Upgrading and Downgrading ROM Monitor and Boothelper

This chapter describes how to upgrade or downgrade the ROM Monitor and Boothelper.

Information About ROM Monitor and Boothelper Software

The ROM Monitor, which is also known as ROMMON, is a bootstrap program that initializes the hardware and boots the Cisco IOS XR firmware when you power on or restart a Cisco XR 12000 Series Router. ROM Monitor upgrades can be required to resolve firmware defects or support new features. Typically, ROM Monitor upgrades are infrequent and not required for every Cisco IOS XR software upgrade.

The ROM Monitor firmware on all Route Processors (RP)s must be compatible with the current Cisco IOS XR software release running on the router before it is upgraded to the latest Cisco IOS XR Software Release. For minimum ROM Monitor requirements, see Software/Firmware Compatibility Matrix at the following URL:

http://www.cisco.com/web/Cisco_IOS_XR_Software/index.html

If the router is brought up with an incompatible version of the ROM Monitor software, then the standby RP may fail to boot.

Note   ROMMON versions are backward compatible. You need not downgrade the ROMMON versions if the current version is higher than the listed compatible version.

The upgrade and downgrade procedures for ROM Monitor are the same. During the upgrade or downgrade process, you select the firmware that is used for ROM Monitor. This firmware can represent an upgrade or a downgrade. The firmware must be compatible with the hardware, but it need not be a later version of the ROM Monitor already installed. During an upgrade or downgrade, the firmware is copied into hardware EEPROMs in the router.

Boothelper software is an additional software that extends the capabilities of ROM Monitor on a Cisco XR 12000 Series Router. Without the Boothelper, ROM Monitor can load images from disk0, disk1, and bootflash. With Boothelper, ROM Monitor can load images from disk0, disk1, bootflash, compact flash, and TFTP servers.

The Boothelper software is also stored in bootflash and can be upgraded or downgraded by replacing the software in the bootflash with a different Boothelper image.

How to Upgrade or Downgrade Boothelper and ROM Monitor

This section contains the following procedures:

Upgrading or Downgrading Boothelper

Perform this task to upgrade or downgrade the Boothelper.

Note   Upgrading or downgrading boothelper is not applicable for PRP-3 cards, as the boothelper software is integrated in ROM Monitor software for PRP-3 cards.

From Cisco IOS XR software release 4.3.1 and later, it is required to have the boothelper, c12kprp-boot-mz.120-33.S11, to ensure the successful installation of Cisco IOS XR Software from a TFTP server.

Prerequisites

Before starting the procedure described in this section, complete the following:

- Determine if there is a Boothelper upgrade file for your version of Cisco IOS XR software.

- To prepare for a Boothelper upgrade, copy the Boothelper upgrade file to the router or to a local workstation from which you can copy files to the router. You can also perform the upgrade with a Boothelper upgrade file located on a TFTP server.

- Establish a connection to the active Route Processor (RP). This allows you to manage the active RP. For more information, see "Connecting and Communicating with the Router" in Cisco IOS XR Getting Started Guide for the Cisco XR 12000 Series Router.

SUMMARY STEPS

1. **dir bootflash:**
2. **format bootflash:**
3. **squeeze bootflash:**
4. **copy** *upgradeImage* **bootflash:**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**dir bootflash:** **Example:** RP/0/0/CPU0:router# **dir bootflash:**	Displays the bootflash contents. • Boothelper filename shows the file version number. • If the correct version is in use, there is no need to upgrade.
Step 2	**format bootflash:** **Example:** RP/0/0/CPU0:router# **format bootflash:**	Formats bootflash and erases all contents.
Step 3	**squeeze bootflash:** **Example:** RP/0/0/CPU0:router# **squeeze bootflash:**	Permanently erases the files tagged as "deleted" in the file system.
Step 4	**copy** *upgradeImage* **bootflash:** **Example:** RP/0/0/CPU0:router# **copy disk0:c12kprp-boot-mz.120-32.S3 bootflash:** or RP/0/0/CPU0:router# **copy disk0:c12kprp-boot-mz.120-33.S11 bootflash:**	Copies a file to bootflash. • File system changes you make to the active RP are replicated on the standby RP.

Upgrading or Downgrading ROM Monitor

As IOS XR images are bundled with ROMMON images, you can upgrade or downgrade ROM Monitor using the process below, which does not require copying an external file to the Route Processor's bootflash. The following procedure upgrades or downgrades the ROM Monitor.

Prerequisites

Before starting the procedure described in this section, complete the following:

- Determine Route Processors that require upgrade or downgrade.

- If you want to upgrade ROM Monitor without interrupting traffic through the router, install a standby RP and verify that the standby RP is operating in standby mode.

- Establish a connection to the active Route Processor. This allows you to manage the active RP. For more information, see "Connecting and Communicating with the Router" in Cisco IOS XR Getting Started Guide for the Cisco XR 12000 Series Router.

