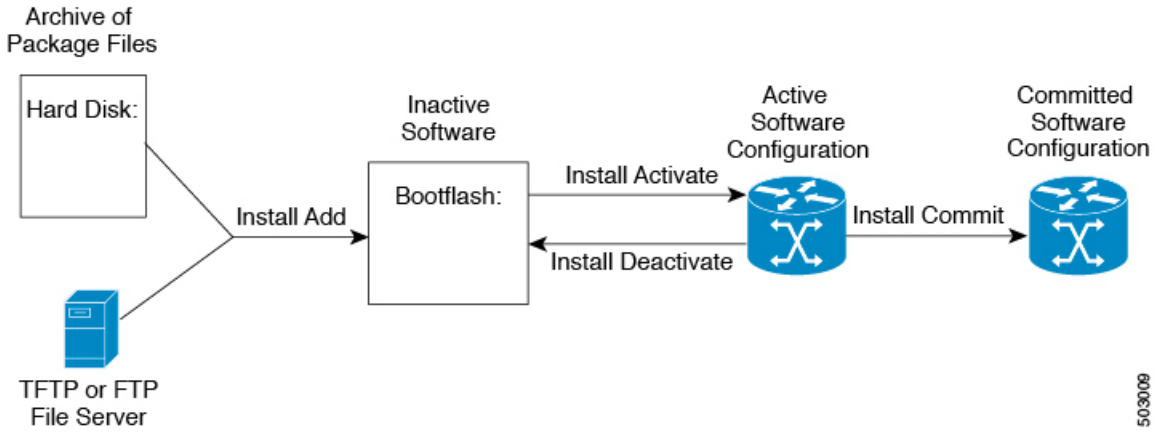
Package Management

The general procedure for adding and activating SMU packages on the device is as follows:

1. Copy the package file or files to a local storage device or file server.
2. Add the package or packages on the device using the **install add** command.
3. Activate the package or packages on the device using the **install activate** command.
4. Commit the current set of packages using the **install commit** command.
5. (Optional) Deactivate and remove the package, when desired.

The following figure illustrates the key steps in the package management process.

Figure 1: Process to Add, Activate, and Commit SMU Packages



Prerequisites for SMUs

These prerequisites must be met for a package to be activated or deactivated:

- You must be in a user group associated with a task group that includes the proper task IDs. If you suspect a user group assignment is preventing you from using a command, contact your AAA administrator for assistance.
- Verify that all line cards are installed and operating properly. For example, do not activate or deactivate packages while line cards are booting, while line cards are being upgraded or replaced, or when you anticipate an automatic switchover activity.

Guidelines and Limitations for SMUs

SMUs have the following guidelines and limitations:

- Some packages require the activation or deactivation of other packages. If the SMUs have dependencies on each other, you cannot activate them without first activating the previous ones.
- The package being activated must be compatible with the current active software set.
- You cannot activate multiple SMUs in one command.
- Activation is performed only after the package compatibility checks have been passed. If a conflict is found, an error message displays.
- While a software package is being activated, other requests are not allowed to run on any of the impacted nodes. Package activation is completed when a message similar to this one appears:

  ```
  Install operation 1 completed successfully at Thu Jan 9 01:19:24 2014
  ```

- Each CLI install request is assigned a request ID, which can be used later to review the events.
- If you perform a software maintenance upgrade and later upgrade your device to a new Cisco Nexus 3500 software release, the new image will overwrite both the previous Cisco Nexus 3500 release and the SMU package file.
- Beginning with Cisco NX-OS Release 10.5(1)F, the following guidelines are applicable to SMU:
  - If you need to activate an SMU that is valid and compatible with the image, and the activation fails, then the switch reloads automatically. However, if the SMU is not activated after four tries, do not activate the SMU. Meanwhile, when the switch is ready, a syslog message is displayed indicating that the SMU failed to activate.
  - If you try to install a PID-specific SMU on a PID that it is not meant for, then the following message is displayed: **Install operation failed because SMU is not compatible for this switch model**.
  - If you perform ISSU on a switch along with a tar ball of SMUs containing supported and non-supported SMUs, only the supported SMUs will be installed after ISSU.

Performing a Software Maintenance Upgrade for Cisco NX-OS

Preparing for Package Installation

You should use several **show** commands to gather information in preparation for the SMU package installation.

