



# Upgrading and Downgrading ROM Monitor Firmware on Cisco CRS-1 Routers

This chapter describes how to upgrade or downgrade the ROM Monitor firmware on a Cisco CRS-1.

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## Caution

The ROM Monitor software must be upgraded to version 1.42 or higher on all RPs before a Cisco CRS-1 system is upgraded to Cisco IOS XR Software Release 3.4.1 or higher release. If the router is brought up with an incompatible version of the ROM Monitor software, then the standby RP may fail to boot. For instructions to overcome a boot block in the standby RP in a single-chassis system, see [Overriding a ROM Monitor Boot Block in a Single-chassis System, page 5-83](#). If a boot block occurs in a multishelf system, contact your Cisco Systems support representative for assistance. See [Obtaining Technical Assistance, page x](#)

In addition, Cisco CRS-1 multishelf systems should be upgraded to ROMMON release 1.40 before being upgraded to Cisco IOS XR Release 3.4.1 to ensure that RPs are assigned the correct rack numbers during system boot.

For more information, see [ROM Monitor Compatibility with Cisco IOS XR Software, page 5-69](#).

## Information About ROM Monitor Firmware

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 CRS-1. 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.

Before upgrading or downgrading ROM Monitor firmware, you should understand the following concept:

- [About ROMMON A and ROMMON B, page 5-68](#)
- [Upgrading or Downgrading a Single Node or All Nodes, page 5-68](#)
- [ROM Monitor Compatibility with Cisco IOS XR Software, page 5-69](#)

**Tip**

Information on operating the router in ROM Monitor mode is provided in [ROM Monitor Overview and Basic Procedures, page 1-1](#).

## About ROMMON A and ROMMON B

Each node in a Cisco CRS-1 router includes two copies of ROM Monitor: ROMMON A and ROMMON B. During power on, ROMMON A loads first. If ROMMON A detects the presence of ROMMON B, it checks the compatibility and integrity of the ROMMON B code. If ROMMON B passes these tests, ROMMON A passes control of the router to ROMMON B.

You can upgrade ROMMON B or both ROMMON A and ROMMON B. When you upgrade only ROMMON B, the router can still use the unmodified ROMMON A if the ROM Monitor upgrade is interrupted or fails for any reason.

**Note**

If the new ROMMON B is not compatible with the older installed version, both ROMMON A and ROMMON B must be upgraded. For example, if a router is running a version of ROMMON earlier than version 1.32, you should upgrade both ROMMON A and ROMMON B. However, if a router is already running ROMMON version 1.32 or higher for ROMMON A and ROMMON B, then only ROMMON B should be upgraded to the latest release. This ensures that the router can still use the unmodified ROMMON A if the ROM Monitor upgrade is interrupted or fails for any reason. See [Table 5-2](#) for more information.

## Upgrading or Downgrading a Single Node or All Nodes

The upgrade and downgrade procedures for ROMMON firmware are the same. Install a higher version to upgrade the firmware, or a lower version to downgrade the firmware.

ROM Monitor operates on every node within the router. During an upgrade or downgrade, the ROMMON firmware is copied into hardware EEPROMs in the router. For more information on ROMMON firmware compatibility with the Cisco IOS XR software and Cisco CRS-1 router, see [ROM Monitor Compatibility with Cisco IOS XR Software, page 5-69](#).

For most upgrades, we recommend upgrading or downgrading the ROMMON firmware on all nodes. You can also upgrade or downgrade a single node which is useful when moving a card between two routers or adding a card that is not running the correct ROM Monitor version. When you upgrade a single node that uses ROM Monitor in both the CPU0 and SP modules, such as a line card node, we recommend that you upgrade both modules to the same ROM Monitor version.

## Reloading Nodes After a ROMMON Firmware Change

The new ROMMON firmware is not active on a node until the card is reloaded. For example, if you upgrade a single node, you must reload that node only after the upgrade. If you upgrade or downgrade all nodes, you must also reload all nodes to activate the new ROMMON version.

To gracefully reload all nodes, reload the standby RP, perform a redundancy switchover, reload the second RP, and then reload all other nodes in the system.

If the router does not contain a redundant standby RP, or if you wish to perform a cold restart, you can also reload all nodes at the same time, including the primary RP (DSC). Remember that a cold restart will result in router downtime while the cards reboot.

Instructions to reload the nodes are included in [Upgrading or Downgrading ROM Monitor Using the FPD Pie, page 5-70](#).

## ROM Monitor Compatibility with Cisco IOS XR Software

The ROM Monitor software must be upgraded to version 1.42 or a later version on all RPs before a Cisco CRS-1 system is upgraded to Cisco IOS XR Software Release 3.4.1 or later release. If the router is brought up with an incompatible version of the ROM Monitor software, then the standby RP may fail to boot.

In addition, Cisco CRS-1 multisshelf systems should be upgraded to ROMMON release 1.40 before being upgraded to Cisco IOS XR Release 3.4.1 to ensure that RPs are assigned the correct rack numbers during system boot.

**Note**

If the new ROMMON B is not compatible with the older installed version, both ROMMON A and ROMMON B must be upgraded. For example, if a router is running a version of ROMMON older than version 1.32, you should upgrade both ROMMON A and ROMMON B. However, if a router is already running ROMMON version 1.32 or later version for ROMMON A and ROMMON B, then only ROMMON B should be upgraded to the latest release. This ensures that the router can still use the unmodified ROMMON A if the ROM Monitor upgrade is interrupted or fails for any reason. See [Table 5-2](#) for more information.

