

# Recovering a Catalyst 4000 Layer 3 Module (WS-X4232-L3) from a Corrupted or Missing Image, or from ROMmon Mode

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## Introduction

This document explains how to recover the WS-X4232-L3 Catalyst 4000 Layer 3 (L3) module from a missing or corrupted system image. This procedure is only required if all system images are either missing or corrupt.

An L3 module image can sometimes be corrupted during a TFTP download, or it can be deleted and squeezed manually (but not replaced) by the user.

## 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 IOS® Software Release 12.0(25)W5(27)
- Catalyst 4000 with an L3 module WS-X4232-L3

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, make sure that you understand the potential impact of any command.

### Conventions

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

# Recovering from ROMmon Using Xmodem

In most cases, a corrupted or missing image is only discovered once the L3 module is in ROM monitor (ROMmon) mode. This can occur because of a switch reset or an L3 module reload after the image was corrupted or deleted.

You will notice a number of symptoms from the switch side if the L3 blade was in ROMmon:

- You are no longer be able to issue the **session** *mod\_num* command to go from the switch to the router.

```
Console> (enable) session 3
```

```
Module 3 is not online.
```

- The **show module** *mod\_num* command shows a status of *faulty* for the L3 module.

```
Console> (enable) show mod 3
```

| Mod | Slot | Ports | Module-Type        | Model       | Sub | Status |
|-----|------|-------|--------------------|-------------|-----|--------|
| 3   | 3    | 34    | Router Switch Card | WS-X4232-L3 | no  | faulty |

- The **show port** *mod\_num* command shows *errdisable* for all of the 4232–L3 ports.

```
Console> (enable) show port 3
```

| Port | Name | Status     | Vlan | Level  | Duplex | Speed | Type         |
|------|------|------------|------|--------|--------|-------|--------------|
| 3/1  |      | errdisable | 1    | normal | full   | 1000  | No GBIC      |
| 3/2  |      | errdisable | 1    | normal | full   | 1000  | No GBIC      |
| 3/3  |      | errdisable | 1    | normal | auto   | auto  | 10/100BaseTX |
| 3/4  |      | errdisable | 1    | normal | auto   | auto  | 10/100BaseTX |

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

The only way to re-establish connectivity is to first connect to the console port of the L3 module. If the module is in ROMmon then you see this prompt:

```
rommon 1 >
```

Next, you must download an image from a terminal (such as a PC, a UNIX workstation, or a Macintosh) through the console port via the Xmodem or Ymodem protocol. Xmodem and Ymodem are common protocols that are used to transfer files. They are included in standard Windows platform applications, such as HyperTerminal, and in Linux UNIX freeware, such as Minicom.

**Note:** Xmodem and Ymodem downloads are slow. You can set the console port speed to 38400 bps to speed up the transfer. You can also use a 57600 bps port speed, but this has not been found to be as reliable as 38400 bps.

Issue the **xmodem** command to perform Xmodem or Ymodem file transfers from the ROMmon:

```
xmodem
```

```
[-cys] [-c CRC-16] [-y ymodem-batch protocol] -s  
Set speed of download, where speed may be 1200|2400|4800|9600|19200|38400|57600]
```

The computer from which you transfer the WS–X4232–L3 software image must be running terminal emulation software that supports the Xmodem and Ymodem protocol. To transfer a file via the Xmodem or Ymodem protocol, follow the steps in the next section, in the order that they are given, to facilitate a

successful image recovery.

## Step-by-Step Instructions

Follow these steps to successfully transfer a software image file with the Xmodem or Ymodem protocol:

1. Download the WS-X4232-L3 module software image to the hard drive of the computer.

For more information on how to download an image, refer to the Software Advisor (registered customers only) tool to determine which image to download. You can download the Catalyst WS-X4232-L3 software image file from the Cisco Downloads (registered customers only) page.

