



# Installing the Software

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## Overview

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.

These are the two main methods to install the software:

- [Managing and Configuring a Device to Run Using a Consolidated Package, on page 5](#)—This method allows for individual upgrade of subpackages and generally has reduced boot times compared to the method below. Use this method if you want to individually upgrade a module's software.
- [Managing and Configuring a Device to Run Using Individual Packages, on page 33](#)—This a simple method that is similar to a typical Cisco router image installation and management that is supported across Cisco routers.

It is better to upgrade software in a planned period of maintenance when an interruption in service is acceptable. The router needs to be rebooted for a software upgrade to take effect.

## ROMMON Images

A ROMMON image is a software package used by ROM Monitor (ROMMON) software on a router. The software package is separate from the consolidated package normally used to boot the router. For more information on ROMMON, see [Hardware Installation Guide for the Cisco Catalyst 8000 Series Edge Platforms](#).

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.




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

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## Provisioning Files

This section provides background information about the files and processes used in [Managing and Configuring a Device to Run Using Individual Packages](#), on page 33.

The consolidated package on a device consists of a collection of subpackages and a provisioning file titled `packages.conf`. To run the software, the usual method used is to boot the consolidated package, which is copied into memory, expanded, mounted, and run within memory. The provisioning file's name can be renamed but subpackage file's names cannot be renamed. The provisioning file and subpackage files must be kept in the same directory. The provisioning file does not work properly if any individual subpackage file is contained within a different directory.




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**Note** An exception to this is that if a new or upgraded module firmware package is subsequently installed, it need not be in the same directory as the provisioning file.

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Configuring a device to boot, using the provisioning file `packages.conf`, is beneficial because no changes have to be made to the boot statement after the Cisco IOS XE software is upgraded.

## File Systems

The following table provides a list of file systems that can be seen 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.

File System	Description
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.
nvrnram:	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 usb1: USB 3.0 Type-B	The Universal Serial Bus (USB) flash drive file systems. <b>Note</b> The USB flash drive file system is visible only if a USB drive is installed in usb0: or usb1: ports.

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 discusses the autogenerated files and directories that can be created, and how the files in these directories can be managed.

**Table 2: Autogenerated Files**

File or Directory	Description
crashinfo files	Crashinfo 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 itself at bootup. The .core files in this directory can be erased without impacting any device functionality, but the directory itself should not be erased.
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.

File or Directory	Description
tracelogs directory	<p>The storage area for trace files.</p> <p>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.</p> <p>Trace files, however, are not a part of device operations, and can be erased without impacting the device's performance.</p>

### 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.

## Configuring the Configuration Register for Autoboot

The configuration register can be used to change behavior. This includes controlling how the device boots. Set the configuration register to 0x0 to boot into ROM, by using one of the following 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 one of the following methods to use the software from a consolidated package or an individual package. Also see the overview section.

- [Managing and Configuring a Device to Run Using a Consolidated Package, on page 5](#)
- [Managing and Configuring a Device to Run Using Individual Packages, on page 33](#)

## Managing and Configuring a Device to Run Using a Consolidated Package



**Note** Do not use these procedures if you also need to install any optional subpackages or plan to upgrade individual subpackages. See [Managing and Configuring a Device to Run Using Individual Packages, on page 33](#).

- [Managing and Configuring a Consolidated Package Using Copy and Boot Commands, on page 5](#)
- [Configuring a Device to Boot the Consolidated Package via TFTP Using the Boot Command: Example, on page 7](#)

## Managing and Configuring 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 following 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:/

81921   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      -rwx           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
```



```
[OK]
Router# reload
```

## Configuring a Device to Boot the Consolidated Package via TFTP Using the Boot Command: Example

```
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: bins: System booted in AUTONOMOUS mode
```

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Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, California 95134-1706

```
Cisco IOS Software [Amsterdam], c8000be Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
  17.3.lprd8, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2020 by Cisco Systems, Inc.
Compiled Tue 19-May-20 12:00 by mcpre
```

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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
Copyright (c) 1986-2020 by Cisco Systems, Inc.
Compiled Tue 19-May-20 12:00 by mcpre
```

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ROM: (c)

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A summary of U.S. laws governing Cisco cryptographic products may be found at: <http://www.cisco.com/wvl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to [export@cisco.com](mailto:export@cisco.com).

Technology Package License Information:

Technology Package License Information:

```
-----
Technology      Type          Technology-package Current      Technology-package 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 FDO2320AOCF
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
```

## Installing 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 for Installing the Software Using install Commands

- ISSU is not covered in this feature.
- Install mode requires a reboot of the system.

## Information About Installing the Software Using install Commands

From Cisco IOS XE Cupertino 17.7.1a release, for routers shipped in install mode, a set of **install** commands can be used for starting, upgrading and downgrading of platforms in install mode. This update is applicable to the Cisco Catalyst 8000 Edge platforms.

The following table describes the differences between Bundle mode and Install mode:

**Table 3: Bundle Mode vs Install Mode**

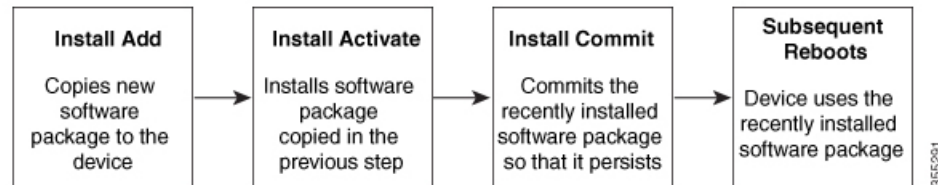
Bundle Mode	Install Mode
This mode provides a consolidated boot process, using local (hard disk, flash) or remote (TFTP) .bin image.	This mode uses the local (bootflash) packages.conf file for the boot process.
This mode uses a single .bin file.	.bin file is replaced with expanded .pkg files in this mode.
CLI: #boot system file <filename>	CLI: #install add file bootflash: [activate commit]
To upgrade in this mode, point the boot system to the new image.	To upgrade in this mode, use the <b>install</b> commands.
Image Auto-Upgrade: When a new Field-Replaceable Unit (FRU) is inserted in a modular chassis, manual intervention is required to get the new FRU running with the same version as the active FRUs.	Image Auto-Upgrade: When a new FRU is inserted in a modular chassis, the joining FRU is auto-upgraded to the image version in sync with the active FRUs.
Rollback: Rollback to the previous image with multiple Software Maintenance Updates (SMUs) may require multiple reloads.	Rollback: Enables rollback to an earlier version of Cisco IOS XE software, including multiple patches in single reload.