Note This procedure requires a reload of the Route Processor for which you are upgrading ROM monitor. This procedure installs the ROMMON release which is bundled with the IOS XR image.

SUMMARY STEPS

1. **admin**
2. **show upgrade rommon location all**
3. **upgrade rommon location** *<location>*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**admin** **Example:** `RP/0/0/CPU0:router# admin`	Enters administration EXEC mode.
Step 2	**show upgrade rommon location all** **Example:** `RP/0/0/CPU0:router(admin)# show upgrade rommon location all`	Displays a list of RPs, line cards, and other cards that may require either upgrade or downgrade for the ROMMON. To find out such card, you need to view the compatibility of the ROMMON image with the bundled IOS XR image.
Step 3	**upgrade rommon location** *<location>* **Example:** `RP/0/0/CPU0:router(admin)# upgrade rommon location 0/0/CPU0`	Upgrades the ROMMON and reloads the RP. • Displays a message indicating that RP card rom-monitor has upgraded successfully. • Displays a message indicating that RP is being reloaded. • The upgrade rommon location all upgrades the rommon for all available cards. And the upgrade rommon location all force command forces the rommon ugrade to all RP or line cards even if it is not required.

What to Do Next

The upgrade process continues on the card, even if you press Ctrl-C when the upgrade is in progress.

Upgrade Procedures: Examples

This section provides the following configuration examples:

Upgrading Boothelper: Example

The following example shows how the bootflash is upgraded with a file located on a TFTP server.

```
RP/0/0/CPU0:router# dir bootflash:

Directory of bootflash:

10   -rwx  5192        Thu Apr 28 03:37:53 2005   crashinfo5
381  -rwx  5177        Wed Jun  1 22:12:54 2005   crashinfo4
440  -rwx  1389        Sat Jul 16 14:20:08 2005   snmp/ifindex-table
443  -rwx  3047        Sun Jul 24 06:19:25 2005   crashinfo
444  -rwx  5177        Sun Jul 24 06:30:00 2005   crashinfo3
445  -rwx  3223556     Thu Aug  4 21:55:27 2005   c12kprp-boot-mz.120-29.S

66322432 bytes total (58795492 bytes free)

RP/0/0/CPU0:router# format bootflash:

Format operation may take a while. Continue? [confirm] y
Format will destroy all data on "bootflash:". Continue? [confirm] y

Formatting sector 1
Format of bootflash: complete

RP/0/0/CPU0:router# squeeze bootflash:

All deleted files will be removed. Continue? [confirm]y
Squeeze operation may take a while. Continue? [confirm]y

Squeeze under progress 254
Squeeze of bootflash: complete

RP/0/0/CPU0:router# disk0:c12kprp-boot-mz.120-32.S7
Destination filename [/bootflash:/c12kprp-boot-mz.120-32.S7]? <return>
Accessing disk0:c12kprp-boot-mz.120-32.S7
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
3223556 bytes copied in    23 sec (   138000)bytes/sec

RP/0/0/CPU0:router# dir bootflash:

Directory of bootflash:

1    -rwx  3223556     Thu Aug  4 22:09:23 2005   c12kprp-boot-mz.120-32.S7

66322432 bytes total (63098748 bytes free)
```

Upgrading ROM Monitor: Example

The following example shows how the ROM Monitor software is upgraded on a single RP:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# show upgrade rommon location all

Node           Type               PLIM        Current    Image      Upgrade
                                              Rommon     Rommon     Required
                                              Version    Version
--------------------------------------------------------------------------------
0/0/CPU0       L3 Service Eng     N/A         1.3        1.3        No
0/1/CPU0       L3 Service Eng     N/A         1.3        1.3        No
```

```
0/2/CPU0        L3LC Eng 5+              Jacket Card     17.1        17.1    No
0/3/CPU0        L3LC Eng 5+              Jacket Card     19.1        17.1    No
0/4/CPU0        L3LC Eng 5+              Jacket Card     17.1        17.1    No
0/5/CPU0        PRP(Active)             N/A             1.17        1.23    Yes
0/16/CPU0       CSC6(P)                 N/A             N/A         N/A     N/A
0/18/CPU0       SFC6                    N/A             N/A         N/A     N/A
0/19/CPU0       SFC6                    N/A             N/A         N/A     N/A
0/20/CPU0       SFC6                    N/A             N/A         N/A     N/A
0/24/CPU0       ALARM6                  N/A             N/A         N/A     N/A
0/25/CPU0       ALARM6                  N/A             N/A         N/A     N/A
0/28/CPU0       GSR6-BLOWER             N/A             N/A         N/A     N/A
RP/0/0/CPU0:router(admin)# upgrade rommon location 0/5/CPU0
% RELOAD WARNING:
    RP ROMMON upgrade starting. If successful, RP will be reloaded.
Continue ? [no]: yes

========= Slot 5 =========
Starting to upgrade rom-monitor
Erasing sectors: eeeeeeee
Programming image: ppp
Verifying image: vvv
Upgraded RP rom-monitor successfully