2. On a standard Windows operating system platform, configure a HyperTerminal connection to COM1 with these settings:

- ◆ 9600 bps
- ◆ 8 data bits
- ◆ No parity
- ◆ 1 stop bit
- ◆ Flow control Xon-Xoff

3. Use a rolled cable to connect the COM1 port to the console port on the WS-X4232-L3 module.
  - a. Use a DB-9 connector to connect from the PC to a female RJ-45.
  - b. Connect the RJ-45 to the WS-X4232-L3 module.
4. Use the HyperTerminal Connect window to connect to the WS-X4232-L3 module ROMmon.
5. Press **Enter** to get to the ROMmon prompt, then enter this information to initiate the file transfer connection:

```
xmodem -y -s38400
```

```
!-- This sets up the protocol as Ymodem with a 38400 bps transfer speed.
```

```
rommon 5 > xmodem -y -s38400
```

```
Do not start sending the image yet...
```

```
Invoke this application for disaster recovery.
```

```
Do you wish to continue? y/n [n]: y
```

6. The ROMmon returns to ask whether you accept 38400 bps as the download speed. Press **Enter** to accept and proceed.

```
Note, If the console port is attached to a modem, both the console port  
and the modem must be operating at the same baud rate.  
Use console speed 38400 bps for download [confirm]
```

```
!-- Press Enter here.
```

```
Download will be performed at 38400. Make sure your terminal emulator  
is set to this speed before sending file. Ready to receive file  
...C
```

You are ready to initiate the file transfer. At this point, the HyperTerminal session is set to 9600 bps, and the file transfer is requested at 38400 bps.

7. To reset the session speed and reconnect the link, follow these steps:
  - a. On the HyperTerminal toolbar, click the **Disconnect** icon.
  - b. From the HyperTerminal menu, select **File > Properties**.
  - c. Click the **Configure** button.
  - d. Change the COM1 speed to **38400 bps**.

- e. Close the COM1 Properties window and the HyperTerminal Properties window.
- f. On the HyperTerminal toolbar, click the **Call** icon.

The link is now set for 38400 bps.

8. On the main menu, select **HyperTerminal Transfer > Send**, to send a file from the PC to the WS-X4232-L3 module.

A menu appears, which allows you to select the PC files to send and the transfer protocol to use.

9. Click the **Browse** button to select the file to transfer to the WS-X4232-L3 module.
10. Select the **Ymodem** transfer protocol.
11. When the transfer is complete, a message appears which requests that you reset the link speed to 9600 bps. Do not press the **Y** key at this point, even though the message on the screen ask you to do so.

```
Returning console speed to 9600.
Please reset your terminal emulator to this speed... and hit 'y'
to continue.
```

*!-- Do not press the Y key at this point; proceed to Step 12.*

12. You must now go back to HyperTerminal and reset the link to 9600 bps.

At this point, the HyperTerminal session is still set to 38400 bps. To reset the session speed and reconnect the link, follow these steps:

- a. On the HyperTerminal toolbar, click the **Disconnect** icon.
- b. From the HyperTerminal menu, select **File > Properties**.
- c. Click the **Configure** button.
- d. Change the COM1 speed from 38400 bps to 9600 bps.
- e. Close the COM1 Properties window and the HyperTerminal Properties window.
- f. Click the **Call** icon on the toolbar.

13. When the link speed has been changed back to 9600 bps in HyperTerminal, go to the terminal window and press the **Y** key followed by the **Enter** key.

```
Returning console speed to 9600.
Please reset your terminal emulator to this speed...
and hit 'y' to continue
```

*!-- Press the Y key.*

After you finish this procedure, ROMmon boots the image that you transferred. At this point, you are returned to the Router> prompt or to the previously configured hostname of the router (because your previous configuration should now be restored).

```
Download Complete!
```

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

```
Inside platform_power_on_main()
```

```
Inside platform_main()
      Restricted Rights Legend
```

```
Use, duplication, or disclosure by the Government is
subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
```

Rights clause at FAR sec. 52.227-19 and subparagraph  
(c) (1) (ii) of the Rights in Technical Data and Computer  
Software clause at DFARS sec. 252.227-7013.