## 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**.

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

Process with Install Commit



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.




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

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The following set of install commands is available:

Table 4: List of install Commands

Command	Syntax	Purpose
<b>install add</b>	<b>install add file</b> <i>location:filename.bin</i>	<p>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:</p> <ul style="list-style-type: none"> <li>• Validates the file-checksum, platform compatibility checks, and so on.</li> <li>• Extracts individual components of the package into subpackages and packages.conf</li> <li>• Copies the image into the local inventory and makes it available for the next steps.</li> </ul>
<b>install activate</b>	<b>install activate</b>	<p>Activates the package added using the <b>install add</b> command.</p> <ul style="list-style-type: none"> <li>• Use the <b>show install summary</b> command to see which image is inactive. This image will get activated.</li> <li>• System reloads on executing this command. Confirm if you want to proceed with the activation. Use this command with the <b>prompt-level none</b> keyword to automatically ignore any confirmation prompts.</li> </ul>

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

Command	Syntax	Purpose
<b>install abort</b>	<b>install abort</b>	<p>Terminates the installation and returns the system to the last-committed state.</p> <ul style="list-style-type: none"> <li>• This command is applicable only when the package is in activated status (uncommitted state).</li> <li>• If you have already committed the image using the <b>install commit</b> command, use the <b>install rollback to</b> command to return to the preferred version.</li> </ul>
<b>install remove</b>	<b>install remove {file &lt;filename&gt;   inactive}</b>	<p>Deletes inactive packages from the platform repository. Use this command to free up space.</p> <ul style="list-style-type: none"> <li>• <b>file</b>: Removes specified files.</li> <li>• <b>inactive</b>: Removes all the inactive files.</li> </ul>
<b>install rollback to</b>	<b>install rollback to {base   label   committed   id}</b>	<p>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:</p> <ul style="list-style-type: none"> <li>• Requires reload.</li> <li>• Is applicable only when the package is in committed state.</li> <li>• Use this command with the <b>prompt-level none</b> keyword to automatically ignore any confirmation prompts.</li> </ul> <p><b>Note</b> 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.</p>

Command	Syntax	Purpose
<b>install deactivate</b>	<b>install deactivate file</b> <filename>	Removes a package from the platform repository. This command is supported only for SMUs. <ul style="list-style-type: none"> <li>Use this command with the <b>prompt-level none</b> keyword to automatically ignore any confirmation prompts.</li> </ul>

The following show commands are also available:

**Table 5: List of show Commands**

Command	Syntax	Purpose
<b>show install log</b>	<b>show install log</b>	Provides the history and details of all install operations that have been performed since the platform was booted.
<b>show install package</b>	<b>show install package</b> <filename>	Provides details about the .pkg/.bin file that is specified.
<b>show install summary</b>	<b>show install summary</b>	Provides an overview of the image versions and their corresponding install states for all the FRUs. <ul style="list-style-type: none"> <li>The table that is displayed will state for which FRUs this information is applicable.</li> <li>If all the FRUs are in sync in terms of the images present and their state, only one table is displayed.</li> <li>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.</li> </ul>
<b>show install active</b>	<b>show install active</b>	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
<b>show install inactive</b>	<b>show install inactive</b>	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.
<b>show install committed</b>	<b>show install committed</b>	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.
<b>show install uncommitted</b>	<b>show install uncommitted</b>	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.
<b>show install rollback</b>	<b>show install rollback {point-id   label}</b>	Displays the package associated with a saved installation point.
<b>show version</b>	<b>show version [rp-slot] [installed   user-interface]   provisioned   running]</b>	Displays information about the current package, along with hardware and platform information.

## Booting the Platform 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 Converting 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.

## SUMMARY STEPS

1. **enable**
2. **install add file location: *filename* [activate commit]**
3. **exit**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> Device>enable	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	<b>install add file location: <i>filename</i> [activate commit]</b> <b>Example:</b> Device#install add file boot flash:c800be-universal-9_HID_V17_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	<b>exit</b> <b>Example:</b> Device#exit	Exits privileged EXEC mode and returns to user EXEC mode.

## Three-Step Installation



### 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.

### SUMMARY STEPS

1. **enable**
2. **install add file location:** *filename*
3. **show install summary**
4. **install activate** [**auto-abort-timer** *<time>*]
5. **install abort**
6. **install commit**
7. **install rollback to committed**
8. **install remove** {**file filesystem:** *filename* | **inactive**}
9. **show install summary**
10. **exit**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> Device>enable	Enables privileged EXEC mode. Enter your password, if prompted.
Step 2	<b>install add file location:</b> <i>filename</i> <b>Example:</b> Device#install add file bootflash:c8000e-universalk9_ELD_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	<b>show install summary</b> <b>Example:</b> Device#show install summary	(Optional) Provides an overview of the image versions and their corresponding install state for all the FRUs.

	Command or Action	Purpose
Step 4	<b>install activate</b> [ <b>auto-abort-timer</b> <time>] <b>Example:</b> Device# install activate auto-abort-timer 120	Activates the previously added package and reloads the platform. <ul style="list-style-type: none"> <li>• When doing a full software install, do not provide a package filename.</li> <li>• In the three-step variant, <b>auto-abort-timer</b> starts automatically with the <b>install activate</b> command; the default for the timer is 120 minutes. If the <b>install commit</b> 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.</li> </ul>
Step 5	<b>install abort</b> <b>Example:</b> Device#install abort	(Optional) Terminates the software install activation and returns the platform to the last committed version. <ul style="list-style-type: none"> <li>• Use this command only when the image is in activated state, and not when the image is in committed state.</li> </ul>
Step 6	<b>install commit</b> <b>Example:</b> Device#install commit	Commits the new package installation and makes the changes persistent over reloads.
Step 7	<b>install rollback to committed</b> <b>Example:</b> Device#install rollback to committed	(Optional) Rolls back the platform to the last committed state.
Step 8	<b>install remove</b> { <b>file</b> <i>filesystem: filename</i>   <b>inactive</b> } <b>Example:</b> Device#install remove inactive	(Optional) Deletes software installation files. <ul style="list-style-type: none"> <li>• <b>file</b>: Deletes a specific file</li> <li>• <b>inactive</b>: Deletes all the unused and inactive installation files.</li> </ul>
Step 9	<b>show install summary</b> <b>Example:</b> Device#show install summary	(Optional) Displays information about the current state of the system. The output of this command varies according to the <b>install</b> commands run prior to this command.
Step 10	<b>exit</b> <b>Example:</b> Device#exit	Exits privileged EXEC mode and returns to user EXEC mode.

