



# Upgrading the ROMMON and CPLD

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This chapter describes the procedures to upgrade the ROMMON on the Cisco ASR 1001-X Router.

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## Upgrading the ROMMON

The ROMMON must be upgraded on the Cisco ASR 1001-X Router if the system message on the router indicates that the ROMMON requires an upgrade, or when a Cisco technical support representative suggests a ROMMON upgrade.

## Compatibility Requirements



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**Note** For information about the compatibility between the ROMMON releases and the Cisco ASR 1001-X Router, see the “ [ROMMON Release Requirements](#) ” section in the [Cisco ASR 1000 Series Aggregation Services Routers Release Notes](#) .

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To upgrade the ROMMON image, you must have access to the privileged EXEC mode prompt or the diagnostic mode prompt on the router.

## Checking the Current ROMMON Version

If you are unsure whether a ROMMON upgrade is required, follow the instructions provided in this section.

Run the **show rom-monitor** command or the **show platform** command to display the version of ROMMON running on your router. If the output shows that the release to which you plan to upgrade is already installed, you need not upgrade the ROMMON.

For a single form-factor platform such as the Cisco ASR 1001-X Router, all of the following commands display the same output:

- **show rom-monitor 0**
- **show rom-monitor F0**
- **show rom-monitor FP**
- **show rom-monitor R0**
- **show rom-monitor RP**

In the following example, the output of the **show rom-monitor** command indicates that an upgrade to Release 15.4(2r)S is not required:

```
Router# show rom-monitor 0
System Bootstrap, Version 15.4(2r)S, RELEASE SOFTWARE (fc1)
Copyright (c) 1994-2014 by cisco Systems, Inc.
```

## Upgrading the ROMMON for the Cisco ASR 1001-X Router

Use this procedure to upgrade the ROMMON for the Cisco ASR 1001-X Router:

### SUMMARY STEPS

1. (Optional) Run the **show platform** command or the **show rom-monitor slot** command to see the current release number of ROMMON on the hardware.
2. If the ROMMON image has not been copied onto the router, copy the PKG file that is made available as part of this ROMMON release onto the bootflash: or usb[0-1]: file system using the **copy source-location destination-location** command. For example, if you are upgrading to Release 15.4(2r)S, copy the `asr1000-rommon.154-2r.S.pkg` file.
3. Run the **dir file-system** command to verify that the ROMMON file is copied into the specified directory.
4. Run the **upgrade rom-monitor filename location all** command to begin the ROMMON image upgrade, where *location* is the path to the ROMMON file.
5. Messages pertaining to the upgrade are displayed on the console. After the display of these messages stops and the router prompt is available, run the **reload** command to reload the router.
6. If autoboot has not been enabled by using the **config-register 0x2102** command, run the **boot filesystem:/file-location** command at the ROMMON prompt to boot the Cisco IOS XE image, where *filesystem:/file-location* is the path to the consolidated package file. The ROMMON upgrade is not permanent for any piece of hardware until the Cisco IOS XE image is booted.
7. Run the **enable** command at the user prompt to enter the privileged EXEC mode after the boot is complete.
8. Run the **show platform** command or the **show rom-monitor slot** command to verify whether the ROMMON has been upgraded.

### DETAILED STEPS

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- Step 1** (Optional) Run the **show platform** command or the **show rom-monitor slot** command to see the current release number of ROMMON on the hardware.
- Step 2** If the ROMMON image has not been copied onto the router, copy the PKG file that is made available as part of this ROMMON release onto the bootflash: or usb[0-1]: file system using the **copy source-location destination-location** command. For example, if you are upgrading to Release 15.4(2r)S, copy the `asr1000-rommon.154-2r.S.pkg` file.
- Step 3** Run the **dir file-system** command to verify that the ROMMON file is copied into the specified directory.

- Step 4** Run the **upgrade rom-monitor filename location all** command to begin the ROMMON image upgrade, where *location* is the path to the ROMMON file.
- Caution** Do not remove hardware, turn off power, or interrupt the router in any way during the ROMMON upgrade. Although the router should be able to recover from most interruptions during the ROMMON upgrade, certain scenarios may cause unpredictable problems.
- Step 5** Messages pertaining to the upgrade are displayed on the console. After the display of these messages stops and the router prompt is available, run the **reload** command to reload the router.
- Note** If you change the configuration register setting through Cisco IOS after initiating a ROMMON upgrade, but before reloading the router, the configuration register setting will not be applied. Reload the router and allow the ROMMON upgrade to be applied prior to changing the configuration register in Cisco IOS.
- Step 6** If autoboot has not been enabled by using the **config-register 0x2102** command, run the **boot filesystem:/file-location** command at the ROMMON prompt to boot the Cisco IOS XE image, where *filesystem:/file-location* is the path to the consolidated package file. The ROMMON upgrade is not permanent for any piece of hardware until the Cisco IOS XE image is booted.
- Note** If you enter the **reset** command twice when booting from the ROMMON prompt, the ROMMON upgrade will automatically fall back to the previous ROMMON image. The following message appears after you enter the reset command the second time, and the earlier version of the ROMMON image is installed: Rommon upgrade requestedMaximum upgrade attempts exceeded, continuing with old Rommon...
- Step 7** Run the **enable** command at the user prompt to enter the privileged EXEC mode after the boot is complete.
- Step 8** Run the **show platform** command or the **show rom-monitor slot** command to verify whether the ROMMON has been upgraded.

