



Software installation

Installing software on the router involves installing a consolidated package (bootable image). This consists of a bundle of subpackages (modular software units), with each subpackage controlling a different set of functions.

This method supports the upgrade of individual subpackages and offers reduced boot times compared to other available methods. Use this approach if you need to upgrade module software independently.

Upgrade software during a scheduled maintenance window to minimize service disruption. The router must be rebooted to apply the software upgrade.

A consolidated package is a bootable image used for installing software on a router.

- It comprises a bundle of modular software units, known as subpackages.
- Each subpackage independently controls a distinct set of router functions, and
- This installation method facilitates individual subpackage upgrades and typically results in reduced boot times.
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ROMMON images

A ROMMON image is a software package that:

- Is utilized by the ROMmon software on a router.
- Operates independently from the consolidated package typically used to boot the router, and
- Can be upgraded separately to update the router's ROMmon software.

An independent ROMmon image (software package) may occasionally be released and the router can be upgraded with the new ROMmon software. For detailed instructions, see the documentation that accompanies the ROMmon image.

For detailed information on ROMmon, refer to the [Hardware Installation Guide for the Cisco Catalyst 8000 Series Edge Platforms](#).



Note A new version of the ROMmon image is not necessarily released at the same time as a consolidated package for a router.

File systems

This table lists the file systems available on the Cisco Catalyst 8000 Series Edge Platform.

Table 1: Device File Systems

File System	Description
bootflash:	Boot flash memory file system.
flash:	Alias to the boot flash memory file system above.
harddisk:	Hard disk file system (NVME-M2-600G or USB-M2-16G or USB-M2-32G with the CLI command harddisk).
cns:	Cisco Networking Services file directory.
nvrn:	Device NVRAM. You can copy the startup configuration to NVRAM or from NVRAM.
obfl:	File system for Onboard Failure Logging (OBFL) files.
system:	System memory file system, which includes the running configuration.
tar:	Archive file system.
tmpsys:	Temporary system files file system.
usb0: USB 3.0 Type-A	Note The USB flash drive file system is visible only if a USB drive is installed in usb0: or usb1: ports.
usb1: USB 3.0 Type-B	

Use the ? help option, or use the copy command in command reference guides, if you find a file system that is not listed in the table above.

Autogenerated file directories and files

This section describes the autogenerated files and directories that may be created. It also explains how to manage the files in these directories.

Table 2: Autogenerated Files

File or Directory	Description
crashinfo files	Crash info files may appear in the bootflash: file system. These files provide descriptive information of a crash and may be useful for tuning or troubleshooting purposes. However, the files are not part of device operations, and can be erased without impacting the functioning of the device.
core directory	The storage area for .core files. If this directory is erased, it will automatically regenerate at bootup. You can erase the .core files in this directory without impacting device functionality. However, do not erase the directory itself.
lost+found directory	This directory is created on bootup if a system check is performed. Its appearance is completely normal and does not indicate any issues with the device.
tracelogs directory	The storage area for trace files. Trace files are useful for troubleshooting. If the Cisco IOS process fails, for instance, users or troubleshooting personnel can access trace files using diagnostic mode to gather information related to the Cisco IOS failure. Trace files are not part of device operations and can be erased without affecting device performance.

Important notes about autogenerated directories

Important information about autogenerated directories include:

- Autogenerated files on the bootflash: directory should not be deleted, renamed, moved, or altered in any way unless directed by Cisco customer support.



Note Altering autogenerating files on the bootflash: may have unpredictable consequences for system performance.

- Crashinfo, core, and trace files can be deleted.

Flash storage

Subpackages are installed to local media storage, such as flash. For flash storage, use the **dir bootflash:** command to list the file names.



Note Flash storage is required for successful operation of a device.

Configuration register for autoboot

The configuration register can be used to change behavior. This includes control over the device's boot process. Set the configuration register to 0x0 to boot into ROM, by using one of these commands:

- In Cisco IOS configuration mode, use the **config-reg 0x0** command.
- From the ROMMON prompt, use the **confreg 0x0** command.

For more information about the configuration register, see [Use of the Configuration Register on All Cisco Routers](#).



Note Setting the configuration register to 0x2102 will set the device to autoboot the Cisco IOS XE software.



Note The console baud rate is set to 9600 after changing the **confreg** to 0x2102 or 0x0. If you cannot establish a console session after setting **confreg**, or garbage output appears, change the setting on your terminal emulation software to 9600.

How to install and upgrade the software

To install or upgrade the software, use [#unique_83](#) method. Also see the Install a software section.

Manage and configure a device to run using a consolidated package

You can manage and configure a device using:

- [Manage and configure a consolidated package using copy and boot commands, on page 5](#)
- [#unique_86](#)

Manage and configure a consolidated package using copy and boot commands

To upgrade a consolidated package, copy the consolidated package to the **bootflash:** directory on the router using the **copy** command. After making this copy of the consolidated package, configure the router to boot using the consolidated package file.

The example shows the consolidated package file being copied to the **bootflash:** file system via TFTP. The config register is then set to boot using **boot system** commands, and the **boot system** commands instruct the router to boot using the consolidated package stored in the **bootflash:** file system.

The new configuration is then saved using the **copy running-config startup-config** command, and the system is then reloaded to complete the process.

```
Router# dir bootflash:
Directory of bootflash:/

181921   drwx           237568   Jul  8 2020 11:17:27 -07:00  tracelogs
98305    drwx           4096      Jun 24 2020 17:26:48 -07:00  license_evlog
237569   drwx           4096      Jun 24 2020 17:26:48 -07:00  core
131073   drwx           4096      Jun 24 2020 17:26:45 -07:00  onep
16       -rw-             30      Jun 24 2020 17:26:38 -07:00
throughput_monitor_params
13       -rw-          134458   Jun 24 2020 17:26:37 -07:00  memleak.tcl
401409   drwx           4096      Jun 24 2020 17:26:23 -07:00  .dbpersist
15       -rw-          1314     Jun 24 2020 17:26:21 -07:00  trustidrootx3_ca.ca
14       -rw-          20109   Jun 24 2020 17:26:21 -07:00  ios_core.p7b
73729    drwx           4096      Jun 24 2020 17:26:19 -07:00  gs_script
12       -rw-           182     Jun 24 2020 17:26:19 -07:00  mode_event_log
221185   drwx           4096      Jun 24 2020 17:26:13 -07:00  .prst_sync
212993   drwx           4096      Jun 24 2020 17:25:59 -07:00  .ssh
368641   drwx           4096      Jun 24 2020 17:25:55 -07:00  .rollback_timer
376833   drwx           4096      Jun 24 2020 17:25:55 -07:00  .installer
458753   drwx           4096      Jun 24 2020 17:25:47 -07:00  sysboot
11       -rw-          696368193 Jun 24 2020 17:15:13 -07:00

Router# copy tftp: bootflash:Address or name of remote host []? 203.0.113.2
Source filename []? /auto/tftp-ngio/test/c8000be-universalk9.17.03.01prd14.SPA.bin

Destination filename [c8000be-universalk9.17.03.01prd14.SPA.bin]?
Accessing
tftp://203.0.113.2//auto/tftp-ngio/test/c8000be-universalk9.17.03.01prd14.SPA.bin...
>Error opening
tftp://203.0.113.2//auto/tftp-ngio/test/c8000be-universalk9.17.03.01prd14.SPA.bin (Timed
out)

C8300-Router#
C8300-Router#copy tftp bootflash
Address or name of remote host [203.0.113.2]? 203.0.113.2
Source filename [/auto/tftp-ngio/test/c8000be-universalk9.17.03.01prd14.SPA.bin]?

Destination filename [c8000be-universalk9.17.03.01prd14.SPA.bin]?
Accessing
tftp://203.0.113.2//auto/tftp-ngio/test/c8000be-universalk9.17.03.01prd14.SPA.bin...
Loading /auto/tftp-ngio/test/c8000be-universalk9.17.03.01prd14.SPA.bin from
203.0.113.2 (via GigabitEthernet0/0/0):
=====

=====

=====
```

```

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!!!!!!!
[OK - 696368193 bytes]

696368193 bytes copied in 478.600 secs (1455011 bytes/sec)

Router# dir bootflash:
Directory of bootflash:/

 106497  drwx           4096   Jul 8 2020 11:38:27 -07:00  tracelogs
    11   -rw-          696368193   Jul 8 2020 11:34:28 -07:00
c8000be-universalk9.17.03.01prd14.SPA.bin
 458753  drwx           4096   Jun 24 2020 17:25:47 -07:00  sysboot

7693897728 bytes total (5950341120 bytes free)
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# boot system flash
bootflash:c8000be-universalk9.17.03.01prd14.SPA.bin
Router(config)# config-reg 0x2102
Router(config)# exit
Router# show run | include boot
boot-start-marker
boot system flash bootflash:c8000be-universalk9.17.03.01prd14.SPA.bin
boot-end-marker
diagnostic bootup level minimal
Router# copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
Router# reload

```

Configure a device to boot the consolidated package via TFTP using the boot command: example

An example to configure a device to boot the consolidated package via TFTP using the boot command.