## Upgrading in Install Mode

Use either the one-step installation or the three-step installation to upgrade the platform in install mode.

## Downgrading 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.

## Terminating a Software Installation

You can terminate the activation of a software package in the following 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 issuing the **install commit** command, the installation process is terminated, and the platform 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 Examples for Installing the Software Using install Commands

The following 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_tle1.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]
--- 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!

The following is an example of the three-step installation:

```
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_t1e1.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_lt3e3.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_tle1.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]
--- 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_t1e1.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
Copyright (c) 1994-2021 by cisco Systems, Inc.

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

```

The following is an example of downgrading in install mode:

```

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]
--- 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

System Bootstrap, Version 17.3(5r), RELEASE SOFTWARE
Copyright (c) 1994-2021 by cisco Systems, Inc.

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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GPL code under the terms of GPL Version 2.0. For more details, see the
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

This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
```

A summary of U.S. laws governing Cisco cryptographic products may be found at:  
<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to  
[export@cisco.com](mailto:export@cisco.com).

Technology Package License Information:

```

-----
Technology      Type           Technology-package Current  Technology-package 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

The following 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
Copyright (c) 1994-2021 by cisco Systems, Inc.

Current image running   : Boot ROM1
Last reset cause       : LocalSoft
C8300-2N2S-6T platform with 8388608 Kbytes of main memory

□

Press RETURN to get started!

□

```

The following are sample outputs for show commands:

### show install log

```

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

```

### show install summary

```

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
-----

```

### show install package *filesystem: filename*

```

Device# show install package
bootflash: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:
 5c4e7617a6c71ffbcc73dcd034ab58bf76605e3f
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:
a57bed4ddeafd08af3b456f69d11aaeb962865ea
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.
```

### show install active

```
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
-----

```

**show install 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

```

**show install committed**

```

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
-----

```

**show install uncommitted**

```

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

```

## Troubleshooting Software Installation Using install Commands

**Problem** Troubleshooting the software installation

**Solution** Use the following 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 the following 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.

## Managing and Configuring a Device to Run Using Individual Packages

To choose between running individual packages or a consolidated package, see [Overview](#) section.

The following topics are included in this section:

- [Installing Subpackages from a Consolidated Package, on page 33](#)
- [Installing a Firmware Subpackage, on page 49](#)
- [Installing Subpackages from a Consolidated Package on a Flash Drive, on page 39](#)

### Installing Subpackages from a Consolidated Package

Perform the following procedure to obtain the consolidated package from a TFTP server.

Another variation of this procedure obtains the consolidated package from a USB flash drive. This is described in [Installing Subpackages from a Consolidated Package on a Flash Drive](#).

#### Before you begin

Copy the consolidated package to the TFTP server.

#### SUMMARY STEPS

1. **show version**
2. **dir bootflash:**
3. **show platform**
4. **mkdir bootflash:** *URL-to-directory-name*
5. **request platform software package expand file** *URL-to-consolidated-package* **to** *URL-to-directory-name*
6. **reload**
7. **boot** *URL-to-directory-name/packages.conf*
8. **show version installed**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>show version</b> <b>Example:</b> <pre>Router# show version Cisco IOS Software, IOS-XE Software Step 1 (X86_64_LINUX_IOSD-UNIVERSALK9-M), Experimental Version 15.3(20120627:221639) [build_151722_111] Copyright (c) 1986-2012 by Cisco Systems, Inc. Compiled Thu 28-Jun-12 15:17 by mcpre . . .</pre>	Shows the version of software running on the router. This can later be compared with the version of software to be installed.
<b>Step 2</b>	<b>dir bootflash:</b> <b>Example:</b> <pre>Router# dir bootflash:</pre>	Displays the previous version of software and that a package is present.
<b>Step 3</b>	<b>show platform</b> <b>Example:</b> <pre>Router# show platform Chassis type: c8000be/K9</pre>	Displays the inventory.
<b>Step 4</b>	<b>mkdir bootflash: <i>URL-to-directory-name</i></b> <b>Example:</b> <pre>Router# mkdir bootflash:mydir</pre>	Creates a directory to save the expanded software image. You can use the same name as the image to name the directory.
<b>Step 5</b>	<b>request platform software package expand file <i>URL-to-consolidated-package</i> to <i>URL-to-directory-name</i></b> <b>Example:</b> <pre>Router# request platform software package expand file bootflash:c8000be-universalk9-NIM.bin to bootflash:mydir</pre>	Expands the software image from the TFTP server ( <i>URL-to-consolidated-package</i> ) into the directory used to save the image ( <i>URL-to-directory-name</i> ), which was created in Step 4.
<b>Step 6</b>	<b>reload</b> <b>Example:</b> <pre>Router# reload rommon &gt;</pre>	Enables ROMMON mode, which allows the software in the consolidated file to be activated.
<b>Step 7</b>	<b>boot <i>URL-to-directory-name/packages.conf</i></b> <b>Example:</b> <pre>rommon 1 &gt; boot bootflash:mydir/packages.conf</pre>	Boots the consolidated package, by specifying the path and name of the provisioning file: packages.conf.
<b>Step 8</b>	<b>show version installed</b> <b>Example:</b>	Displays the version of the newly installed software.

	Command or Action	Purpose
	Router# <b>show version installed</b> Package: Provisioning File, version: n/a, status: active	

## Examples

The initial part of the example shows the consolidated package, `c8000be-universalk9.17.03.01prd14.SPA.bin`, being copied to the TFTP server. This is a prerequisite step. The remaining part of the example shows the consolidated file, `packages.conf`, being booted.