Cisco Systems, Inc.  
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San Jose, California 95134-1706

Cisco Internetwork Operating System Software  
IOS (tm) L3 Switch/Router Software (CAT4232-IN-M),  
Version 12.0(25)W5(27) RELEASE SOFTWARE  
Copyright (c) 1986-2002 by Cisco Systems, Inc.  
Compiled Fri 08-Feb-02 11:40 by integ  
Image text-base: 0x60010928, data-base: 0x60616000

Initializing GT64120 and FX1000 Subsystem ... done.  
Downloading TCAM FPGA ... done.  
Initializing Switch Fabric Driver Subsystem ... done.  
Initializing Temperature Monitoring Subsystem ... done.  
cisco Cat4232L3 (R5000) processor with 57344K/8192K bytes of memory.  
R5000 processor, Implementation 35, Revision 2.1  
Last reset from power-on  
1 FastEthernet/IEEE 802.3 interface(s)  
4 Gigabit Ethernet/IEEE 802.3z interface(s)  
123K bytes of non-volatile configuration memory.  
  
16384K bytes of Flash internal SIMM (Sector size 256K).

ENABLING INTERFACES. PLEASE WAIT...

Force linkup done for GigabitEthernet4  
Force linkup done for GigabitEthernet3

Press RETURN to get started!

*!-- Press the **Enter** or **Return** key here.*

Router>

**Note:** The image is still running from memory at this point, and the image file must be copied into bootflash. After you complete the steps in this section, continue to the Step-by-Step Instructions in the Recovering from Corrupted or Missing Images section, for instructions on how to copy the file into bootflash.

## Recovering from Corrupted or Missing Images

If you are still at the Router> prompt, issue the **show bootflash:** command to see the contents of the L3 module Flash system, and issue the **verify bootflash:** command to see whether the image has been verified:

```
Router# show bootflash:
```

```
-#- ED --type-- --crc--- -seek-- nlen -length- -----date/time----- name  
1 .. image DB186313 363388 31 3289864 Jan 01 2000 00:01:09  
   at4232-in-mz.120-10.W5.18f.bin  
12700792 bytes available (3289992 bytes used)
```

```
Router# verify bootflash:
```

```
Verify filename []? cat4232-in-mz.120-10.W5.18f.bin  
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC  
CCCCCCCCCCCCCCCCCCCCCCCC  
Verified bootflash:
```

If bootflash is not verified, issue the **delete** and **squeeze** commands to get rid of this image:

```

Router# delete bootflash: cat4232-in-mz.120-10.W5.18f.bin

Delete filename [cat4232-in-mz.120-10.W5.18f.bin]?
Delete bootflash:cat4232-in-mz.120-10.W5.18f.bin? [confirm]

Router# show bootflash:

-#- ED --type-- --crc--- -seek-- nlen -length- -----date/time----- name
1  .D image    DB186313 363388 31 3289864 Jan 01 2000 00:01:09
   cat4232-in-mz.120-10.W5.18f.bin
12700792 bytes available (3289992 bytes used)

```

Notice that file index number 1 now has a D, which shows that it has been marked for deletion but still resides in memory. If you delete an image by mistake, you can issue the **undelete** command to restore it:

```

Router# undelete ?

<1-1024> File index number

Router# undelete 1 ?

bootflash: Filesystem name

Router# undelete 1 bootflash:

```

When you are sure that you want to permanently erase a particular image or images, issue the **squeeze bootflash:** command. This command permanently removes all files that are marked with a D:

```

Router# squeeze bootflash:

All deleted files will be removed. Continue? [confirm]

```

If all of the images are missing, you see this output from the **show bootflash:** command:

```

Router# show bootflash:

No files on device
15990784 bytes available (0 bytes used)

```

Whether the image is corrupted or missing, you will still must copy over a new image from a TFTP server.

