

Recovery From Corrupt or Missing Software Image on Cisco Catalyst 2900XL and 3500XL Series Switches

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Introduction

This document describes how to recover from a corrupt or missing software image on the Cisco Catalyst 2900XL and 3500XL Series Switches. When this problem exists, the error message `error loading flash` appears when you boot up after power loss or after an incorrect software upgrade.

Note: Trivial File Transfer Protocol (TFTP) may be used to transfer software image files from a PC to your device. This document was written using 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.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

To create the examples in this document, this equipment is used:

- Hyperterminal software used in Microsoft Operating Systems.
- A console cable suitable for the Catalyst 2900XL / 3500XL in the switch.

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

Conventions

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

Problem

If you receive the error `loading flash` message, this indicates that there is a problem loading the current image in Flash. The image may be corrupt, an incorrect image, or the image in Flash may be missing. If the system is unable to load a software image in Flash, the system loads the boot helper and brings up a **switch:** prompt. Otherwise it is in a continuous boot cycle. If the switch is stuck in a continuous boot cycle, use this procedure to bring up a **switch:** prompt:

1. Unplug the power cable.
2. Hold down the mode button located on the left side of the front panel while you reconnect the power cord to the switch. Release the mode button a second or two after the LED above port 1x is no longer illuminated.
3. Enter the commands **flash_init** and **load_helper**.

This problem occurs only on XL switches. For a complete list of affected switches, see the [XL Models, Their Amount of Memory, and Category of Images They Support](#) section of this document.

This is a sample output from a failed bootup:

```
C2900XL Boot Loader (C2900-HBOOT-M) Version 11.2(0.28)SA4, BETA TEST SOFTWARE
  Compiled Fri 06-Nov-98 00:15 by paulines
  starting...
  Base ethernet MAC Address: 00:50:80:39:f8:80
  Xmodem file system is available.
  Initializing Flash...
  flashfs[0]: 175 files, 4 directories
  flashfs[0]: 0 orphaned files, 0 orphaned directories
  flashfs[0]: Total bytes: 3612672
  flashfs[0]: Bytes used: 3113472
  flashfs[0]: Bytes available: 499200
  flashfs[0]: flashfs fsck took 85 seconds.
  ...done Initializing Flash.
  Boot Sector Filesystem (bs:) installed, fsid: 3
  Parameter Block Filesystem (pb:) installed, fsid: 4
  Loading "flash:c2900XL-h2s-mz-120.5-XP.bin"...flash:c2900XL-h2s-mz-120.5-XP.bin:
  no such file or directory

  Error loading "flash:c2900XL-h2s-mz-120.5-XP.bin"

  Interrupt within 5 seconds to abort boot process.
  Boot process failed...
```

Solution

(Section A) Verify Software Image in Flash and Attempt to Manually Boot Process

Follow these steps when you verify the software image in Flash and attempt to boot manually.

1. Connect a terminal to the console port of the switch.

In the absence of software image or with corrupted image, the software image does not load.

The switch starts in boot loader mode. This is indicated by the `switch:` prompt

2. Verify the software contents of Flash by issuing the **dir flash:** command.

```
switch: dir flash:
  Directory of flash:/
```

```

189 -rwx 856 <date> vlan.dat
3 -rwx 1112393 <date> c2900XL-h2-mz-112.8.5-SA6.bin
4 drwx 10816 <date> html
2 -rwx 106 <date> info
175 -rwx 1490584 <date> c2900XL-h2s-mz-120.5-XP.bin
176 -r-- 302 <date> env_vars
174 -rwx 106 <date> info.ver
177 -r-- 1306 <date> config.text
499200 bytes available (3113472 bytes used)

```

3. Verify that the image in Flash is the correct image for the platform. The hardware model number is on the front of the switch. For information on how to verify the image, refer to the *Catalyst 2900XL and 3500XL* section of Managing Software Images and Working with Configuration Files on Catalyst Switches.

Note the hardware model here.

- ◆ For Standard / Enterprise Edition hardware, the image name must contain the suffix "h2".
- ◆ For Original Edition hardware, the image name must contain the suffix "h" and **not** "h2".

If the software image present is incorrect for the switch, or if it is missing, proceed to (Section B) Copy a New Software Image from ROM Monitor.

4. If the software image in Flash is correct, manually boot this software image with the help of the **boot flash:<filename>** command.

```
switch: boot flash:c2900XL-h2s-mz-120.5-XP.bin
```

If the system boots correctly and does not return to the `switch:` prompt, proceed to (Section C) Change and Verify Boot Configuration.