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#boot system
tftp://10.81.116.4/auto/cebu-tftpboot/test/release/rommon/bin/test-17-3-2r
Router(config)#config-register 0x2102
Router(config)#exit
Router#
*Jul  7 01:43:52.098: %SYS-5-CONFIG_I: Configured from console by
console

Router#show run | include boot
boot-start-marker
boot system bootflash:c8000be-universalk9.17.03.01prd14.SPA.bin
boot system
tftp://10.81.116.4/auto/mcebu-tftpboot/test/release/rommon/bin/test-17-3-1r
boot-end-marker
license boot level network-essentials
diagnostic bootup level minimal
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#reload
Proceed with reload? [confirm]

*Jul  7 01:55:28.639: %SYS-5-RELOAD:
Reload requested by console. Reload Reason: Reload Command.Jul  7
01:55:36.715: %PMAN-5-EXITACvp: Process manager is exiting: process exit with reload chassis
code

Initializing Hardware ...

Checking for PCIe device presence...done
System integrity status: 0x610
Rom image verified correctly

System Bootstrap, Version 1RU-20191104, DEVELOPMENT SOFTWARE
Copyright (c) 1994-2019 by cisco Systems, Inc.

Current image running: Boot ROM1

Last reset cause: LocalSoft
C8300-1N1S-6T platform with 8388608 Kbytes of main memory

.....
Located c8000be-universalk9.17.03.01prd14.SPA.bin

=====

=====

=====
```

```

=====

=====

=====

Package header rev 3 structure detected
IsoSize = 655712256
Calculating SHA-1 hash...Validate package: SHA-1 hash:
calculated DF67D179:DAB875C9:D61FB9E7:2E25B30B:48E86BFC
expected   DF67D179:DAB875C9:D61FB9E7:2E25B30B:48E86BFC
RSA Signed RELEASE Image Signature Verification Successful.
Image validated

RSA Signed RELEASE Image Signature Verification Successful.
Image validated
Jul  7 01:58:19.327: %BOOT-5-OPMODE_LOG: R0/0: binos: System booted

in AUTONOMOUS mode

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Cisco Systems, Inc.
170 West Tasman Drive
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All TCP AO KDF Tests Pass
cisco C8300-1N1S-6T (1RU) processor with 3763047K/6147K bytes of
memory.

Processor board ID FDO2320A0CF
Router operating mode: Autonomous
6 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
7090175K bytes of flash memory at bootflash:.
28884992K bytes of M.2 USB at harddisk:.

Dspfarm profile 7 :: No resource, check voice card or dspfarm service
is not configured

Press RETURN to get started!
Router>show version
Cisco IOS XE Software, Version 17.03.01prd8
Cisco IOS Software [Amsterdam], c8000be Software
(X86_64_LINUX_IOSD-UNIVERSALK9-M), Version 17.3.1prd8, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
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ROM: (c)

```

```

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

Technology Package License Information:

Technology Package License Information:

-----
Technology      Type      Technology-package Technology-package
Current          Next Reboot
-----
Smart License   Perpetual   network-essentials network-essentials
Smart License   Subscription None          None

The current crypto throughput level is 1000000 kbps

cisco C8300-1N1S-6T (1RU) processor with 3763047K/6147K bytes of
memory.

Processor board ID FDO2320A0CF
Router operating mode: Autonomous
6 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
7090175K bytes of flash memory at bootflash:.
28884992K bytes of M.2 USB at harddisk:.

Configuration register is 0x2102

```

Install the software using install commands

From Cisco IOS XE Cupertino 17.7.1a, Cisco Catalyst 8000 Edge platforms are shipped in install mode by default. Users can boot the platform, and upgrade or downgrade to Cisco IOS XE software versions using a set of **install** commands.

Restrictions

- ISSU is not covered in this feature.

- Install mode requires a reboot of the system.

Install software using install commands

This table describes the differences between Bundle mode and Install mode.

Table 3: Bundle Mode vs Install Mode

Bundle Mode	Install Mode
This mode provides a consolidated boot process, using local (hard disk, flash) or remote (TFTP) .bin image. Note Bundle boot from USB and TFTP Boot is not supported.	This mode uses the local (bootflash) packages.conf file for the boot process.
This mode uses a single .bin file.	.bin file is replaced with expanded .pkg files in this mode.
CLI: <pre>#boot system file <filename></pre>	CLI: <pre>#install add file bootflash: [activate commit]</pre>
To upgrade in this mode, point the boot system to the new image.	To upgrade in this mode, use the install commands.

Install mode process flow

The install mode process flow comprises three commands to perform installation and upgrade of software on platforms—**install add**, **install activate**, and **install commit**.

Table 4: List of install Commands

Command	Syntax	Purpose
install add	install add file <i>location:filename.bin</i>	Copies the contents of the image, package, and SMUs to the software repository. File location may be local or remote. This command does the following: - Validates the file—checksum, platform compatibility checks, and so on. - Extracts individual components of the package into subpackages and packages.conf - Copies the image into the local inventory and makes it available for the next steps.
install activate	install activate	Activates the package added using the install add command. - Use the show install summary command to see which image is inactive. This image will get activated. - System reloads on executing this command. Confirm if you want to proceed with the activation. Use this command with the prompt-level none keyword to automatically ignore any confirmation prompts.

Command	Syntax	Purpose
(install activate) auto abort-timer	install activate auto-abort timer <30-1200>	The auto-abort timer starts automatically, with a default value of 120 minutes. If the install commit command is not executed within the time provided, the activation process is terminated, and the system returns to the last-committed state. • You can change the time value while executing the install activate command. • The install commit command stops the timer, and continues the installation process. • The install activate auto-abort timer stop command stops the timer without committing the package. • Use this command with the prompt-level none keyword to automatically ignore any confirmation prompts. • This command is valid only in the three-step install variant.
install commit	install commit	Commits the package activated using the install activate command, and makes it persistent over reloads. • Use the show install summary command to see which image is uncommitted. This image will get committed.

Command	Syntax	Purpose
install abort	install abort	Terminates the installation and returns the system to the last-committed state. • This command is applicable only when the package is in activated status (uncommitted state). • If you have already committed the image using the install commit command, use the install rollback to command to return to the preferred version.
install remove	install remove {file <filename> inactive}	Deletes inactive packages from the platform repository. Use this command to free up space. • file: Removes specified files. • inactive: Removes all the inactive files.
install rollback to	install rollback to {base label committed id}	Rolls back the software set to a saved installation point or to the last-committed installation point. The following are the characteristics of this command: • Requires reload. • Is applicable only when the package is in committed state. • Use this command with the prompt-level none keyword to automatically ignore any confirmation prompts. Note If you are performing install rollback to a previous image, the previous image must be installed in install mode. Only SMU rollback is possible in bundle mode.

Command	Syntax	Purpose
install deactivate	install deactivate file <filename>	Removes a package from the platform repository. This command is supported only for SMUs. • Use this command with the prompt-level none keyword to automatically ignore any confirmation prompts.

Table 5: List of show Commands

Command	Syntax	Purpose
show install log	show install log	Provides the history and details of all install operations that have been performed since the platform was booted.
show install package	show install package <filename>	Provides details about the .pkg/.bin file that is specified.
show install summary	show install summary	Provides an overview of the image versions and their corresponding install states for all the FRUs. • The table that is displayed will state for which FRUs this information is applicable. • If all the FRUs are in sync in terms of the images present and their state, only one table is displayed. • If, however, there is a difference in the image or state information among the FRUs, each FRU that differs from the rest of the stack is listed in a separate table.
show install active	show install active	Provides information about the active packages for all the FRUs. If there is a difference in the information among the FRUs, each FRU that differs from the rest of the stack is listed in a separate table.

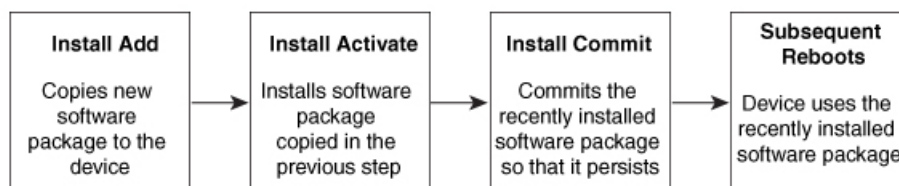
Command	Syntax	Purpose
show install inactive	show install inactive	Provides information about the inactive packages, if any, for all the FRUs. If there is a difference in the information among the FRUs, each FRU that differs from the rest of the stack is listed in a separate table.
show install committed	show install committed	Provides information about the committed packages for all the FRUs. If there is a difference in the information among the FRUs, each FRU that differs from the rest of the stack is listed in a separate table.
show install uncommitted	show install uncommitted	Provides information about uncommitted packages, if any, for all the FRUs. If there is a difference in the information among the FRUs, each FRU that differs from the rest of the stack is listed in a separate table.
show install rollback	show install rollback {point-id label}	Displays the package associated with a saved installation point.
show version	show version [rp-slot] [installed [user-interface] provisioned running]	Displays information about the current package, along with hardware and platform information.

The install mode process flow comprises three commands to perform installation and upgrade of software on platforms—**install add**, **install activate**, and **install commit**.

The flow chart explains the install process with **install** commands:

Figure 1: Process with install commit

Process with Install Commit



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The **install add** command copies the software package from a local or remote location to the platform. The location can be FTP, HTTP, HTTPS, or TFTP. The command extracts individual components of the .package file into subpackages and packages.conf files. It also validates the file to ensure that the image file is specific to the platform on which it is being installed.

The **install activate** command performs the required validations and provisions the packages previously added using the **install add** command. It also triggers a system reload.

The **install commit** command confirms the packages previously activated using the **install activate** command, and makes the updates persistent over reloads.



Note Installing an update replaces any previously installed software image. At any time, only one image can be installed in a device.

Boot in install mode

You can install, activate, and commit a software package using a single command (one-step install) or multiple separate commands (three-step install).

If the platform is working in bundle mode, the one-step install procedure must be used to initially convert the platform from bundle mode to install mode. Subsequent installs and upgrades on the platform can be done with either one-step or three-step variants.

One-step Installation or convert from bundle mode to install mode



- Note**
- All the CLI actions (for example, add, activate, and so on) are executed on all the available FRUs.
 - The configuration save prompt will appear if an unsaved configuration is detected.
 - The reload prompt will appear after the second step in this workflow. Use the **prompt-level none** keyword to automatically ignore the confirmation prompts.
 - If the prompt-level is set to None, and there is an unsaved configuration, the install fails. You must save the configuration before reissuing the command.

Use the one-step install procedure described below to convert a platform running in bundle boot mode to install mode. After the command is executed, the platform reboots in install boot mode.

Later, the one-step install procedure can also be used to upgrade the platform.

This procedure uses the **install add file activate commit** command in privileged EXEC mode to install a software package, and to upgrade the platform to a new version.

Procedure

Step 1 **enable**

Example:

```
Device>enable
```

Enables privileged EXEC mode. Enter your password, if prompted.

Step 2 **installadd filelocation:filename [activate commit]****Example:**

```
Device#install add file
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.bin activate
commit
```

Copies the software install package from a local or remote location (through FTP, HTTP, HTTPS, or TFTP) to the platform and extracts the individual components of the .package file into subpackages and packages.conf files. It also performs a validation and compatibility check for the platform and image versions, activates the package, and commits the package to make it persistent across reloads.

The platform reloads after this command is run.

Step 3 **exit****Example:**

```
Device#exit
```

Exits privileged EXEC mode and returns to user EXEC mode.

Platform is upgraded to new version.

Three-step install

**Note**

- All the CLI actions (for example, add, activate, and so on) are executed on all the available FRUs.
- The configuration save prompt will appear if an unsaved configuration is detected.
- The reload prompt will appear after the install activate step in this workflow. Use the **prompt-level none** keyword to automatically ignore the confirmation prompts.

The three-step installation procedure can be used only after the platform is in install mode. This option provides more flexibility and control to the customer during installation.

This procedure uses individual **install add** , **install activate** , and **install commit** commands for installing a software package, and to upgrade the platform to a new version.

Procedure**Step 1** **enable****Example:**

```
Device>enable
```

Enables privileged EXEC mode. Enter your password, if prompted.

Step 2 **installadd filelocation:***filename*

Example:

```
Device#install add file
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.bin
```

Copies the software install package from a remote location (through FTP, HTTP, HTTPS, or TFTP) to the platform, and extracts the individual components of the .package file into subpackages and packages.conf files.

Step 3 **showinstall summary**

Example:

```
Device#show install summary
```

(Optional) Provides an overview of the image versions and their corresponding install state for all the FRUs.

Step 4 **installactivate [auto-abort-timer<time>]**

Example:

```
Device# install activate auto-abort-timer 120
```

Activates the previously added package and reloads the platform.

- When doing a full software install, do not provide a package filename.
- In the three-step variant, **auto-abort-timer** starts automatically with the **install activate** command; the default for the timer is 120 minutes. If the **install commit** command is not run before the timer expires, the install process is automatically terminated. The platform reloads and boots up with the last committed version.

Step 5 **installabort**

Example:

```
Device#install abort
```

(Optional) Terminates the software install activation and returns the platform to the last committed version.

- Use this command only when the image is in activated state, and not when the image is in committed state.

Step 6 **installcommit**

Example:

```
Device#install commit
```

Commits the new package installation and makes the changes persistent over reloads.

Step 7 **installrollback tocommitted**

Example:

```
Device#install rollback to committed
```

(Optional) Rolls back the platform to the last committed state.

Step 8 **installremove { filefilesystem: filename | inactive }**

Example:

```
Device#install remove inactive
```

(Optional) Deletes software installation files.

- **file** : Deletes a specific file
- **inactive** : Deletes all the unused and inactive installation files.

Step 9 **showinstall summary**

Example:

```
Device#show install summary
```

(Optional) Displays information about the current state of the system. The output of this command varies according to the **install** commands run prior to this command.

Step 10 **exit**

Example:

```
Device#exit
```

Exits privileged EXEC mode and returns to user EXEC mode.

Downgrade in install mode

Use the **install rollback** command to downgrade the platform to a previous version by pointing it to the appropriate image, provided the image you are downgrading to was installed in install mode.

The **install rollback** command reloads the platform and boots it with the previous image.



Note The **install rollback** command succeeds only if you have not removed the previous file using the **install remove inactive** command.

Alternatively, you can downgrade by installing the older image using the install commands.

Downgrade in install mode

Use the **install rollback** command to downgrade the platform to a previous version by pointing it to the appropriate image, provided the image you are downgrading to was installed in install mode.

The **install rollback** command reloads the platform and boots it with the previous image.



Note The **install rollback** command succeeds only if you have not removed the previous file using the **install remove inactive** command.

Alternatively, you can downgrade by installing the older image using the install commands.

Terminate a software installation

You can terminate the activation of a software package in these ways:

- When the platform reloads after activating a new image, the auto-abort-timer is triggered (in the three-step install variant). If the timer expires before you issue the **install commit** command, the installation process terminates. The platform then reloads and boots with the last committed version of the software image.

Alternatively, use the **install auto-abort-timer stop** command to stop this timer, without using the **install commit** command. The new image remains uncommitted in this process.

- Using the **install abort** command returns the platform to the version that was running before installing the new software. Use this command before issuing the **install commit** command.

Configuration example for software installation using install commands

Configuration examples for Installing the software using install commands.

This is an example of the one-step installation or converting from bundle mode to install mode.

```
Router#install add file
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.bin
activate commit
install_add_activate_commit: START Thu Oct 28 21:57:21 UTC 2021

System configuration has been modified.
Press Yes(y) to save the configuration and proceed.
Press No(n) for proceeding without saving the configuration.
Press Quit(q) to exit, you may save configuration and re-enter the command.
[y/n/q]y
Building configuration...

[OK]Modified configuration has been saved

*Oct 28 21:57:39.818: %SYS-6-PRIVCFG_ENCRYPT_SUCCESS: Successfully encrypted
private config file
*Oct 28 21:57:39.925: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started
install one-shot
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.bininstall_add_activate_commit:
Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ....

--- Starting Add ---
Performing Add on Active/Standby
[1] Add package(s) on R0
[1] Finished Add on R0
Checking status of Add on [R0]
Add: Passed on [R0]
Finished Add

Image added. Version: 17.07.01.0.1515
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:

/bootflash/c8000be-rpboot.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-mono-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_sm_nim_adpt.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_sm_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
```

```

/bootflash/c8000be-firmware_sm_async.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_sm_lt3e3.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_sm_10g.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_prince.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_nim_xdsl.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_nim_ssd.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_nim_shdsl.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_nim_ge.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_nim_cwan.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_nim_bri_st_fw.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_nim_async.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_ngwic_t1e1.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_dsp_tilegx.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_dsp_analogbri.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

/bootflash/c8000be-firmware_dreamliner.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

```

```

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

--- Starting Activate ---
Performing Activate on Active/Standby

*Oct 28 22:05:49.484: %INSTALL-5-INSTALL_AUTO_ABORT_TIMER_PROGRESS: R0/0:
rollback_timer: Install auto abort timer will expire in 7200 seconds [1] Activate package(s)
on R0
[1] Finished Activate on R0
Checking status of Activate on [R0]
Activate: Passed on [R0]
Finished Activate

--- Starting Commit ---
Performing Commit on Active/Standby
[1] Commit package(s) on R0

```

```

Building configuration...
[1] Finished Commit on R0
Checking status of Commit on [R0]
Commit: Passed on [R0]
Finished Commit

[OK]
*Oct 28 22:06:55.375: %SYS-6-PRIVCFG_ENCRYPT_SUCCESS: Successfully encrypted
private config fileSend model notification for install_add_activate_commit before reload
Install will reload the system now!
SUCCESS: install_add_activate_commit Thu Oct 28 22:07:22 UTC 2021

Router#
*Oct 28 22:07:22.661: %INSTALL-5-INSTALL_COMPLETED_INFO: R0/0: install_engine:
Completed install one-shot PACKAGE
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.binOct
28 22:07:26.864: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: reload action
requested

□

Press RETURN to get started!

```

This is an example of downgrading in install mode.

```

Router# install add file
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.bin
install_add: START Thu Oct 28 22:36:43 UTC 2021

*Oct 28 22:36:44.526: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started
install add
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.bininstall_add:
Adding PACKAGE
install_add: Checking whether new add is allowed ....