## Example: Upgrading a ROMMON

The following sequence of commands is an example of the procedure to upgrade the ROMMON on a Cisco ASR 1001-X Router:

```
Router# copy tftp boot
Address or name of remote host []? 2.0.0.2
Source filename []? images/nightster/asr1000-rommon.154-2r.S.pkg
Destination filename [asr1000-rommon.154-2r.S.pkg]?
Accessing tftp://2.0.0.2/images/nightster/asr1000-rommon.154-2r.S.pkg...
Loading images/nightster/asr1000-rommon.154-2r.S.pkg from 2.0.0.2 (via GigabitEthernet0):
!
[OK - 3832112 bytes]
3832112 bytes copied in 1.206 secs (3177539 bytes/sec)
Router# upgrade rom-monitor filename bootflash:asr1000-rommon.154-2r.S.pkg all
Chassis model ASR1001-X has a single rom-monitor.
Upgrade rom-monitor
Target copying rom-monitor image file
File size : //tmp/rommon_upgrade/latest.bin
File size is : 3211264
FIPS File size is : 3211264
ROMMON Image Type : X86
File /tmp/rommon_upgrade/latest.bin is a FIPS ROMMON image
FIPS-140-3 Load Test on /tmp/rommon_upgrade/latest.bin has PASSED.
Authenticity of the image has been verified.
4259840+0 records in
4259840+0 records out
```

```

131072+0 records in
131072+0 records out
655360+0 records in
655360+0 records out
Checking upgrade image...
3211264+0 records in
6272+0 records out
Upgrade image MD5 signature is b806b4bffb47e9be24d26ecd976212e8
Burning upgrade partition...
3211264+0 records in
3211264+0 records out
Checking upgrade partition...
3211264+0 records in
3211264+0 records out
Copying ROMMON environment
4259840+0 records in
4259840+0 records out
131072+0 records in
131072+0 records out
131072+0 records in
131072+0 records out
655360+0 records in
655360+0 records out
Upgrade flash partition MD5 signature is b806b4bffb47e9be24d26ecd976212e8
ROMMON upgrade complete.
To make the new ROMMON permanent, you must restart the RP.
Router# reload
Proceed with reload? [confirm]
*Mar 24 17:39:33.712 EDT: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload
  Command.Mar 24 17:39:48.058 R0/0: %PMAN-5-EXITACTION: P rocess manager is exiting: process
  exit with reload chassis code
Initializing Hardware ...
System integrity status: 00000610
System Bootstrap, Version 12.2(20140222:162915) [rommon_release_1_49 101], DEVELOPMENT
SOFTWARE
Copyright (c) 1994-2014 by cisco Systems, Inc.
Compiled Sat 02/22/2014 9:10:52.81
Current image running: Boot ROM1
Last reset cause: LocalSoft
ASR1001-X platform with 8388608 Kbytes of main memory
Rommon upgrade requested
Flash upgrade reset 1 in progress
.....
Initializing Hardware ...
System integrity status: 00000610
System Bootstrap, Version 15.4(2r)S, RELEASE SOFTWARE (fc1)
Copyright (c) 1994-2014 by cisco Systems, Inc.
Current image running: *Upgrade in progress* Boot ROM0
Last reset cause: BootRomUpgrade
***          Incorrect BIOS parameters          ***
*** Correcting the BIOS parameters and rebooting ***
Initializing Hardware ...
System integrity status: 00000610
System Bootstrap, Version 12.2(20140222:162915) [rommon_release_1_49 101], DEVELOPMENT
SOFTWARE
Copyright (c) 1994-2014 by cisco Systems, Inc.
Compiled Sat 02/22/2014 9:10:52.81
Current image running: Boot ROM1
Last reset cause: LocalSoft
ASR1001-X platform with 8388608 Kbytes of main memory
Rommon upgrade requested
Flash upgrade reset 2 in progress
.....
Initializing Hardware ...