If the system still fails to load the image correctly, proceed to (Section B) Copy a New Software Image from ROM Monitor.

(Section B) Copy a New Software Image from ROM Monitor

To copy a new software image from a ROMmon follow these steps. For additional documentation on this procedure, refer to Recovering Catalyst 2950, 2955, and 3550 Series Switches from a Corrupted or Missing Image.

1. Check the remaining memory capacity. If the size of the file to be loaded is larger than the available capacity, delete the existing image in Flash to make space for a new image.

The command to delete the existing image in Flash is **delete flash: filename**, where *filename* is the name of the file to be deleted. A sample command output is shown here.

```
delete flash:cat2900XL-h2s-mz.112-8.5-SA6.bin
```

2. Download a new Cisco IOS-only image file from the Cisco Software Center (registered customers only) to your PC. Do not download a Cisco IOS image with Cluster Management Suite (CMS) files. Xmodem transfer is a very slow procedure. It takes longer to copy the larger images.
3. Copy the image to the Flash using HyperTerminal for Microsoft Windows, or another terminal software program. The command on the switch is **copy xmodem: flash:filename**, where *filename* is the name of file that you downloaded. With HyperTerminal, use the **TRANSFER -- SEND FILE** option using the **XMODEM** protocol. Start the XMODEM download within three seconds. Otherwise, the switch times out the XMODEM copy.

When the XMODEM request appears, issue the appropriate command on the terminal-emulation software to start the transfer. Copy the software image into Flash memory. The command to issue is **switch: copy xmodem: flash:image_filename**.

An example is shown here.

```
switch:
switch: copy xmodem: flash:c3500XL-c3h2s-mz.120-5.1.XP.bin

CCC.....

(BEGIN XMODEM DOWNLOAD ON TERMINAL SOFTWARE NOW)
```

```
File "xmodem:" successfully copied to "flash:c3500XL-c3h2s-mz.120-5.1.XP.bin"
```

4. After the new image has been loaded, boot the new image using the **boot flash:filename** command where *filename* is the name of the file that is downloaded. A sample command output is shown here.

```
boot flash:c2900XL-hs-mz.112-8.6-SA6.bin
```

5. After you boot the system, download a bundled image. For information on how to download a bundled image (.tar), refer to Upgrading Software in Catalyst 2900XL and 3500XL Switches Using the Command Line Interface.

Note: The .tar file on Cisco.com is named **c3500XL-c3h2s-mz-120_5_1-XP.tar**. The Cisco IOS file inside is called **c3500XL-c3h2s-mz-120.5.1-XP.bin**.

When you follow the upgrade instructions in the above link, the old image is renamed using an underscore. The new image is copied into Flash. Instead of the new image overwriting the old one, the result is two images, one old and one new. Reloading this causes the XL series switch to reload to the old image (now confusingly called by the new name in Flash).

The problem is overcome by renaming the **.tar** file downloaded from Cisco.com to the exact same name as the **.bin** file enclosed within it.

After you upgrade from Cisco IOS Software Release 11.2 to Cisco IOS Software Release 12.0.5(1), there is a file left in Flash named **c3500XL-diag-mz-112.8.2-SA6**. The box now runs Cisco IOS Software Release 12.0. There is no similar **diag** file for Cisco IOS Software Release 12.0. The Cisco IOS Software Release 11.2 **diag** file is useless and can be deleted.

(Section C) Change and Verify Boot Configuration

Follow these steps when you change and verify the boot configuration.

1. Enter enable mode by issuing the **enable** command. View the boot configuration by issuing the **show boot** command. A sample command output is shown here.

```
Switch#: show boot
BOOT path-list: Flash:c3500XL-c3h2s-mz-120.5.1-XP.bin

Config file: Flash:config.text E

Enable Break: no

Manual Boot: no

HELPER path-list:

NVRAM / Config file

buffer size: 32768
```

2. Verify that the boot configuration is correct by viewing the contents of Flash. Issue the **dir flash:** command to view the boot configuration.

```
Switch# dir flash:
```

Directory of Flash: /

```

189 -rwx 856 <date> vlan.dat
4 drwx 10816 <date> html
2 -rwx 106 <date> info
175 -rwx 1490584 <date> c2900XL-h2s-mz-120.5-XP.bin
176 -r-- 302 <date> env_vars
174 -rwx 106 <date> info.ver
177 -r-- 1306 <date> config.text
499200 bytes available (3113472 bytes used)

```

3. If the boot variable is not correct, change the boot variable by entering the global configuration mode and issuing the command **boot system flash:filename** , where *filename* is the name of the image to boot.
4. Save the configuration by issuing the **write memory** command. Verify the boot parameter by issuing the **show boot** command.
5. The switch boots automatically the next time that the switch is reloaded.