Before you begin

Determine if a software change is required.

Verify that the new package is supported on your system. Some software packages require that other packages or package versions be activated, and some packages support only specific line cards.

Review the release notes for important information related to that release and to help determine the package compatibility with your device configuration.

Verify that the system is stable and prepared for the software changes.

SUMMARY STEPS

1. **show install active**
2. **show module**
3. **show clock**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**show install active** **Example:** `switch# show install active`	Displays the active software on the device. Use this command to determine what software should be added on the device and to compare to the active software report after installation operations are complete.
Step 2	**show module** **Example:** `switch# show module`	Confirms that all modules are in the stable state.
Step 3	**show clock** **Example:** `switch# show clock`	Verifies that the system clock is correct. Software operations use certificates based on device clock times.

Example

This example shows how to display the active packages for the entire system. Use this information to determine if a software change is required.

```
switch# show install active
Active Packages:
Active Packages on Module #3:

Active Packages on Module #6:

Active Packages on Module #7:
Active Packages on Module #22:

Active Packages on Module #30:
```

This example shows how to display the current system clock setting:

```
switch# show clock
02:14:51.474 PST Wed Jan 04 2014
```

Copying the Package File to a Local Storage Device or Network Server

You must copy the SMU package file to a local storage device or a network file server to which the device has access. After this task is done, the package can be added and activated on the device.

If you need to store package files on the device, we recommend that you store the files on the hard disk. The boot device is the local disk from which the package is added and activated. The default boot device is bootflash:.

Tip Before you copy package files to a local storage device, use the **dir** command to determine if the required package files are already on the device.

If the SMU package files are located on a remote TFTP, FTP, or SFTP server, you can copy the files to a local storage device. After the files are located on the local storage device, the package can be added and activated on the device from that storage device. The following server protocols are supported:

- Trivial File Transfer Protocol—TFTP allows files to be transferred from one computer to another over a network, usually without the use of client authentication (for example, username and password). It is a simplified version of FTP.

Note Some package files might be larger than 32 MB, and the TFTP services provided by some vendors might not support a file this large. If you do not have access to a TFTP server that supports files larger than 32 MB, download the file using FTP.

- File Transfer Protocol—FTP is part of the TCP/IP protocol stack and requires a username and password.
- SSH File Transfer Protocol—SFTP is part of the SSHv2 feature in the security package and provides for secure file transfers.

After the SMU package file has been transferred to a network file server or the local storage device, you are ready to add and activate the file.

Adding and Activating Packages

You can add SMU package files that are stored on a local storage device or on a remote TFTP, FTP, or SFTP server to your device.

Note The SMU package being activated must be compatible with the currently active software to operate. When an activation is attempted, the system runs an automatic compatibility check to ensure that the package is compatible with the other active software on the device. If a conflict is found, an error message displays. The activation is performed only after all compatibility checks have been passed.

SUMMARY STEPS

1. **install add** *filename* [**activate**]
2. (Optional) **show install inactive**
3. **install activate** *filename* [**test**]
4. Repeat Step 3 until all packages are activated.
5. (Optional) **show install active**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**install add** *filename* [**activate**] **Example:** `switch# install add bootflash: n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin`	Unpacks the package software files from the local storage device or network server and adds them to the bootflash: and all active and standby supervisors installed on the device. The *filename* argument can take any of these formats: • **bootflash:***filename* • **tftp://***hostname-or-ipaddress*/*directory-path*/*filename* • **ftp://***username***:***password***@** *hostname-or-ipaddress*/*directory-path*/*filename* • **sftp://***hostname-or-ipaddress*/*directory-path*/*filename*
Step 2	(Optional) **show install inactive** **Example:** `switch# show install inactive`	Displays the inactive packages on the device. Verify that the package added in the previous step appears in the display.

Step 3	Required: **install activate** *filename* [**test**]
	Example:
	`switch# install activate n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin`
	Example:
	`switch# install activate n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin Install operation 1 completed successfully at Thu Jan 9 01:27:56 2014`
	Example:
	`switch# install activate n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin Install operation 2 !!WARNING!! This patch will get activated only after a reload of the switch. at Sun Mar 9 00:42:12 2014`
		Activates a package that was added to the device. SMU packages remain inactive until activated. (Skip this step if the package was activated earlier with the **install add activate** command.)
		Note Press **?** after a partial package name to displ one match, press the **Tab** key to fill in the re

Step 4	Repeat Step 3 until all packages are activated.	Activates additional packages as required.