--- Starting Add ---
Performing Add on Active/Standby
[1] Add package(s) on R0
[1] Finished Add on R0
Checking status of Add on [R0]
Add: Passed on [R0]
Finished Add

Image added. Version: 17.07.01.0.1601
SUCCESS: install_add Thu Oct 28 22:40:25 UTC 2021

Router#
*Oct 28 22:40:25.971: %INSTALL-5-INSTALL_COMPLETED_INFO: R0/0: install_engine:
Completed install add PACKAGE
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.bin

Router# show install log
[0|install_op_boot]: START Thu Oct 28 22:09:29 Universal 2021
[0|install_op_boot(INFO, )]: Mount IMG INI state base image
[0|install_op_boot]: END SUCCESS Thu Oct 28 22:09:30 Universal 2021
[0|install_op_boot(INFO, )]: cleanup_trap remote_invocation 0 operation
install_op_boot .. 0 .. 0
[1|display_install_log]: START Thu Oct 28 22:12:11 UTC 2021
[2|install_add]: START Thu Oct 28 22:36:43 UTC 2021
[2|install_add(INFO, )]: Set INSTALL_TYPE to PACKAGE
[2|install_add(CONSOLE, )]: Adding PACKAGE
[2|install_add(CONSOLE, )]: Checking whether new add is allowed ....
[2|install_add(INFO, )]: check_add_op_allowed: Install type PACKAGE
[remote|install_add]: START Thu Oct 28 22:37:12 UTC 2021

```

```

[remote|install_add]: END SUCCESS Thu Oct 28 22:40:10 UTC 2021
[remote|install_add(INFO, )]: cleanup_trap remote_invocation 1 operation
install_add .. 0 .. 0
[2|install_add(INFO, )]: Remote output from R0
[2|install_add(INFO, )]: install_add: START Thu Oct 28 22:37:12 UTC 2021
Expanding image file:
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.bin
Verifying parameters
Expanding superpackage
bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.bin
... parameters verified
Validating package type
... package type validated
Copying package files

c8000be-firmware_dreamliner.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_dsp_analogbri.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

c8000be-firmware_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_dsp_tilegx.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_ngwic_tle1.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_nim_async.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_nim_bri_st_fw.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

c8000be-firmware_nim_cwan.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_nim_ge.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

c8000be-firmware_nim_shdsl.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_nim_ssd.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_nim_xdsl.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_prince.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

c8000be-firmware_sm_10g.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

c8000be-firmware_sm_1t3e3.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_sm_async.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-firmware_sm_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

c8000be-firmware_sm_nim_adpt.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-mono-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
c8000be-rpboot.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
WARNING: A different version of provisioning file packages.conf already exists
in bootflash:
WARNING: The provisioning file from the expanded bundle will be saved as
WARNING: bootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211027_0.conf
... package files copied
SUCCESS: Finished expanding all-in-one software package.
Image file expanded
SUCCESS: install_add Thu Oct 28 22:40:10 UTC 2021

```



```

[2|install_add]: END SUCCESS Thu Oct 28 22:40:25 UTC 2021
[2|install_add(INFO, )]: cleanup_trap remote_invocation 0 operation install_add
.. 0 .. 0
[3|COMP_CHECK]: START Thu Oct 28 22:40:26 UTC 2021
[3|COMP_CHECK]: END FAILED exit(1) Thu Oct 28 22:40:27 UTC 2021
[3|COMP_CHECK(INFO, )]: cleanup_trap remote_invocation 0 operation COMP_CHECK
.. 1 .. 1
[4|install_activate]: START Thu Oct 28 22:42:53 UTC 2021
[4|install_activate(INFO, require user prompt)]: install_cli
[4|install_activate(CONSOLE, )]: Activating PACKAGE
[4|install_activate(INFO, )]: Acquiring transaction lock...
[4|install_activate(INFO, )]: global_trans_lock:
/bootflash/.installer/install_global_trans_lock
[4|install_activate(INFO, )]: tmp_global_trans_lock:
/tmp/tmp_install_global_trans_lock
[4|install_activate(INFO, )]: tmp lock does not exist:
/tmp/tmp_install_global_trans_lock
[4|install_activate(INFO, )]: global_trans_lock:
/bootflash/.installer/install_global_trans_lock
[4|install_activate(INFO, )]: tmp_global_trans_lock:
/tmp/tmp_install_global_trans_lock
[4|install_activate(INFO, )]: local_trans_lock:
/bootflash/.installer/install_local_trans_lock
[4|install_activate(INFO, )]: global_trans_lock:
/bootflash/.installer/install_global_trans_lock
[4|install_activate(INFO, )]: validate_lock: lock_duration is 7200
[4|install_activate(INFO, )]: install type stored in lock PACKAGE, install type
PACKAGE, install operation install_activate
[4|install_activate(INFO, )]: lock duration: 7200
[4|install_activate(INFO, )]: extend trans lock done.
/bootflash/.installer/install_global_trans_lock
[4|install_activate(INFO, require user prompt)]: install_cli
[4|install_activate( FATAL)]: Cannot proceed activate because of user input
[4|install_activate(INFO, )]: cleanup_trap remote_invocation 0 operation
install_activate .. 6 .. 0
[5|install_add]: START Thu Oct 28 22:45:48 UTC 2021
[5|install_add(INFO, )]: Set INSTALL_TYPE to PACKAGE
[5|install_add(CONSOLE, )]: Adding PACKAGE
[5|install_add(CONSOLE, )]: Checking whether new add is allowed ....
[5|install_add(INFO, )]: check_add_op_allowed: Install type PACKAGE
[5|install_add( FATAL)]: Super package already added. Add operation not allowed.
install remove inactive can be used to discard added packages

Router# install activate
install_activate: START Thu Oct 28 23:57:57 UTC 2021
install_activate: Activating PACKAGE

*Oct 28 23:57:57.823: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started
install activateFollowing packages shall be activated:

/bootflash/c8000be-rpboot.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
/bootflash/c8000be-mono-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_sm_nim_adpt.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_sm_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_sm_async.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

```

```

/bootflash/c8000be-firmware_sm_1t3e3.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_sm_10g.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_prince.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_nim_xdsl.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_nim_ssd.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_nim_shdsl.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_nim_ge.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_nim_cwan.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_nim_bri_st_fw.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_nim_async.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_ngwic_tlel.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_dsp_tilegx.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_dsp_analogbri.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

/bootflash/c8000be-firmware_dreamliner.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

```

```

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

```

```

--- Starting Activate ---

```

```

Performing Activate on Active/Standby

```

```

*Oct 29 00:04:19.400: %INSTALL-5-INSTALL_AUTO_ABORT_TIMER_PROGRESS: R0/0:

```

```

rollback_timer: Install auto abort timer will expire in 7200 seconds [1] Activate package(s)
on R0

```

```

--- Starting list of software package changes ---

```

```

Old files list:

```

```

Modified

```

```

c8000be-firmware_dreamliner.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

```

```

Modified

```

```

c8000be-firmware_dsp_analogbri.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

```

```

Modified

```

```

c8000be-firmware_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

```

```

Modified

```

```

c8000be-firmware_dsp_tilegx.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

```

```

        Modified
c8000be-firmware_ngwic_tle1.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_nim_async.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_nim_bri_st_fw.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

        Modified
c8000be-firmware_nim_cwan.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_nim_ge.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_nim_shdsl.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_nim_ssd.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_nim_xdsl.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_prince.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_sm_10g.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_sm_1t3e3.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_sm_async.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-firmware_sm_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

        Modified
c8000be-firmware_sm_nim_adpt.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified
c8000be-mono-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
        Modified c8000be-rpboot.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg

New files list:
Added
c8000be-firmware_dreamliner.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_dsp_analogbri.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

Added
c8000be-firmware_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_dsp_tilegx.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_ngwic_tle1.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_nim_async.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_nim_bri_st_fw.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

Added
c8000be-firmware_nim_cwan.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_nim_ge.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_nim_shdsl.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_nim_ssd.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_nim_xdsl.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added
c8000be-firmware_prince.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
Added

```

```

c8000be-firmware_sm_10g.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
    Added
c8000be-firmware_sm_1t3e3.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
    Added
c8000be-firmware_sm_async.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
    Added
c8000be-firmware_sm_dsp_sp2700.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
    Added
c8000be-firmware_sm_nim_adpt.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
    Added
c8000be-mono-universalk9.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg
    Added c8000be-rpboot.BLD_V177_THROTTLE_LATEST_20211027_030841_V17_7_0_120.SSA.pkg

    Finished list of software package changes
    [1] Finished Activate on R0
    Checking status of Activate on [R0]
    Activate: Passed on [R0]
    Finished Activate

    Send model notification for install_activate before reload
    Install will reload the system now!
    SUCCESS: install_activate  Fri Oct 29 00:05:09 UTC 2021

Router#
*Oct 29 00:05:09.504: %INSTALL-5-INSTALL_COMPLETED_INFO: R0/0: install_engine:
Completed install activate PACKAGEOct 29 00:05:14.494: %PMAN-5-EXITACTION: R0/0: pvp: Process
manager is exiting: reload action requested

    Initializing Hardware ...

    Checking for PCIe device presence...done
    System integrity status: 0x610

    System Bootstrap, Version 17.3(4.1r), RELEASE SOFTWARE
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    Current image running      : Boot ROM1
    Last reset cause           : LocalSoft
    C8300-2N2S-6T platform with 8388608 Kbytes of main memory

    □

    Press RETURN to get started!

    □

Router# install commit
install_commit: START Fri Oct 29 00:13:58 UTC 2021
install_commit: Committing PACKAGE

--- Starting Commit ---
Performing Commit on Active/Standby

*Oct 29 00:13:59.552: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started
install commit [1] Commit package(s) on R0
    [1] Finished Commit on R0
    Checking status of Commit on [R0]
    Commit: Passed on [R0]
    Finished Commit

    SUCCESS: install_commit  Fri Oct 29 00:14:03 UTC 2021

Router#

```

```
*Oct 29 00:14:03.712: %INSTALL-5-INSTALL_COMPLETED_INFO: R0/0: install_engine:
Completed install commit PACKAGE
```

This is an example of the three-step installation.