XL Models, Their Amount of Memory, and Category of Images They Support

Original Edition XLs (2 MB Flash, 4 MB DRAM)	Catalyst XL Series
Original Catalyst 2900XL Cisco IOS Software Release 11.2.SA6 Software Download OR Earlier Catalyst 2900XL Original Software Download	WS-C2908-Switch-XL
	WS-C2916M-XL
	WS-C2924-XL

Standard / Enterprise Edition XLs (4 MB Flash, 8 MB DRAM)	Catalyst XL Series
Catalyst 2900XL Cisco IOS Software Release 12.0 Standard / Enterprise Software Download OR Earlier Catalyst 2900XL Standard / Enterprise Software Download	WS-C2924C-Switch-XL
	WS-C2912-Switch-XL-Av
	WS-C2924-XL-A
	WS-C2924-XL-ENv
	WS-C2924C-XL-A
	WS-C2924C-XL-EN
	WS-C2924M-XL-A

Standard / Enterprise Edition XLs (4 MB Flash, 8 MB DRAM)	Catalyst XL Series
Catalyst 3500XL Cisco IOS Software Release 12.0 Standard / Enterprise Software Download OR	WS-C2924M-XL-EN
	WS-C3508G-Switch-XL-A
	WS-C3508-XL-EN
	WS-C3512-XL-A
	WS-C3512-XL-EN

Earlier Catalyst 3500XL Standard / Enterprise Software Download

WS-C3524-XL-A

WS-C3524-XL-EN

WS-C3524-XL-A

WS-C3524-XL-EN

WS-C3548-XL-A

WS-C3548-XL-EN

Important Notes

The Catalyst 2900XL / 3500XL series switches are referred to as 4 Mg and 8 Mg switches. This refers to the amount of DRAM present on the switches as shown in **show version** command output. The actual differences in these switches is not *only DRAM and Flash*. The physical chipset for the Ethernet PHY is changed between these switches to allow for more functionality (including VLAN trunking) in the 8 Mg switches. No amount of software upgrades or memory upgrades (which actually are not possible anyway) allow the older 4 Mg switches the newer functionality (memory on the XLs is *not* upgradable). This section provides a brief history of upgrades on the Catalyst 2900XLs.

Cisco IOS Software Release 11.2(8)SAx software was created for the Catalyst 2900XL with the first shipment of the 4 Mg switches. Improvements were made on the original Cisco IOS Software Release 11.2(8)SA in Cisco IOS Software Releases 11.2(8)SA1, 11.2(8)SA2, and 11.2(8)SA3. The additional features are exposed in the Enterprise version versus the Standard version. However, these only apply to the 4 Mg switches.

At the same time the 8 Mg switches were released, Cisco IOS Software Release 11.2(8)SA4 was created to support these new switches. It was also created to support new modules that had been made for the Catalyst 2900XL (ws-x2922-xl-v ws-x2914-xl-v), which are trunking capable. Cisco IOS Software Release 11.2(8)SA4 was available in two versions, Standard and Enterprise. Both versions ran on both types of switches.

In Cisco IOS Software Release 11.2(8)SA5, a break was made. Software was added to take full advantage of the features made available by the hardware changes in the 8 Mg switches. Both versions of software did not run on all switches. The original version of SA5 ran on the 4 Mg switches. The Standard and Enterprise versions ran on the 8 Mg switches (with minor feature additions in the Enterprise version).

Cisco IOS Software Release 11.2(8)SA6 continued this behavior. It is important to note that Cisco IOS Software Release 11.2(8)SA6 is the final version of software for the 4 Mg switches. All bug fixes and maintenance releases were created as Cisco IOS Software Release 11.2(8.x)SA6. Currently, these switches run Cisco IOS Software Release 11.2(8.5)SA6. SA6 was the first version to support clustering switch management.

The 8 Mg switches are capable of SA7 for Cisco IOS Software Release 12.0(5.1)XP or later.

Always use the latest release on the Catalyst 2900XLs (and the Catalyst 3500XLs). New features and vital bug fixes are incorporated at each step.

Related Information

- [Recovering Catalyst 2950, 2955, and 3550 Series Switches from a Corrupted or Missing Image](#)
- [Cisco Software Center](#)
- [Upgrading Software in Catalyst 2900XL and 3500XL Switches Using the Command Line Interface](#)

- **LAN Product Support Pages**
 - **LAN Switching Support Page**
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