	Command or Action	Purpose
Step 5	(Optional) **show install active** **Example:** `switch# show install active`	Displays all active packages. Use this command to determine if the correct packages are active.

Committing the Active Package Set

When an SMU package is activated on the device, it becomes part of the current running configuration. To make the package activation persistent across system-wide reloads, you must commit the package on the device.

SUMMARY STEPS

1. **install commit** *filename*
2. (Optional) **show install committed**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**install commit** *filename* **Example:** `switch# install commit n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin`	Commits the current set of packages so that these packages are used if the device is restarted.
Step 2	(Optional) **show install committed** **Example:** `switch# show install committed`	Displays which packages are committed.

Deactivating and Removing Packages

When a package is deactivated, it is no longer active on the device, but the package files remain on the boot disk. The package files can be reactivated later, or they can be removed from the disk.

SUMMARY STEPS

1. **install deactivate** *filename*
2. (Optional) **show install inactive**
3. (Optional) **install commit**
4. (Optional) **install remove** {*filename* | **inactive**}

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**install deactivate** *filename* **Example:** `switch# install deactivate n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin`	Deactivates a package that was added to the device and turns off the package features for the line card. **Note** Press **?** after a partial package name to displa one match, press the **Tab** key to fill in the re
Step 2	(Optional) **show install inactive** **Example:** `switch# show install inactive`	Displays the inactive packages on the device.
Step 3	(Optional) **install commit** **Example:** `switch# install commit`	Commits the current set of packages so that these packages are used if the device is restarted. **Note** Packages can be removed only if the deactiv

Step 4	(Optional) **install remove** {*filename* | **inactive**}
	Example:
	`switch# install remove n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin Proceed with removing n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin? (y/n)? [n] y`
	Example:
	`switch# install remove inactive Proceed with removing? (y/n)? [n] y`
		Removes the inactive package.
		• Only inactive packages can be removed.
		• Packages can be removed only if they are deactivated from all line cards in the device.
		• The package deactivation must be committed.
		• To remove a specific inactive package from a storage device, use the **install remove** command with the *filename* argument.
		• To remove all inactive packages from all nodes in the system, use the **install remove** command with the **inactive** keyword.

Displaying Installation Log Information

The installation log provides information on the history of the installation operations. Each time an installation operation is run, a number is assigned to that operation.

- Use the **show install log** command to display information about both successful and failed installation operations.
- Use the **show install log** command with no arguments to display a summary of all installation operations. Specify the *request-id* argument to display information specific to an operation. Use the **detail** keyword

to display details for a specific operation, including file changes, nodes that could not be reloaded, and any impact to processes.

This example shows how to display information for all installation requests:

```
switch# show install log
Thu Jan 9 01:26:09 2014
Install operation 1 by user 'admin' at Thu Jan 9 01:19:19 2018
Install add bootflash: n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin
Install operation 1 completed successfully at Thu Jan 9 01:19:24 2014
---------------------------------------
Install operation 2 by user 'admin' at Thu Jan 9 01:19:29 2018
Install activate n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin
Install operation 2 completed successfully at Thu Jan 9 01:19:45 2018
---------------------------------------
Install operation 3 by user 'admin' at Thu Jan 9 01:20:05 2018
Install commit n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin
Install operation 3 completed successfully at Thu Jan 9 01:20:08 2018
---------------------------------------
Install operation 4 by user 'admin' at Thu Jan 9 01:20:21 2018
Install deactivate n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin
Install operation 4 completed successfully at Thu Jan 9 01:20:36 2018
---------------------------------------
Install operation 5 by user 'admin' at Thu Jan 9 01:20:43 2018
Install commit n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin
Install operation 5 completed successfully at Thu Jan 9 01:20:46 2014
---------------------------------------
Install operation 6 by user 'admin' at Thu Jan 9 01:20:55 2018
Install remove n3500-uk9.6.0.2.U6.0.1.CSCab00001.bin
Install operation 6 completed successfully at Thu Jan 9 01:20:57 2018
```