

Recovering a Catalyst 5000 RSM from a Corrupted or Missing Image, Boot, or ROMmon Mode

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Introduction

This document explains how to recover a Catalyst 5000 Route Switch Module (RSM) from a missing or corrupted system image. A Layer 3 (L3) module image can sometimes be corrupted during a TFTP download, or deleted and squeezed (but not replaced) manually by the user. In other cases, the Flash device itself can become corrupted and require reformatting. The RSM provides a number of ways to recover if any of these events occur.

When the RSM boots up or resets, there are three possibilities, as follows:

- The RSM starts up normally and displays the `Router>` prompt.
- The RSM has a missing or corrupted system image, but is able to run from a boot helper or RXboot image. It displays the `Router (boot)>` prompt. This is a scaled down version of the system image which allows you to perform the `copy tftp` procedure to recover.
- The RSM cannot find or has a corrupt boot image as well, and therefore it ends up in ROM monitor (ROMmon) mode. It displays the `rommon>` prompt. In ROMmon mode, the RSM must be able to locate a valid boot or system image. There is no option for Xmodem or Ymodem that allows you to copy an image through the console port.

In addition to the 8 MB internal Flash Single In-Line Memory Module (SIMM), the RSM has two Personal Computer Memory Card International Association (PCMCIA) card slots for up to 20 MB each: slot0 (bottom) and slot1 (top). If the system image or the boot image fails, these devices provide a backup. The Flash devices are recognized in ROMmon, and the images stored there can be used to recover. For this reason, the RSM ships with a 16 MB PCMCIA card in slot0, which is the default Flash device.

Before You Begin

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

You notice these primary symptoms from the switch side if the L3 blade is in Boot mode:

- Routing failures occur because Boot mode *cannot* route between VLAN interfaces. It is a limited-feature set image designed to facilitate the copy tftp procedure.
- If you session between the switch and the RSM, or if you are connected to the console port of the RSM, you see the following prompt:

```
Router(boot)>
```

Step-by-Step Instructions

Perform the steps below, in the order given, to facilitate a successful image recovery from Boot mode.

Step 1

1. You have two choices in this first step.

- ◆ You may choose to issue the **session mod** command from the switch side, as in the following example:

```
Console> (enable) session 5  
Trying Router-5...  
Connected to Router-5.  
Escape character is '^]'.  
Router(boot)>
```

If you can still session in this manner, and if you find yourself at the `Router(boot)>` prompt, proceed directly to Step 2.

- ◆ If you cannot session or you already have a console connection to the RSM, on a standard Windows operating system platform configure a HyperTerminal connection directly to COM1 with the following settings:

- ◇ 9600 bps
- ◇ Eight data bits
- ◇ No parity
- ◇ One stop bit
- ◇ Flow control none

2. Use a rolled male RJ-45 cable to connect from COM1 on the PC to the console port on the Catalyst 5000 RSM module. Use a DB-9 connector on the PC and a DB-25 adapter on the console port (Cisco part number CAB-25AS-MMOD= or equivalent. For more information on Cisco part number CAB-25AS-MMOD=, refer to the document Serial Cables, and scroll down to CAB-25AS-MMOD=). Cisco also makes a dedicated DB25-to-DB25 cable (part number CAB-RSM2CON), if you prefer it.
3. Use the HyperTerminal connect window to connect to the RSM. Press **Enter** to get to the `Router(boot)>` prompt.

Step 2

The main system image has a problem, but the RSM has successfully started up from the boot helper image.

1. At the enable prompt, issue the **show slot0:** command. Slot0: is where the system image is located for this document.
2. Issue the **verify** command to verify the image.