```
ROUTER# install activate file bootflash:c8000be-universalk9.17.06.01a.SPA.bin activate
commit
```

```
install_add_activate_commit: START Fri Dec 10 18:07:17 GMT 2021
```

```
*Dec 10 18:07:18.405 GMT: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine:
Started install one-shot
bootflash:c8000be-universalk9.17.06.01a.SPA.bininstall_add_activate_commit: Adding PACKAGE
install_add_activate_commit: Checking whether new add is allowed ....
```

```
--- Starting Add ---
Performing Add on Active/Standby
[1] Add package(s) on R0
[1] Finished Add on R0
Checking status of Add on [R0]
Add: Passed on [R0]
Finished Add
```

```
Image added. Version: 17.06.01a.0.298
install_add_activate_commit: Activating PACKAGE
Following packages shall be activated:
/bootflash/c8000be-rpboot.17.06.01a.SPA.pkg
/bootflash/c8000be-mono-universalk9.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_sm_nim_adpt.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_sm_dsp_sp2700.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_sm_async.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_sm_lt3e3.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_sm_10g.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_prince.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_nim_xdsl.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_nim_ssd.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_nim_shdsl.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_nim_ge.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_nim_cwan.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_nim_bri_st_fw.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_nim_async.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_ngwic_tle1.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_dsp_tilegx.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_dsp_sp2700.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_dsp_analogbri.17.06.01a.SPA.pkg
/bootflash/c8000be-firmware_dreamliner.17.06.01a.SPA.pkg
```

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

```
--- Starting Activate ---
Performing Activate on Active/Standby
[1] Activate package(s) on R0
[1] Finished Activate on R0
Checking status of Activate on [R0]
Activate: Passed on [R0]
Finished Activate
```

```
--- Starting Commit ---
Performing Commit on Active/Standby
[1] Commit package(s) on R0
Building configuration...
```

```
[1] Finished Commit on R0
Checking status of Commit on [R0]
Commit: Passed on [R0]
```

```

Finished Commit

[OK]
*Dec 10 18:14:57.782 GMT: %SYS-6-PRIVCFG_ENCRYPT_SUCCESS: Successfully encrypted
private config fileSend model notification for install_add_activate_commit before reload
/usr/binos/conf/install_util.sh: line 164: /bootflash/.prst_sync/reload_info: No
such file or directory
/usr/binos/conf/install_util.sh: line 168: /bootflash/.prst_sync/reload_info: No
such file or directory
cat: /bootflash/.prst_sync/reload_info: No such file or directory
Install will reload the system now!
SUCCESS: install_add_activate_commit  Fri Dec 10 18:15:23 GMT 2021

ROUTER#
*Dec 10 18:15:23.955 GMT: %INSTALL-5-INSTALL_COMPLETED_INFO: R0/0: install_engine:
Completed install one-shot PACKAGE bootflash:c8000be-universalk9.17.06.01a.SPA.binDec 10
18:15:27.708: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: reload action
requested

Initializing Hardware ...

Checking for PCIe device presence...done
System integrity status: 0x610
Rom image verified correctly

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Current image running: Boot ROM0

Last reset cause: LocalSoft
ROUTER platform with 8388608 Kbytes of main memory

□

Press RETURN to get started!

□

ROUTER#
ROUTER# show version
Cisco IOS XE Software, Version 17.06.01a
Cisco IOS Software [Bengaluru], c8000be Software (X86_64_LINUX_IOSD-UNIVERSALK9-M),
Version 17.6.1a, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2021 by Cisco Systems, Inc.
Compiled Sat 21-Aug-21 03:27 by mcpre

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documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.

ROM: 17.3(5r)

ROUTER uptime is 0 minutes
Uptime for this control processor is 2 minutes
System returned to ROM by LocalSoft
System image file is "bootflash:packages.conf"

```

Last reload reason: LocalSoft

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

Technology Package License Information:

```

-----
Technology      Type      Technology-package Technology-package
Current          Next Reboot
-----
Smart License   Perpetual   None                None
Smart License   Subscription None                None

```

The current crypto throughput level is 250000 kbps

Smart Licensing Status: Registration Not Applicable/Not Applicable

cisco ROUTER (1RU) processor with 3747220K/6147K bytes of memory.
 Processor board ID FDO2521M27S
 Router operating mode: Autonomous
 5 Gigabit Ethernet interfaces
 2 2.5 Gigabit Ethernet interfaces
 2 Cellular interfaces
 32768K bytes of non-volatile configuration memory.
 8388608K bytes of physical memory.
 7573503K bytes of flash memory at bootflash:..
 1875361792K bytes of NVMe SSD at harddisk:..
 16789568K bytes of USB flash at usb0:..

Configuration register is 0x2102

This is an example of terminating a software installation.

```

Router# install abort
install_abort: START Fri Oct 29 02:42:51 UTC 2021

This install abort would require a reload. Do you want to proceed? [y/n]
*Oct 29 02:42:52.789: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started
install aborty
--- Starting Abort ---
Performing Abort on Active/Standby

[1] Abort package(s) on R0
[1] Finished Abort on R0
Checking status of Abort on [R0]
Abort: Passed on [R0]
Finished Abort

```

```

Send model notification for install_abort before reload
Install will reload the system now!
SUCCESS: install_abort  Fri Oct 29 02:44:47 UTC 2021

Router#
*Oct 29 02:44:47.866: %INSTALL-5-INSTALL_COMPLETED_INFO: R0/0: install_engine:
Completed install abort PACKAGEOct 29 02:44:51.577: %PMAN-5-EXITACTION: R0/0: pvp: Process
manager is exiting: reload action requested

Initializing Hardware ...

Checking for PCIe device presence...done
System integrity status: 0x610

System Bootstrap, Version 17.3(4.1r), RELEASE SOFTWARE
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Current image running      : Boot ROM1
Last reset cause           : LocalSoft
C8300-2N2S-6T platform with 8388608 Kbytes of main memory

□

Press RETURN to get started!

□

```

These are sample outputs for show commands:

```

Device#show install log
[0|install_op_boot]: START Thu Oct 28 22:09:29 Universal 2021
[0|install_op_boot(INFO, )]: Mount IMG INI state base image
[0|install_op_boot]: END SUCCESS  Thu Oct 28 22:09:30 Universal 2021

Device#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    17.07.01.0.1515
-----
Auto abort timer: inactive
-----

Device#show install
packagebootflash:c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.bin

Package:
c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.bin
Size: 831447859
Timestamp: 2021-10-23 17:08:14 UTC
Canonical path:
/bootflash/c8000be-universalk9.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.bin

Raw disk-file SHA1sum:
5c4e7617a6c71ffbccc73dcd034ab58bf76605e3f
Header size:      1192 bytes
Package type:     30000
Package flags:    0
Header version:   3

```


Internal package information:

Name: rp_super
BuildTime: 2021-10-21_13.00
ReleaseDate: 2021-10-21_03.11
BootArchitecture: i686
RouteProcessor: radium
Platform: C8000BE
User: mcpre
PackageName: universalk9
Build: BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117
CardTypes:

Package is bootable from media and tftp.

Package contents:

Package:

c8000be-firmware_nim_ge.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
Size: 2966620
Timestamp: 2021-10-21 20:10:44 UTC

Raw disk-file SHA1sum:

501d59d5f152ca00084a0da8217bf6f6b95dddb1
Header size: 1116 bytes
Package type: 40000
Package flags: 0
Header version: 3

Internal package information:

Name: firmware_nim_ge
BuildTime: 2021-10-21_13.00
ReleaseDate: 2021-10-21_03.11
BootArchitecture: none
RouteProcessor: radium
Platform: C8000BE
User: mcpre
PackageName: firmware_nim_ge
Build: BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117
CardTypes:

Package is not bootable.

Package:

c8000be-firmware_prince.BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117.SSA.pkg
Size: 10204252
Timestamp: 2021-10-21 20:10:43 UTC

Raw disk-file SHA1sum:

a57bed4ddecfd08af3b456f69d11aaeb962865ea
Header size: 1116 bytes
Package type: 40000
Package flags: 0
Header version: 3

Internal package information:

Name: firmware_prince
BuildTime: 2021-10-21_13.00
ReleaseDate: 2021-10-21_03.11
BootArchitecture: none
RouteProcessor: radium
Platform: C8000BE
User: mcpre
PackageName: firmware_prince
Build: BLD_V177_THROTTLE_LATEST_20211021_031123_V17_7_0_117
CardTypes:

```

Package is not bootable.