Reloading RP now
P/0/5/CPU:Nov 10 21:43:50.626 : redfs_svr[85]: %OS-REDFS-6-MIRROR_REDUNDANT : Mirroring
is now fully redundant for devices disk0: and disk1:.
RP/0/5/CPU0:Nov 10 21:43:55.164 : sysmgr[89]: %OS-SYSMGR-5-NOTICE : Card is COLD started
RP/0/5/CPU0:Nov 10 21:43:58.753 : sysmgr[438]: %OS-SYSMGR-6-INFO : Backup system manager
is ready
RP/0/5/CPU0:Nov 10 21:44:11.462 : dsc[189]: %PLATFORM-DSC-6-INFO_I_AM_DSC : Setting myself
 as DSC
RP/0/5/CPU0:Nov 10 21:44:04.450 : dsc[189]: DSC Election entry delay time for this RP is 4
 seconds
RP/0/5/CPU0:Nov 10 21:44:18.208 : dumper_config[190]:  No HDD Controller found by process
dumper
RP/0/5/CPU0:Nov 10 21:44:18.680 : fctl[218]: %PLATFORM-FABRIC_CTRL-2-ERR_REPORT : PCDS:
PCDS detected a cold bootn
RP/0/5/CPU0:Nov 10 21:44:18.694 : fctl[218]:  PCDS init done with area at 0x601ce040 , size
 4032 (n1784 required),
RP/0/5/CPU0:Nov 10 21:44:45.138 : sysldr[436]: %PLATFORM-SYSLDR-6-INFO : Waiting for startup
 config to be applied before booting LCs
RP/0/5/CPU0:Nov 10 21:44:51.426 : sysldr[436]: %PLATFORM-SYSLDR-5-OIRIN : OIR: Node 0/2/0
inserted
RP/0/5/CPU0:Nov 10 21:44:51.441 : sysldr[436]: %PLATFORM-SYSLDR-5-OIRIN : OIR: Node 0/2/1
inserted
RP/0/5/CPU0:Nov 10 21:44:51.446 : sysldr[436]: %PLATFORM-SYSLDR-5-OIRIN : OIR: Node 0/2/2
inserted
RP/0/5/CPU0:Nov 10 21:44:51.459 : sysldr[436]: %PLATFORM-SYSLDR-5-OIRIN : OIR: Node 0/3/1
inserted
RP/0/5/CPU0:Nov 10 21:44:51.470 : sysldr[436]: %PLATFORM-SYSLDR-5-OIRIN : OIR: Node 0/4/0
inserted
RP/0/5/CPU0:Nov 10 21:44:51.475 : sysldr[436]: %PLATFORM-SYSLDR-5-OIRIN : OIR: Node 0/4/1
inserted
RP/0/5/CPU0:Nov 10 21:44:51.480 : sysldr[436]: %PLATFORM-SYSLDR-5-OIRIN : OIR: Node 0/4/2
inserted
RP/0/5/CPU0:Nov 10 21:44:51.484 : sysldr[436]: %PLATFORM-SYSLDR-5-OIRIN : OIR: Node 0/4/3
inserted
RP/0/5/CPU0:Nov 10 21:45:02.111 : sysldr[436]: %PLATFORM-POWERMGR-6-INFO : PEMs are in
Non-Redundancy Mode now

 This (D)RP Node is not ready or active for login /configuration
--More--

RP/0/5/CPU0:router(admin)#upgrade rommon location all force
This may take around 7-10 minutes for a full chassis.
Ensure that GSR is not power cycled during the upgrade.
Premature termination of this command may render the GSR
inoperable.
Please consult the documentation for more information.

% UPGRADE ALL WARNING:
    ROMMON in RP(s) will not be upgraded by this command. Please upgrade
```

```
     RP's one by one using "upgrade rom location 0/x/CPU0."
Continue ? [no]: yes

Slot 0 is not in IOX Running state

Slot 1 is not in IOX Running state

========= Slot 2 =========
Starting to upgrade rom-monitor
Erasing sectors: eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Programming image: ppppppppp
Verifying image: vvvvvvvvv
Upgraded linecard rom-monitor successfully

========= Slot 3 =========
Starting to upgrade rom-monitor
Erasing sectors: eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Programming image: ppppppppp
Verifying image: vvvvvvvvv
Upgraded linecard rom-monitor successfully

========= Slot 4 =========
Starting to upgrade rom-monitor
Erasing sectors: eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Programming image: ppppppppp
Verifying image: vvvvvvvvv
Upgraded linecard rom-monitor successfully
```

Additional References

Related Documents

Related Topic	Document Title
Hardware component commands	*Cisco IOS XR Interface and Hardware Component Command Reference for the Cisco XR 12000 Series Router*
System management commands	*Cisco IOS XR System Management Command Reference for the Cisco XR 12000 Series Router*

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support