```
Router# copy tftp:c8000be-universalk9.17.03.01prd14.SPA.bin bootflash:
address or name of remote host []? 203.0.113.6
Destination filename [c8000be-universalk9.17.03.01prd14.SPA.bin]
Accessing tftp://203.0.113.6/c8000be/ic8000be-universalk9.17.03.01prd8.SPA.bin...
Loading c8000be/c8000be-universalk9.17.03.01prd14.SPA.bin from 192.0.2.4 (via
GigabitEthernet0): !!!!!!!!
[OK - 410506248 bytes]

410506248 bytes copied in 338.556 secs (1212521 bytes/sec)

Router# show version
Cisco IOS XE Software, Version 17.03.01prd14
Cisco IOS Software [Amsterdam], c8000be Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
 17.3.1prd14, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2020 by Cisco Systems, Inc.
Compiled Tue 16-Jun-20 23:44 by mcpre
```

```
Cisco IOS-XE software, Copyright (c) 2005-2020 by cisco Systems, Inc.
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with ABSOLUTELY NO WARRANTY. You can redistribute and/or modify such
GPL code under the terms of GPL Version 2.0. For more details, see the
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(1r)
```

```
C8300-Router uptime is 15 minutes
Uptime for this control processor is 16 minutes
System returned to ROM by Reload Command
System image file is "bootflash:c8000be-universalk9.17.03.01prd14.SPA.bin"
Last reload reason: Reload Command
```

```
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
```

A summary of U.S. laws governing Cisco cryptographic products may be found at:  
<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to  
[export@cisco.com](mailto:export@cisco.com).

Technology Package License Information:

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

The current crypto throughput level is 250000 kbps

Smart Licensing Status: UNREGISTERED/No Licenses in Use

```
cisco C8300-1N1S-4T2X (1RU) processor with 3763577K/6147K bytes of memory.
Processor board ID FDO2401A038
Router operating mode: Autonomous
1 Virtual Ethernet interface
20 Gigabit Ethernet interfaces
4 2.5 Gigabit Ethernet interfaces
5 Ten Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
7573503K bytes of flash memory at bootflash:.
15253504K bytes of M.2 USB at harddisk:.
7819328K bytes of USB flash at usb0:.
```

Configuration register is 0x2102

Router# **dir bootflash:**

Directory of bootflash:/

```
106497  drwx           16384   Jul 8 2020 12:01:57 -07:00  tracelogs
360449  drwx           4096    Jul 8 2020 11:51:37 -07:00  license_evlog
212993  drwx           4096    Jul 8 2020 11:51:37 -07:00  core
262145  drwx           4096    Jul 8 2020 11:51:35 -07:00  onep
16      -rw-            30      Jul 8 2020 11:51:27 -07:00  throughput_monitor_params
13      -rw-          134458   Jul 8 2020 11:51:27 -07:00  memleak.tcl
311297  drwx           4096    Jul 8 2020 11:51:12 -07:00  .dbpersist
15      -rwx           1314    Jul 8 2020 11:51:10 -07:00  trustidrootx3_ca.ca
14      -rw-          20109   Jul 8 2020 11:51:10 -07:00  ios_core.p7b
327681  drwx           4096    Jul 8 2020 11:51:08 -07:00  gs_script
12      -rw-            182    Jul 8 2020 11:51:08 -07:00  mode_event_log
237569  drwx           4096    Jul 8 2020 11:51:02 -07:00  .prst_sync
114689  drwx           4096    Jul 8 2020 11:50:48 -07:00  .ssh
368641  drwx           4096    Jul 8 2020 11:50:44 -07:00  .rollback_timer
401409  drwx           4096    Jul 8 2020 11:50:44 -07:00  .installer
458753  drwx           4096    Jul 8 2020 11:50:36 -07:00  sysboot
11      -rw-          696368193 Jul 8 2020 11:34:28 -07:00  c8000be-universalk9.17.03.01prd14.SPA.bin
```

7693897728 bytes total (5945937920 bytes free)

Router# **show platform**

Chassis type: C8300-1N1S-4T2X

Slot	Type	State	Insert time (ago)
0	C8300-1N1S-4T2X	ok	00:18:53
0/0	4x1G-2xSFP+	ok	00:18:03
0/1	C-NIM-1X	ok	00:18:03
1	C8300-1N1S-4T2X	ok	00:18:53
1/0	C-SM-X-16G4M2X	ok	00:18:03
R0	C8300-1N1S-4T2X	ok, active	00:18:53
F0	C8300-1N1S-4T2X	ok, active	00:18:53
P0	PWR-CC1-250WAC	ok	00:18:30
P1	Unknown	empty	never
P2	C8300-FAN-1R	ok	00:18:30

Slot	CPLD Version	Firmware Version
0	20011540	17.3(1r)
1	20011540	17.3(1r)
R0	20011540	17.3(1r)
F0	20011540	17.3(1r)

```
Router# mkdir bootflash:c8000be-universalk9.17.03.01.dir1
Create directory filename [c8000be-universalk9.17.03.01.dir1]?
Created dir bootflash:/c8000be-universalk9.17.03.01.dir1
Router# request platform software package expand file
bootflash:c8000be-universalk9.17.03.01.NIM.bin
to bootflash:c8000be-universalk9.17.03.01.dir1
Verifying parameters
Validating package type
Copying package files
SUCCESS: Finished expanding all-in-one software package.
```

```
Router# reload
Proceed with reload? [confirm]
```

```
*Jul 13 19:39:06.354: %SYS-5-RELOAD: Reload requested by console.Reload Reason: Reload
Command.
```

```
rommon 1 > boot bootflash:c8000be-universalk9.17.03.01.dir1/packages.conf
```

```
File size is 0x00002836
Located c8000be-universalk9.17.03.01.dir1/packages.conf
Image size 10294 inode num 324484, bks cnt 3 blk size 8*512
#
File is comprised of 1 fragments (33%)

is_valid_shalhash: SHA-1 hash:
calculated 62f6235a:fc98eb3a:85ce183e:834f1cb3:8a1f71d1
expected 62f6235a:fc98eb3a:85ce183e:834f1cb3:8a1f71d1
File size is 0x04b3dc00
Located
c8000be-universalk9.17.03.01.dir1/c8000be-mono-universalk9.17.03.01-build_164422SSA.pkg
Image size 78896128 inode num 324491, bks cnt 19262 blk size 8*512
#####
File is comprised of 21 fragments (0%)
.....
```

```
Router# show version installed
Package: Provisioning File, version: n/a, status: active
Role: provisioning file
File: bootflash:sysboot/packages.conf, on: RP0
Built: n/a, by: n/a
```

```
File SHA1 checksum: d86dda7aeb6f8bade683712734932e5dd4c2587b

Package: mono-universalk9, version: 17.03.01prd14, status: active
Role: rp_base
File: bootflash:sysboot/c8000be-mono-universalk9.17.03.01prd14.SPA.pkg, on: RP0
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 5621bed407a53fcbefe5e3dc567c073e0728d541

Package: rpboot, version: 17.03.01prd14, status: active
Role: rp_boot
File: bootflash:sysboot/c8000be-rpboot.17.03.01prd14.SPA.pkg, on: RP0
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: n/a

Package: firmware_dreamliner, version: 17.03.01prd14, status: active
Role: firmware_dreamliner
File: bootflash:sysboot/c8000be-firmware_dreamliner.17.03.01prd14.SPA.pkg, on: RP0/0
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 1ce360c1e100f86a37fd707461ea2495f8a50abd

Package: firmware_dsp_analogbri, version: 17.03.01prd14, status: active
Role: firmware_dsp_analogbri
File: bootflash:sysboot/c8000be-firmware_dsp_analogbri.17.03.01prd14.SPA.pkg, on: RP0/0
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 33e13705ab791cb466ed2f4e787e978d40af27da

Package: firmware_dsp_sp2700, version: 17.03.01prd14, status: active
Role: firmware_dsp_sp2700
File: bootflash:sysboot/c8000be-firmware_dsp_sp2700.17.03.01prd14.SPA.pkg, on: RP0/0
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: cdefc7b39e8383be190fca59c9a01286dc2a2842

Package: mono-universalk9, version: 17.03.01prd14, status: n/a
Role: rp_security
File: bootflash:sysboot/c8000be-mono-universalk9.17.03.01prd14.SPA.pkg, on: RP1/1
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 5621bed407a53fcbefe5e3dc567c073e0728d541

Package: mono-universalk9, version: 17.03.01prd14, status: n/a
Role: rp_webui
File: bootflash:sysboot/c8000be-mono-universalk9.17.03.01prd14.SPA.pkg, on: RP1/1
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 5621bed407a53fcbefe5e3dc567c073e0728d541

Package: mono-universalk9, version: 17.03.01prd14, status: active
Role: fp
File: bootflash:sysboot/c8000be-mono-universalk9.17.03.01prd14.SPA.pkg, on: ESP0
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 5621bed407a53fcbefe5e3dc567c073e0728d541

Package: fp, version: unknown, status: n/a
Role: fp
File: unknown, on: ESP1
Built: unknown, by: unknown
File SHA1 checksum: unknown

Package: mono-universalk9, version: 17.03.01prd14, status: active
Role: cc_spa
File: bootflash:sysboot/c8000be-mono-universalk9.17.03.01prd14.SPA.pkg, on: SIP0
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 5621bed407a53fcbefe5e3dc567c073e0728d541

Package: mono-universalk9, version: 17.03.01prd14, status: active
Role: cc
```

```

File: bootflash:sysboot/c8000be-mono-universalk9.17.03.01prd14.SPA.pkg, on: SIP0/0
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 5621bed407a53fcbefe5e3dc567c073e0728d541

Package: mono-universalk9, version: 17.03.01prd14, status: active
Role: cc
File: bootflash:sysboot/c8000be-mono-universalk9.17.03.01prd14.SPA.pkg, on: SIP0/1
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 5621bed407a53fcbefe5e3dc567c073e0728d541

Package: cc, version: unknown, status: n/a
Role: cc
File: unknown, on: SIP0/2
Built: unknown, by: unknown
File SHA1 checksum: unknown

Package: cc, version: unknown, status: n/a
Role: cc
File: unknown, on: SIP0/3
Built: unknown, by: unknown
File SHA1 checksum: unknown

Package: cc, version: unknown, status: n/a
Role: cc
File: unknown, on: SIP0/4
Built: unknown, by: unknown
File SHA1 checksum: unknown

Package: cc, version: unknown, status: n/a
Role: cc
File: unknown, on: SIP0/5
Built: unknown, by: unknown
File SHA1 checksum: unknown

Package: mono-universalk9, version: 17.03.01prd14, status: active
Role: cc_spa
File: bootflash:sysboot/c8000be-mono-universalk9.17.03.01prd14.SPA.pkg, on: SIP1
Built: 2020-06-17_00.17, by: mcpre
File SHA1 checksum: 5621bed407a53fcbefe5e3dc567c073e0728d541

```

## Installing Subpackages from a Consolidated Package on a Flash Drive

The steps for installing subpackages from a consolidated package on a USB flash drive are similar to those described in Installing Subpackages from a Consolidated Package section .

- 
- Step 1**    **show version**
  - Step 2**    **dir usb:**
  - Step 3**    **show platform**
  - Step 4**    **mkdir bootflash:*URL-to-directory-name***
  - Step 5**    **request platform software package expand fileusb: *package-name to URL-to-directory-name***
  - Step 6**    **reload**
  - Step 7**    **boot *URL-to-directory-name/packages.conf***
  - Step 8**    **show version installed**
-

# Upgrading the 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.

## SUMMARY STEPS

1. copy Cisco IOS XE image into bootflash: **mydir**.
2. **request platform software package expand file** `bootflash:/mydir /<IOS-XE image>` to expand super package.
3. **reload**.
4. **boot bootflash:mydir/ /packages.conf**.
5. **copy** NIM firmware subpackage to the folder **bootflash:mydir/**.
6. **request platform software package install** `rp 0 file bootflash:/mydir/<firmware subpackage>`.
7. **hw-module subslot x/y reload** to boot the module with the new firmware.
8. **show platform software subslot 0/2 module firmware** to verify that the module is booted up with the new firmware.

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	copy Cisco IOS XE image into bootflash: <b>mydir</b> .  <b>Example:</b> Router# <code>mkdir bootflash:mydir</code>	Creates a directory to save the expanded software image.  You can use the same name as the image to name the directory.
<b>Step 2</b>	<b>request platform software package expand file</b> <code>bootflash:/mydir /&lt;IOS-XE image&gt;</code> to expand super package.  <b>Example:</b>	Expands the platform software package to super package.



	Command or Action	Purpose
	<pre>Router# request platform software package expand file bootflash:/mydir/c6000be-universalk9.03.14.00.S.155-1.S-std.SPA.bin</pre>	
<b>Step 3</b>	<p><b>reload.</b></p> <p><b>Example:</b></p> <pre>Router# reload rommon &gt;</pre>	Enables ROMMON mode, which allows the software in the super package file to be activated.
<b>Step 4</b>	<p><b>boot bootflash:mydir/ /packages.conf.</b></p> <p><b>Example:</b></p> <pre>rommon 1 &gt; boot bootflash:mydir/packages.conf</pre>	Boots the super package by specifying the path and name of the provisioning file: packages.conf.
<b>Step 5</b>	<p><b>copy</b> NIM firmware subpackage to the folder <b>bootflash:mydir/</b>.</p> <p><b>Example:</b></p> <pre>Router#copy bootflash:c6000be-firmware_nim_xdsl.2020-07-01_11.05_39n.SSA.pkg bootflash:mydir/</pre>	Copies the NIM firmware subpackage into bootflash:mydir.
<b>Step 6</b>	<p><b>request platform software package install</b> <i>rp 0 file bootflash:/mydir/&lt;firmware subpackage&gt;</i>.</p> <p><b>Example:</b></p> <pre>Router#request platform software package install rp 0 file bootflash:mydir/c6000be-firmware_nim_xdsl.2020-07-01_11.05_39n.SSA.pkg</pre>	Installs the software package.
<b>Step 7</b>	<p><b>hw-module subslot x/y reload</b> to boot the module with the new firmware.</p> <p><b>Example:</b></p> <pre>Router#hw-module subslot 0/2 reload</pre>	Reloads the hardware module subslot and boots the module with the new firmware.
<b>Step 8</b>	<p><b>show platform software subslot 0/2 module firmware</b> to verify that the module is booted up with the new firmware.</p> <p><b>Example:</b></p> <pre>Router# show platform software subslot 0/2 module firmware Pe</pre>	Displays the version of the newly installed firmware.

### Examples

The following example shows how to perform firmware upgrade in a device module:

```
Router#mkdir bootflash:mydir
Create directory filename [mydir]?
Created dir bootflash:/mydir
Router#c
```

```

Router#copy bootflash:c8000be-universalk9.17.03.01prd14.S-std.SPA.bin bootflash:mydir/
Destination filename [mydir/c8000be-universalk9.17.03.01prd14.S-std.SPA.bin]?
Copy in progress...CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCC
696368193 bytes copied in 478.600 secs (1455011 bytes/sec)
Router#
Router#
Router#dir bootflash:mydir
Directory of bootflash:/mydir/

632738  -rw-          425288648  Dec 12 2014 09:16:42 +00:00
c8000be-universalk9.17.03.01prd14.S-std.SPA.bin

7451738112 bytes total (474025984 bytes free)
Router#

Router#request platform software package
expand file bootflash:/mydir/c8000be-universalk9.17.03.01prd14.S-std.SPA.bin.S-std.SPA.bin
Verifying parameters
Validating package type
Copying package files
SUCCESS: Finished expanding all-in-one software package.

Router#reload
Proceed with reload? [confirm]

Proceed with reload? [confirm]

*Jul  8 11:48:30.917 PDT: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload
Command.
*Jul  8 11:48:32.768 PDT: %IOSXE_INFRA-3-RELOAD_INFO_SAVE_FAIL: Unable to save reload
information: 23: Invalid argument.
Jul  8 11:48:38.652: %PMAN-TACTION: R0/0: pvp: 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 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

rommon 1  boot bootflash:mydir/packages.conf

File size is 0x000028f1
Located mydir/packages.conf
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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If you require further assistance please contact us by sending email to  
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```
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:cmdand: The platform does not detect a power
supply in slot 1
*Dec 12 09:29:01.256: %CMLIB-6-THROUGHPUT_VALUE:cmdand: 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-4x1GE) 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-4x1GE[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-4x1GE) 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:vdsllog.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: Secondary
-----
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#
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_rcl

Boot Loader: Seondry
-----
Version: 1.1

Modem Up time
-----
0D 0H 0M 42S

Router#

```

## Installing a Firmware Subpackage

### Before you begin

Obtain a consolidated package that contains your required firmware package and expand the package. (See [Managing and Configuring a Device to Run Using Individual Packages, on page 33](#).) Make a note of the location and name of the firmware package and use this information in the steps below for *URL-to-package-name*.

You can install a firmware subpackage if the device has been configured using, for example, [Managing and Configuring a Device to Run Using Individual Packages, on page 33](#).

Firmware subpackages are not released individually. You can select a firmware package from within a consolidated package after expanding the consolidated package. The firmware package can then be installed as shown in the procedure below.



**Note** Read the Release Notes document pertaining to the consolidated package to verify that the firmware within the consolidated package is compatible with the version of Cisco IOS XE software that is currently installed on a device.

## SUMMARY STEPS

1. **show version**
2. **dir bootflash:**
3. **show platform**
4. **mkdir bootflash:** *URL-to-directory-name*
5. **request platform software package expand file** *URL-to-consolidated-package* **to** *URL-to-directory-name*
6. **reload**
7. **boot** *URL-to-directory-name* **/packages.conf**
8. **show version installed**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>show version</b> <b>Example:</b> <pre>Router# show version Cisco IOS Software, IOS-XE Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Experimental Version 15.3(20120627:221639) [build_151722_111] Copyright (c) 1986-2012 by Cisco Systems, Inc. Compiled Thu 28-Jun-12 15:17 by mcpre . . .</pre>	Shows the version of software running on the device. This can later be compared with the version of software to be installed.
<b>Step 2</b>	<b>dir bootflash:</b> <b>Example:</b> <pre>Router# dir bootflash:</pre>	Displays the previous version of software and that a package is present.
<b>Step 3</b>	<b>show platform</b> <b>Example:</b> <pre>Router# show platform Chassis type: c8000be/K9</pre>	Checks the inventory.  Also see the example in Installing Subpackages from a Consolidated Package section.
<b>Step 4</b>	<b>mkdir bootflash:</b> <i>URL-to-directory-name</i> <b>Example:</b> <pre>Router# mkdir bootflash:mydir</pre>	Creates a directory to save the expanded software image.  You can use the same name as the image to name the directory.
<b>Step 5</b>	<b>request platform software package expand file</b> <i>URL-to-consolidated-package</i> <b>to</b> <i>URL-to-directory-name</i>	Expands the software image from the TFTP server ( <i>URL-to-consolidated-package</i> ) into the directory used to

	Command or Action	Purpose
	<b>Example:</b> Router# <b>request platform software package expand file</b> <b>bootflash:c8000be-universalk9-NIM.bin to bootflash:mydir</b>	save the image ( <i>URL-to-directory-name</i> ), which was created in the Step 4.
<b>Step 6</b>	<b>reload</b> <b>Example:</b> Router# <b>reload</b> rommon >	Enables ROMMON mode, which allows the software in the consolidated file to be activated.
<b>Step 7</b>	<b>boot <i>URL-to-directory-name</i> /packages.conf</b> <b>Example:</b> rommon 1 > <b>boot bootflash:mydir/packages.conf</b>	Boots the consolidated package by specifying the path and name of the provisioning file: packages.conf.
<b>Step 8</b>	<b>show version installed</b> <b>Example:</b> Router# <b>show version installed</b> Package: Provisioning File, version: n/a, status: active	Displays the version of the newly installed software.

### Examples

The initial part of the following example shows the consolidated package, c8000be-universalk9.164422SSA.bin, being copied to the TFTP server. This is a prerequisite step. The remaining part of the example shows the consolidated file, packages.conf, being booted.

```
Router# tftp:c8000be/c8000be-universalk9.164422SSA.bin bootflash:
Address or name of remote host []? 192.0.2.1
Destination filename [c8000be-universalk9.164422SSA.bin]?
Accessing tftp://192.0.2.1/c8000be/c8000be-universalk9.164422SSA.bin...
Loading c8000be/c8000be-universalk9.164422SSA.bin from 192.0.2.1 (via GigabitEthernet0):
!!!!!!!!!!
[OK - 410506248 bytes]

410506248 bytes copied in 338.556 secs (1212521 bytes/sec)

Router# show version
Cisco IOS Software, IOS-XE Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Experimental Version
15.3(20120627:221639) [build_151722 111]
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Thu 28-Jun-12 15:17 by mcpre

IOS XE Version: 2012-06-28_15.31_mcpre

Cisco IOS-XE software, Copyright (c) 2005-2012 by cisco Systems, Inc.
All rights reserved. Certain components of Cisco IOS-XE software are
licensed under the GNU General Public License ("GPL") Version 2.0. The
software code licensed under GPL Version 2.0 is free software that comes
with ABSOLUTELY NO WARRANTY. You can redistribute and/or modify such
GPL code under the terms of GPL Version 2.0. For more details, see the
documentation or "License Notice" file accompanying the IOS-XE software,
```

or the applicable URL provided on the flyer accompanying the IOS-XE software.

ROM: IOS-XE ROMMON

```
Router uptime is 0 minutes
Uptime for this control processor is 3 minutes
System returned to ROM by reload
System image file is "tftp:c8000be/c8000be.bin"
Last reload reason: Reload Command
```

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute or use encryption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at: <http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to [export@cisco.com](mailto:export@cisco.com).

```
License Level: adventerprise
License Type: EvalRightToUse
Next reload license Level: adventerprise
cisco c8000be/K9 (2RU) processor with 1136676K/6147K bytes of memory.
Processor board ID FGL161611AB
4 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
4194304K bytes of physical memory.
7393215K bytes of Compact flash at bootflash:.
```

Configuration register is 0x8000

Router# **dir bootflash:**

Directory of bootflash:/

```
11 drwx 16384 May 3 2012 19:58:37 +00:00 lost+found
178465 drwx 4096 Jun 6 2012 15:20:20 +00:00 core
584065 drwx 4096 Jul 13 2012 19:19:00 +00:00 .prst_sync
405601 drwx 4096 May 3 2012 19:59:30 +00:00 .rollback_timer
113569 drwx 40960 Jul 13 2012 19:19:32 +00:00 tracelogs
64897 drwx 4096 May 3 2012 19:59:42 +00:00 .installer
13 -rw- 1305 May 7 2012 17:43:42 +00:00 startup-config
14 -rw- 1305 May 7 2012 17:43:55 +00:00 running-config
15 -r-- 1541 Jun 4 2012 18:32:41 +00:00 debug.conf
16 -rw- 1252 May 22 2012 19:58:39 +00:00 running-config-20120522
519169 drwx 4096 Jun 4 2012 15:29:01 +00:00 vman_fdb

7451738112 bytes total (7067635712 bytes free)
```

Router# **show platform**

Chassis type: c8000be/K9

Slot Type State Insert time (ago)

-----  
0 c8000be/K9 ok 15:57:33

```

0/0 c8000be-6X1GE ok 15:55:24
1 Ic8000be/K9 ok 15:57:33
1/0 SM-1T3/E3 ok 15:55:24
2 c8000be/K9 ok 15:57:33
2/0 SM-1T3/E3 ok 15:55:24
R0 c8000be/K9 ok, active 15:57:33
F0 c8000be-FP ok, active 15:57:33
P0 Unknown ps, fail never
P1 XXX-XXXX-XX ok 15:56:58
P2 ACS-4450-FANASSY ok 15:56:58

Slot CPLD Version Firmware Version
-----
0 12090323 15.3(01r)S [ciscouser-c8000beRO...
1 12090323 15.3(01r)S [ciscouser-c8000beRO...
2 12090323 15.3(01r)S [ciscouser-c8000beRO...
R0 12090323 15.3(01r)S [ciscouser-c8000beRO...
F0 12090323 15.3(01r)S [ciscouser-c8000beRO...

Router# mkdir bootflash:c8000be-universalk9.dir1
Create directory filename [c8000be-universalk9.dir1]?
Created dir bootflash:/c8000be-universalk9.dir1
Router# request platform software package expand file bootflash:c8000be-universalk9.NIM.bin
to
bootflash:c8000be-universalk9.dir1
Verifying parameters
Validating package type
Copying package files
SUCCESS: Finished expanding all-in-one software package.