The following provides an example of these steps:

```

Router(boot)#show slot0:
-#- ED ----type---- --crc--- -seek-- nlen -length- -----date/time----- name
1  .. image          8A7B9039 C556DC   24 12801628 Jan 01 2000 00:29:37 c5rsm-jsv-mz
3582244 bytes available (12801756 bytes used)

Router(boot)#verify slot0:c5rsm-jsv-mz.122-10b.bin
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCC
Verified slot0:c5rsm-jsv-mz.122-10b.bin

```

Step 3

1. Look for a missing or deleted image. If you issue the **show slot0:** command, it shows **.D** for deleted, as in the following example:

```

Router(boot)#show slot0:
-#- ED ----type---- --crc--- -seek-- nlen -length- -----date/time----- name
1  .D image          8A7B9039 C556DC   24 12801628 Jan 01 2000 00:29:37 c5rsm-jsv-mz

```

2. Try to restore the image with the **undelete** command, as in the following example:

```

Router(boot)#undelete ?
<1-1024> File index number

Router(boot)#undelete 1 slot0:

```

If the **undelete** command is successful, you see the following output displayed:

```

Router(boot)#show slot0:
-#- ED ----type---- --crc--- -seek-- nlen -length- -----date/time----- name
1  .. image          8A7B9039 C556DC   24 12801628 Jan 01 2000 00:29:37 c5rsm-jsv-mz

```

If all images are missing or removed, you see the following (with a 16MB PCMCIA Flash card):

```

Router(boot)#dir slot0:
Directory of slot0:/

No files in directory

16384000 bytes total (16384000 bytes free)

```

If the image is missing altogether or Step 3 proves unsuccessful, (any outcome other than what is shown in Step 3 is displayed), then proceed directly to Step 4. Otherwise, continue by following the directions below.

3. Be sure a boot variable is configured, and verify that the **config-register** is set correctly, as shown in the following example:

```

Router(boot)#show bootvar
BOOT variable = slot0:c5rsm-jsv-mz.122-10b.bin,1;
CONFIG_FILE variable does not exist
BOOTLDR variable = bootflash:c5rsm-boot-mz.122-10b.bin
Configuration register is 0x2102

```

The **BOOT** variable determines the system image from which the RSM boots, just as the **BOOTLDR** variable determines the boot image to use. These commands are useful when dealing with multiple images on a Flash device. For now, be sure that the **config register** is set to **0x2102**, which directs the module to boot from Flash. If it is not, the following is an example of how to configure it:

```
Router(boot)#configure t
Enter configuration commands, one per line. End with CNTL/Z.
Router(boot)(config)#config-register 0x2102
```

4. Issue the **reload** command.

Do *not* save your configuration. Saving your configuration overwrites the previous configuration in Non-Volatile RAM (NVRAM), causing you to lose your original configuration after issuing the **reload** command.

```
Router(boot)#reload
01:46:07: %SYS-5-CONFIG_I: Configured from console by console
System configuration has been modified. Save? [yes/no]:n

!--- Type n for "no" here.
```

Step 4

If the RSM falls back to the Router (boot) > prompt, you should follow these steps to permanently erase this system image:

1. Delete the system image.
2. Issue the **squeeze** command.

The following provides an example of these steps:

```
Router#delete slot0:c5rsm-jsv-mz.122-10b.bin
Delete filename [c5rsm-jsv-mz.122-10b.bin]?
Delete slot0:c5rsm-jsv-mz.122-10b.bin? [confirm]

Router#squeeze slot0:
All deleted files will be removed. Continue? [confirm]
Squeeze operation may take a while. Continue? [confirm]
Squeezing...Erasing squeeze buffer

!--- Output suppressed.

Squeeze of slot0 complete
```

Step 5

If, despite the previous steps, the RSM remains in Router (boot) >, you need to perform the copy tftp procedure to place another image into Flash. An interface VLAN needs to be created.

Boot mode has limited routing capabilities, so if the tftp server is not on the same local subnet as the VLAN interface, a default gateway is required.

Issue the **ip default-gateway** command to enter a gateway router IP address, if necessary.