Device#show install active
[ R0 ] Active Package(s) Information:
State (St): I - Inactive, U - Activated & Uncommitted,
C - Activated & Committed, D - Deactivated & Uncommitted
-----
Type  St   Filename/Version
-----
IMG   C    17.07.01.0.1515

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

Device#show install inactive
[ R0 ] Inactive Package(s) Information:
State (St): I - Inactive, U - Activated & Uncommitted,
C - Activated & Committed, D - Deactivated & Uncommitted
-----
Type  St   Filename/Version
-----
No Inactive Packages

Device#show install committed
[ R0 ] Committed Package(s) Information:
State (St): I - Inactive, U - Activated & Uncommitted,
C - Activated & Committed, D - Deactivated & Uncommitted
-----
Type  St   Filename/Version
-----
IMG   C    17.07.01.0.1515

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

Device#show install uncommitted
[ R0 ] Uncommitted Package(s) Information:
State (St): I - Inactive, U - Activated & Uncommitted,
C - Activated & Committed, D - Deactivated & Uncommitted
-----
Type  St   Filename/Version
-----
No Uncommitted Packages

```

Troubleshoot software installation using install commands

To troubleshoot software installation using install commands.

Problem Troubleshooting the software installation

Solution Use these show commands to view installation summary, logs, and software versions.

- show install summary
- show install log
- show version
- show version running

Problem Other installation issues

Solution Use these commands to resolve installation issue:

- **dir** *<install directory>*
- **more location:** *packages.conf*
- **show tech-support install:** this command automatically runs the **show** commands that display information specific to installation.
- **request platform software trace archive target bootflash** *<location>*: this command archives all the trace logs relevant to all the processes running on the system since the last reload, and saves this information in the specified location.

Upgrade firmware on NIMs

To upgrade the firmware on a Network Interface Module (NIM), perform these steps:

Before you begin

When you boot the device in *packages.conf* mode with the Cisco IOS XE image (super package) during the installation period, you can upgrade or downgrade the firmware without reloading the device. You need to follow the steps described in *Installing a Firmware Subpackage* section before proceeding with the firmware upgrade.

If you do not boot the device in *packages.conf* mode with the Cisco IOS XE image, you need to follow the below prerequisites before proceeding with the firmware upgrade:

- Copy the firmware subpackage (NIM firmware) into *bootflash:/mydir*.
- Send a request to the platform software package expand file *boot flash:/mydir/<IOS-XE image>* to expand the super package.
- Reload the hardware module subslot to boot the module with the new firmware.
- Verify that the module is booted up with the new firmware using the **show platform software subslot x/y module firmware** command.

Procedure

Step 1 copy Cisco IOS XE image into *bootflash: mydir* .

Example:

```
Router#mkdir bootflash:mydir
```

Creates a directory to save the expanded software image.

You can use the same name as the image to name the directory.

Step 2 **requestplatformsoftwarepackageexpandfilebootflash:/mydir /<IOS-XE image** to expand super package.

Example:

```
Router#
```

```
request platform software package expand file
```

```
bootflash:/mydir/c8000be-universalk9.03.14.00.S.155-1.S-std.SPA.bin
```

Expands the platform software package to super package.

Step 3 **reload** .

Example:

```
Router#reload
rommon >
```

Enables ROMMON mode, which allows the software in the super package file to be activated.

Step 4 **bootbootflash:mydir//packages.conf** .

Example:

```
rommon 1 >boot bootflash:mydir/packages.conf
```

Boots the super package by specifying the path and name of the provisioning file: packages.conf.

Step 5 **copy** NIM firmware subpackage to the folder **bootflash:mydir/** .

Example:

```
Router#copy bootflash:c8000be-firmware_nim_xdsl.2020-07-01_11.05_39n.SSA.pkg
bootflash:mydir/
```

Copies the NIM firmware subpackage into bootflash:mydir.

Step 6 **requestplatformsoftwarepackageinstallrp 0 file bootflash:/mydir/<firmware subpackage>** .

Example:

```
Router#request platform software package install rp 0 file
bootflash:mydir/c8000be-firmware_nim_xdsl.2020-07-01_11.05_39n.SSA.pkg
```

Installs the software package.

Step 7 **hw-module subslot x/yreload** to boot the module with the new firmware.

Example:

```
Router#hw-module subslot 0/2 reload
```

Reloads the hardware module subslot and boots the module with the new firmware.

Step 8 **showplatformsoftwaresubslot 0/2 module firmware** to verify that the module is booted up with the new firmware.

Example:

```
Router#show platform software subslot 0/2 module firmware
Pe
```

Displays the version of the newly installed firmware.

Firmware is upgraded on NIMs.


```

Image size
10481 inode num 632741, bks cnt 3 blk size 8*512
#
File size is 0x150ae3cc
Located mydir/c8000be-universalk9.17.03.01prd14.S-std.SPA.pkg
Image size 353035212 inode num 356929, bks cnt 86191 blk size 8*512
#####
#####
Boot image size = 353035212 (0x150ae3cc) bytes
Package header rev 1 structure detected
Calculating SHA-1 hash...done
validate_package: SHA-1 hash:
    calculated 8e966678:8afb08f4:8a88bb8f:fe591121:8bddf4b3
    expected   8e966678:8afb08f4:8a88bb8f:fe591121:8bddf4b3
RSA Signed RELEASE Image Signature Verification Successful.
Package Load Test Latency : 3799 msec
Image validated
Dec 12 09:28:50.338 R0/0: %FLASH_CHECK-3-DISK_QUOTA: Flash disk quota exceeded
[free space is 61864 kB] - Please clean up files on bootflash.
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    San Jose, California 95134-1706
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  17.3.1prd14, RELEASE SOFTWARE (fc1)
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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 c8000be1-X/K9 (2RU) processor with 1681388K/6147K bytes of memory.
Processor board ID FTX1736AJUT
2 Ethernet interfaces
4 Gigabit Ethernet interfaces
2 ATM interfaces
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
7393215K bytes of flash memory at bootflash:.
Press RETURN to get started!

```

```

*Dec 12 09:28:58.922:
%IOS_LICENSE_IMAGE_APPLICATION-6-LICENSE_LEVEL:
Module name = esg Next reboot level = appxk9 and License = appxk9
*Dec 12 09:28:58.943:
%IOS_LICENSE_IMAGE_APPLICATION-6-LICENSE_LEVEL:
Module name = esg Next reboot level = ipbasek9 and License = ipbasek9
*Dec 12 09:28:58.981:
%Cat_THROUGHPUT-6-LEVEL: Throughput level has been set to 1000000 kbps
*Dec 12 09:29:13.302: %SPANTREE-5-EXTENDED_SYSID: Extended SysId enabled for type vlan
*Dec 12 09:29:14.142: %LINK-3-UPDOWN: Interface Lsmpi0, changed state to up
*Dec 12 09:29:14.142: %LINK-3-UPDOWN: Interface EOBC0, changed state to up
*Dec 12 09:29:14.142: %LINK-3-UPDOWN: Interface GigabitEthernet0, changed state to down
*Dec 12 09:29:14.142: %LINK-3-UPDOWN: Interface LIIN0, changed state to up
*Dec 12 09:28:51.438: %CMRP-3-PFU_MISSING:cmd: The platform does not detect a power
supply in slot 1
*Dec 12 09:29:01.256: %CMLIB-6-THROUGHPUT_VALUE:cmd: Throughput license found, throughput
set to 1000000 kbps
*Dec 12 09:29:03.223: %CPPHA-7-START:cpp_ha: CPP 0 preparing ucode
*Dec 12 09:29:03.238: %CPPHA-7-START:cpp_ha: CPP 0 startup init
*Dec 12 09:29:11.335: %CPPHA-7-START:cpp_ha: CPP 0 running init
*Dec 12 09:29:11.645: %CPPHA-7-READY:cpp_ha: CPP 0 loading and initialization complete
*Dec 12 09:29:11.711: %IOSXE-6-PLATFORM:cpp_cp:
Process CPP_PFILTER_EA_EVENT_API_CALL_REGISTER
*Dec 12 09:29:16.280:
%IOSXE_MGMTVRF-6-CREATE_SUCCESS_INFO:
Management vrf Mgmt-intf created with ID 1, ipv4 table-id 0x1, ipv6 table-id 0x1E000001
*Dec 12 09:29:16.330:
%LINEPROTO-5-UPDOWN: Line protocol on Interface Lsmpi0, changed state to up
*Dec 12 09:29:16.330:
%LINEPROTO-5-UPDOWN: Line protocol on Interface EOBC0, changed state to up
*Dec 12 09:29:16.330:
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0, changed state to down
*Dec 12 09:29:16.330:
%LINEPROTO-5-UPDOWN: Line protocol on Interface LIIN0, changed state to up
*Dec 12 09:29:17.521: %SYS-5-LOG_CONFIG_CHANGE: Buffer logging disabled
*Dec 12 09:29:18.867: %SYS-5-CONFIG_I: Configured from memory by console
*Dec 12 09:29:18.870:
%IOSXE_OIR-6-REMSPA: SPA removed from subslot 0/0, interfaces disabled
*Dec 12 09:29:18.870:
%IOSXE_OIR-6-REMSPA: SPA removed from subslot 0/1, interfaces disabled
*Dec 12 09:29:18.871:
%IOSXE_OIR-6-REMSPA: SPA removed from subslot 0/2, interfaces disabled
*Dec 12 09:29:18.873:
%SPA_OIR-6-OFFLINECARD: SPA (c8000be-X-4xlGE) offline in subslot 0/0
*Dec 12 09:29:18.874: %SPA_OIR-6-OFFLINECARD: SPA (NIM-VA-B) offline in subslot 0/1
*Dec 12 09:29:18.874: %SPA_OIR-6-OFFLINECARD: SPA (NIM-VAB-A) offline in subslot 0/2
*Dec 12 09:29:18.876: %IOSXE_OIR-6-INSCARD: Card (fp) inserted in slot F0
*Dec 12 09:29:18.876: %IOSXE_OIR-6-ONLINECARD: Card (fp) online in slot F0
*Dec 12 09:29:18.882: %IOSXE_OIR-6-INSSPA: SPA inserted in subslot 0/0
*Dec 12 09:29:18.884: %IOSXE_OIR-6-INSSPA: SPA inserted in subslot 0/1
*Dec 12 09:29:18.884: %IOSXE_OIR-6-INSSPA: SPA inserted in subslot 0/2
*Dec 12 09:29:18.935: %SYS-5-RESTART: System restarted --
Cisco IOS Software, c8000be Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version 15.5(1)S,
RELEASE SOFTWARE (fc5)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2014 by Cisco Systems, Inc.
Compiled Thu 20-Nov-14 18:28 by mcpre
*Dec 12 09:29:18.895: %SPA-3-ENVMON_NOT_MONITORED:iomd: Environmental monitoring
is not enabled for c8000be-X-4xlGE[0/0]
*Dec 12 09:29:19.878: %LINK-5-CHANGED: Interface GigabitEthernet0,
changed state to administratively down
*Dec 12 09:29:22.419: %SPA_OIR-6-ONLINECARD: SPA (c8000be-X-4xlGE) online in subslot 0/0
*Dec 12 09:29:22.610: %SYS-6-BOOTTIME: Time taken to reboot after reload = 194 seconds
*Dec 12 09:29:24.354: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/0,

```

```

changed state to down
*Dec 12 09:29:24.415: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/2,
changed state to down
*Dec 12 09:29:24.417: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/3,
changed state to down
*Dec 12 09:29:30.919: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/0,
changed state to up
*Dec 12 09:29:30.925: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/2,
changed state to up
*Dec 12 09:29:30.936: %LINK-3-UPDOWN: Interface GigabitEthernet0/0/3,
changed state to up
*Dec 12 09:29:31.919: %LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0/0, changed state to up
*Dec 12 09:29:31.930: %LINEPROTO-5-UPDOWN: Line protocol on
Interface GigabitEthernet0/0/2, changed state to up
*Dec 12 09:29:31.936: %LINEPROTO-5-UPDOWN: Line protocol on
Interface GigabitEthernet0/0/3, changed state to up
*Dec 12 09:29:34.147: %SSH-5-ENABLED: SSH 1.99 has been enabled
*Dec 12 09:30:29.152: %SPA_OIR-6-ONLINECARD: SPA (NIM-VA-B) online in subslot 0/1
*Dec 12 09:30:29.470: %SPA_OIR-6-ONLINECARD: SPA (NIM-VAB-A) online in subslot 0/2
*Dec 12 09:30:31.152: %LINK-3-UPDOWN: Interface Ethernet0/1/0, changed state to down
*Dec 12 09:30:31.152: %LINK-3-UPDOWN: Interface ATM0/1/0, changed state to down
*Dec 12 09:30:31.470: %LINK-3-UPDOWN: Interface Ethernet0/2/0, changed state to down
*Dec 12 09:30:31.470: %LINK-3-UPDOWN: Interface ATM0/2/0, changed state to down
*Dec 12 09:31:03.074: %CONTROLLER-5-UPDOWN: Controller VDSL 0/2/0, changed state to up
*Dec 12 09:31:05.075: %LINK-3-UPDOWN: Interface Ethernet0/2/0, changed state to up
*Dec 12 09:31:06.076: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/2/0,
changed state to up
*Dec 12 09:31:12.559: %CONTROLLER-5-UPDOWN: Controller VDSL 0/1/0, changed state to up
*Dec 12 09:31:20.188: %LINK-3-UPDOWN: Interface ATM0/1/0, changed state to up
*Dec 12 09:31:21.188: %LINEPROTO-5-UPDOWN: Line protocol on Interface ATM0/1/0,
changed state to up
Router>
Router>en
Password:
Router#
Router#show controller vdsl 0/2/0
Controller VDSL 0/2/0 is UP
Daemon Status:      UP
      XTU-R (DS)      XTU-C (US)
Chip Vendor ID:      'BDCM'      'BDCM'
Chip Vendor Specific: 0x0000      0xA41B
Chip Vendor Country: 0xB500      0xB500
Modem Vendor ID:      'CSCO'      '
Modem Vendor Specific: 0x4602      0x0000
Modem Vendor Country: 0xB500      0x0000
Serial Number Far:
Modem Version Near:   15.5(1)S
Modem Version Far:    0xa41b
Modem Status(L1):     TC Sync (Showtime!)
DSL Config Mode:      VDSL2
Trained Mode(L1):     G.993.2 (VDSL2) Profile 30a
TC Mode:              PTM
Selftest Result:      0x00
DELT configuration:    disabled
DELT state:           not running
Failed full inits:     0
Short inits:          0
Failed short inits:    0
Modem FW Version:     4.14L.04
Modem PHY Version:    A2pv6F039h.d24o_rc1
Line 1:
      XTU-R (DS)      XTU-C (US)
Trellis:              ON              ON

```



```

SRA:                disabled          disabled
SRA count:          0                  0
Bit swap:           enabled            enabled
Bit swap count:     9                  0
Profile 30a:        enabled
Line Attenuation:    3.5 dB             0.0 dB
Signal Attenuation:  0.0 dB             0.0 dB
Noise Margin:       30.9 dB            12.4 dB
Attainable Rate:    200000 kbits/s      121186 kbits/s
Actual Power:       13.3 dBm            7.2 dBm
Per Band Status:    D1      D2      D3      U0      U1      U2      U3
Line Attenuation(dB): 0.9    1.5    5.5    N/A    0.1    0.9    3.8
Signal Attenuation(dB): 0.8    1.5    5.5    N/A    0.0    0.2    3.2
Noise Margin(dB):    31.1    31.0    30.9    N/A    12.3    12.4    12.5
Total FECC:          0              0
Total ES:            0              0
Total SES:           0              0
Total LOSS:          0              0
Total UAS:           51             51
Total LPRS:          0              0
Total LOFS:          0              0
Total LOLS:          0              0
DS Channel1         DS Channel0      US Channel1      US Channel0
Speed (kbps):        NA              100014            NA              100014
SRA Previous Speed:  NA              0              NA              0
Previous Speed:      NA              0              NA              0
Reed-Solomon EC:     NA              0              NA              0
CRC Errors:          NA              0              NA              0
Header Errors:       NA              0              NA              0
Interleave (ms):     NA              9.00            NA              0.00
Actual INP:          NA              4.00            NA              0.00
Training Log :       Stopped
Training Log Filename : flash:vdslllog.bin
Router#
Router#
Router#

copy bootflash:c8000be-firmware_nim_xdsl.2014-11-17_11.05_39n.SSA.pkg
bootflash:mydir/
Destination filename [mydir/c8000be-firmware_nim_xdsl.2014-11-17_11.05_39n.SSA.pkg]?
Copy in progress...CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
6640604 bytes copied in 1.365 secs (4864911 bytes/sec)
Router#
Router#

request platform software package install rp 0 file
bootflash:mydir/c8000be-firmware_nim_xdsl.2014-11-17_11.05_39n.SSA.pkg
--- Starting local lock acquisition on R0 ---
Finished local lock acquisition on R0
--- Starting file path checking ---
Finished file path checking
--- Starting image file verification ---
Checking image file names
Locating image files and validating name syntax
Found c8000be-firmware_nim_xdsl.2014-11-17_11.05_39n.SSA.pkg
Verifying image file locations
Inspecting image file types
Processing image file constraints
Creating candidate provisioning file
Finished image file verification
--- Starting candidate package set construction ---
Verifying existing software set
Processing candidate provisioning file
Constructing working set for candidate package set
Constructing working set for running package set

```

```

Checking command output
Constructing merge of running and candidate packages
Checking if resulting candidate package set would be complete
Finished candidate package set construction
--- Starting ISSU compatibility verification ---
Verifying image type compatibility
Checking IPC compatibility with running software
Checking candidate package set infrastructure compatibility
Checking infrastructure compatibility with running software
Checking package specific compatibility
Finished ISSU compatibility verification
--- Starting impact testing ---
Checking operational impact of change
Finished impact testing
--- Starting list of software package changes ---
Old files list:
Removed c8000be-firmware_nim_xdsl.03.14.00.S.155-1.S-std.SPA.pkg
New files list:
Added c8000be-firmware_nim_xdsl.2014-11-17_11.05_39n.SSA.pkg
Finished list of software package changes
--- Starting commit of software changes ---
Updating provisioning rollback files
Creating pending provisioning file
Committing provisioning file
Finished commit of software changes
--- Starting analysis of software changes ---
Finished analysis of software changes
--- Starting update running software ---
Blocking peer synchronization of operating information
Creating the command set placeholder directory
Finding latest command set
Finding latest command shortlist lookup file
Finding latest command shortlist file
Assembling CLI output libraries
Assembling CLI input libraries
Skipping soft links for firmware upgrade
Skipping soft links for firmware upgrade
Assembling Dynamic configuration files
Applying interim IPC and database definitions
rsync: getaddrinfo: cc2-0 873: Name or service not known rsync error:
error in socket IO (code 10) at /auto/mcpbuilds19/
release/03.14.00.S/BLD-V03_14_00_S_FC5/contrib/rsync/clientserver.c(104) [sender=2.6.9]
rsync: getaddrinfo: cc2-0 873: Name or service not known rsync error:
error in socket IO (code 10) at /auto/mcpbuilds19/
release/03.14.00.S/BLD-V03_14_00_S_FC5/contrib/rsync/clientserver.c(104) [sender=2.6.9]
rsync: getaddrinfo: cc2-0 873: Name or service not known rsync error:
error in socket IO (code 10) at /auto/mcpbuilds19
/release/03.14.00.S/BLD-V03_14_00_S_FC5/contrib/rsync/clientserver.c(104) [sender=2.6.9]
Replacing running software
Replacing CLI software
Restarting software
Applying final IPC and database definitions
rsync: getaddrinfo: cc2-0 873: Name or service not known rsync error:
error in socket IO (code 10) at /auto/mcpbuilds19/
release/03.14.00.S/BLD-V03_14_00_S_FC5/contrib/rsync/clientserver.c(104) [sender=2.6.9]
Generating software version information
Notifying running software of updates
Unblocking peer synchronization of operating information
Unmounting old packages
Cleaning temporary installation files
Finished update running software
SUCCESS: Finished installing software.
Router#
Router#show platform software subslot 0/2 module firmware

```