Router# reload
Proceed with reload? [confirm]

*Jul 13 19:39:06.354: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload
Command.

rommon 1 > boot bootflash:c8000be-universalk9.dir1/packages.conf

File size is 0x00002836
Located c8000be-universalk9.dir1/packages.conf
Image size 10294 inode num 324484, bks cnt 3 blk size 8*512
#
File is comprised of 1 fragments (33%)

is_valid_shalhash: SHA-1 hash:
calculated 62f6235a:fc98eb3a:85ce183e:834f1cb3:8alf71d1
expected 62f6235a:fc98eb3a:85ce183e:834f1cb3:8alf71d1
File size is 0x04b3dc00
Located c8000be-universalk9.dir1/c8000be-mono-universalk9-build_164422SSA.pkg
Image size 78896128 inode num 324491, bks cnt 19262 blk size 8*512
#####
File is comprised of 21 fragments (0%)
.....

Router# show version installed
Package: Provisioning File, version: n/a, status: active
File: bootflash:c8000be-universalk9.dir1/packages.conf, on: RP0
Built: n/a, by: n/a
File SHA1 checksum: ad09affd3f8820f4844f27acc1add502e0b8f459

Package: rpbase, version: 2012-07-10_16.22_mcpres, status: active
File: bootflash:c8000be-universalk9.dir1/c8000be-mono-universalk9-build_164422SSA.pkg, on:

```

```

RP0
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 5e95c9cbc4eaf5a4a5a1ac846ee2d0f41d1a026b

Package: firmware_attributes, version: 2012-07-10_16.22_mcpre, status: active
File: bootflash:c8000be-universalk9.dir1/c8000be-firmware_attributes_164422SSA.pkg, on:
RP0/0
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 71614f2d9cbe7f96d3c6e99b67d514bd108c6c99

Package: firmware_dsp_sp2700, version: 2012-07-10_16.22_mcpre, status: active
File: bootflash:c8000be-universalk9.dir1/c8000be-firmware_dsp_164422SSA.pkg, on: RP0/0
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 8334565edf7843fe246783b1d5c6ed933d96d79e
Package: firmware_fpge, version: 2012-07-10_16.22_mcpre, status: active
File: bootflash:c8000be-universalk9.dir1/c8000be-firmware_fpge_164422SSA.pkg, on: RP0/0
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: eb72900ab32c1c50652888ff486cf370ac901dd7

Package: firmware_sm_lt3e3, version: 2012-07-10_16.22_mcpre, status: active
File: bootflash:c8000be-universalk9.dir1/c8000be-firmware_sm_lt3e3_164422SSA.pkg, on: RP0/0
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 803005f15d8ea71ab088647e2766727ac2269871

Package: rpcontrol, version: 2012-07-10_16.22_mcpre, status: active
File: bootflash:c8000be-universalk9.dir1/c8000be-mono-universalk9_164422SSA.pkg, on: RP0/0
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 980fd58fe581e9346c44417b451d1c09ebb640c2

Package: rpios-universalk9, version: dir1, status: active
File: bootflash:c8000be-universalk9.dir1/c8000be-mono-universalk9_164422SSA.pkg, on: RP0/0
Built: 2012-07-10_16.23, by: mcpre
File SHA1 checksum: 27084f7e30ald69d45a33e05d1b00345040799fb
Package: rpaccess, version: 2012-07-10_16.22_mcpre, status: active
File: bootflash:c8000be-universalk9.dir1/c8000be-mono-universalk9_164422SSA.pkg, on: RP0/0
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 0119802deda2da91c38473c47a998fb3ed423448

Package: rpcontrol, version: 2012-07-10_16.22_mcpre, status: n/a
File: bootflash:c8000be-universalk9.dir1/c8000be-rpcontrol-BLD-BLD_MCP_DEV_LATEST_20120710_
164422SSA.pkg, on: RP0/1
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 980fd58fe581e9346c44417b451d1c09ebb640c2

Package: rpios-universalk9, version: 2012-07-10_16.23_mcpre, status: n/a
File: bootflash:c8000be-universalk9.dir1/c8000be-rpios-universalk9-BLD-BLD_MCP_DEV_LATEST_
20120710_164422SSA.pkg, on: RP0/1
Built: 2012-07-10_16.23, by: mcpre
File SHA1 checksum: 27084f7e30ald69d45a33e05d1b00345040799fb

Package: rpaccess, version: 2012-07-10_16.22_mcpre, status: n/a
File: bootflash:c8000be-universalk9.dir1/c8000be-rpaccess-BLD-BLD_MCP_DEV_LATEST_20120710_
164422SSA.pkg, on: RP0/1
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 0119802deda2da91c38473c47a998fb3ed423448

Package: rpbase, version: 2012-07-10_16.22_mcpre, status: n/a
File: bootflash:c8000be-universalk9.dir1/c8000be-rpbase-BLD-BLD_MCP_DEV_LATEST_20120710_
164422SSA.pkg, on: RP1
Built: 2012-07-10_16.22, by: mcpre
File SHA1 checksum: 5e95c9cbc4eaf5a4a5a1ac846ee2d0f41d1a026b

Package: firmware_fpge, version: 2012-07-10_16.22_mcpre, status: n/a

```

# Configuring No Service Password-Recovery

The Cisco IOS password recovery procedure allows you to gain access, using the console, to the ROMMON mode by using the Break key during system startup and reload. When the device software is loaded from ROMMON mode, the configuration is updated with the new password. The password recovery procedure makes anyone with console access have the ability to access the device and its network.

The No Service Password-Recovery feature is designed to prevent the service password-recovery procedure from being used to gain access to the device and network.

## Configuration Registers and System Boot Configuration

The lowest four bits of the configuration register (bits 3, 2, 1, and 0) form the boot field. The boot field determines if the device boots manually from ROM or automatically from flash or the network. For example, when the configuration register boot field value is set to any value from 0x2 to 0xF, the device uses the register boot field value to form a default boot filename for autobooting from a network server.

Bit 8, when set to 1, ignores the startup configuration. Bit 6, when set to 1, enables break key detection. You must set the configuration register to autoboot to enable this feature. Any other configuration register setting will prevent the feature from being enabled.



---

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

---

## How to Enable No Service Password-Recovery

You can enable the No Service Password-Recovery in the following 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, ensure that this feature is disabled before making any change to the device regardless of the significance of the change—such as a configuration, module, software version, or ROMMON version change.

The configuration register boot bit must be enabled to load the startup configuration by setting bit-8 to 0, to ignore the break key in Cisco IOS XE by setting bit-6 to 0, and to auto boot a Cisco IOS XE image by setting the lowest four bits 3-0, to any value from 0x2 to 0xF. 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 following 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
...
```

The following 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
```

```
..
```