**Note**

We recommend you do not upgrade ROMMON A. If you must upgrade ROMMON A, please contact Cisco Technical Support. See the [“Obtaining Technical Assistance” section on page x](#) for Cisco Technical Support contact information. The following commands will upgrade ROMMON A:

```
upgrade hw-module fpd all location node-id  
upgrade hw-module fpd rommon location node-id
```

### Overriding a Boot Block in the Standby RP

If a Cisco CRS-1 system is upgraded to Cisco IOS XR Software Release 3.4.1 before the ROM Monitor firmware is upgraded, a boot block may occur in the standby RP.

- For instructions to override a boot block in a single-chassis system, see [Overriding a ROM Monitor Boot Block in a Single-chassis System, page 5-83](#).
- If a boot block occurs in a multisshelf system, contact your Cisco Systems support representative for assistance. See [Obtaining Technical Assistance, page x](#).

Table 5-1 shows the ROM Monitor requirements for Cisco IOS XR Software Releases 3.01 and later releases.

**Table 5-1 Cisco CRS-1 ROM Monitor Requirements**

Cisco IOS XR software release	ROMMON version supported on RPs	ROMMON versions NOT supported on RPs
Release 3.0.1	1.19x	1.38
Release 3.0.1 with CSCee55511 SMU	1.19x, 1.38	—
Release 3.2.0	1.19x, 1.38	—
Release 3.2.5	1.38	1.19x (CSCei40918)
Release 3.3.0 and up	1.38 or higher <sup>1</sup>	1.19x
Release 3.3.1 and up	1.40 or higher	1.19x
Release 3.4.0 and up	1.42 or higher <sup>2</sup>	1.19x

1. For RP/B the supported version is 1.38.

2. For Cisco CRS-1 multishelf systems the minimum supported version is 1.40.



**Note**

If you are running a Cisco IOS XR Software Release 3.2.5 version, or earlier, RP/B is not supported in Cisco CRS-1 systems (single or multishelf). RP/B was introduced in Cisco IOS XR Software Release 3.3.0 with minimum supported ROMMON version of 1.38.

**Table 5-2 When to Upgrade ROMMON A or ROMMON B, or Both**

Current ROMMON Version	What to Upgrade
A ROMMON version earlier than 1.32 is running on the router (for example, ROMMON version 1.19x)	Upgrade both ROMMON A and ROMMON B.
ROMMON version 1.32 or later version is running on the router	Upgrade ROMMON B only. When you verify that the new firmware is running correctly and the system is stable, you can also upgrade ROMMON A.

## Upgrading or Downgrading ROM Monitor Using the FPD Pie

The following procedure upgrades or downgrades the ROM Monitor firmware using the ROM Monitor image contained in the FPD software PIE. This section also includes instructions to reload a node, gracefully reload all nodes in the system, or perform a cold restart for all nodes in the system.



**Note**

We recommend you do not upgrade ROMMON A. If you must upgrade ROMMON A, please contact Cisco Technical Support. See the “[Obtaining Technical Assistance](#)” section on page x for Cisco Technical Support contact information. The following commands will upgrade ROMMON A:

```
upgrade hw-module fpd all location node-id
upgrade hw-module fpd rommon location node-id
```

**Note**

Upgrading the ROM monitor image on a card using the **reload** keyword temporarily places the card offline at the end of the upgrade procedure, and may interrupt traffic.

If you are not sure whether a card requires a ROM monitor upgrade, you can install the card and use the **show hw-module fpd** command to determine if the ROM monitor image on the card is compatible with the currently running Cisco IOS XR software release.

## Prerequisites

Before upgrading or downgrading ROM Monitor firmware, verify that the following prerequisites have been met:

- The ROMMON firmware must be compatible with the Cisco IOS XR software version on your router.
- The FPD PIE must be installed on your router. Refer to the *Upgrading and Managing Cisco IOS XR Software* module in *Cisco IOS XR System Management Configuration Guide* for more information on installing software PIEs.

## SUMMARY STEPS

1. **show hw-module fpd location all**
2. **admin**
3. **show fpd package**
4. **upgrade hw-module fpd rommon2 location [all | node-id]**
5. **exit**
6. If you are upgrading a single node on a router, including a standby DSDRSC, go to Step 9.
7. If you are upgrading a router with redundant DSCs, and wish to perform a graceful reload, go to Step 10.
8. If you are upgrading a router with a single RP, or wish to perform a cold restart on all nodes, go to Step 11.
9. Reload a single node:
  - a. **hw-module location nodeID reload**
  - b. Go to Step 12.
10. Gracefully reload all nodes on a system that includes redundant RPs:
  - a. (Optional) **cfs check**
  - b. (Optional) Repeat on each secure domain router (SDR) impacted by the reload operation.
  - c. **hw-module location nodeID reload**
  - d. **show redundancy**
  - e. **redundancy switchover**
  - f. **show redundancy**
  - g. **hw-module location nodeID reload**
  - h. Repeat Step a. to Step g. for all DSDRSC pairs in the system.
  - i. **admin**