```

Avg Load info
-----
1.83 1.78 1.44 3/45 607
Kernel distribution info
-----
Linux version 3.4.11-rt19 (sapanwar@blr-atg-001) (gcc version 4.6.2
(Buildroot 2011.11) ) #3 SMP PREEMPT Fri Nov 7 09:26:19 IST 2014
Module firmware versions
-----
Modem Fw Version: 4.14L.04
Modem Phy Version: A2pv6F039h.d24o_rc1
Boot Loader: Secundry
-----
Version: 1.1
Modem Up time
-----
0D 0H 25M 38S
Router#
Router#

      hw-module subslot 0/2 reload
Proceed with reload of module? [confirm]
Router#
*Dec 12 09:55:59.645: %IOSXE_OIR-6-SOFT_RELOADSPA: SPA(NIM-VAB-A)
reloaded on subslot 0/2
*Dec 12 09:55:59.646: %SPA_OIR-6-OFFLINECARD: SPA (NIM-VAB-A) offline in subslot 0/2
*Dec 12 09:55:59.647: %CONTROLLER-5-UPDOWN: Controller VDSL 0/2/0, changed state to down
*Dec 12 09:57:22.514: new extended attributes received from iomd(slot 0 bay 2 board 0)
*Dec 12 09:57:22.514: %IOSXE_OIR-6-SOFT_RELOADSPA: SPA(NIM-VAB-A)
reloaded on subslot 0/2
*Dec 12 09:57:22.515: %SPA_OIR-6-OFFLINECARD: SPA (NIM-VAB-A) offline in subslot 0/2
Router#
Router#
*Dec 12 09:58:35.471: %SPA_OIR-6-ONLINECARD: SPA (NIM-VAB-A) online in subslot 0/2
*Dec 12 09:58:37.470: %LINK-3-UPDOWN: Interface Ethernet0/2/0, changed state to down
*Dec 12 09:58:37.470: %LINK-3-UPDOWN: Interface ATM0/2/0, changed state to down
Router#
Router#

      show platform software subslot 0/2 module firmware
Avg Load info
-----
0.84 0.23 0.08 1/45 598
Kernel distribution info
-----
Linux version 3.4.11-rt19 (sapanwar@blr-atg-001) (gcc version 4.6.2 (Buildroot 2011.11) )
#6 SMP PREEMPT Mon Nov 17 10:51:41 IST 2014
Module firmware versions
-----
Modem Fw Version: 4.14L.04
Modem Phy Version: A2pv6F039n.d24o_rc1
Boot Loader: Secundry
-----
Version: 1.1
Modem Up time
-----
0D 0H 0M 42S
Router#

```

Configure no service password-recovery

The Cisco IOS password recovery procedure allows you to gain access to ROMMON mode using the console and the Break key during system startup and reload. When the device software is loaded from ROMMON mode, the system updates the configuration with the new password.

The password recovery procedure allows anyone with console access to access the device and its network.

The No Service Password-Recovery feature prevents unauthorized users from using the service password-recovery procedure to access the device and network.



Note By default, the no confirm prompt and messages are not displayed after reloads.

How to enable no service password-recovery

To enable no service password-recovery.

You can enable the No Service Password-Recovery in these two ways:

- Using the **no service password-recovery** command. This option allows password recovery once it is enabled.
- Using the **no service password-recovery strict** command. This option does not allow for device recovery once it is enabled.



Note As a precaution, a valid Cisco IOS image should reside in the bootflash: before this feature is enabled.

If you plan to enter the no service password-recovery command, Cisco recommends that you save a copy of the system configuration file in a location away from the device.

Before you begin, make sure this feature is disabled prior to changing the device, including configurations, modules, software versions, or ROMMON versions, regardless of the significance.

Enable the configuration register boot bit to load the startup configuration by setting bit-8 to 0. To ignore the break key in Cisco IOS XE, set bit-6 to 0. Set the lowest four bits (3-0) to a value from 0x2 to 0xF to auto boot a Cisco IOS XE image. Changes to the configuration register are not saved after the No Service Password-Recovery feature is enabled.



Note If Bit-8 is set to 1, the startup configuration is ignored. If Bit-6 is set to 1, break key detection is enabled in Cisco IOS XE. If both Bit-6 and Bit-8 are set to 0, the No Service Password-Recovery feature is enabled.

This example shows how to enable the No Service Password-Recovery feature:

```
Router> enable
Router# show version
Router# configure terminal
Router(config)# config-register 0x2012
```

```
Router(config)# no service password-recovery
Router(config)# exit
```

Recovering a Device with the No Service Password-Recovery Feature Enabled

To recover a device after the no service password-recovery feature is enabled using the **no service password-recovery** command, look out for the following message that appears during the boot: “PASSWORD RECOVERY FUNCTIONALITY IS DISABLED.” As soon as “..” appears, press the Break key. You are then prompted to confirm the Break key action:

- If you confirm the action, the startup configuration is erased and the device boots with the factory default configuration with the No Service Password-Recovery enabled.
- If you do not confirm the Break key action, the device boots normally with the No Service Password-Recovery feature enabled.



Note You cannot recover a device if the No Service Password-Recovery feature was enabled using the **no service password-recovery strict** command.

This example shows a Break key action being entered during boot up, followed by confirmation of the break key action. The startup configuration is erased and the device then boots with the factory default configuration with the No Service Password-Recovery feature enabled.

```
Initializing Hardware ...

Checking for PCIe device presence...done
System integrity status: 0x610
Rom image verified correctly

System Bootstrap, Version 17.3(1r), RELEASE SOFTWARE
Copyright (c) 1994-2020 by cisco Systems, Inc.

Current image running: Boot ROM0

Last reset cause: LocalSoft
C8300-1N1S-4T2X platform with 8388608 Kbytes of main memory

PASSWORD RECOVERY FUNCTIONALITY IS DISABLED

..

telnet> send brk

..

PASSWORD RECOVERY IS DISABLED.

Do you want to reset the router to the factory default
configuration and proceed [y/n] ? y

Router clearing configuration. Please wait for ROMMON prompt...

File size is 0x17938a80

Located c8000be-universalk9.BLD_V153_3_S_XE310_THROTTLE_LATEST_20130623_234109.SSA.bin
```

```
Image size 395545216 inode num 26, bks cnt 96569 blk size 8*512
This example shows a Break key action being entered during boot up, followed by the
non-confirmation of the break key action. The device then boots normally with the No Service
Password-Recovery feature enabled.
```

```
Checking for PCIe device presence...done
System integrity status: 0x610
Rom image verified correctly
```

```
System Bootstrap, Version 17.3(1r), RELEASE SOFTWARE
Copyright (c) 1994-2020 by cisco Systems, Inc.
```

```
Current image running: Boot ROM0
```

```
Last reset cause: LocalSoft
C8300-1N1S-4T2X platform with 8388608 Kbytes of main memory
```

```
PASSWORD RECOVERY FUNCTIONALITY IS DISABLED
```

```
..
```

```
telnet> send brk
```

```
...
```

```
PASSWORD RECOVERY IS DISABLED.
```

```
Do you want to reset the router to the factory default
configuration and proceed [y/n] ? n
```

```
Router continuing with existing configuration...
```

```
File size is 0x17938a80
```

```
Located c8000be-universalk9.BLD_V153_3_S_XE310_THROTTLE_LATEST_20130623_234109.SSA.bin
```

```
Image size 395545216 inode num 26, bks cnt 96569 blk size 8*512
```

```
##### ...
```

Configuration Examples for No Service Password-Recovery

The example shows how to obtain the configuration register setting (which is set to autoboot), disable password recovery capability, and then verify that the configuration persists through a system reload:

```
Router# show version
```

```
Cisco Internetwork Operating System Software
```

```
IOS (tm) 5300 Software (C7200-P-M), Version 12.3(8)YA, RELEASE SOFTWARE (fc1)
```

```
TAC Support: http://www.cisco.com/tac
```

```
Copyright (c) 1986-2004 by Cisco Systems, Inc.
```

```
Compiled Wed 05-Mar-04 10:16 by xxx
```

```
Image text-base: 0x60008954, data-base: 0x61964000
```

```
ROM: System Bootstrap, Version 12.3(8)YA, RELEASE SOFTWARE (fc1)

...

125440K bytes of ATA PCMCIA card at slot 0 (Sector size 512 bytes).

8192K bytes of Flash internal SIMM (Sector size 256K).

Configuration register is 0x2102

Router# configure terminal

Router(config)# no service password-recovery

WARNING:

Executing this command will disable the password recovery mechanism.

Do not execute this command without another plan for password recovery.

Are you sure you want to continue? [yes]: yes

...

Router(config)# exit

Router#

Router# reload

Proceed with reload? [confirm] yes

00:01:54: %SYS-5-RELOAD: Reload requested

System Bootstrap, Version 12.3...

Copyright (c) 1994-2004 by cisco Systems, Inc.

C7400 platform with 262144 Kbytes of main memory

PASSWORD RECOVERY FUNCTIONALITY IS DISABLED

...
```

This example shows how to disable password recovery capability using the no service password-recovery strict command:

```
Router# configure terminal

Router(config)# no service password-recovery strict

WARNING:

Do not execute this command without another plan for password recovery.

Are you sure you want to continue? [yes]: yes

..
```

