

System Software Conversion from CatOS to Cisco IOS for Catalyst 6500/6000 Switches

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Related Information

Introduction

This document explains how to convert the system software on Cisco Catalyst 6500/6000 Series Switches from Catalyst OS (CatOS) on the Supervisor Engine with Cisco IOS[®] Software on the Multilayer Switch Feature Card (MSFC) to Cisco IOS Software on both the Supervisor Engine and MSFC.

Refer to [How to Convert a Catalyst 6500/6000 Supervisor Engine from Hybrid Mode \(CatOS\) to Native Mode \(IOS\) Using a Conversion Utility](#) for information on how to use the conversion utility in order to convert the system software from CatOS to Cisco IOS.

Refer to [Translating Commands Using Commands Translator](#) for information on how to convert the CatOS configuration file into a Cisco IOS configuration file.

This document does not describe how to convert the system software from Cisco IOS Software to CatOS. Refer to [System Software Conversion from Cisco IOS to CatOS for Catalyst 6500/6000 Switches](#) for this information.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco Catalyst 6500/6000 Series Switches
- Supervisor Module that runs Cisco CatOS Software
- Multilayer Switch Feature Card (MSFC) that runs Cisco IOS Software

Conventions

Refer to Cisco Technical Tips Conventions for information on document conventions.

Difference Between CatOS and Cisco IOS System Software

CatOS on the Supervisor Engine and Cisco IOS Software on the MSFC (Hybrid): a CatOS image is used as the system software to run the Supervisor Engine on Catalyst 6500/6000 Switches. With the MSFC installed, a separate Cisco IOS Software image is used to run the routing module.

Cisco IOS Software on both the Supervisor Engine and MSFC (Native): a single Cisco IOS Software image is used as the system software to run both the Supervisor Engine and MSFC on Catalyst 6500/6000 Switches.

Refer to Comparison of the Cisco Catalyst and Cisco IOS Operating Systems for the Cisco Catalyst 6500 Series Switch for more information.

Naming Convention for CatOS and Cisco IOS Software Images

CatOS on the Supervisor Engine and Cisco IOS Software on the MSFC

This section describes the CatOS image naming conventions for Supervisor Engines 1, 2, 720, and 32 as well as the Cisco IOS Software image naming conventions for the MSFC1, MSFC2, MSFC2A, and MSFC3.

- **CatOS naming conventions for the Supervisor Engine 1, 1A, 2, 720, and 32**
 - ◆ **cat6000–sup** Supervisor Engine 1 and 1A
 - ◆ **cat6000–sup2** Supervisor Engine 2
 - ◆ **cat6000–sup720** Supervisor Engine 720
 - ◆ **cat6000–sup32** Supervisor Engine 32
- **Cisco IOS Software naming conventions for the MSFC1, MSFC2, MSFC2A, and MSFC3**
 - ◆ **c6msfc** MSFC1
 - ◆ **c6msfc2** MSFC2
 - ◆ **c6msfc2a** MSFC2A
 - ◆ **c6msfc3** MSFC3
 - ◆ **c6msfc–boot** MSFC1 boot image
 - ◆ **c6msfc2–boot** MSFC2 boot image
- **Examples of CatOS images for the Supervisor Engine and Cisco IOS Software images for the MSFC**

- ◆ **cat6000-supk8.8-1-1.bin** is the Catalyst 6500/6000 Supervisor Engine 1 and 1A CatOS image, version 8.1(1).
- ◆ **cat6000-sup720k8.8-1-1.bin** is the Catalyst 6500/6000 Supervisor Engine 720 CatOS image, version 8.1(1).
- ◆ **cat6000-sup32pfc3k8.8-4-1.bin** is the Catalyst 6500/6000 Supervisor Engine 32 CatOS image, version 8.4.
- ◆ **c6msfc-boot-mz.121-19.E** is the Catalyst 6500/6000 MSFC1 Cisco IOS Software Release 12.1(19)E boot image.
- ◆ **c6msfc-ds-mz.121-19.E** is the Catalyst 6500/6000 MSFC1 Cisco IOS Software Release 12.1(19)E image.
- ◆ **c6msfc2-jsv-mz.121-19.E** is the Catalyst 6500/6000 MSFC2 Cisco IOS Software Release 12.1(19)E image.
- ◆ **c6msfc2a-adventerprisek9_wan-mz.122-18.SXF** is the Catalyst 6500/6000 MSFC2A Cisco IOS Software Release 12.2(18)SXF image.
- ◆ **c6msfc3-jsv-mz.122-14.SX2** is the Catalyst 6500 MSFC3 Cisco IOS Software Release 12.2(14)SX2 image.

Cisco IOS Software Images for Both the Supervisor Engine and MSFC

- **Cisco IOS Software naming conventions for the Supervisor Engine 1A and 2 with MSFC1 or MSFC2**

The **c6supxy** indicates the Supervisor Engine/MSFC combination upon which the image runs. The **x** is the Supervisor Engine version, and **y** is the MSFC version. These versions appear in boldface in these lists:

- ◆ **c6sup** This is the original name for the Cisco IOS Software image. The image runs on the Supervisor Engine 1, MSFC1.
- ◆ **c6sup11** Supervisor Engine **1**, MSFC1
- ◆ **c6sup12** Supervisor Engine **1**, MSFC2
- ◆ **c6sup22** Supervisor Engine **2**, MSFC2

Here are examples of Cisco IOS Software images for the Supervisor Engine 1 and 2 with MSFC1 or MSFC2:

- ◆ **c6sup-is-mz.120-7.XE1** is the Catalyst 6500/6000 Cisco IOS Software Release 12.0(7)XE1 image (with Supervisor Engine 1/MSFC1).
- ◆ **c6sup11-dsv-mz.121-19.E1** is the Catalyst 6500/6000 Cisco IOS Software Release 12.1(19)E1 image (with Supervisor Engine 1/MSFC1).
- ◆ **c6sup12-js-mz.121-13.E9** is the Catalyst 6500/6000 Cisco IOS Software Release 12.1(13)E9 image (with Supervisor Engine 1/MSFC2).
- ◆ **c6sup22-psv-mz.121-11b.EX1** is the Catalyst 6500 Cisco IOS Software Release 12.1(11b)EX1 image (with Supervisor Engine 2/MSFC2).

- **Cisco IOS Software naming conventions for the Supervisor Engine 720**

The **s720xy** indicates the MSFC/Policy Feature Card (PFC) combination on the Supervisor Engine 720. The **x** is the MSFC version, and **y** is the PFC version. These versions appear in boldface in this list:

- ◆ **s72033** MSFC3, PFC3

Here is an example of the Cisco IOS Software naming convention for the Supervisor Engine 720:

- ◆ **s72033-jk9s-mz.122-14.SX** is the Catalyst 6500 Supervisor Engine 720 Cisco IOS Software Release 12.2(14)SX image (with Supervisor Engine 720/MSFC3/PFC3a).

- **Cisco IOS Software naming conventions for the Supervisor Engine 32**

The **s32xy** indicates the MSFC/PFC combination on the Supervisor Engine 32. The **x** is the MSFC version, and **y** is the PFC version. These versions appear in boldface in this list:

- ◆ **s3223 MSFC2, PFC3**

Here is an example of the Cisco IOS Software naming convention for the Supervisor Engine 32:

- ◆ **s3223-ipbasek9_wan-mz.122-18.SXF** is the Catalyst 6500 Supervisor Engine 32 Cisco IOS Software Release 12.2(18)SXF image (with Supervisor Engine 32/MSFC2A/PFC3B).
- **Note:** You can download all the images that this section mentions as well as a number of other images. Refer to the LAN Switches section of Downloads – Switches (registered customers only) .

DRAM, Boot ROM, Bootflash, and PC Card (PCMCIA) Requirements

DRAM and Boot ROM (ROM Monitor [ROMmon]) Requirements for Supervisor Engine 1A, 2, 720, and 32

Refer to the Catalyst 6500 Series Release Notes for your version of CatOS or Cisco IOS Software for information on DRAM and Boot ROM (ROMmon) requirements. Issue the **show version** command in order to verify the DRAM and ROMmon (system bootstrap) version.

If you find that you need a physical DRAM or Boot ROM upgrade, refer to the upgrade instructions for your hardware. Refer to Memory (Flash, CompactFlash, Module and Supervisor) for the instructions.

Bootflash and PC Card (PCMCIA) Requirements for the Supervisor Engine 1A and 2

- **Use of Supervisor Engine bootflash versus PC card (PCMCIA)**

The Supervisor Engine 1 and 1A ship with 16 MB of bootflash. The Supervisor Engine 2 ships with 32 MB of bootflash. There is no option to upgrade the Supervisor Engine bootflash for the Supervisor Engine 1, 1A, or 2.

CatOS images (cat6000*) are often stored in the Supervisor Engine bootflash. If you store more than one CatOS image, you might need to use a PC card. This requirement depends on the Supervisor Engine and image size.

Note: This document uses an asterisk (*) to denote any image name.

Cisco IOS Software images (c6sup*) are often stored in the Supervisor Engine bootflash. In Cisco IOS Software Release 12.1(11b)E and later, some of these images have increased in size and do not fit in the Supervisor Engine 1A 16 MB bootflash. In the case of a large image size, the Supervisor Engine 2 can only store one image in Supervisor Engine bootflash. The use of a PC card can be necessary in order to store one or more c6sup* images. This requirement depends on the image size.

PCMCIA (Flash PC) cards can store either:

- ◆ CatOS images (cat6000*)
- ◆ Cisco IOS Software images (c6sup*)
- ◆ Cisco IOS Software for the MSFC images (c6msfc*)

PC cards are available in 16, 24, and 64 MB sizes for the Supervisor Engine 1, 1A, and 2.

- **Use of MSFC bootflash versus PC card (PCMCIA)**

The MSFC for the Supervisor Engine 1A and 2 has its own bootflash. The MSFC1 has 16 MB of bootflash. The MSFC2 has 16 to 32 MB of bootflash. The amount of bootflash depends on the ship date.

Cisco IOS Software images for the MSFC (c6msfc*) are often stored in the MSFC bootflash. In Cisco IOS Software Release 12.1(11b)E and later for the MSFC1 and MSFC2, some images have increased in size and do not fit in the MSFC bootflash.

In the case of Cisco IOS Software images for the MSFC2 (c6msfc2*), you can upgrade from a 16 MB to a 32 MB SIMM or use a PC card if you want to store one or more of the larger c6msfc2* images or boot images (c6msfc2–boot*) on the internal MSFC bootflash SIMM. Refer to Catalyst 6000 Family MSFC2 Bootflash Device Upgrade Installation Note for information on how to upgrade the internal MSFC2 bootflash on the Supervisor Engine 1A and 2 from 16 to 32 MB.

In the case of Cisco IOS Software images for the MSFC1 (c6msfc*), there is no option to upgrade the internal bootflash. A PC card is necessary to store these larger images.

PCMCIA (Flash PC) cards can store either:

- ◆ CatOS images (cat6000*)
- ◆ Cisco IOS Software images (c6sup*)
- ◆ Cisco IOS Software for the MSFC images (c6msfc*)

Flash PC cards are available in 16, 24, and 64 MB sizes for the Supervisor Engine 1, 1A, and 2.

Note: Supervisor Engine 2 ROMMON version 7.1(1) or later supports the MEM–C6K–ATA–1–64M= (64 MB) PCMCIA ATA FlashDisk device. For more information, refer to the *ROMMON Image Overview* section of Release Notes for Catalyst 6000 Family Supervisor Engine 2 ROMMON Software.

Bootflash and PC Card (PCMCIA) Requirements for the Supervisor Engine 720

The Supervisor Engine 720 ships with 64 MB of Supervisor Engine bootflash and 64 MB of MSFC bootflash. There are two slots that are available for CompactFlash Type II cards (Disk 0 and Disk 1) which provide additional storage. CompactFlash cards for the Supervisor Engine 720 are available in 64, 128, 256 and 512 MB sizes. A 1 GB MicroDrive is also available.

There are currently no flash memory limitations for Supervisor Engine 720 (s720xx*) images. Refer to the Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 720 CompactFlash Memory Card Installation Note for information on how to install Supervisor Engine 720 flash cards or MicroDrives.

Note: Because some of the latest software images for the Supervisor Engine 720 are larger than the bootflash device, a CompactFlash card is recommended.

Refer to Memory/Flash Size Supported in Catalyst Switch Platforms for information on the minimum and maximum memory that is available on the Catalyst switch platforms.

Bootflash and PC Card (PCMCIA) Requirements for the Supervisor Engine 32

The Supervisor Engine 32 ships with 256 MB of Supervisor Engine bootflash and 256 MB of MSFC bootflash. The Supervisor Engine 32 has one external CompactFlash Type II slot and 256 MB of internal CompactFlash Flash memory. The internal CompactFlash, which is referred to as **bootdisk:** in the command–line interface (CLI), can be upgraded to 512 MB and 1 GB. The CompactFlash Type II slot supports CompactFlash Type II cards and IBM MicroDrive cards. CompactFlash cards for the Supervisor Engine 32 are available in 64, 128, and 256 MB sizes. The Supervisor Engine 32 hardware is able to support 512 MB and 1 GB of CompactFlash Type II Flash memory. The keyword for the external CompactFlash memory is **disk0:**. The keyword for the internal CompactFlash memory is **bootdisk:**.

Convert Redundant Supervisor Engines

Do not attempt to convert one Supervisor Engine with another Supervisor Engine that is installed at the same time. The conversion process was not designed for this type of conversion.

Complete these steps when you convert redundant Supervisor Engines:

1. Eject the standby Supervisor Engine.
2. Complete the appropriate conversion procedure on the active Supervisor Engine, and then verify.

Note: For the procedure, see the Step-by-Step Procedure to Convert from CatOS to Cisco IOS System Software section of this document.

3. Eject the active Supervisor Engine.
4. Insert the standby Supervisor Engine, and complete and verify the same procedure.
5. Insert the other Supervisor Engine for a redundant configuration.

Refer to the *Supervisor Redundancy* section of the Catalyst 6000/6500 Series Switches with Redundant Supervisor Engines Software Image Upgrade Configuration Example for complete information on how various redundancy modes work with the different system software in Catalyst 6500/6000 switches with redundant supervisors.

Step-by-Step Procedure to Convert from CatOS to Cisco IOS System Software

This section describes the steps that are necessary to convert the software that runs on your Catalyst 6500/6000 Series Switch from CatOS on the Supervisor Engine with Cisco IOS Software on the MSFC to Cisco IOS Software on the Supervisor Engine/MSFC. This section provides four procedures. Complete the correct procedure for your hardware.

- Conversion on Supervisor Engine with MSFC1
- Conversion on Supervisor Engine with MSFC2
- Conversion on Supervisor Engine 720
- Conversion on Supervisor Engine 32

Conversion on Supervisor Engine with MSFC1

This section describes the steps to convert the system software that runs on a Catalyst 6500/6000 Series Switch from CatOS to Cisco IOS Software when there is an MSFC1 on the Supervisor Engine.

This section uses this terminology:

- **Switch Processor (SP)** Refers to the switch component of the system or Supervisor Engine.
- **Route Processor (RP)** Refers to the router component of the system or MSFC1.

Note: The images that this document uses are for example purposes only. Replace the images with the images that you use in your switch environment. Make sure to refer to the Catalyst 6500 Series Release Notes for memory and ROM requirements.

Step 1

Establish a console connection to the SP.

Log your console session as a best practice. The log enables you to capture a record of the session and compare the log to the steps in this document, if you need to troubleshoot. For example, in Windows HyperTerminal, choose **Transfer > Capture Text** in order to log a console session. Refer to Connecting a Terminal to the Console Port on Catalyst Switches for more information.

Step 2

Back up the CatOS configuration from the Supervisor Engine and the Cisco IOS Software configuration from the MSFC1.

You need to reconfigure the switch after you convert to Cisco IOS Software as the system software because the conversion process loses the configuration. If you back up the files, they can serve as a reference after the conversion or as a backup if you decide to convert back to CatOS. Issue the **copy config tftp** command on the Supervisor Engine and the **copy start tftp** command on the MSFC1 in order to back up the configurations.

Refer to Managing Software Images and Working with Configuration Files on Catalyst Switches for more information on the use of the **copy config tftp** and **copy start tftp** commands to back up configuration files.

Step 3

Issue the **show module** command in order to confirm that the PFC and the MSFC1 are installed in the switch.

Note: You cannot run a Cisco IOS Software image (c6sup11*) without a PFC and an MSFC.

```

Console> (enable) show module
Mod Slot Ports Module-Type Model Sub Status
-----
1 1 2 1000BaseX Supervisor WS-X6K-SUP1A-2GE yes ok
15 1 1 Multilayer Switch Feature WS-F6K-MSFC no ok

!--- In this case, the SP in slot 1 is a Supervisor Engine 1A
!--- with an RP or MSFC1.

3 3 48 10/100BaseTX Ethernet WS-X6348-RJ-45 no ok
Mod Module-Name Serial-Num
-----
1 SAD040905LF
15 SAD040701C4
3 SAL0547ENL8
Mod MAC-Address(es) Hw Fw Sw
-----
1 00-d0-bc-f7-75-96 to 00-d0-bc-f7-75-97 3.2 5.3(1) 8.1(1)

!--- This is the current CatOS software version that runs on the SP.

00-d0-bc-f7-75-94 to 00-d0-bc-f7-75-95
00-02-7e-02-a0-00 to 00-02-7e-02-a3-ff
15 00-d0-bc-f7-75-98 to 00-d0-bc-f7-75-d7 1.4 12.1(19)E1 12.1(19)E1a

!--- This is the current Cisco IOS Software release that runs on the RP.

3 00-05-74-0a-32-70 to 00-05-74-0a-32-9f 6.1 5.4(2) 8.1(1)
Mod Sub-Type Sub-Model Sub-Serial Sub-Hw Sub-Sw
-----
1 L3 Switching Engine WS-F6K-PFC SAD040906A9 1.0

!--- This is the PFC.

Console> (enable)

```



```

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 1879040 bytes]
1879040 bytes copied in 28.848 secs (65136 bytes/sec)
Verifying compressed IOS image checksum...
Verified compressed IOS image checksum for bootflash:/c6msfc-boot-mz.121-19.E1a
Router#

```

!--- Verify the image location.

```

Router#dir bootflash:
Directory of bootflash:/
  1  -rw-      1879040   Nov 03 2003 01:36:45   c6msfc-boot-mz.121-19.E1a
15990784 bytes total (14111616 bytes free)
Router#

```

Step 9

Verify that the `BOOTLDR` variable statement points to the `c6msfc-boot` image in RP bootflash and that the configuration register is set to `0x2102`. This setting tells the MSFC1 to boot automatically.

Issue the `show bootvar` command in order to check the `BOOTLDR` variable and configuration register settings.

```

Router#show bootvar
BOOT variable = sup-slot0:c6msfc-jsv-mz.121-19.E1a,1
CONFIG_FILE variable =
BOOTLDR variable = bootflash:c6msfc-boot-mz.121-19.E1a

```

!--- The BOOTLDR variable statement is set correctly for the MSFC1.

Configuration register is 0x2102

!--- The configuration register is set to 0x2102, which is correct.

Router#

If the `BOOTLDR` variable statement or the configuration register is not set correctly, complete Step 10 in order to change the setting. If both these settings are correct, go to Step 11.

Step 10 (Optional)

Note: Complete this step only if the `BOOTLDR` variable statement or the configuration register was not set correctly. See Step 9 in order to determine if you need to complete this step.

Issue these commands in order to set the `BOOTLDR` variable statement and change the configuration register setting:

!--- Verify the boot image name.

```

Router#dir bootflash:
Directory of bootflash:/
  1  -rw-      1879040   Nov 03 2003 01:36:45   c6msfc-boot-mz.121-19.E1a
15990784 bytes total (14111616 bytes free)
Router#

```

!--- Set the BOOTLDR variable.

Router#configure terminal

```

Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#boot bootldr bootflash:c6msfc-boot-mz.121-19.E1a

!--- Set the configuration register so that the MSFC1 boots automatically.

Router(config)#config-register 0x2102
Router(config)#end
Router#

!--- Save the changes.

Router#write memory
Building configuration...
[OK]

!--- Verify the BOOTLDR variable and configuration register settings.

Router#show bootvar
BOOT variable = sup-slot0:c6msfc-jsv-mz.121-19.E1a,1
CONFIG_FILE variable =
BOOTLDR variable = bootflash:c6msfc-boot-mz.121-19.E1a
Configuration register is 0x2102
Router#

```

Step 11

In order to go back to the SP, press **Ctrl-C** three times on the RP.

Note: If you issued the **session module** command in order to access the RP, you must issue the **exit** command instead of **Ctrl-C**.

```

!--- Press Ctrl-C three times.

Router#^C
Router#^C
Router#^C
Console> (enable)

!--- This is the SP console prompt.

```

Step 12

Change the configuration register setting on the SP so that the switch does not boot the CatOS image and goes to ROMmon.

```

Console> (enable) set boot config-register 0x0
Configuration register is 0x0
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
console baud: 9600
boot: the ROM monitor
Console> (enable)

```

Step 13

Reset the switch so that it goes into ROMmon.

```

Console> (enable) reset
This command will reset the system.
Do you want to continue (y/n) [n]? y

```

```
2003 Nov 03 02:00:26 %SYS-5-SYS_RESET:System reset from Console//
Powering OFF all existing linecards
Console> (enable) 2003 Nov 03 02:00:26 %SPANTREE-2-RX_1QNONTRUNK: Rcvd 1Q-BPDU
on non-trunk port 3/1 vlan 1
2003 Nov 03 02:00:27 %ETHC-5-PORTFROMSTP:Port 3/1 left bridge port 3/1
System Bootstrap, Version 5.3(1)
```

!--- This is the SP ROMmon image version.

Copyright (c) 1994-1999 by cisco Systems, Inc.
c6k_sup1 processor with 131072 Kbytes of main memory

!--- After this message, the router goes into SP ROMmon.

Note: This document provides comments in *blue italics* in order to differentiate between the SP and RP ROMmon prompts.

```
rommon 1 >
```

!--- Note: This prompt is SP ROMmon.

Step 14

Issue the **set** command at the ROMmon prompt in order to check the environment variables.

Note: The switch is currently set to boot into the CatOS image.

```
rommon 1 > set
```

!--- Note: This prompt is SP ROMmon.

*!--- Press **Enter** or **Return**.*

```
PS1=rommon ! >
BOOTLDR=
SLOTCACHE=cards;
RET_2_RTS=22:54:02 UTC Sun Nov 2 2003
RET_2_RUTC=1067813642
?=0
CONFIG_FILE=bootflash:switch.cfg
BOOT=bootflash:cat6000-supk8.8-1-1.bin,1;
rommon 2
```

!--- Note: This prompt is SP ROMmon.

Cisco IOS Software does not use the CONFIG_FILE environment variable, so the variable can cause a problem. In order to avoid the problem, remove either **bootflash:switch.cfg** or **slot0:switch.cfg** from the environment settings. Issue these commands:

```
rommon 2 > CONFIG_FILE=
```

!--- Note: This prompt is SP ROMmon.

!--- The CONFIG_FILE statement is case sensitive and is all capital letters.

```
rommon 3 > BOOT=
```

!--- The BOOT statement is case sensitive and is all capital letters.

```
rommon 4 > confreg 0x2102
```

You must reset or power cycle for new config to take effect

```
!--- When you set the config register to 0x2102, the SP autoboots once
!--- the BOOT variable is set to the correct IOS image file name after it
!--- converts to Native IOS mode.
```

```
rommon 5 > sync
```

```
!--- Note: This prompt is SP ROMmon.
!--- The sync command writes the new environment variable setting to NVRAM.
```

```
rommon 6 > reset
```

```
!--- Note: This prompt is SP ROMmon.
!--- The reset command is necessary after you change any environment variable.
```

```
System Bootstrap, Version 5.3(1)
Copyright (c) 1994-1999 by cisco Systems, Inc.
c6k_sup1 processor with 131072 Kbytes of main memory
```

```
Autoboot: failed, BOOT string is empty
rommon 1 >
```

```
!--- Note: This prompt is SP ROMmon.
!--- You are still in SP ROMmon after the reset.
```

Step 15

Boot the switch with the Cisco IOS Software image (c6sup11*).

Issue either the **dir bootflash:** command or the **dir slot0:** command. The command you issue depends on the device to which you previously downloaded the Cisco IOS Software image. Then, issue the **boot bootflash:** command or the **boot slot0:filename** command in order to start the bootup sequence.

```
rommon 1 > dir slot0:
```

```
!--- Note: This prompt is SP ROMmon.
```

File size	Checksum	File name
17160908 bytes (0x105dacc)	0x283e970	c6sup11-jsv-mz.121-19.E1a

```
!--- The Cisco IOS Software image (c6sup11*) is on slot0: in this case.
!--- This is the device from which the image boots in this procedure.
```

```
rommon 2 > boot slot0:c6sup11-jsv-mz.121-19.E1a
```

```
!--- Note: This prompt is SP ROMmon.
```

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

```
!--- Output suppressed.
```

```
00:00:02: %PFREDUN-6-ACTIVE: Initializing as ACTIVE processor
00:00:05: %OIR-SP-6-CONSOLE: Changing console ownership to route processor
System Bootstrap, Version 12.0(3)XE, RELEASE SOFTWARE
```

!--- This is the RP ROMmon image release.

Copyright (c) 1998 by cisco Systems, Inc.
Cat6k-MSFC platform with 131072 Kbytes of main memory

Download Start

!!
!!
!!
!!
!!
!!
!!
!!
!!
!!
!!
!!
!!
!!
!!

Download Completed! Booting the image.
Self decompressing the image : #####

[OK]

!--- Output suppressed.

Press RETURN to get started!

!--- Output suppressed.

Router>

Step 16

At this point, the Cisco IOS Software image (c6sup11*) has successfully booted, but the Supervisor Engine Flash devices are still formatted with the previous CatOS algorithm. Therefore, Cisco IOS Software cannot correctly write to **sup-bootflash:** or **slot0:**. You need to reformat these Flash devices and replace the images that are on the Flash devices.

Issue the **format** command in order to format both the Supervisor Engine bootflash and slot0 Flash devices.

```
Router>enable
Router#format sup-bootflash:
Format operation may take a while. Continue? [confirm]

!--- Press Enter or Return.

Format operation will destroy all data in "sup-bootflash:". Continue? [confirm]

!--- Press Enter or Return.

Format of sup-bootflash complete
Router#

Router#format slot0:
```

```
Format operation may take a while. Continue? [confirm]
```

```
!--- Press Enter or Return.
```

```
Format operation will destroy all data in "slot0:". Continue? [confirm]
```

```
!--- Press Enter or Return.
```

```
Enter volume ID (up to 64 chars)[default slot0]:
```

```
!--- Press Enter or Return.
```

```
Format of slot0 complete  
Router#
```

Step 17

When you format the Supervisor Engine Flash devices in Step 16, the Cisco IOS Software image (c6sup11*) used to boot the Supervisor Engine, as well as all data on the device, is erased. You need to recopy the Cisco IOS Software image (c6sup11*).

Note: Remember that the conversion lost the configuration. You need to configure an IP address and possibly static or dynamic routing in order to reestablish connectivity to your TFTP server. Verify that you can ping your TFTP server from the switch.

Issue the **copy tftp** command in order to copy the Cisco IOS Software image (c6sup11*) to either the **sup-bootflash:** or **slot0:** Flash device.

```
Router#copy tftp slot0:
```

```
!--- The Cisco IOS Software image (c6sup11*) copies to slot0: in this case.
```

```
Address or name of remote host []? 10.1.1.2
```

```
Source filename []? c6sup11-jsv-mz.121-19.E1a
```

```
Destination filename [c6sup11-jsv-mz.121-19.E1a]?
```

```
Accessing tftp://10.1.1.2/c6sup11-jsv-mz.121-19.E1a...
```

```
Loading c6sup11-jsv-mz.121-19.E1a from 10.1.1.2 (via FastEthernet3/1): !!!!
```

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

```
!--- Output suppressed.
```

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

```
[OK - 17160908 bytes]
```

```
17160908 bytes copied in 859.292 secs (19971 bytes/sec)
```

```
Verifying compressed IOS image checksum...
```

```
Verified compressed IOS image checksum for slot0:/c6sup11-jsv-mz.121-19.E1a
```

```
Router#
```

Step 18

Set the boot variable to boot from the Cisco IOS Software image (c6sup11*) in sup-bootflash: or slot0:

```
!--- Check the current boot variable settings.
```

```
Router#show bootvar
```

```
BOOT variable = sup-slot0:c6msfc-jsv-mz.121-19.E1a,1
```

```

!--- The BOOT variable incorrectly points to an old MSFC image.

CONFIG_FILE variable =
BOOTLDR variable = bootflash:c6msfc-boot-mz.121-19.E1a
Configuration register is 0x2102
Standby is not up.
Router#

!--- Set the boot variable to boot the Cisco IOS Software image (c6sup11*).

Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#boot system flash slot0:c6sup11-jsv-mz.121-19.E1a
Router(config)#end
Router#

!--- Save the changes.

Router#write memory
Building configuration...
[OK]
Router#

```

Step 19

Verify if the configuration register is set to 0x2102. If not, modify the configuration register to the correct value of 0x2102.

```

Router#show bootvar
BOOT variable = slot0:c6sup11-jsv-mz.121-19.E1a,1
CONFIG_FILE variable =
BOOTLDR variable = bootflash:c6msfc-boot-mz.121-19.E1a
Configuration register is 0x2102
Standby is not up.
Router#

```

Step 20

Reload the switch.

```

Router#reload
Proceed with reload? [confirm]

!--- Output suppressed.

```

Conversion on Supervisor Engine with MSFC2

This section describes the steps to convert the system software that runs on a Catalyst 6500/6000 Series Switch from CatOS to Cisco IOS Software when there is an MSFC2 on the Supervisor Engine.

This section uses this terminology:

- **Switch Processor (SP)** Refers to the switch component of the system or Supervisor Engine.
- **Route Processor (RP)** Refers to the router component of the system or MSFC2.

Note: The images that this document uses are for example purposes only. Replace the images with the images that you use in your switch environment. Make sure to refer to the Catalyst 6500 Series Release Notes for memory and ROMmon requirements.

Step 1

Establish a console connection to the SP.

Log your console session as a best practice. This log enables you to capture a record of the session and compare the log to the steps in this document, if you need to troubleshoot. For example, in HyperTerminal, choose **Transfer > Capture Text** in order to log a console session. Refer to Connecting a Terminal to the Console Port on Catalyst Switches for more information.

Step 2

Back up the CatOS configuration from the Supervisor Engine and the Cisco IOS Software configuration from the MSFC2.

You need to reconfigure the switch after you convert to Cisco IOS Software as the system software because the conversion process loses the configuration. If you back up the files, they can serve as a reference after the conversion or as a backup if you decide to convert back to CatOS. Issue the **copy config tftp** command on the Supervisor Engine and the **copy start tftp** command on the MSFC2 in order to back up the configurations.

Refer to Managing Software Images and Working with Configuration Files on Catalyst Switches for more information on how to use the **copy config tftp** and **copy start tftp** commands to back up configuration files.

Step 3

Issue the **show module** command in order to confirm that the PFC or PFC2 and the MSFC2 are installed in the switch.

Note: You cannot run a Cisco IOS Software image (c6sup*) without a PFC and an MSFC.

```
Console> (enable) show module
Mod Slot Ports Module-Type Model Sub Status
-----
1 1 2 1000BaseX Supervisor WS-X6K-S2U-MSFC2 yes ok
15 1 1 Multilayer Switch Feature WS-F6K-MSFC2 no ok

!--- In this case, the SP in slot 1 is a Supervisor Engine 2
!--- with an RP or MSFC2.

3 3 48 10/100BaseTX Ethernet WS-X6548-RJ-45 no ok
5 5 0 Switch Fabric Module 2 WS-X6500-SFM2 no ok
Mod Module-Name Serial-Num
-----
1 SAD060302XM
15 SAD060102KP
3 SAL0701B2S0
5 SAD061506MD
Mod MAC-Address(es) Hw Fw Sw
-----
1 00-01-c9-da-ee-d2 to 00-01-c9-da-ee-d3 3.5 7.1(1) 8.1(1)

!--- This is the current CatOS software version that runs on the SP.

00-01-c9-da-ee-d0 to 00-01-c9-da-ee-d1
00-04-9b-bd-c0-00 to 00-04-9b-bd-c3-ff
15 00-08-7c-a1-cf-80 to 00-08-7c-a1-cf-bf 1.3 12.1(19)E1 12.1(19)E1a

!--- This is the current Cisco IOS Software release that runs on the RP.

3 00-09-11-f3-88-48 to 00-09-11-f3-88-77 5.1 6.3(1) 8.1(1)
5 00-01-00-02-00-03 1.2 6.1(3) 8.1(1)
```

Mod	Sub-Type	Sub-Model	Sub-Serial	Sub-Hw	Sub-Sw
1	L3 Switching Engine II	WS-F6K-PFC2	SAD054104B3	3.0	

!--- A PFC2 is installed in the switch in this case.

Console> (enable)

Step 4

Verify that the Cisco IOS Software image (c6sup*) is available on the SP bootflash or on the PC card in slot0.

Note: Where you choose to store the Cisco IOS Software image (c6sup*) depends on the Supervisor Engine flash device capacity and image size.

Use the **dir** command in order to verify the location of the Cisco IOS Software image (c6sup*).

```

Console> (enable) dir bootflash:
-#- -length- -----date/time----- name
   1  8040396 Oct 30 2003 23:17:13 cat6000-sup2k8.8-1-1.bin

!--- This is the SP bootflash and the location for the current
!--- CatOS software version that runs on the SP.

23941044 bytes available (8040524 bytes used)
Console> (enable)

Console> (enable) dir slot0:
-#- -length- -----date/time----- name
   1 19769600 Oct 31 2003 00:39:30 c6sup22-js-mz.121-19.E1a

!--- This is the PCMCIA or Flash PC device with the name slot0:.
!--- This is the Cisco IOS Software image (c6sup*) release for this conversion.

5002880 bytes available (19769728 bytes used)
Console> (enable)

```

If the Cisco IOS Software image (c6sup*) is missing from either bootflash: or slot0:, download the image. Step 5 provides the procedure. If the image is present, go to Step 6.

Step 5 (Optional)

Note: Complete this step only if the Cisco IOS Software image (c6sup*) is missing from either bootflash: or slot0:. See Step 4 in order to determine if you need to complete this step.

Issue the **copy tftp bootflash:** command or the **copy tftp slot0:** command in order to download the image to either the SP bootflash or to the PC card in slot0.

Note: You might need to format the PC cards if it has never been used before or if it was formatted with the Cisco IOS Software algorithm. Issue the **format slot0:** command or the **format slot1:** command or both commands in order to format PC cards on a Supervisor Engine 1, 1A or 2.

Note: You can free up space as necessary on the flash devices. Issue the **delete bootflash:** command or the **delete slot0:filename** command in order to delete the file. Then, issue the **squeeze bootflash:** or **squeeze slot0:** command in order to erase all deleted files from the device.

```

Console> (enable) copy tftp slot0:
IP address or name of remote host []? 10.1.1.2
Name of file to copy from []? c6sup22-js-mz.121-19.E1a
24772480 bytes available on device slot0, proceed (y/n) [n]? y

```

```

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
File has been copied successfully.
Console> (enable)

```

!--- Verify the image location.

```

Console> (enable) dir slot0:
-#- -length- ----date/time----- name
  1 19769600 Oct 31 2003 21:37:39 c6sup22-js-mz.121-19.E1a
5002880 bytes available (19769728 bytes used)
Console> (enable)

```

Step 6

In order to access the RP, issue either the **switch console** command or the **session module** command.

```

Console> (enable) switch console
Trying Router-15...
Connected to Router-15.
Type ^C^C^C to switch back...
Router>

```

*!--- Issue the **enable** command in order to enter privileged EXEC mode.*

```

Router>enable
Router#

```

Step 7

Issue the **dir bootflash:** command in order to verify that the MSFC2 boot image (c6msfc2–boot) is present on the RP bootflash.

Important Note: A boot image is *not* a requirement for the MSFC2. However, Cisco recommends that you use a boot image as described in this procedure. A boot image is a much smaller, scaled–down version of the system image. With a boot image, you can perform a TFTP image transfer if the main system image becomes corrupt or lost. If you choose to use an MSFC2 boot image, you must store it in the RP bootflash.

```

Router#dir bootflash:
Directory of bootflash:/
  1  -rw-      1820676  Aug 20 2003 18:13:11 c6msfc2-boot-mz.121-19.E1a
15204352 bytes total (13383548 bytes free)

```

If the c6msfc2–boot image is missing from the RP bootflash, download the image. Step 8 provides the procedure. If the image is present, go to Step 9.

Step 8 (Optional)

Note: Complete this step only if the c6msfc2–boot image is missing from the RP bootflash. See Step 7 in order to determine if you need to complete this step.

Issue the **copy tftp bootflash:** command in order to download the image to RP bootflash.

Note: You can free up space as necessary on RP bootflash. Issue the **delete bootflash:filename** command in order to delete the file. Then, issue the **squeeze bootflash:** command in order to erase all deleted files from the device.

```

Router#copy tftp bootflash:
Address or name of remote host []? 10.1.1.2
Source filename []? c6msfc2-boot-mz.121-19.E1a
Destination filename [c6msfc2-boot-mz.121-19.E1a]?
Accessing tftp://10.1.1.2/c6msfc2-boot-mz.121-19.E1a...
Loading c6msfc2-boot-mz.121-19.E1a from 10.1.1.2 (via Vlan1): !!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 1820676 bytes]
1820676 bytes copied in 18.800 secs (96844 bytes/sec)
Verifying compressed IOS image checksum...
Verified compressed IOS image checksum for bootflash:/c6msfc2-boot-mz.121-19.E1a

!--- Verify the image location.

Router#dir bootflash:
Directory of bootflash:/
  1  -rw-     1820676   Nov 01 2003 00:37:41  c6msfc2-boot-mz.121-19.E1a
15204352 bytes total (13383548 bytes free)
Router#

```

Step 9

Verify that the `BOOTLDR` variable statement points to the `c6msfc2-boot` image in RP bootflash. and that the configuration register is set to `0x2102`.

Issue the `show bootvar` command in order to check the `BOOTLDR` variable and configuration register settings.

Note: A `BOOTLDR` variable statement is not a requirement for the MSFC2. However, Cisco recommends that you use the `BOOTLDR` variable statement as described in this procedure.

```

Router#show bootvar
BOOT variable = sup-slot0:c6msfc2-jsv-mz.121-19.E1a,1
CONFIG_FILE variable =
BOOTLDR variable = bootflash:c6msfc2-boot-mz.121-19.E1a

!--- The BOOTLDR variable statement is set correctly for the MSFC2.

Configuration register is 0x2102

!--- The configuration register is set to 0x2102, which is correct

Router#

```

If the `BOOTLDR` variable statement or the configuration register is not set correctly, complete Step 10 in order to change the setting. If both these settings are correct, go to Step 11.

Step 10 (Optional)

Note: Complete this step only if the `BOOTLDR` variable statement or the configuration register were not set correctly. See Step 9 in order to determine if you need to complete this step.

Issue these commands in order to set the `BOOTLDR` variable statement and change the configuration register setting:

```
!--- Verify the boot image name.
```

```
Router#dir bootflash:
Directory of bootflash:/
  1  -rw-      1820676   Nov 01 2003 00:37:41  c6msfc2-boot-mz.121-19.E1a
15204352 bytes total (13383548 bytes free)
Router#
```

!--- Set the BOOTLDR variable.

```
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#boot bootldr bootflash:c6msfc2-boot-mz.121-19.E1a
Router(config)#end
Router#
```

!--- Set the configuration register so that the MSFC2 boots automatically.

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

!--- Save the changes.

```
Router#write memory
Building configuration...
[OK]
```

!--- Verify the BOOTLDR variable and configuration register settings.

```
Router#show bootvar
BOOT variable = sup-slot0:c6msfc2-jsv-mz.121-19.E1a,1
CONFIG_FILE variable =
BOOTLDR variable = bootflash:c6msfc2-boot-mz.121-19.E1a
Configuration register is 0x2102
Router#
```

Step 11

In order to go back to the SP, press **Ctrl-C** three times on the RP.

Note: If you issued the **session module** command in order to access the RP, you must issue the **exit** command instead of **Ctrl-C**.

!--- Press Ctrl-C three times.

```
Router#^C
Router#^C
Router#^C
Console> (enable)
```

!--- This is the SP console prompt.

Step 12

Change the configuration register setting on the SP so that the switch does not boot the CatOS image and goes to ROMmon.

```
Console> (enable) set boot config-register 0x0
Configuration register is 0x0
```

```
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
console baud: 9600
boot: the ROM monitor
Console> (enable)
```

!--- Verify the settings.

```
Console> (enable) show boot
BOOT variable = bootflash:cat6000-sup2k8.8-1-1.bin,1;
CONFIG_FILE variable = bootflash:switch.cfg
Configuration register is 0x0
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
console baud: 9600
boot: the ROM monitor
Console> (enable)
```

Step 13

Reset the switch so that it goes into ROMmon:

```
Console> (enable) reset
This command will reset the system.
Do you want to continue (y/n) [n]? y
2003 Nov 01 03:44:12 %SYS-5-SYS_RESET:System reset from Console//
Powering OFF all existing linecards
2003 Nov 01 03:44:12 %ETHC-5-PORTFROMSTP:Port 3/1 left bridge port 3/1
System Bootstrap, Version 7.1(1)
```

!--- This is the SP ROMmon image version.

```
Copyright (c) 1994-2001 by cisco Systems, Inc.
c6k_sup2 processor with 262144 Kbytes of main memory
```

!--- After this message, the router goes into SP ROMmon.

```
rommon 1
```

Step 14

Issue the **set** command at the ROMmon prompt in order to check the environment variables.

Note: The switch is currently set to boot into the CatOS image.

```
rommon 1 > set

!--- Press Enter or Return.

PS1=rommon ! >
BOOTLDR=
SLOTCACHE=cards;
RET_2_RTS=22:35:52 UTC Thu Oct 30 2003
RET_2_RUTC=1067553353
?=0
BOOT=bootflash:cat6000-sup2k8.8-1-1.bin,1;
CONFIG_FILE=bootflash:switch.cfg
rommon 2
```

Cisco IOS Software does not use the CONFIG_FILE environment variable, so the variable can cause a problem. In order to avoid the problem, remove either **bootflash:switch.cfg** or **slot0:switch.cfg** from the environment settings. Issue these commands:

```

rommon 2 > CONFIG_FILE=

!--- The CONFIG_FILE statement is case sensitive and is all capital letters.

rommon 3 > BOOT=

!--- The BOOT statement is case sensitive and is all capital letters.

rommon 4 > confreg 0x2102

```

You must reset or power cycle for new config to take effect

```

!--- When you set the config register to 0x2102, the SP autoboots once
!--- the BOOT variable is set to the correct IOS image file name after it
!--- converts to Native IOS mode.

```

```

rommon 5 > sync

!--- The sync command writes the new environment variable setting to NVRAM.

```

```

rommon 6 > reset

!--- The reset command is necessary after you change any environment variable.

```

```

System Bootstrap, Version 7.1(1)
Copyright (c) 1994-2001 by cisco Systems, Inc.
c6k_sup2 processor with 262144 Kbytes of main memory

```

```

Autoboot: failed, BOOT string is empty
rommon 1 >

```

```

!--- You are still in SP ROMmon after the reset.

```

Step 15

Boot the switch with the Cisco IOS Software image (c6sup*).

Issue either the **dir bootflash:** command or the **dir slot0:** command. The command you issue depends on the device to which you previously downloaded the Cisco IOS Software image (c6sup*). Then, issue the **boot bootflash:** command or the **boot slot0:filename** command in order to start the bootup sequence.

```

rommon 1 > dir slot0:
      File size           Checksum   File name
19769600 bytes (0x12da900) 0x4dbcb14a  c6sup22-js-mz.121-19.E1a

```

```

!--- The Cisco IOS Software image (c6sup*) is on slot0: in this case.
!--- This is the device from which the image boots in this procedure.

```

```

rommon 2 > boot slot0:c6sup22-js-mz.121-19.E1a
Self decompressing the image : #####
#####
#####
##### [OK]

```

```

!--- Output suppressed.

```

```

00:00:02: %PFREDUN-6-ACTIVE: Initializing as ACTIVE processor
00:00:05: %OIR-SP-6-CONSOLE: Changing console ownership to route processor
System Bootstrap, Version 12.1(4r)E, RELEASE SOFTWARE (fc1)

```



```

CONFIG_FILE variable =
BOOTLDR variable = bootflash:c6msfc2-boot-mz.121-19.E1a
Configuration register is 0x2102
Standby is not up.
Router#

!--- Set the boot variable to boot the Cisco IOS Software image (c6sup*).

Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#boot system flash slot0:c6sup22-js-mz.121-19.E1a
Router(config)#

!--- Save the changes.

Router#write memory
Building configuration...
[OK]
Router#

```

Step 19

Verify if the configuration register is set to 0x2102. If not, update the configuration register to the correct value of 0x2102.

```

Router#show bootvar
BOOT variable = slot0:c6sup22-js-mz.121-19.E1a,1
CONFIG_FILE variable does not exist
BOOTLDR variable = bootflash:c6msfc2-boot-mz.121-19.E1a
Configuration register is 0x2102
Standby is not up.

```

Step 20

Reload the switch.

```

Router#reload
Proceed with reload? [confirm]

!--- Output suppressed.

```

Conversion on Supervisor Engine 720

This section uses this terminology:

- **Switch Processor (SP)** Refers to the switch component of the system or Supervisor Engine.
- **Route Processor (RP)** Refers to the router component of the system or MSFC3.

Note: The images that this document uses are for example purposes only. Replace the images with the images that you use in your switch environment. Make sure to refer to the Catalyst 6500 Series Release Notes for memory and ROMmon requirements.

Step 1

Establish a console connection to the SP.

Log your console session as a best practice. The log enables you to capture a record of the session and

compare the log to the steps in this document, if you need to troubleshoot. For example, in HyperTerminal, choose **Transfer > Capture Text** in order to log a console session. Refer to [Connecting a Terminal to the Console Port on Catalyst Switches](#) for more information.

Step 2

Back up the CatOS configuration from the Supervisor Engine and the Cisco IOS Software configuration from the MSFC3.

You need to reconfigure the switch after you convert to Cisco IOS Software as the system software because the conversion process loses the configuration. If you back up the files, they can serve as a reference after the conversion or as a backup if you decide to convert back to CatOS. Issue the **copy config tftp** command on the Supervisor Engine and the **copy start tftp** command on the MSFC3 in order to back up the configurations.

Refer to [Managing Software Images and Working with Configuration Files on Catalyst Switches](#) for more information on how to use the **copy config tftp** and **copy start tftp** commands to back up configuration files.

Step 3

Verify that the Cisco IOS Software image (s720xy*) is available on the SP bootflash or a CompactFlash card in disk0 or disk1.

Issue the **dir** command in order to verify the location of the Cisco IOS Software image (s720xy*).

```
Console> (enable) dir bootflash:
-#- -length- ----date/time----- name
  1 13389508 Jul 11 2003 15:46:45 cat6000-sup720k8.8-1-1.bin

!--- This is the SP bootflash and the location for the current
!--- CatOS software version that runs on the SP.

52059424 bytes available (13476576 bytes used)

Console> (enable) dir disk0:
  2 -rw- 32983632 Nov 01 2003 14:33:05 s72033-psv-mz.122-14.SX1.bin

!--- This is the CompactFlash Type II device with the name disk0:.
!--- This is the Cisco IOS Software image (s720xy*) release for this conversion.

95641600 bytes available (32985088 bytes used)
Console> (enable)
```

If the Cisco IOS Software image (s720xy*) is missing from either bootflash: or disk0: or disk1:, download the image. Step 4 provides this procedure. If the image is present, go to Step 5.

Step 4 (Optional)

Complete this step only if the Cisco IOS Software image (s720xy*) is missing from either the SP bootflash or the PC card in slot0. See Step 3 in order to determine if you need to complete this step.

Issue the **copy tftp bootflash:** command, the **copy tftp disk0:** command, or the **copy tftp disk1:** command in order to download the image to either the SP bootflash or to one of the flash cards.

Note: You might need to format the CompactFlash if it has never been used before or if it was formatted with the Cisco IOS Software algorithm. Issue the **format disk0:** command or the **format disk1:** command or both commands in order to format CompactFlash on a Supervisor Engine 720.

Note: You can free up space as necessary on either of these devices. Issue the **delete bootflash:** command, the **delete disk0:** command, or the **delete disk1:filename** command in order to delete the file. Then, issue the **squeeze bootflash:** command, the **squeeze disk0:** command, or the **squeeze disk1:** command in order to erase all deleted files from the device.

```
Console> (enable) copy tftp disk0:
IP address or name of remote host []? 10.1.1.2
Name of file to copy from []? s72033-psv-mz.122-14.SX1.bin
128626688 bytes available on device disk0, proceed (y/n) [n]? y
/
File has been copied successfully.
Console> (enable)
```

!--- Verify the image location.

```
Console> (enable) dir disk0:
  2  -rw-  32983632   Nov 01 2003 14:33:05 s72033-psv-mz.122-14.SX1.bin
95641600 bytes available (32985088 bytes used)
Console> (enable)
```

Step 5

Issue either the **switch console** or the **session module** command in order to access the RP.

```
Console> (enable) switch console
Trying Router-15...
Connected to Router-15.
Type ^C^C to switch back...
Router>
```

!--- Issue the enable command in order to enter privileged EXEC mode.

```
Router>enable
Router#
```

Step 6

Change the configuration register setting in order to put the switch into ROMmon on reload.

Issue the **show bootvar** command in order to check the current configuration register setting.

```
Router#show bootvar
BOOT variable = bootflash:c6msfc3-jsv-mz.122-14.SX2,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

!---This is the current configuration register value.

```
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#config-register 0x0
```

!--- This changes the configuration register value of the router.

```
Router(config)#end
Router#
```

Verify the new configuration register setting:

```
Router#show bootvar
```

```
BOOT variable = bootflash:c6msfc3-jsv-mz.122-14.SX2,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102(will be 0x0 at next reload)
Router#
```

Then, reload the router:

```
Router#reload

!--- Press Enter or Return.
!--- This reloads the router.

System configuration has been modified. Save? [yes/no]: no

!--- Press Enter or Return.

Proceed with reload? [confirm]

!--- Press Enter or Return.

System Bootstrap, Version 12.2(17r)S2, RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 2004 by cisco Systems, Inc.
Cat6k-Sup720/RP platform with 524288 Kbytes of main memory

!--- After this step is complete, the switch enters into RP ROMmon.

rommon 1 >
```

Step 7

Erase NVRAM for the CatOS system software region in order to prevent any corrupted files from passing during this conversion. Then, change the configuration register back to the default.

```
rommon 1 > priv

!--- Press Enter or Return.
!--- You have entered ROMmon privileged mode.
!--- This output displays:

You now have access to the full set of monitor commands.
Warning: some commands will allow you to destroy your
configuration and/or system images and could render
the machine unbootable.

!--- Issue the fill command from ROMmon privileged mode.

rommon 2 > fill

!--- Press Enter or Return.
!--- Be sure to enter these parameters exactly as they appear here:

Enter in hex the start address [0x0]: be000000

!--- Press Enter or Return.

Enter in hex the test size or length in bytes [0x0]: 80000

!--- Press Enter or Return.
```

Enter in hex the pattern to be written [0x0]: **ffff**

*!--- Press **Enter** or **Return**.*

Enter the operation size 'l'ong, 'w'ord, or 'b'yte []: 1

*!--- Press **Enter** or **Return**.*

*!--- After the NVRAM erase has completed, issue the **reset** command.*

```
rommon 3 > reset
```

*!--- Press **Enter** or **Return**.*

```
rommon 1 > confreg 0x2102
```

*!--- Press **Enter** or **Return**.*

Step 8

In order to go back to the SP, press **Ctrl-C** three times:

*!--- Press **Ctrl-C** three times.*

```
rommon 2 > ^C
rommon 2 > ^C
rommon 2 > ^C
Console> (enable)
```

!--- This is the SP console prompt.

Step 9

Change the configuration register setting on the SP so that the switch does not boot the CatOS image and goes to ROMmon.

```
Console> (enable) set boot config-register 0x0
Configuration register is 0x0
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
console baud: 9600
boot: the ROM monitor
Console> (enable)
```

!--- Verify the settings.

```
Console> (enable) show boot
BOOT variable = bootflash:cat6000-sup720k8.8-1-1.bin,1;
CONFIG_FILE variable = bootflash:switch.cfg
Configuration register is 0x0
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
console baud: 9600
boot: the ROM monitor
Console> (enable)
```

Step 10

Reset the switch so that it goes into ROMmon:

```

Console> (enable) reset
This command will reset the system.
Do you want to continue (y/n) [n]? y
2003 Nov 01 16:08:31 %SYS-5-SYS_RESET:System reset from Console//
Powering OFF all existing linecards
2003 Nov 01 16:08:31 %ETHC-5-PORTFROMSTP:Port 1/1 left bridge port 1/1
Console> (enable)
System Bootstrap, Version 7.7(1)

```

!--- This is the SP ROMmon image version.

```

Copyright (c) 1994-2003 by cisco Systems, Inc.
Cat6k-Sup720/SP processor with 524288 Kbytes of main memory

```

!--- After this message, the router goes into SP ROMmon.

```
rommon 1 >
```

Step 11

Boot the switch with the Cisco IOS Software image (s720xy*).

Issue the **dir bootflash:** command, or the **dir disk0:** command, or the **dir disk1:** command. The command you issue depends on the device to which you previously downloaded the Cisco IOS Software image (s720xy*). Then, issue the **boot bootflash:** command, or the **boot disk0:** command, or the **boot disk1:filename** command in order to start the bootup sequence.

```

rommon 1 > dir disk0:
Directory of disk0:
   2          32983632  -rw-      s72033-psv-mz.122-14.SX1.bin

```

!--- The Cisco IOS Software image (s720xy) is on disk0: in this case.
!--- This is the device from which the image boots in this procedure.*

```

rommon 2 > boot disk0:s72033-psv-mz.122-14.SX1.bin
Self decompressing the image : #####
#####
#####
##### [OK]

```

!--- Output suppressed.

```

System Bootstrap, Version 12.2(14r)S9, RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 2003 by cisco Systems, Inc.
Cat6k-Sup720/RP platform with 524288 Kbytes of main memory
Download Start

```

```

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!

```

```

Download Completed! Booting the image.
Self decompressing the image : #####
##### [OK]

```

!--- Output suppressed.

Press RETURN to get started!

!--- Output suppressed.

Router>

Step 12

At this point, the Cisco IOS Software image (s720xy*) has successfully booted, but the Supervisor Engine Flash devices are still formatted with the previous CatOS algorithm. Therefore, Cisco IOS Software cannot correctly write to **sup-bootflash:**, **disk0:**, or **disk1:**. You need to reformat these Flash devices and replace the images that are on the Flash devices.

Issue the **format** command in order to format the Flash devices.

```
Router#format sup-bootflash:
Format operation may take a while. Continue? [confirm]

!--- Press Enter or Return.

Format operation will destroy all data in "sup-bootflash:". Continue? [confirm]

!--- Press Enter or Return.

Format of sup-bootflash complete
Router#

Router#format disk0:

!--- Format the CompactFlash card in disk1: as well, if you have one.

Format operation may take a while. Continue? [confirm]

!--- Press Enter or Return.

Format operation will destroy all data in "disk0:". Continue? [confirm]

!--- Press Enter or Return.

Format: Drive communication & 1st Sector Write OK...
Writing Monlib sectors.....
.....
Monlib write complete
Format: All system sectors written. OK...
Format: Total sectors in formatted partition: 251616
Format: Total bytes in formatted partition: 128827392
Format: Operation completed successfully.
Format of disk0 complete
Router#
```

Step 13

When you format the Supervisor Engine Flash devices in Step 12, the Cisco IOS Software image (s720xy*) that is used to boot the Supervisor Engine, as well as all data on the device, is erased. You need to recopy the Cisco IOS Software image (s720xy*).

Note: Remember that the conversion lost the configuration. You need to configure an IP address and possibly a static or dynamic routing in order to reestablish connectivity to your TFTP server. Verify that you can ping your TFTP server from the switch.

Issue the **copy tftp** command in order to copy the Cisco IOS Software image (s720xy*) to either the **sup-bootflash:** or the **disk0:** or **disk1:** Flash devices.

```
Router#copy tftp sup-bootflash:
```


!--- The Cisco IOS Software image (s720xy) copies to the SP bootflash (sup-bootflash:)
!--- in this case.*

```
Address or name of remote host []? 10.1.1.2
Source filename []? s72033-psv-mz.122-14.SX1.bin
Destination filename [s72033-psv-mz.122-14.SX1.bin]?
Accessing tftp://10.1.1.2/s72033-psv-mz.122-14.SX1.bin...
Loading s72033-psv-mz.122-14.SX1.bin from 10.1.1.2 (via FastEthernet1/1): !
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

!--- Output suppressed.

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 32983632 bytes]
32983632 bytes copied in 382.524 secs (86226 bytes/sec)
Verifying compressed IOS image checksum...
Verified compressed IOS image checksum for sup-bootflash:/s72033-psv-mz.122-14.S
X1.bin
Router#
```

!--- Verify the image location in the SP bootflash.

```
Router#dir sup-bootflash:
Directory of sup-bootflash:/
  1  -rw-   32983632   Nov 01 2003 20:38:05  s72033-psv-mz.122-14.SX1.bin
65536000 bytes total (32552240 bytes free)
Router#
Router#
```

Step 14

Set the boot variable to boot from the Cisco IOS Software image (s720xy*) in either **sup-bootflash:** or **disk0:** or **disk1:**.

!---Check the current boot variable settings.

```
Router#show bootvar
BOOT variable = bootflash:c6msfc3-jsv-mz.122-14.SX2,1
```

!--- The BOOT variable incorrectly points to an old MSFC3 image.

```
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
Standby is not up.
Router#
```

!--- Set the boot variable to boot the Cisco IOS Software image (s720xy).*

```
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#boot system flash sup-bootflash:s72033-psv-mz.122-14.SX1.bin
Router(config)#end
```

!--- Save the changes.

```
Router#write memory
Building configuration...
[OK]
Router#
```

Step 15

Change the configuration register of the SP from 0x0 to 0x2102. Otherwise, upon reload, the router ends up in SP ROMmon. Issue the **show bootvar** command again.

```
Router#show bootvar
BOOT variable = sup-bootflash:s72033-psv-mz.122-14.SX1.bin,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

This output seems to show that all the variables are set and that you can boot the switch automatically. However, if you reload the router at this point, you end up in SP ROMmon because the configuration register value for the SP that you set in Step 9 is still 0x0. Issue the **remote command switch show bootvar** command in order to verify this statement. The command displays the current environment variable settings on the SP.

```
Router#remote command switch show bootvar
BOOT variable = bootflash:s72033-psv-mz.122-14.SX1,1
CONFIG_FILE variable =
BOOTLDR variable =
Configuration register is 0x0
```

Issue this set of commands on the RP in order to change the configuration register settings on the SP:

```
!--- Set the configuration register.

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

!--- Save the changes.

Router#write memory
Building configuration...
[OK]

!--- Verify the settings on the SP.

Router#remote command switch show bootvar
BOOT variable = bootflash:s72033-psv-mz.122-14.SX1,12
CONFIG_FILE variable =
BOOTLDR variable =
Configuration register is 0x0 (will be 0x2102 at next reload)
```

Step 16

Reload the switch.

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

!--- Output suppressed.
```

Conversion on Supervisor Engine 32

This section uses this terminology:

- **Switch Processor (SP)** Refers to the switch component of the system or Supervisor Engine.
- **Route Processor (RP)** Refers to the router component of the system or MSFC2A.

Note: The images that this document uses are for example purposes only. Replace the images with the images that you use in your switch environment. Make sure to refer to the Catalyst 6500 Series Release Notes for memory and ROMmon requirements.

Step 1

Establish a console connection to the SP.

Log your console session as a best practice. The log enables you to capture a record of the session and compare the log to the steps in this document, if you need to troubleshoot. For example, in HyperTerminal, choose **Transfer > Capture Text** in order to log a console session. Refer to Connecting a Terminal to the Console Port on Catalyst Switches for more information.

Step 2

Back up the CatOS configuration from the Supervisor Engine and the Cisco IOS Software configuration from the MSFC2A.

You need to reconfigure the switch after you convert to Cisco IOS Software as the system software because the conversion process loses the configuration. If you back up the files, they can serve as a reference after the conversion or as a backup if you decide to convert back to CatOS. Issue the **copy config tftp** command on the Supervisor Engine and the **copy start tftp** command on the MSFC2A in order to back up the configurations.

Refer to Managing Software Images and Working with Configuration Files on Catalyst Switches for more information on how to use the **copy config tftp** and **copy start tftp** commands to back up configuration files.

Step 3

Verify that the Cisco IOS Software image (s3223*) is available on the SP bootdisk or a CompactFlash card in disk0.

Issue the **dir** command in order to verify the location of the Cisco IOS Software image (s3223*).

```

Console> (enable) dir bootdisk:
-#- -length- ----date/time----- name
  1 13389508 Oct 11 2005 15:46:45 s3223-adventerprisek9_wan-mz.122-18.SXF.bin

!--- This is the SP bootdisk and the location for the current
!--- CatOS software version that runs on the SP.

245784576 bytes available (47114308 bytes used)

Console> (enable) dir disk0:
  2  -rw-  47114308  Oct 11 2005 14:33:05 s3223-adventerprisek9_wan-mz.122-18.SXF.bin

!--- This is the CompactFlash Type II device called disk0:.
!--- This is the Cisco IOS Software image (s3223*) release for this conversion.

95641600 bytes available (47114308 bytes used)
Console> (enable)

```

If the Cisco IOS Software image (s3223*) is missing from either bootdisk: or disk0:, download the image. Step 4 provides this procedure. If the image is present, go to Step 5.

Step 4 (Optional)

Complete this step only if the Cisco IOS Software image (s3223*) is missing from either the SP bootdisk or the PC card in slot0. See Step 3 in order to determine if you need to complete this step.

Issue the **copy tftp bootdisk:** command or the **copy tftp disk0:** command in order to download the image to either the SP bootdisk or to one of the flash cards.

Note: You might need to format the CompactFlash if it has never been used before or if it was formatted with the Cisco IOS Software algorithm. Issue the **format disk0:** command in order to format CompactFlash on a Supervisor Engine 32.

Note: You can free up space as necessary on either of these devices. Issue the **delete bootdisk:** command or the **delete disk0:filename** command in order to delete the file. You do not need to issue a command in order to erase deleted files from the device.

```
Console> (enable) copy tftp disk0:
IP address or name of remote host []? 10.1.1.2
Name of file to copy from []? s3223-adventerprisek9_wan-mz.122-18.SXF.bin
128626688 bytes available on device disk0, proceed (y/n) [n]? y
/
File has been copied successfully.
Console> (enable)
```

!--- Verify the image location.

```
Console> (enable) dir disk0:
   2  -rw-  32983632   Oct 04 2005 19:33:05 s3223-adventerprisek9_wan-mz.122-18.SXF.
bin
95641600 bytes available (32985088 bytes used)
Console> (enable)
```

Step 5

Issue either the **switch console** or the **session module** command in order to access the RP.

```
Console> (enable) switch console
Trying Router-15...
Connected to Router-15.
Type ^C^C to switch back...
Router>
```

!--- Issue the enable command in order to enter privileged EXEC mode.

```
Router>enable
Router#
```

Step 6

Change the configuration register setting in order to put the switch into ROMmon on reload.

Issue the **show bootvar** command in order to check the current configuration register setting.

```
Router#show bootvar
BOOT variable = bootflash: c6msfc2a-adventerprisek9_wan-mz.122-18.SXF.bin,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

```
!--- This is the current configuration register value.

Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#config-register 0x0

!--- This changes the configuration register value of the RP.

Router(config)#end
Router#
```

Verify the new configuration register setting.

```
Router#show bootvar
BOOT variable = bootflash: c6msfc2a-adventerprisek9_wan-mz.122-18.SXF.bin,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102(will be 0x0 at next reload)
Router#
```

Then, reload the router.

```
Router#reload

!--- Press Enter or Return.
!--- This reloads the router.

System configuration has been modified. Save? [yes/no]: no

!--- Press Enter or Return.

Proceed with reload? [confirm]

!--- Press Enter or Return.

System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 2004 by cisco Systems, Inc.
Cat6k-MSFC2A platform with 524288 Kbytes of main memory

!--- After this step is complete, the switch enters into RP ROMmon.

rommon 1 >
```

Step 7

Erase NVRAM for the CatOS system software region in order to prevent any corrupted files from passing during this conversion. Then, change the configuration register back to the default.

```
rommon 1 > priv

!--- Press Enter or Return.
!--- You enter ROMmon privileged mode.
!--- This output displays:

You now have access to the full set of monitor commands.
Warning: some commands allow you to destroy your
configuration and/or system images and could render
the machine unbootable.

!--- Issue the fill command from ROMmon privileged mode.
```

```

rommon 2 > fill

!--- Press Enter or Return.
!--- Be sure to enter these parameters exactly as they appear here:

Enter in hex the start address [0x0]: be000000

!--- Press Enter or Return.

Enter in hex the test size or length in bytes [0x0]: 80000

!--- Press Enter or Return.

Enter in hex the pattern to be written [0x0]: fff

!--- Press Enter or Return.

Enter the operation size 'l'ong, 'w'ord, or 'b'yte []: l

!--- Press Enter or Return.
!--- After the NVRAM erase is complete, issue the reset command.

rommon 3 > reset

!--- Press Enter or Return.

rommon 1 > confreg 0x2102

!--- Press Enter or Return.

```

Step 8

In order to go back to the SP, press **Ctrl-C** three times:

Note: If you issued the **session module** command in order to access the RP, you must issue the **exit** command instead of **Ctrl-C**.

```

!--- Press Ctrl-C three times.

rommon 2 > ^C
rommon 2 > ^C
rommon 2 > ^C
Console> (enable)

!--- This is the SP console prompt.

```

Step 9

Change the configuration register setting on the SP so that the switch does not boot the CatOS image and goes to ROMmon.

```

Console> (enable) set boot config-register 0x0
Configuration register is 0x0
ignore-config: disabled
auto-config: non-recurring, overwrite, sync disabled
console baud: 9600
boot: the ROM monitor
Console> (enable)

```

!--- Verify the settings.

```
Console> (enable) show boot  
BOOT variable = bootdisk:cat6000-sup32pfc3k8.8-5-1.bin,1;  
CONFIG_FILE variable = bootdisk:switch.cfg
```

```
Configuration register is 0x0  
ignore-config: disabled  
auto-config: non-recurring, overwrite, sync disabled  
ROMmon console baud: 9600  
boot: image specified by the boot system commands
```

```
Image auto sync is enabled  
Image auto sync timer is 120 seconds
```

Step 10

Reset the switch so that it goes into ROMmon:

```
Console> (enable) reset  
This command will reset the system.  
Do you want to continue (y/n) [n]? y  
2005 Oct 14 17:21:18 %SYS-5-SYS_RESET:System reset from Console//  
Powering OFF all existing linecards  
2005 Oct 14 17:21:18 %ETHC-5-PORTFROMSTP:Port 2/1 left bridge port 2/1  
Console> (enable)  
System Bootstrap, Version 12.2(18r)SX2
```

!--- This is the SP ROMmon image release.

```
Copyright (c) 2004 by cisco Systems, Inc.  
Cat6k-Sup32 platform with 1048576 Kbytes of main memory
```

!--- After this message, the router goes to SP ROMmon.

```
rommon 1 >
```

Step 11

Boot the switch with the Cisco IOS Software image (s3223*).

Issue the **dir bootdisk:** command or the **dir disk0:** command. The command you use depends on the device to which you previously downloaded the Cisco IOS Software image (s3223*). Then, issue the **boot bootdisk:** command or the **boot disk0:filename** command in order to start the bootup sequence.

```
rommon 1 > dir disk0:  
Directory of disk0:  
 2          47114308  -rw-      s3223-adventerprisek9_wan-mz.122-18.SXF.bin
```

!--- The Cisco IOS Software image (s3223) is on disk0: in this case.
!--- This is the device from which the image boots in this procedure.*

```
rommon 2 > boot disk0:s3223-adventerprisek9_wan-mz.122-18.SXF.bin  
Self decompressing the image :  
#####  
#####  
##### [OK]
```

!--- Output suppressed.

```
System Bootstrap, Version 12.2(17r)SX3, RELEASE SOFTWARE (fc1)  
Technical Support: http://www.cisco.com/techsupport
```

```

Copyright (c) 2004 by cisco Systems, Inc.
Cat6k-MSFC2A platform with 524288 Kbytes of main memory
Download Start
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Download Completed! Booting the image.
Self decompressing the image :
#####
##### [OK]

!--- Output suppressed.

Press RETURN to get started!

!--- Output suppressed.

Router>

```

Step 12

At this point, the Cisco IOS Software image (3223*) has successfully booted, but the Supervisor Engine Flash devices are still formatted with the previous CatOS algorithm. Therefore, Cisco IOS Software cannot correctly write to **sup-bootdisk:** or **disk0:**. You need to reformat these Flash devices and replace the images that are on the Flash devices.

Issue the **format** command in order to format the Flash devices.

```

Router#format sup-bootdisk:
Format operation may take a while. Continue? [confirm]

!--- Press Enter or Return.

Format operation will destroy all data in "sup-bootdisk:". Continue? [confirm]

!--- Press Enter or Return.

Format of sup-bootflash complete
Router#

Router#format disk0:

!--- Format the CompactFlash card in disk1: as well, if you have one.

Format operation may take a while. Continue? [confirm]

!--- Press Enter or Return.

Format operation will destroy all data in "disk0:". Continue? [confirm]

!--- Press Enter or Return.

Format: Drive communication & 1st Sector Write OK...
Writing Monlib sectors.....
.....
Monlib write complete
Format: All system sectors written. OK...
Format: Total sectors in formatted partition: 251616
Format: Total bytes in formatted partition: 128827392
Format: Operation completed successfully.

```



```
Format of disk0 complete
Router#
```

Step 13

When you formatted the Supervisor Engine Flash devices in Step 12, the Cisco IOS Software image (s3223*) used to boot the Supervisor Engine, as well as all data on the device, is erased. You need to recopy the Cisco IOS Software image (s3223*).

Note: Remember that the conversion lost the configuration. You need to configure an IP address and possibly a static or dynamic routing in order to reestablish connectivity to your TFTP server. Verify that you can ping your TFTP server from the switch.