```

```

System integrity status: 00000610
System Bootstrap, Version 15.4(2r)S, RELEASE SOFTWARE (fc1)
Copyright (c) 1994-2014 by cisco Systems, Inc.
Current image running: *Upgrade in progress* Boot ROM0
Last reset cause: BootRomUpgrade
ASR1001-X platform with 8388608 Kbytes of main memory

```



**Note** From here, you can manually reload from the ROMMON prompt, or let the router auto boot directly to Cisco IOS.

The **show platform** command displays the upgraded version of the ROMMON:

```

Router# show platform
Chassis type: ASR1001-X
Slot      Type                State                Insert time (ago)
-----
0         ASR1001-X             ok                   17:51:08
0/0      BUILT-IN-2T+6X1GE    ok                   17:50:18
0/1      SPA-1X10GE-L-V2     ok                   17:50:18
R0       ASR1001-X             ok                   17:51:08
R0/0     ok, active            17:51:08
R0/1     ok, standby           17:49:51
F0       ASR1001-X             ok, active           17:51:08
P0       ASR1001X-PWR-AC      ok                   17:50:44
P1       ASR1001X-PWR-AC      ok                   17:50:42
P2       ASR1001-X-FANTRAY    ok                   17:50:45
Slot     CPLD Version          Firmware Version
-----
0         14022717              15.4(2r)S << New ROMmon is confirmed
R0       14022717              15.4(2r)S
F0       14022717              15.4(2r)S

```

## Compatible ROMMON Releases

For information about the compatibility between ROMMON releases and the Cisco ASR 1001-X Router, see the “[ROMMON Release Requirements](#)” section in the [Cisco ASR 1000 Series Aggregation Services Routers Release Notes](#).

## Resolved Caveats

For information about the resolved caveats in each ROMMON release, see the “[Resolved Caveats](#)” section in the [Cisco ASR 1000 Series Aggregation Services Routers Release Notes](#).

## Hardware that Require a CPLD Upgrade

The Cisco ASR 1001-X Router has the capability to allow users to perform Complex Programmable Logic Device (CPLD) upgrades in the field.

For details about Cisco ASR 1000 Series Aggregation Services Router hardware configuration combinations that require a CPLD field-programmable upgrade for components, see [Upgrading Field Programmable Hardware Devices for Cisco ASR 1000 Series Routers](#) .

## Upgrading the CPLD

To upgrade the CPLD, follow these steps:

### SUMMARY STEPS

1. Copy the **.pkg** file to your bootflash directory.
2. Execute the **upgrade hw-programmable cpld filename bootflash:<cpld.pkg> RP active** command:
3. Press **Enter**.
4. To confirm if the upgrade is complete, execute the **show platform** command:

### DETAILED STEPS

**Step 1** Copy the **.pkg** file to your bootflash directory.

**Step 2** Execute the **upgrade hw-programmable cpld filename bootflash:<cpld.pkg> RP active** command:

```
Router# upgrade hw-programmable cpld filename bootflash:nightster_cpld_14041015.pkg RP active
Upgrade CPLD on Route-Processor 0 from current version 13081317 to 14041015 [Press Enter to confirm]
```

This command could take up to 10 minutes, please wait and do not power-cycle the chassis or the card. Otherwise, hardware may be unrecoverable. The system will be automatically power-cycled upon completion. [Press Enter to confirm]

**Note** If you decide not to upgrade the CPLD after step 2, press **Ctrl-C** to abort.

**Step 3** Press **Enter**.

The router upgrades the CPLD, and information will be displayed on the screen. The router then power cycles and returns to your configuration register-based setting (Cisco IOS boot or ROMMON prompt).

**Step 4** To confirm if the upgrade is complete, execute the **show platform** command:

```
Router# show platform
Chassis type: ASR1001-X
Slot Type State Insert time (ago)
-----
0 ASR1001-X ok 2d22h
0/0 BUILT-IN-2T+6X1GE ok 2d20h
R0 ASR1001-X ok, active 2d22h
F0 ASR1001-X ok, active 2d22h
P0 ASR1001X-PWR-AC ok 2d22h
P1 ASR1001X-PWR-AC ps, fail 2d22h
P2 ASR1001-X-FANTRAY f1, fail 2d22h
```

Slot CPLD Version Firmware Version

-----  
0 **14041015** 15.4(2r)S

R0 **14041015** 15.4(2r)S

F0 **14041015** 15.4(2r)S

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## Checking Hardware and Software Compatibility

Cisco software is packaged in feature sets consisting of software images that support specific platforms. The feature sets that are available for a specific platform depend on which Cisco software images are included in a release. To identify the set of software images available in a specific release or to find out if a feature is available in a given Cisco IOS XE software image, use Cisco Feature Navigator or the corresponding software release notes.

### Using Cisco Feature Navigator

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS XE software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn> . An account on Cisco.com is not required.