If you are still at the Router> prompt, refer to the Software Advisor ( registered customers only) tool to determine which image to download. You can download the Catalyst WS-X4232-L3 software image file from the Cisco Downloads ( registered customers only) page. After you download the image to the hard drive of your PC, follow the steps in the next section.

## Step-by-Step Instructions

Follow these steps to successfully copy the software image into the WS-X4232-L3 bootflash:

1. There are two ways to proceed with the copy TFTP procedure:

- ◆ To copy an image over the internal Gigabit Ethernet connections to the L3 module, issue the **copy tftp flash** command.

These interfaces must be up and must be configured correctly on both the switch and on the L3 module. To correctly configure the internal Gigabit Ethernet interfaces, refer to Configuration and Overview of the Router Module for the Catalyst 4500/4000 Family (WS-X4232-L3).

**Note:** After you verify that the internal Gigabit Ethernet connections are configured correctly, proceed directly to Step 3 for the copy TFTP procedure.

- ◆ You may copy the image directly to the L3 module via the Ethernet Out-of-Band Channel (EOBC) 10/100 port on the front panel. This port maps to Fast Ethernet interface 1 in the configuration for the WS-X4232-L3 module. Proceed to Step 2 for this procedure.

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

2. To copy the image to the WS-X4232-L3 module via the EOBC port (Fast Ethernet interface 1), continue with these sub-steps.
  - a. While you are connected to the console port, configure Fast Ethernet interface 1 with an IP address that is on the same subnet in use by your PC Network Interface Card (NIC).

In this example, IP address 10.10.10.1 is used.

- b. Issue the **no shutdown** command.

```
Router# configure t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)# interface fastethernet 1

Router(config-if)# ip address 10.10.10.1 255.255.255.0

Router(config-if)# no shutdown

00:41:36: %LINK-3-UPDOWN: Interface FastEthernet1, changed state to up
00:41:46: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1,
changed state to up
```

- c. With a straight-through cable, connect the PC NIC to the port on the L3 module labeled **10/100 MGT** (located next to the console port).
- d. Verify that you can ping your PC from the HyperTerminal session.

```
Router# ping 10.10.10.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.10.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/4 ms
```

3. Start the TFTP software on the PC.

**Note:** You may use TFTP to transfer software image files from a PC to your device. This document uses output from the Cisco TFTP server application. Cisco has discontinued this application and no longer supports it. If you do not have a TFTP server, obtain any third-party TFTP server application from another source.

4. In enable mode, issue the **copy tftp flash** command to copy the image into bootflash.

```
Router# copy tftp flash
```

5. When prompted, enter the IP address of the connected PC and enter the image filename. Press the **Enter** key to confirm the default copy location and start the copy process.

```
Address or name of remote host []? 10.10.10.2

Source filename []? cat4232-in-mz.120-25.W5.27.bin

Destination filename [flash]? cat4232-in-mz.120-25.W5.27.bin

Accessing tftp://10.10.10.2/cat4232-in-mz.120-25.W5.27.bin...
```



```
BOOTLDR variable does not exist
Configuration register is 0x2102
```

e. Reload the WS-X4232-L3 module.

```
Router# reload
```

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

```
!-- Press the Enter key here.
```

When you reload the router, the switch resets the module. Once the module is back online, the `errDisable` status on the WS-X4232-L3 ports should instead show as `connected`. The status LED on the module should now be green, and full connectivity should be restored.

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## Related Information

- [Recovering Catalyst Switches Running CatOS from Booting Failures](#)
- [Recover a Cisco IOS Catalyst 4500/4000 Series Switch from a Corrupt or Missing Image or in Rommon Mode](#)
- [Upgrading Software Images on Catalyst 4000/4500 Series Switches](#)
- [Installation and Configuration Note for the Catalyst 4000 Layer 3 Services Module](#)
- [LAN Product Support Pages](#)
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