In the example below, the TFTP server is directly connected to the switch, so no default gateway is required.

```
Router(boot)(config)#interface vlan 1
00:08:01: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1,
changed state to down
Router(boot)(config-if)#ip address 10.10.10.1 255.255.255.0
Router(boot)(config-if)#no shut
00:08:44: %LINK-3-UPDOWN: Interface Vlan1, changed state to up
00:08:45: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1,
changed state to up
```



```
Router(boot)#show bootvar
BOOT variable = slot0:c5rsm-jsv-mz.122-10b.bin,1;
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

3. Verify the image, and be sure that the config register is set to 0x2102, as explained in Step 3.

Note: If you experience errors copying the image file, you may need to issue the **formatdevice** command to reformat a corrupt device. After the device is formatted, you can continue with the image copy procedure.

Step 8

1. Issue the **reload** command for the RSM.

Do not save your configuration when in Router(boot)>.

```
Router(boot)#reload

System configuration has been modified. Save? [yes/no]: n
Proceed with reload? [confirm]

00:17:15: %SYS-5-RELOAD: Reload requested
System Bootstrap, Version 11.2(17523) [mohsen 102], INTERIM SOFTWARE
Copyright (c) 1994-1997 by Cisco Systems, Inc.

SLOT 7 C5RSP is system master
C5RSP processor with 32768 Kbytes of main memory

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Self decompressing the image : #####

#####
##### [OK]
Self decompressing the image :
#####
#####
#####
#####
# [OK]
```

!--- Output suppressed.

```
Cisco Internetwork Operating System Software
IOS (tm) C5RSM Software (C5RSM-JSV-M), Version 12.2(10b), RELEASE SOFTWARE (fc1)
```

!--- Output suppressed.

```
cisco RSP2 (R4700) processor with 32768K/2072K bytes of memory.
16384K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
8192K bytes of Flash PCMCIA card at slot 1 (Sector size 128K).
8192K bytes of Flash internal SIMM (Sector size 256K).
```

Press RETURN to get started!

```
Router>
```

2. Perform a final check of the config-register settings and boot system statements. For more information, refer to the Final Check After Returning to Router> Prompt section of this document.
3. Save your configuration.

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

Press RETURN to get started!

Router>

Step 2

If you do not have a system image, you can still recover using the boot image and return to the Router (boot) > prompt.

1. Perform the copy tftp procedure, outlined in Steps 7–8 of Recovering from Boot Mode, to reach the Router> prompt.
2. Store this image in bootflash. Bootflash is the a good place to store it, as the boot image is about half the size of the system image.

```
rommon 9 > boot bootflash:c5rsm-boot-mz.122-10b.bin
cccccccccccccccccccccccccccccccccccccccc
cccccccccccccccccccccccccccccccccccccccc
cccccccccccccccc
Self decompressing the image : #####
#####
#####
```

!--- Output suppressed.

Press RETURN to get started!

Router(boot)>

The RSM also enters the ROMmon mode if there are no valid images on both the bootflash and the Flash devices. Since there is no Xmodem or Ymodem disaster recovery available on the RSM, you have the following options if all boot images and system images on all Flash devices bootflash, slot0 and slot1 are missing or corrupt:

- Use a PCMCIA card from another RSM, if available.
- Use a compatible PCMCIA card with the same filesystem from another Cisco device. The RSM uses Filesystem Class "A". For a list of Cisco devices that use the same PCMCIA formatting, refer to PCMCIA Filesystem Compatibility Matrix and Filesystem Information.

Note: PCMCIA Flash memory cards must be formatted either on the RSM or on one of the devices cited in PCMCIA Filesystem Compatibility Matrix and Filesystem Information, and they must be running the *same or later software version* as the RSM. Flash memory cards previously formatted on a Route Processor (RP)–based Cisco 7000 series router cannot be used on the RSM.

- If all of these options fail, open a case with Cisco Technical Assistance Center (TAC). Registered users may open a case with Cisco TAC. If you are not a registered user, go to User Registration.

Final Check After Returning to Router> Prompt

1. Be sure the correct image is installed by issuing the **dir bootflash:**, **dir slot0:**, or **dir slot1:** command. Compare the image length (size in bytes) to the same image on the Cisco Downloads.
2. If you wish, verify the checksum of the file by issuing the **verify** command.

The following provides an example of these steps:

