

Recover Catalyst 4500/4000 Switch from Image Loss or from ROMmon Mode

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Introduction

This document describes how to recover a Catalyst 4500/4000 Series switch from a lost system image or an incorrect boot variable.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on Catalyst 4500/4000 Series switches that use Supervisor Engine II-Plus, III, IV or V.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Conventions

Refer to [Cisco Technical Tips Conventions](#) for more information on document conventions.

Background Information

When an incorrect boot image is specified with the boot variable setup, the system image does not boot. This output is only seen on the switch console because the switch is not yet functional. For example:

```
<#root>
*****
*
* Welcome to ROM Monitor for WS-X4014 System.      *
* Copyright (c) 2002 by Cisco Systems, Inc.      *
* All rights reserved.                            *
*
*****
```

ROM Monitor Program Version 12.1(11br)EW

Board type 1, Board revision 5
Swamp FPGA revision 14, Dagobah FPGA revision 48

MAC Address : 00-01-96-d9-f6-fe
Ip Address : Not set.
Netmask : Not set.
Gateway : Not set.
TftpServer : Not set.
Main Memory : 256 MBytes

***** The system will autoboot in 5 seconds *****

Type control-C to prevent autobooting.

.

***** The system will autoboot now *****

config-register = 0x2102
Autobooting using BOOT variable specified file.....

Current BOOT file is --- bootflash:cat4000-is-mz.121-8a.Ew
boot: can not load "bootflash:cat4000-is-mz.121-8a.Ew"

The switch will automatically reboot now...

rommon 1 >

This reboot is continuous.

Step-by-Step Instructions

These steps show how you can recover the switch.

1. You must already have a console connection to the Supervisor to see the previous output and perform the recovery. On a standard Windows operating system platform, configure a Terminal Emulator connection directly to COM1 with these settings:

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

Use a rolled male RJ-45 cable to connect from COM1 on the PC to the console port on the Supervisor module. Use a DB-9 connector on the PC.

2. The reboot continues until autoboot is prevented when you press **Control-C** and go into ROMmon mode.

This is shown in this example:

```
<#root>

*****
*
* Welcome to ROM Monitor for WS-X4014 System.
* Copyright (c) 2002 by Cisco Systems, Inc.
* All rights reserved.
*
*****

ROM Monitor Program Version 12.1(11br)EW

Board type 1, Board revision 5
Swamp FPGA revision 14, Dagobah FPGA revision 48

MAC Address   : 00-01-96-d9-f6-fe
Ip Address    : Not set.
Netmask       : Not set.
Gateway       : Not set.
TftpServer    : Not set.
Main Memory   : 256 Mbytes

***** The system will autoboot in 5 seconds *****

Type control-C to prevent autobooting.
```

!--- Press Control-C.

```
Autoboot cancelled..... please wait!!!  
rommon 1 > [interrupt]
```

1. Issue the **dir bootflash:** command to list the files present in the bootflash or issue the **dir slot0:** command to list the files present in the Compact Flash device.

In the example, the files are in the bootflash: device:

```
<#root>  
  
rommon 1 >  
  
dir bootflash:  
  
File size                Checksum      File name  
-----  
6516904 bytes (0x6370a8)  0x7b7edb21  
  
cat4000-is-mz.121-11b.EW  
  
Total space = 61341696 bytes, Available = 54824664 bytes  
  
rommon 2 >  
  
dir slot0:  
  
File size                Checksum      File name  
-----  
6516904 bytes (0x6370a8)  0x7b7edb21  
  
cat4000-is-mz.121-11b.EW  
  
Total space = 128057344 bytes, Available = 121540312 bytes
```

 **Note:** The reason the switch reboots continuously is because the system image file name specified does not exist, but there is a valid file in the bootflash and slot0:. Also, the system image file name specified is case sensitive. If it is not specified correctly, it causes a continuous reboot.

2. Since you have the required system image file present in the bootflash:, you can issue the **boot bootflash: <filename>** command to boot the switch. Issue the **boot slot0: <filename>** command if you want to load the system from the file present in slot0:. The system is booted with that specified image. If the switch fails to load due to the specified system image that is corrupted, or the valid system file is not present, see the [Recover from a Corrupt or Lost Image](#) section of this document.

This is shown in this example:

<#root>

rommon 2 >

boot bootflash:cat4000-is-mz.121-11b.EW

Rommon reg: 0x30004180

Running diags...

Decompressing the image

[OK]

k2diags version 1.6

prod: WS-X4014 part: 73-6854-05 serial: JAB054109FE

Power-on-self-test for Module 1: WS-X4014

Status: (. = Pass, F = Fail)

Traffic using serdes loopback (L2; one port at a time)...

switch port 0: .	switch port 1: .	switch port 2: .
switch port 3: .	switch port 4: .	switch port 5: .
switch port 6: .	switch port 7: .	switch port 8: .
switch port 9: .	switch port 10: .	switch port 11: .
switch port 12: .	switch port 13: .	switch port 14: .
switch port 15: .	switch port 16: .	switch port 17: .
switch port 18: .	switch port 19: .	switch port 20: .
switch port 21: .	switch port 22: .	switch port 23: .
switch port 24: .	switch port 25: .	switch port 26: .
switch port 27: .	switch port 28: .	switch port 29: .
switch port 30: .	switch port 31: .	

Traffic using asic loopback (L2; all ports at once)...

switch port 0: .	switch port 1: .	switch port 2: .
switch port 3: .	switch port 4: .	switch port 5: .
switch port 6: .	switch port 7: .	switch port 8: .
switch port 9: .	switch port 10: .	switch port 11: .
switch port 12: .	switch port 13: .	switch port 14: .
switch port 15: .	switch port 16: .	switch port 17: .
switch port 18: .	switch port 19: .	switch port 20: .
switch port 21: .	switch port 22: .	switch port 23: .
switch port 24: .	switch port 25: .	switch port 26: .
switch port 27: .	switch port 28: .	switch port 29: .
switch port 30: .	switch port 31: .	

Traffic using asic loopback (L3; all ports at once)...

switch port 0: .	switch port 1: .	switch port 2: .
switch port 3: .	switch port 4: .	switch port 5: .
switch port 6: .	switch port 7: .	switch port 8: .
switch port 9: .	switch port 10: .	switch port 11: .
switch port 12: .	switch port 13: .	switch port 14: .
switch port 15: .	switch port 16: .	switch port 17: .
switch port 18: .	switch port 19: .	switch port 20: .
switch port 21: .	switch port 22: .	switch port 23: .
switch port 24: .	switch port 25: .	switch port 26: .
switch port 27: .	switch port 28: .	switch port 29: .
switch port 30: .	switch port 31: .	

Module 1 Passed

Exiting to ios...

Rommon reg: 0x30000180

Running IOS...

Decompressing the image

```
#####  
#####  
#####  
#####  
#####  
#####  
#####  
#####  
#####  
##### [OK]
```

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San Jose, California 95134-1706

Cisco Internetwork Operating System Software
IOS (tm) Catalyst 4000 L3 Switch Software (cat4000-IS-M), Version 12.1(11b)EW,
EARLY DEPLOYMENT RELEASE SOFTWARE (fc2)
TAC Support: <http://www.cisco.com/tac>
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Tue 14-May-02 13:31 by hqluong
Image text-base: 0x00000000, data-base: 0x00B1C1F8

cisco WS-C4006 (MPC8245) processor (revision 5) with 262144K bytes of memory.
Processor board ID FOX04169082
Last reset from Reload
32 FastEthernet/IEEE 802.3 interface(s)
18 Gigabit Ethernet/IEEE 802.3 interface(s)
467K bytes of non-volatile configuration memory.

Uncompressed configuration from 1732 bytes to 4359 bytes

Press RETURN to get started!

```
00:00:21: %SYS-5-CONFIG_I: Configured from memory by console  
00:00:21: %LINK-3-UPDOWN: Interface GigabitEthernet1/2, changed state to up  
00:00:21: %SYS-5-RESTART: System restarted --  
Cisco Internetwork Operating System Software  
IOS (TM) Catalyst 4000 L3 Switch Software (cat4000-IS-M), Version 12.1(11b)EW,  
EARLY DEPLOYMENT RELEASE SOFTWARE (fc2)  
TAC Support: http://www.cisco.com/tac  
Copyright (c) 1986-2002 by cisco Systems, Inc.  
Compiled Tue 14-May-02 13:31 by hqluong
```

```
00:00:21: %SNMP-5-COLDSTART: SNMP agent on host Switch is undergoing a cold start
00:00:22: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/2,
changed state to up
00:00:24: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/2,
changed state to up
Switch>
Switch>
Switch>
```

3. Issue the **enable** command to enter into **EXEC** mode, as this example shows:

```
<#root>
Switch>
enable
Password:
Switch#
```

4. The system is back up. Issue the **dir bootflash:** command to note the file in the bootflash: or issue the **dir slot0:** command if you loaded the system file present in the slot0:.

```
<#root>
Switch
#dir bootflash:
Directory of bootflash:/
   1  -rw-     6516904   Aug 13 2000 13:37:13  cat4000-is-mz.121-11b.EW
61341696 bytes total (54824664 bytes free)
```

5. Issue the **show bootvar** command to check the current boot variable.

```
<#root>
Switch#
show bootvar

BOOT variable = bootflash:cat4000-is-mz.121-8a.Ew,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

6. Remove the current incorrect boot variable and add the correct one. Issue the **configure terminal** command in order to do this.

```
<#root>

Switch#

configure terminal

Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#

no boot system flash bootflash:cat4000-is-mz.121-8a.Ew

Switch(config)#

boot system flash bootflash:cat4000-is-mz.121-11b.EW

Switch(config)#end

00:01:31: %SYS-5-CONFIG_I: Configured from console by console
```

7. Save the entire configuration to the `startup-config` with the **write memory** command.

```
<#root>

Switch#

write memory

Building configuration...
Compressed configuration from 4359 bytes to 1730 bytes[OK]
Switch#
```

8. Check the boot variable again to make sure it is set properly so that the switch boots up the correct system file on the next reboot. Issue the **show bootvar** command in order to do this.

```
<#root>

Switch#

show bootvar

BOOT variable =
bootflash:cat4000-is-mz.121-11b.EW
,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

Recover from a Corrupt or Lost Image

The Supervisor boots into ROMmon mode if the image specified is corrupt or no image file exists. Typically, you must have more than one image in the bootflash: or slot0: devices so that the switch can be recovered.

Step-by-Step Instructions

Complete these steps, in the order given, to facilitate a successful image recovery from ROMmon mode without any valid image.

1. Make a console connection to the Supervisor. Typically, on a standard Windows operating system platform, configure a Terminal Emulator connection directly to COM1 with these settings:

- 9600 BPS
- Eight data bits
- No parity
- One stop bit
- One stop bit

Use a rolled male RJ-45 cable to connect from COM1 on the PC to the console port on the Supervisor module. Use a DB-9 connector on the PC, and a Terminal Emulator to connect to the Supervisor.

2. Press **Enter** . If you get the `rommon>` prompt, skip to Step 3. If the switch continuously reboots, press **Control-C** to prevent autoboot and to get into ROMmon mode.

```
*****  
*  
* Welcome to ROM Monitor for WS-X4014 System. *  
* Copyright (c) 2002 by Cisco Systems, Inc. *  
* All rights reserved. *  
*  
*****
```

```
ROM Monitor Program Version 12.1(11br)EW
```

```
Board type 1, Board revision 5  
Swamp FPGA revision 14, Dagobah FPGA revision 48
```

```
MAC Address : 00-01-96-d9-f6-fe  
Ip Address : Not set.  
Netmask : Not set.  
Gateway : Not set.  
TftpServer : Not set.  
Main Memory : 256 Mbytes
```

```
***** The system will autoboot in 5 seconds *****
```

```
Type control-C to prevent autobooting.  
!--- Press Control-C.  
Autoboot cancelled..... please wait!!!  
rommon 1 > [interrupt]
```

3. Verify that there is a valid file present in the bootflash: with the **dir bootflash:** command, and the **dir slot0:** command to check the slot0:, as this example shows. If you do have any valid file, see the [Recover from a Continuous Reboot](#) section of this document for the recovery. Otherwise, continue to the next step.

```
<#root>

rommon 1 >
dir bootflash:

File size Checksum File name
-----

Total space = 61341696 bytes, Available = 61341696 bytes

rommon 2 >
dir slot0:

File size Checksum File name
-----

Total space = 128057344 bytes, Available = 128057344 bytes
```

4. Issue the **set** command to display the current environmental variables.

```
<#root>

rommon 3 >
set

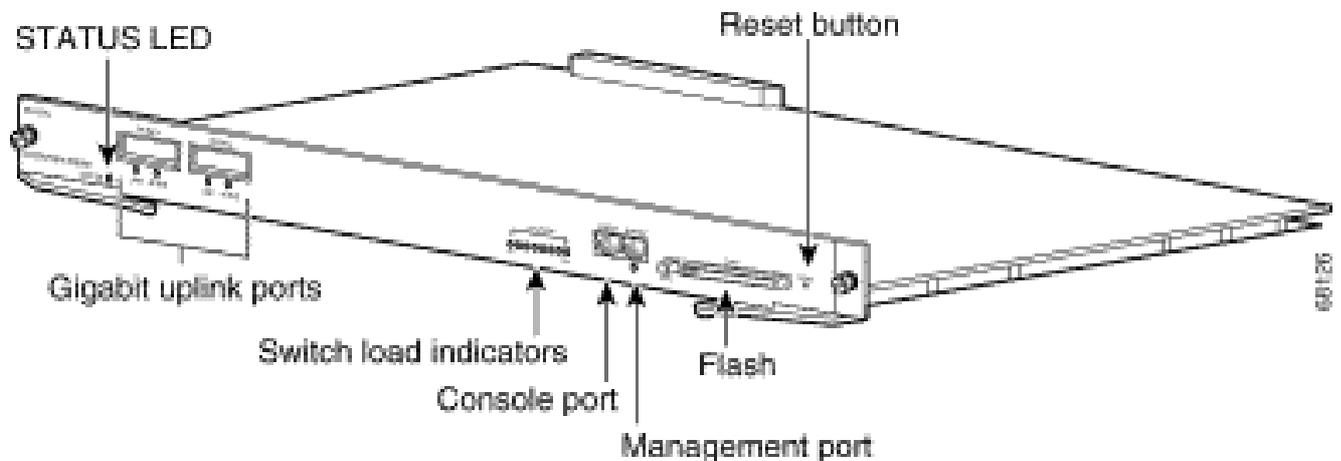
PS1=rommon ! >
RommonBuild=5
ConfigReg=0x2102
BOOT=bootflash:cat4000-is-mz.121-11b.EW,1
SkipDiags=0
BSI=0
RET_2_RTS=13:36:46 UTC Tue Aug 15 2000
RET_2_RUTC=966346606
BootStatus=Failure
BootedFileName=bootflash:cat4000-is-mz.121-11b.EW
RommonVer=12.1(11br)EW
```

5. Issue the **unset boot** command to clear the current invalid boot variable, which defines the file to load.

```
<#root>

rommon 6 >
unset boot
```

6. Connect the management port on the Supervisor to the network to access a TFTP server. The Fast Ethernet port (10/100 MGT) on the Supervisor Engine is inoperative in normal operation in current software releases. An Ethernet cable plugged into the 10/100 MGT is active only in ROMmon mode. Refer to this example of a Catalyst 4500/4000 Series Supervisor Engine II-Plus, III, IV or V for the location of the MGT port:



As this example shows, if you plan to connect the 10/100 MGT port to the PC/Router directly, use a straight cable. If you connect to another switch, use a crossover cable.

```
<#root>
rommon 7 >

!--- Connect the appropriate cable to connect to the network.

Established physical link 100MB Full Duplex
Network layer connectivity may take a few seconds
```

The MGT port auto-negotiates speed and duplex with the connected device. Currently, you cannot hard code speed and duplex settings. Since this port is available only in ROMmon mode and for TFTP only, it is not a major concern if the speed and duplex are mismatched due to any potential auto-negotiating problem. The TFTP application has an internal packet loss mechanism to prevent any corruption of the system image that is downloaded.

7. Issue the **set interface fa1 <ip address> <subnet mask>** command to configure an IP address for the 10/100 MGT port, as this example shows. If the subnet mask is not specified, the IP address would take the default classful mask.

```
<#root>
rommon 7 >

set interface fa1 10.18.2.234 255.255.255.0
```

8. Issue the **set ip route default <gateway_ip_address>** command to configure the default gateway for the switch to use to get to the TFTP server, as this example shows. The default gateway must be a

routing device in the same subnet as the IP address configured in Step 7.

```
<#root>  
  
rommon 8 >  
  
set ip route default 10.18.2.21
```

In ROMmon versions earlier than 12.1(12r)EW, even if the TFTP server is in the same subnet as the 10/100 MGT port, you still need to configure the default gateway with the **set ip route default <gateway_ip_address>** command. If you are connected directly your PC, and it has the TFTP server application installed, use the IP address of the PC for the default gateway IP address. If the default gateway is not configured, the TFTP cannot be performed. This restriction is resolved in ROMmon version 12.1(12r)EW or later you do not need to specify the default gateway IP address if the TFTP server is in the same subnet as the management IP address.

9. Issue the **set** command to verify the configurations which have been made.

```
<#root>  
  
rommon 11 >  
  
set  
  
PS1=rommon ! >  
RommonBuild=5  
ConfigReg=0x2102  
SkipDiags=0  
BSI=0  
RET_2_RTS=13:36:46 UTC Tue Aug 15 2000  
RET_2_RUTC=966346606  
BootStatus=Failure  
BootedFileName=bootflash:cat4000-is-mz.121-11b.EW  
RommonVer=12.1(11br)EW  
  
IpAddr=10.18.2.234  
Netmask=255.255.255.0  
  
Broadcast=10.18.2.255  
  
Gateway=10.18.2.21
```

10. Ping the TFTP server to ensure that there is connectivity to the server from the MGT port on the Supervisor Engine. Enter the **ping <tftp_server_ip_address>** command, as this example shows:

```
<#root>  
  
rommon 9 >  
  
ping 172.18.125.3  
  
Host 172.18.125.3 is alive
```

If the ping is not successful, troubleshoot the IP connectivity issue from the default gateway to the TFTP server. If the TFTP server is the same subnet, ensure it is configured with the IP address you want to ping.

11. Once the ping to the TFTP server is successful, you can issue the **boot tftp** **://<tftp_server_ip_address>/<image_path_and_file_name>** command to specify the system image which is available in the TFTP server to boot the Supervisor III.

```
<#root>

rommon 6 >

boot tftp://172.18.125.3/cat4000-is-mz.121-11b.EW

Tftp Session details are ....

Filename : /cat4000-is-mz.121-11b.EW
IP Address : 10.18.2.234
Loading from TftpServer: 172.18.125.3

Received data packet # 12729

Loaded 6516904 bytes successfully.

Rommon reg: 0x30004180

Running diags...

Decompressing the image
#####
##### [OK]

k2diags version 1.6

prod: WS-X4014 part: 73-6854-05 serial: JAB054109FE

Power-on-self-test for Module 1: WS-X4014
Status: (. = Pass, F = Fail)

Traffic using serdes loopback (L2; one port at a time)...
switch port 0: .      switch port 1: .      switch port 2: .
switch port 3: .      switch port 4: .      switch port 5: .
switch port 6: .      switch port 7: .      switch port 8: .
switch port 9: .      switch port 10: .     switch port 11: .
switch port 12: .     switch port 13: .     switch port 14: .
switch port 15: .     switch port 16: .     switch port 17: .
switch port 18: .     switch port 19: .     switch port 20: .
switch port 21: .     switch port 22: .     switch port 23: .
switch port 24: .     switch port 25: .     switch port 26: .
switch port 27: .     switch port 28: .     switch port 29: .
switch port 30: .     switch port 31: .

Traffic using asic loopback (L2; all ports at once)...
switch port 0: .      switch port 1: .      switch port 2: .
switch port 3: .      switch port 4: .      switch port 5: .
switch port 6: .      switch port 7: .      switch port 8: .
switch port 9: .      switch port 10: .     switch port 11: .
switch port 12: .     switch port 13: .     switch port 14: .
```

switch port 15: . switch port 16: . switch port 17: .
switch port 18: . switch port 19: . switch port 20: .
switch port 21: . switch port 22: . switch port 23: .
switch port 24: . switch port 25: . switch port 26: .
switch port 27: . switch port 28: . switch port 29: .
switch port 30: . switch port 31: .

Traffic using asic loopback (L3; all ports at once)...

switch port 0: . switch port 1: . switch port 2: .
switch port 3: . switch port 4: . switch port 5: .
switch port 6: . switch port 7: . switch port 8: .
switch port 9: . switch port 10: . switch port 11: .
switch port 12: . switch port 13: . switch port 14: .
switch port 15: . switch port 16: . switch port 17: .
switch port 18: . switch port 19: . switch port 20: .
switch port 21: . switch port 22: . switch port 23: .
switch port 24: . switch port 25: . switch port 26: .
switch port 27: . switch port 28: . switch port 29: .
switch port 30: . switch port 31: .

Module 1 Passed

Exiting to ios...

Rommon reg: 0x30000180

Running IOS...

Decompressing the image

[OK]

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Cisco Internetwork Operating System Software
IOS (TM) Catalyst 4000 L3 Switch Software (cat4000-IS-M), Version 12.1(11b)EW,
EARLY DEPLOYMENT RELEASE SOFTWARE (fc2)
TAC Support: <http://www.cisco.com/tac>
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Tue 14-May-02 13:31 by hqluong
Image text-base: 0x00000000, database: 0x00B1C1F8

```
cisco WS-C4006 (MPC8245) processor (revision 5) with 262144K bytes of memory.  
Processor board ID FOX04169082  
Last reset from Reload  
32 FastEthernet/IEEE 802.3 interface(s)  
18 Gigabit Ethernet/IEEE 802.3 interface(s)  
467K bytes of nonvolatile configuration memory.
```

```
Uncompressed configuration from 1730 bytes to 4359 bytes
```

```
Press RETURN to get started!
```

```
00:00:21: %SYS-5-CONFIG_I: Configured from memory by console  
00:00:21: %LINK-3-UPDOWN: Interface GigabitEthernet1/2, changed state to up  
00:00:21: %SYS-5-RESTART: System restarted --  
Cisco Internetwork Operating System Software  
IOS (TM) Catalyst 4000 L3 Switch Software (cat4000-IS-M), Version 12.1(11b)EW,  
EARLY DEPLOYMENT RELEASE SOFTWARE (fc2)  
TAC Support: http://www.cisco.com/tac  
Copyright (c) 1986-2002 by cisco Systems, Inc.  
Compiled Tue 14-May-02 13:31 by hqluong  
00:00:21: %SNMP-5-COLDSTART: SNMP agent on host Switch is undergoing a cold start  
00:00:22: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet1/2,  
changed state to down  
Switch>  
Switch>
```

12. The switch has booted with the image it got from the TFTP server when it copies it to the DRAM. The image is not yet copied onto the bootflash:, and therefore it has to be copied again into the bootflash: or slot0:. Issue the **enable** command, and provide the password if one is needed to enter into EXEC mode, as this example shows:

```
<#root>  
  
Switch>  
  
enable  
  
Password:  
Switch#
```



Note: If you have accidentally deleted the system image, you can issue the **dir /all** command to check the deleted file and issue the **undelete <file index number> <device>** command to restore the file. This prevents the need to TFTP the new file. If this is the case, skip to Step 17.

13. Ping the TFTP server with the **ping <tftp_server_ip_address>** command to make sure the TFTP server is reachable, as this example shows:

```
<#root>  
  
Switch#
```


have to download the file again.

```
<#root>
Switch#
verify bootflash:cat4000-is-mz.121-11b.EW

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCC
Verified bootflash:cat4000-is-mz.121-11b.EW
```

19. Issue the **show bootvar** command to check the current boot variable and the configuration register variable.

```
<#root>
Switch#
show bootvar

BOOT variable = bootflash:cat4000-is-mz.121-8a.EW1,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

20. You can remove any current incorrect boot variables and add the correct one, as this example shows. In this example, the configuration register is already at the desired 0x2102 value. If this is not the case, issue the global **config-register 0x2102** command.

```
<#root>
Switch#
configure terminal

Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#
no boot system flash bootflash:cat4000-is-mz.121-8a.Ew1

Switch(config)#
boot system flash bootflash:cat4000-is-mz.121-11b.EW

Switch(config)#
config-register 0x2102

Switch(config)#
end
```

00:01:31: %SYS-5-CONFIG_I: Configured from console by consol



Note: If you have no boot variable, issue the **boot system flash bootflash: <filename>** command. Or if you boot from slot0:, issue the **boot system flash slot0: <filename>** command.

21. Issue the **write memory** command to save the configuration from running-config to startup-config.

```
<#root>
Switch#
write memory

Building configuration...
Compressed configuration from 4359 bytes to 1730 bytes[OK]
Switch#
```

22. Check the boot variable again to make sure it is set correctly, so that the switch boots up the correct system file on the next reboot. Issue the **show bootvar** command in order to do this.

```
<#root>
Switch#
show bootvar

BOOT variable = bootflash:cat4000-is-mz.121-11b.EW,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

Related Information

- [LAN Product Support](#)
- [LAN Switching Technology Support](#)
- [Cisco Product Support and Downloads](#)
- [Technical Support & Documentation - Cisco Systems](#)