Issue the **copy tftp** command in order to copy the Cisco IOS Software image (s3223*) to either the **sup-bootdisk:** or the **disk0:** Flash devices.

```
Router#copy tftp sup-bootdisk:

!--- The Cisco IOS Software image (s3223*) copies to SP bootflash (sup-bootdisk:)
!--- in this case.

Address or name of remote host []? 10.1.1.2
Source filename []?s3223-adventerprisek9_wan-mz.122-18.SXF.bin
Destination filename [s3223-adventerprisek9_wan-mz.122-18.SXF.bin]?
Accessing tftp://10.1.1.2/s3223-adventerprisek9_wan-mz.122-18.SXF.bin...
Loading s3223-adventerprisek9_wan-mz.122-18.SXF.bin (via FastEthernet3/1): !!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

!--- Output suppressed.

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 32983632 bytes]
32983632 bytes copied in 382.524 secs (86226 bytes/sec)
Verifying compressed IOS image checksum...
Verified compressed IOS image checksum for sup-bootdisk:/s3223-adventerprisek9_wan-mz.
 122-18.SXF.bin
Router#

!--- Verify the image location in SP bootflash.

Router#dir sup-bootdisk:
Directory of sup-bootdisk:/

   1  -rw-   47114308  Sep 30 2005 00:58:36 +00:00  s3223-adventerprisek9_wan-mz.
 122-18.SXF.bin

255954944 bytes total (208837504 bytes free)
Router#
Router#
```

Step 14

Set the boot variable to boot from the Cisco IOS Software image (s3223*) in either **sup-bootdisk:** or **disk0:**.

```
!--- Check the current boot variable settings.

Router#show bootvar
BOOT variable = bootflash: c6msfc2a-adventerprisek9_wan-mz.122-18.SXF.bin,1
```

```

!--- The BOOT variable incorrectly points to an old MSFC2A image.

CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
Standby is not up.
Router#

!--- Set the boot variable to boot the Cisco IOS Software image (s3223*).

Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#boot system flash sup-bootdisk: s3223-adventerprisek9_wan-mz.122-18.SXF.bin

!--- This command should be on one line.

Router(config)#end

!--- Save the changes.

Router#write memory
Building configuration...
[OK]
Router#

```

Step 15

Change the configuration register of the SP from 0x0 to 0x2102. Otherwise, upon reload, the router ends up in SP ROMmon. Issue the **show bootvar** command again.

```

Router#show bootvar
BOOT variable = sup-bootdisk: s3223-adventerprisek9_wan-mz.122-18.SXF.bin,1
CONFIG_FILE variable does not exist
BOOTLDR variable =
Configuration register is 0x2102

```

This output seems to show that all the variables are set and that you can automatically boot the switch. However, if you reload the router at this point, you end up in SP ROMmon because the configuration register value for the SP that you set in Step 9 is still 0x0. Issue the **remote command switch show bootvar** command in order to verify this statement. The command displays the current environment variable settings on the SP.

```

Router# #remote command switch show bootvar
BOOT variable =
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x0

```

Issue this set of commands on the RP in order to change the configuration register settings on the SP:

```

!--- Set the configuration register.

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

!--- Save the changes.

Router#write memory
Building configuration...

```

[OK]

!--- Verify the settings on the SP.

```
Router# #remote command switch show bootvar
BOOT variable =
CONFIG_FILE variable =
BOOTLDR variable =
Configuration register is 0x0 (will be 0x2102 at next reload)
```

Step 16

Reload the switch.

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

!--- Output suppressed.

Troubleshoot System Software Conversion

This section describes how to troubleshoot common issues that occur during the system software conversion.

Unable to Boot with Cisco IOS Software when User Converts from CatOS to Cisco IOS

If you try to boot Cisco IOS Software from disk0 or slot0 during the conversion process, you can receive an error message similar to this:

```
*** TLB (Store) Exception ***
Access address = 0x10000403
PC = 0x8000fd60, Cause = 0xc, Status Reg = 0x30419003

monitor: command "boot" aborted due to exception
```

This error message can be hardware or software related, and can result in a boot loop or the switch getting stuck in ROM Monitor (ROMmon) mode.

Complete these steps in order to resolve this issue:

1. This issue can be caused by a software image with a bad checksum. Download again the Cisco IOS Software image from the TFTP server.
2. If the download does not resolve the issue, format the Flash card, and download again the Cisco IOS Software image.

Refer to PCMCIA Filesystem Compatibility Matrix and Filesystem Information for information on how to erase the Flash.

3. This issue can also be due to a hardware fault, but the error message does not indicate which hardware component causes the problem. Try to boot the Cisco IOS Software from another Flash card.

Standby Supervisor Engine Module Is Not On Line or Status Indicates unknown

This section outlines common reasons that the standby Supervisor Engine module does not come online and how to solve each problem. You can determine that the Supervisor Engine module does not come online in

one of these ways:

- The output of the **show module** command shows the status as other or faulty.
- The Status LED glows amber in color.

Common Reasons/Solutions

- Console in to the standby Supervisor Engine in order to determine if it is in ROMmon mode or in continuous reboot. If the Supervisor Engine is in one of these states, refer to [Recovering a Catalyst 6500/6000 Running Cisco IOS System Software from a Corrupted or Missing Boot Loader Image or ROMmon Mode](#).

Note: If the active and standby Supervisor Engines do not run the same Cisco IOS Software release, the standby can fail to come online. For example, a Supervisor Engine can fail to come online in a situation in which:

- ◆ The active Supervisor Engine runs Route Processor Redundancy Plus (RPR+) mode. RPR+ mode is available in Cisco IOS Software Release 12.1[11]EX and later.
- ◆ The standby Supervisor Engine runs a software version where RPR/RPR+ mode is not available, such as Cisco IOS Software Release 12.1[8b]E9.

In this case, the second Supervisor Engine fails to come online because the redundancy mode is enhanced high system availability (EHSA) by default. The standby Supervisor Engine fails to negotiate with the active Supervisor Engine. Make sure both Supervisor Engines run the same Cisco IOS Software level.

This output shows the Supervisor Engine in slot 2 in ROMmon mode. You must console in to the standby Supervisor Engine in order to recover it. Refer to [Recovering a Catalyst 6500/6000 Running Cisco IOS System Software from a Corrupted or Missing Boot Loader Image or ROMmon Mode](#) for information on the recovery procedures.

```
6513_01#show module
Mod Ports Card Type Model Serial No.
-----
 1     2 Catalyst 6000 supervisor 2 (Active) WS-X6K-S2U-MSFC2 SAD0628035C
 2     0 Supervisor-Other unknown unknown
 3    16 Pure SFM-mode 16 port 1000mb GBIC WS-X6816-GBIC SAL061218K3
 4    16 Pure SFM-mode 16 port 1000mb GBIC WS-X6816-GBIC SAL061218K8
 5     0 Switching Fabric Module-136 (Active) WS-X6500-SFM2 SAD061701YC
 6     1 1 port 10-Gigabit Ethernet Module WS-X6502-10GE SAD062003CM

Mod MAC addresses Hw Fw Sw Status
-----
 1 0001.6416.0342 to 0001.6416.0343 3.9 6.1(3) 7.5(0.6)HUB9 Ok
 2 0000.0000.0000 to 0000.0000.0000 0.0 Unknown Unknown Unknown
 3 0005.7485.9518 to 0005.7485.9527 1.3 12.1(5r)E1 12.1(13)E3, Ok
 4 0005.7485.9548 to 0005.7485.9557 1.3 12.1(5r)E1 12.1(13)E3, Ok
 5 0001.0002.0003 to 0001.0002.0003 1.2 6.1(3) 7.5(0.6)HUB9 Ok
 6 0002.7ec2.95f2 to 0002.7ec2.95f2 1.0 6.3(1) 7.5(0.6)HUB9 Ok

Mod Sub-Module Model Serial Hw Status
-----
 1 Policy Feature Card 2 WS-F6K-PFC2 SAD062802AV 3.2 Ok
 1 Cat6k MSFC 2 daughterboard WS-F6K-MSFC2 SAD062803TX 2.5 Ok
 3 Distributed Forwarding Card WS-F6K-DFC SAL06121A19 2.1 Ok
 4 Distributed Forwarding Card WS-F6K-DFC SAL06121A46 2.1 Ok
 6 Distributed Forwarding Card WS-F6K-DFC SAL06261R0A 2.3 Ok
 6 10GBASE-LR Serial 1310nm lo WS-G6488 SAD062201BN 1.1 Ok
```

- Make sure that the Supervisor Engine module is properly seated in the backplane connector. Also, make sure that the Supervisor Engine installation screw is completely tightened. Refer to [Catalyst](#)

6500 Series Switch Module Installation Note for more information.

- In order to identify if the standby Supervisor Engine is faulty, issue the **redundancy reload peer** command from the active Supervisor Engine. In order to identify any hardware failures, observe the boot sequence through the console to the standby Supervisor Engine.

If the standby Supervisor Engine still does not come online, create a service request with Cisco Technical Support in order to further troubleshoot. When you create the service request, provide the switch output log that you collected and the troubleshooting steps that you performed.

Error: Compressed image checksum is incorrect

If you try to boot Cisco IOS Software during the conversion process, you can receive an error message similar to this:

```
Error : compressed image checksum is incorrect 0x64479A4B
      Expected a checksum of 0x72A42935

*** System received a Software forced crash ***
signal= 0x17, code= 0x5, context= 0x800267c0
PC = 0x800200d4, Cause = 0x20, Status Reg = 0x3041c003
```

This error message can be hardware or software related and can result in a boot loop or the switch getting stuck in ROM Monitor (ROMmon) mode.

Complete these steps in order to resolve this issue:

1. This issue can be caused by a software image with a bad checksum. Download again the Cisco IOS Software image from the TFTP server.
2. If the download does not resolve the issue, format the Flash card, and download again the Cisco IOS Software image.

Refer to PCMCIA Filesystem Compatibility Matrix and Filesystem Information for information on how to erase the Flash.

3. This issue can also be due to a hardware fault, but the error message does not indicate which hardware component causes the problem. Try to boot the Cisco IOS Software from another Flash card.

Unable to Save Configuration After System Software Conversion

Error messages similar to these can occur soon after the conversion when the write memory command is issued:

```
Warning: Attempting to overwrite an NVRAM configuration previously written
by a different version of the system image.
Overwrite the previous NVRAM configuration?[confirm]
startup-config file open failed (Bad device info block)
```

or

```
Warning: Attempting to overwrite an NVRAM configuration previously written
by a different version of the system image.
Overwrite the previous NVRAM configuration?[confirm]
startup-config file open failed (No such device)
```

In order to resolve the issue, try these options:

- Execute the **erase nvram:** command, and try to save the configuration.

- Execute the **boot config** *nvrAM:startup-config* command, and try to save the configuration.

Related Information

- **How to Convert a Catalyst 6500/6000 Supervisor Engine from Hybrid Mode (CatOS) to Native Mode (IOS) Using a Conversion Utility**
 - **Managing Software Images and Working with Configuration Files on Catalyst Switches**
 - **Recovering a Catalyst 6500/6000 Running Cisco IOS System Software from a Corrupted or Missing Boot Loader Image or ROMmon Mode**
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