- j. **show platform**
  - k. **hw-module location *nodeID* reload**
  - l. Repeat Step k. for all other upgraded nodes in the system.
  - m. **show platform**
  - n. Go to Step 12.
11. Reload all nodes in a system (cold restart):
    - a. (Optional) **cfs check**
    - b. (Optional) Repeat on each SDR impacted by the **reload** operation.
    - c. **admin**
    - d. **reload location all**
  12. **show platform**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<pre>show hw-module fpd location all</pre> <p><b>Example:</b> RP/0/RP0/CPU0:Router# show hw-module fpd location all</p>	Displays the current FPD image versions for all cards installed in the router. Use this command to determine if you must upgrade the ROM monitor image on your cards.
Step 2	<pre>admin</pre> <p><b>Example:</b> RP/0/RP0/CPU0:Router# admin</p>	Enters administration EXEC mode from EXEC mode.
Step 3	<pre>show fpd package</pre> <p><b>Example:</b> RP/0/RP0/CPU0:Router(admin)# show fpd package</p>	(Optional) Displays which cards are supported with your current Cisco IOS XR software release, which FPD or ROM monitor image you need for each card, and what the minimum hardware requirements are for the cards. If there are multiple FPD images for your card, use this command to determine which FPD image to use if you only want to upgrade a specific FPD type.
Step 4	<pre>upgrade hw-module fpd rommon2 location <i>node-id</i></pre> <p><b>Example:</b> RP/0/RP0/CPU0:Router(admin)# upgrade hw-module fpd rommon2 location 0/SM3/SP</p>	Upgrades the ROMMON B images on the specified card. <b>Note</b> The <b>reload</b> keyword causes the card to be reloaded after the ROM monitor image has been updated. This interrupts traffic transmission. If you do not use the <b>reload</b> keyword, you must manually reload the card before the upgrade is complete. Use the <b>hw-module node reload</b> command to reload a card.
Step 5	<pre>exit</pre> <p><b>Example:</b> RP/0/RP0/CPU0:Router(admin)# exit</p>	Exits administration EXEC mode and returns to EXEC mode.

Command or Action	Purpose
<b>Step 6</b> If you are upgrading a single node on a router, including a standby DSDRSC, go to <a href="#">Step 9</a> for instructions to reload the node.	—
<b>Step 7</b> If you are upgrading a router with redundant DSCs, and wish to perform a graceful reload, go to <a href="#">Step 10</a> for instructions to gracefully reload all nodes.	—
<b>Step 8</b> If you are upgrading a router with a single RP, or wish to perform a cold restart on all nodes, go to <a href="#">Step 11</a> for instructions to perform a cold restart of all nodes.	—
<b>Step 9</b> Reload a single node: <ul style="list-style-type: none"> <li>a. <b>hw-module location <i>nodeID</i> reload</b></li> <li>b. Go to <a href="#">Step 12</a></li> </ul> <p><b>Example:</b></p> <pre>RP/0/RP0/CPU0:router# hw-module location 0/RP1/CPU0 reload</pre>	<ul style="list-style-type: none"> <li>a. Reloads a single node within a router, such as a standby RP. The new ROMMON firmware is not active on a node until the card is reloaded.               <ul style="list-style-type: none"> <li>– Replace <i>nodeID</i> with the node ID you specified when upgrading ROM Monitor.</li> <li>– When reloading cards that contain both a CPU and an SP (such as an MSC card), it is only necessary to reload the CPU node. When the CPU is reloaded, the SP will also reload.</li> </ul> </li> <li>b. Go to <a href="#">Step 12</a> to verify that the correct ROMMON firmware is active on each node.</li> </ul>

Command or Action	Purpose
<p><b>Step 10</b> Gracefully reload all nodes on a system that includes redundant RPs (DSCs):</p> <ol style="list-style-type: none"> <li>a. <b>cfs check</b></li> <li>b. Repeat on each secure domain router (SDR) impacted by the reload operation.</li> <li>c. <b>hw-module location <i>nodeID</i> reload</b></li> <li>d. <b>show redundancy</b></li> <li>e. <b>redundancy switchover</b></li> <li>f. <b>show redundancy</b></li> <li>g. <b>hw-module location <i>nodeID</i> reload</b></li> <li>h. Repeat Step a. to Step g. for all DSDRSC pairs in the system.</li> <li>i. <b>admin</b></li> <li>j. <b>show platform</b></li> <li>k. <b>hw-module location <i>nodeID</i> reload</b></li> <li>l. Repeat Step k. to reload all upgraded nodes in the system.</li> <li>m. <b>show platform</b></li> <li>n. Go to <a href="#">Step 12</a>.</li> </ol> <p><b>Example:</b></p> <pre>RP/0/RP0/CPU0:router# cfs check RP/0/RP0/CPU0:router# hw-module location 0/RP1/CPU0 reload RP/0/RP0/CPU0:router# show redundancy RP/0/RP0/CPU0:router# redundancy switchover RP/0/RP0/CPU0:router# show redundancy RP/0/RP0/CPU0:router# hw-module location 0/RP0/CPU0 reload RP/0/RP0/CPU0:router# admin RP/0/RP0/CPU0:router(admin)# show platform RP/0/RP0/CPU0:router(admin)# hw-module location 0/1/CPU0 reload RP/0/RP0/CPU0:router(admin)# hw-module location 0/2/CPU0 reload RP/0/RP0/CPU0:router(admin)# hw-module location 0/SM0/SP reload RP/0/RP0/CPU0:router(admin)# hw-module location 0/SM1/SP reload RP/0/RP0/CPU0:router(admin)# hw-module location 0/SM2/SP reload RP/0/RP0/CPU0:router(admin)# hw-module location 0/SM3/SP reload RP/0/RP0/CPU0:router(admin)# show platform</pre>	<p>Gracefully reloads all nodes on a system that includes redundant RPs. The new ROMMON firmware is not active on a node until the card is reloaded.</p> <ol style="list-style-type: none"> <li>a. (Optional) Use <b>cfs check</b> command to ensure the sanity of the configuration file system for the owner SDR.</li> <li>b. (Optional) Repeat the <b>cfs check</b> command on the DSDRSC of each additional non-owner SDR in the system to verify the configuration file system for each non-owner SDR</li> <li>c. Reloads the standby RP to activate the new ROMMON firmware.</li> </ol> <p><b>Note</b> The standby RP is the standby DSC for the system. The primary and standby DSCs are also the DSDRSCs for the owner SDR.</p> <ol style="list-style-type: none"> <li>d. Use the <b>show redundancy</b> command to verify the redundancy status of the DSC nodes. Wait for the standby RP to return to “Ready” state.</li> <li>e. Use the <b>redundancy switchover</b> command to cause the primary (active) RP to fail over to the redundant standby RP.</li> </ol> <p><b>Note</b> The standby RP must be ready to take over.</p> <ol style="list-style-type: none"> <li>f. Use the <b>show redundancy</b> command to verify the status of the RP nodes. Wait for the standby RP to return to ready state.</li> <li>g. Reload the original primary RP to activate the new ROMMON firmware.</li> <li>h. (Optional) Repeat Step a. to Step g. on all DSDRSCs in the system to ensure a graceful restart for all SDRs.</li> <li>i. Use the <b>admin</b> command to enter administration EXEC mode.</li> <li>j. Use the <b>show platform</b> command to view all the nodes in the system. Enter this command in administration EXEC mode to display information for all nodes in the system, including admin plane resources such as fabric cards.</li> <li>k. Use the <b>hw-module location <i>nodeID</i> reload</b> command to reload each additional card where the ROMMON firmware was changed. additional non-DSDRSC nodes. Each node must be reloaded to activate the new ROMMON firmware.</li> </ol>

Command or Action	Purpose
<p><b>Step 11</b> Reload all nodes in the system (cold restart):</p> <ol style="list-style-type: none"> <li><b>cfs check</b></li> <li>Repeat on each SDR impacted by the reload operation.</li> <li><b>admin</b></li> <li><b>reload [location all]</b></li> </ol> <p><b>Example:</b></p> <pre>RP/0/RP0/CPU0:router# cfs check RP/0/RP0/CPU0:router# admin RP/0/RP0/CPU0:router(admin)# reload location all</pre>	<ul style="list-style-type: none"> <li>– Replace <i>nodeID</i> with the node ID you specified when upgrading ROM Monitor.</li> <li>– When reloading cards that contain both a CPU and an SP (such as an MSC card), it is only necessary to reload the CPU node. When the CPU is reloaded, the SP will also reload.</li> <li><b>l.</b> Repeat Step <b>k.</b> to reload all upgraded nodes in the system.</li> <li><b>m.</b> Use the <b>show platform</b> command to view all the nodes in the system. Verify that all the reloaded nodes are in the “IOS XR RUN” state.</li> </ul> <p>Reloads all nodes, including the DSC. Use these commands if you are upgrading a router with a single RP, or wish to perform a cold restart of all nodes. The new ROMMON firmware is not active on a node until the card is reloaded.</p> <p> <b>Caution</b> Reloading the primary RP (DSC) interrupts all service.</p> <ol style="list-style-type: none"> <li>(Optional) Ensures the sanity of the configuration file system for the owner SDR.</li> <li>(Optional) Ensures the sanity of the configuration file system for each non-owner SDR in the system.</li> <li>Enters administration EXEC mode.</li> <li>Reloads the DSDRSC with the upgraded ROM Monitor firmware. Use the command <b>reload location all</b> in administration EXEC mode to reload all nodes in the system.</li> </ol>
<p><b>Step 12</b> <b>show platform</b></p> <p><b>Example:</b></p> <pre>RP/0/RP0/CPU0:Router# show platform</pre>	<p>Verifies that the ROM monitor image on the card has been successfully upgraded by displaying the status of all cards in the system.</p>

## Troubleshooting Tips

- If any node cannot be upgraded successfully or if you see error messages similar to the following message, try reformatting the bootflash (**format bootflash: [location all | nodeID]**) and then repeat this upgrade procedure:

```
LC/0/3/CPU0:rommon_burner[65635]: %ROMMON_BURNER-3-FILE_OP_ERR : Opening ROMMON flash
partition failed: No such file or directory in function main at line 952
```

- If you are upgrading only ROMMON B and the version does not change to the expected version after the upgrade, the upgrade might have failed. When the router cannot load ROMMON B, it loads ROMMON A.
- If both ROMMANB and ROMMON A are damaged due to an unexpected node reset or a power interruption during the upgrade, the affected route processors must be returned to Cisco for repair.

# Configuration Examples for ROM Monitor Upgrades

This section provides the following configuration examples:

- [ROM Monitor Upgrade Using the FPD Pie: Example, page 5-76](#)
- [Graceful Reload of a Cisco CRS-1 Router, page 5-79](#)

## ROM Monitor Upgrade Using the FPD Pie: Example

The following example illustrates how to display ROM monitor image using the FPD pie information for all cards in the router:

```
RP/0/RP0/CPU0:Router (admin) # show hw-module fpd location all
```

```
===== Existing Field Programmable Devices =====
=====
Location      Card Type                HW      Current SW Upg/
Version Type Subtype Inst  Version  Dng?
=====
0/0/SP        YYY-XXXIface            255.254 lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
0/0/CPU0      CRS1-SIP-800            0.104  lc   fpga   0    2.0     No
                                     lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
0/0/0         SPA-OC192POS-XFP        2.1    spa  fpga   0    1.2     No
-----
0/0/1         SPA-10X1GE-V2           1.0    spa  fpga   1    1.10    No
-----
0/0/2         SPA-1X10GE-L-V2         1.0    spa  fpga   2    1.9     No
-----
0/0/5         SPA-5X1GE-V2            1.0    spa  fpga   5    1.10    No
-----
0/2/SP        YYY-XXXIface            255.254 lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
0/2/CPU0      YYY-XXXIface            255.254 lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
0/RP0/CPU0    HQ Route Processor      0.1    lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
0/SM0/SP      Fabric HS123             0.1    lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
0/SM1/SP      Fabric HS123             0.1    lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
0/SM2/SP      Fabric HS123             0.1    lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
0/SM3/SP      Fabric HS123             0.1    lc   rommon 0    1.43    No
                                     lc   rommon2 0    1.43    No
-----
```

The following example shows how to determine what FPD images are available for each card in the router:

```
RP/0/RP0/CPU0:router(admin)# show fpd package
```

```
=====
                                Field Programmable Device Package
                                =====
Card Type           FPD Description           Type Subtype   SW      Min Req
=====           =====           =====
CRS1-SIP-800       JACKET FPGA swv2.0       lc  fpga        2.0     0.0
                   FPGA swv2.0 hww80       lc  fpga        2.0     0.80
-----
8-10GBE            FPGA swvA.0              lc  fpga        10.0    0.0
-----
Route Processor    ROMMON2 swv1.43 asmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 dsmp     lc  rommon2     1.43    0.0
                   ROMMON swv1.43 asmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 dsmp     lc  rommon      1.43    0.0
-----
SC                 ROMMON2 swv1.43 asmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 dsmp     lc  rommon2     1.43    0.0
                   ROMMON swv1.43 asmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 dsmp     lc  rommon      1.43    0.0
-----
HQ Route Processor ROMMON2 swv1.43 asmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 dsmp     lc  rommon2     1.43    0.0
                   ROMMON swv1.43 asmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 dsmp     lc  rommon      1.43    0.0
-----
Shelf Controller GE ROMMON2 swv1.43 asmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 dsmp     lc  rommon2     1.43    0.0
                   ROMMON swv1.43 asmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 dsmp     lc  rommon      1.43    0.0
-----
Route Processor B  ROMMON2 swv1.43 asmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 dsmp     lc  rommon2     1.43    0.0
                   ROMMON swv1.43 asmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 dsmp     lc  rommon      1.43    0.0
-----
Shelf Controller GE2 ROMMON2 swv1.43 asmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 dsmp     lc  rommon2     1.43    0.0
                   ROMMON swv1.43 asmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 dsmp     lc  rommon      1.43    0.0
-----
DRP                ROMMON2 swv1.43 asmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 dsmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 sp      lc  rommon2     1.43    0.0
                   ROMMON swv1.43 asmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 dsmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 sp      lc  rommon      1.43    0.0
-----
DRP_B              ROMMON2 swv1.43 asmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 dsmp     lc  rommon2     1.43    0.0
                   ROMMON2 swv1.43 sp      lc  rommon2     1.43    0.0
                   ROMMON swv1.43 asmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 dsmp     lc  rommon      1.43    0.0
                   ROMMON swv1.43 sp      lc  rommon      1.43    0.0
-----
S1S2S3             ROMMON2 swv1.43 sp       lc  rommon2     1.43    0.0
                   ROMMON swv1.43 sp       lc  rommon      1.43    0.0
-----
S1S3               ROMMON2 swv1.43 sp       lc  rommon2     1.43    0.0
=====
```

	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
S2	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
Fabric HS123	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
Fabric HS123 Star	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
Fabric HS13 Star	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
Fabric QQS123	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
LED	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
YYY-XXXiface	ROMMON2 swv1.43 asmp	lc	rommon2	1.43	0.0
	ROMMON2 swv1.43 dsmp	lc	rommon2	1.43	0.0
	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 asmp	lc	rommon	1.43	0.0
	ROMMON swv1.43 dsmp	lc	rommon	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
PSAL	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
FAN	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
FC Fan Controller	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
LED	ROMMON2 swv1.43 sp	lc	rommon2	1.43	0.0
	ROMMON swv1.43 sp	lc	rommon	1.43	0.0
SPA-4XT3/E3	SPA E3 Subrate FPGA	spa	fpga2	1.4	0.0
	SPA T3 Subrate FPGA	spa	fpga3	1.4	0.0
	SPA I/O FPGA	spa	fpga	1.0	0.0
	SPA ROMMON	spa	rommon	2.12	0.0
SPA-2XT3/E3	SPA E3 Subrate FPGA	spa	fpga2	1.4	0.0
	SPA T3 Subrate FPGA	spa	fpga3	1.4	0.0
	SPA I/O FPGA	spa	fpga	1.0	0.0
	SPA ROMMON	spa	rommon	2.12	0.0
SPA-OC192POS	SPA FPGA swv1.3	spa	fpga	1.3	0.0
SPA-8XOC12-POS	SPA FPGA swv1.0	spa	fpga	1.0	0.5
SPA-4XOC3-POS	SPA FPGA swv3.4	spa	fpga	3.4	0.0
SPA-OC192POS-XFP	SPA FPGA swv1.2	spa	fpga	1.2	0.0
SPA-8X1GE	SPA FPGA swv1.8	spa	fpga	1.8	0.0
SPA-2XOC48POS/RPR	SPA FPGA swv1.0	spa	fpga	1.0	0.0
SPA-4XOC48POS/RPR	SPA FPGA swv1.0	spa	fpga	1.0	0.0
SPA-10X1GE-V2	SPA FPGA swv1.10	spa	fpga	1.10	0.0

SPA-8X1GE-V2	SPA FPGA swv1.10	spa fpga	1.10	0.0
SPA-5X1GE-V2	SPA FPGA swv1.10	spa fpga	1.10	0.0
SPA-1X10GE-L-V2	SPA FPGA swv1.9	spa fpga	1.9	0.0

The following example shows how to upgrade ROMMON B:

```
RP/0/RP0/CPU0:Router(admin)# upgrade hw-module fpd rommon2 force location 0/SM3/SP
```

```
% RELOAD REMINDER:
```

- The upgrade operation of the target module will not interrupt its normal operation. However, for the changes to take effect, the target module will need to be manually reloaded after the upgrade operation. This can be accomplished with the use of "hw-module <target> reload" command.
- If automatic reload operation is desired after the upgrade, please use the "reload" option at the end of the upgrade command.
- The output of "show hw-module fpd location" command will not display correct version information after the upgrade if the target module is not reloaded.

```
Continue? [confirm]
```

```
Starting the upgrade/download of following FPD:
```

```
=====
Location      Type  Subtype  Upg/Dng  Current  Upg/Dng
              Version  Version
=====
0/SM3/SP     lc   rommon2  upg      1.43     1.43
=====
```

```
SP/0/SM3/SP:Feb 20 15:58:25.656 : lc_fpd_upgrade[112]: %PLATFORM-UPGRADE_FPD-6-START :
Starting to upgrade rommon2 subtype image from 1.43 to 1.43 for for this card on location
0/SM3/SP SP/0/SM3/SP:Feb 20 15:58:25.692 : upgrade_daemon[128]: Start Upgrade...
SP/0/SM3/SP:Feb 20 15:58:25.696 : upgrade_daemon[128]: programming...with file
/net/node0_RP0_CPU0/dev/shmem/hfr-fpd-3.5.0.0I/fpd/ucode/rommon-hfr-ppc8255-sp-B.bin
SP/0/SM3/SP:Feb 20 15:58:25.719 : upgrade_daemon[128]: Verifying
/net/node0_RP0_CPU0/dev/shmem/hfr-fpd-3.5.0.0I/fpd/ucode/rommon-hfr-ppc8255-sp-B.bin:
SP/0/SM3/SP:Feb 20 15:58:25.920 : upgrade_daemon[128]: Passed.
SP/0/SM3/SP:Feb 20 15:58:31.257 : upgrade_daemon[128]: Verifying ROMMON B:
SP/0/SM3/SP:Feb 20 15:58:31.297 : upgrade_daemon[128]: Passed.
SP/0/SM3/SP:Feb 20 15:58:31.301 : upgrade_daemon[128]: OK, ROMMON B is programmed
successfully.
SP/0/SM3/SP:Feb 20 15:58:31.310 : lc_fpd_upgrade[112]: %PLATFORM-UPGRADE_FPD-6-PASSED :
Successfully upgrade rommon2 subtype image for for this card on location 0/SM3/SP
```

```
% Successfully upgraded 1 FPD for Fabric HS123 on location 0/SM3/SP
```

## Graceful Reload of a Cisco CRS-1 Router

In the following example, a Cisco CRS-1 router is gracefully reloaded following a ROMMON upgrade or downgrade.

```
RP/0/RP0/CPU0:router# cfs check
```

```
Creating any missing directories in Configuration File system...OK
Initializing Configuration Version Manager...OK
Syncing commit database with running configuration...OK
```

```
Re-initializing cache files...OK
Updating Commit Database. Please wait...[OK]
```

```
RP/0/RP0/CPU0:router# hw-module location 0/RP1/CPU0 reload
```

```
WARNING: This will take the requested node out of service.
Do you wish to continue?[confirm(y/n)]y
```

```
RP/0/RP0/CPU0:router# show redundancy
```

```
Redundancy information for node 0/RP0/CPU0:
=====
Node 0/RP0/CPU0 is in ACTIVE role
Partner node (0/RP1/CPU0) is in STANDBY role
Standby node in 0/RP1/CPU0 is ready
```

```
Reload and boot info
-----
```

```
RP reloaded Sun Jun 11 17:46:26 2006: 1 hour, 10 minutes ago
Active node booted Sun Jun 11 17:46:26 2006: 1 hour, 10 minutes ago
Standby node boot Sun Jun 11 18:50:39 2006: 6 minutes ago
Standby node last went not ready Sun Jun 11 18:51:18 2006: 6 minutes ago
Standby node last went ready Sun Jun 11 18:53:21 2006: 4 minutes ago
There have been 0 switch-overs since reload
```

```
RP/0/RP0/CPU0:router# redundancy switchover
```

```
Updating Commit Database. Please wait...[OK]
Proceed with switchover 0/RP0/CPU0 -> 0/RP1/CPU0? [confirm]
Initiating switch-over.
RP/0/RP0/CPU0:Router#
```

```
<Your 'TELNET' connection has terminated>
```

```
User Access Verification
```

```
Username: username
Password: <secret>
Last switch-over Tue Jun 13 12:07:34 2006: 1 minute ago
```

```
RP/0/RP1/CPU0:router# show redundancy
```

```
Redundancy information for node 0/RP1/CPU0:
=====
Node 0/RP1/CPU0 is in ACTIVE role
Partner node (0/RP0/CPU0) is in STANDBY role
Standby node in 0/RP0/CPU0 is ready
```

```
Reload and boot info
-----
```

```
RP reloaded Sun Jun 11 19:47:43 2006: 1 day, 16 hours, 24 minutes ago
Active node booted Sun Jun 11 19:48:25 2006: 1 day, 16 hours, 24 minutes ago
Last switch-over Tue Jun 13 12:07:34 2006: 5 minutes ago
Standby node boot Tue Jun 13 12:08:50 2006: 3 minutes ago
Standby node last went not ready Tue Jun 13 12:09:21 2006: 3 minutes ago
Standby node last went ready Tue Jun 13 12:11:21 2006: 1 minute ago
There has been 1 switch-over since reload
```

```
RP/0/RP1/CPU0:router# hw-module location 0/rp0/cpu0 reload
```

```
WARNING: This will take the requested node out of service.
Do you wish to continue?[confirm(y/n)]y
```

```
RP/0/RP1/CPU0:router# show redundancy
```

```
Redundancy information for node 0/RP1/CPU0:
=====
Node 0/RP1/CPU0 is in ACTIVE role
Partner node (0/RP0/CPU0) is in STANDBY role
Standby node in 0/RP0/CPU0 is ready
```

```
Reload and boot info
```

```
-----
RP reloaded Sun Jun 11 19:47:43 2006: 1 day, 16 hours, 30 minutes ago
Active node booted Sun Jun 11 19:48:25 2006: 1 day, 16 hours, 30 minutes ago
Last switch-over Tue Jun 13 12:07:34 2006: 11 minutes ago
Standby node boot Tue Jun 13 12:15:24 2006: 3 minutes ago
Standby node last went not ready Tue Jun 13 12:18:26 2006: 11 seconds ago
Standby node last went ready Tue Jun 13 12:18:26 2006: 11 seconds ago
There has been 1 switch-over since reload
```

```
RP/0/RP1/CPU0:router# admin
```

```
RP/0/RP1/CPU0:router(admin)# show platform
```

Node	Type	PLIM	State	Config State
0/1/SP	MSC (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/1/CPU0	MSC	Jacket Card	IOS XR RUN	PWR, NSHUT, MON
0/1/0	MSC (SPA)	4XOC3-POS	OK	PWR, NSHUT, MON
0/1/5	MSC (SPA)	8X1GE	OK	PWR, NSHUT, MON
0/6/SP	MSC (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/6/CPU0	MSC	Jacket Card	IOS XR RUN	PWR, NSHUT, MON
0/6/0	MSC (SPA)	4XOC3-POS	OK	PWR, NSHUT, MON
0/6/4	MSC (SPA)	8XOC3/OC12-POS	OK	PWR, NSHUT, MON
0/6/5	MSC (SPA)	8X1GE	OK	PWR, NSHUT, MON
0/RP0/CPU0	RP (Standby)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/RP1/CPU0	RP (Active)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/SM0/SP	FC/S (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/SM1/SP	FC/S (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/SM2/SP	FC/S (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/SM3/SP	FC/S (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON

```
RP/0/RP1/CPU0:router(admin)# hw-module location 0/1/cpu0 reload warm
```

```
WARNING: This will warm reload the requested node.
Do you wish to continue?[confirm(y/n)]y
```

```
RP/0/RP1/CPU0:router(admin)# hw-module location 0/6/cpu0 reload warm
```

```
WARNING: This will warm reload the requested node.
Do you wish to continue?[confirm(y/n)]y
```

```
RP/0/RP1/CPU0:router(admin)# hw-module location 0/sm0/sp reload
```

```
WARNING: This will take the requested node out of service.
Do you wish to continue?[confirm(y/n)]y
```

```
RP/0/RP1/CPU0:router(admin)# hw-module location 0/sm1/SP reload
```

```
WARNING: This will take the requested node out of service.
Do you wish to continue?[confirm(y/n)]y
```

```
RP/0/RP1/CPU0:router(admin)# hw-module location 0/sm2/SP reload
```

```
WARNING: This will take the requested node out of service.
Do you wish to continue?[confirm(y/n)]y
```

```
RP/0/RP1/CPU0:router(admin)# hw-module location 0/sm3/SP reload
```

```
WARNING: This will take the requested node out of service.
Do you wish to continue?[confirm(y/n)]y
```

```
RP/0/RP1/CPU0:router(admin)# show platform
```

Node	Type	PLIM	State	Config State
0/1/SP	MSC (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/1/CPU0	MSC	Jacket Card	IOS XR RUN	PWR, NSHUT, MON
0/1/0	MSC (SPA)	4XOC3-POS	OK	PWR, NSHUT, MON
0/1/5	MSC (SPA)	8X1GE	OK	PWR, NSHUT, MON
0/6/SP	MSC (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/6/CPU0	MSC	Jacket Card	IOS XR RUN	PWR, NSHUT, MON
0/6/0	MSC (SPA)	4XOC3-POS	OK	PWR, NSHUT, MON
0/6/4	MSC (SPA)	8XOC3/OC12-POS	OK	PWR, NSHUT, MON
0/6/5	MSC (SPA)	8X1GE	OK	PWR, NSHUT, MON
0/RP0/CPU0	RP (Standby)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/RP1/CPU0	RP (Active)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/SM0/SP	FC/S (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/SM1/SP	FC/S (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/SM2/SP	FC/S (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON
0/SM3/SP	FC/S (SP)	N/A	IOS XR RUN	PWR, NSHUT, MON

```
RP/0/RP1/CPU0:router(admin)# show diag | inc ROM|NODE|PLIM
```

```
NODE 0/1/SP : MSC (SP)
  ROMMON: Version 1.40(20060207:032848) [CRS-1 ROMMON]
PLIM 0/1/CPU0 : JACKET CARD
  ROMMON: Version 1.40(20060207:032757) [CRS-1 ROMMON]
NODE 0/1/0 : 4xOC3 POS SPA
NODE 0/1/5 : 8xGE SPA
NODE 0/6/SP : MSC (SP)
  ROMMON: Version 1.40(20060207:032848) [CRS-1 ROMMON]
PLIM 0/6/CPU0 : JACKET CARD
  ROMMON: Version 1.40(20060207:032743) [CRS-1 ROMMON]
NODE 0/6/0 : 4xOC3 POS SPA
NODE 0/6/4 : 8xOC3/OC12 POS SPA
NODE 0/6/5 : 8xGE SPA
NODE 0/RP0/CPU0 : RP
  ROMMON: Version 1.40(20060207:032757) [CRS-1 ROMMON]
NODE 0/RP1/CPU0 : RP
  ROMMON: Version 1.40(20060207:032757) [CRS-1 ROMMON]
NODE 0/SM0/SP : FC/S
  ROMMON: Version 1.40(20060207:032848) [CRS-1 ROMMON]
NODE 0/SM1/SP : FC/S
  ROMMON: Version 1.40(20060207:032848) [CRS-1 ROMMON]
NODE 0/SM2/SP : FC/S
  ROMMON: Version 1.40(20060207:032848) [CRS-1 ROMMON]
NODE 0/SM3/SP : FC/S
  ROMMON: Version 1.40(20060207:032848) [CRS-1 ROMMON]
```

# Overriding a ROM Monitor Boot Block in a Single-chassis System

When a single chassis Cisco CRS-1 system is upgraded to Cisco IOS XR software Release 3.4.1 or higher, the ROM Monitor firmware must be upgraded to release 1.42 or higher *before* the Cisco IOS XR software is installed or upgraded.

If a single chassis Cisco CRS-1 system is brought up with the incorrect ROM Monitor firmware, the standby RP will fail to boot, and the following console message is displayed:

```
Received boot request from an RP with an empty rack serial number, which indicates an
attempt to boot a RP with ROMMON v1.19x as the standby. Boot request is being failed !
Refer to customer documentation for configuring a boot override.
```

To correct this error, you must override the boot block as described in the following instructions. When the RP is running, immediately upgrade the ROM Monitor firmware.



## Caution

The override instructions are used only to bring up the standby RP for the purpose of upgrading the ROM Monitor firmware.

## Restrictions

- These instructions are for an RP in a single chassis system only.



## Note

If a boot block occurs in a multishelf system, contact your Cisco Systems support representative for assistance. See [Obtaining Technical Assistance, page x](#).

## SUMMARY STEPS

1. **admin**
2. **configure**
3. **hw-module boot override**
4. Complete the instructions in [Upgrading or Downgrading ROM Monitor Using the FPD Pie, page 5-70](#).

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>admin</b>  <b>Example:</b> RP/0/RP0/CPU0:Router# admin	Places the router in administration EXEC mode.
Step 2	<b>configure</b>  <b>Example:</b> RP/0/RP0/CPU0:Router(admin)# configure	Enters administration configuration mode.

	Command or Action	Purpose
Step 3	<b>hw-module boot override</b>  <b>Example:</b> RP/0/RP0/CPU0:Router(admin-config)# hw-module boot override	Allows the RP to boot so the ROM Monitor firmware can be upgraded to the proper version. A message will appear
Step 4	Complete the instructions in <a href="#">Upgrading or Downgrading ROM Monitor Using the FPD Pie, page 5-70</a> .	Upgrades the ROM Monitor firmware on the RP, which allows the RP to boot normally.

## Examples

In the following example, an error message is displayed on the console. The boot block is then cleared to allow the user to upgrade the ROM Monitor firmware.

```
Received boot request from an RP with an empty rack serial number, which indicates an
attempt to boot a RP with ROMMON v1.19x as the standby. Boot request is being failed !
Refer to customer documentation for configuring a boot override.
```

```
RP/0/RP0/CPU0:Router# admin
RP/0/RP0/CPU0:Router(admin)# configure
RP/0/RP0/CPU0:Router(admin-config)# hw-module boot override
```

```
WARNING !!! WARNING !!! Received boot request from an RP with an empty rack serial number.
Permitting RP to boot due to config override. Please upgrade RP ROMMON to latest
recommended version
```

## What to Do Next

Complete the instructions in the following section: [Upgrading or Downgrading ROM Monitor Using the FPD Pie, page 5-70](#).

# Additional References

## Related Documents

Related Topic	Document Title
Hardware component commands	<i>Cisco IOS XR Interface and Hardware Component Command Reference</i>
System management commands	<i>Cisco IOS XR System Management Command Reference</i>

## Technical Assistance

Description	Link
The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	<a href="http://www.cisco.com/techsupport">http://www.cisco.com/techsupport</a>

