

Upgrading Software Images on Catalyst 5000/5500 Series Switches

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Introduction

This document explains the step-by-step procedure for upgrading the software image on Catalyst 5000/5500 series switches running CatOS on their supervisor module, and Cisco IOS® on the Route Switch Module (RSM) / Route Switch Feature Card (RSFC). The software image upgrade is required for the following reasons:

- You want to implement new features in your network that are available in the new software release.
- You want to install a new line card that is not supported by the current software version that you run on the switch.
- Your switch has been affected by a known bug that is resolved in the next software release.

Before You Begin

Conventions

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

Prerequisites

Before attempting this configuration, please ensure that you meet the following prerequisites:

- verified memory and boot ROM requirements
- downloaded the valid software image
- installed the TFTP server on your PC

- backed up the current switch configuration and software image

Verify Memory and Boot ROM Requirement

You should verify the minimum DRAM memory and boot ROM version required for the new software image, and whether your switch supports those requirements. The **show version** command displays the DRAM installed and the boot ROM version on your switch.

```
CAT5500> (enable) show version
WS-C5500 Software, Version McpSW: 4.5(3) NmpSW: 4.5(3)
Copyright (c) 1995-1999 by Cisco Systems
NMP S/W compiled on Sep  2 1999, 17:43:54
MCP S/W compiled on Sep 02 1999, 17:41:49
```

System Bootstrap Version: 3.1.2

!--- This is the boot ROM version running on your switch.

Hardware Version: 1.3 Model: WS-C5500 Serial #: 069048037

Mod	Port	Model	Serial #	Versions
1	2	WS-X5530	010851482	Hw : 2.0 Fw : 3.1.2 Fw1: 4.2(1) Sw : 4.5(3)
2	24	WS-X5224	010829624	Hw : 1.4 Fw : 3.1(1) Sw : 4.5(3)
4	48	WS-X5012	010125020	Hw : 2.3 Fw : 2.3(2) Sw : 4.5(3)
6	24	WS-X5225R	012123124	Hw : 3.1 Fw : 4.3(1) Sw : 4.5(3)
7	2	WS-X5158	005906987	Hw : 2.5 Fw : 1.3 Fw1: 3.1(2) Sw : 3.2(6)
13				

Module	DRAM		FLASH		NVRAM			Total	Used	Free
	Total	Used	Used	Free	Total	Used	Free			
1	32640K	14384K	18256K	8192K	4149K	4043K	512K	122K	390K	

!--- The amount of DRAM and Flash size installed on the switch.

```
Uptime is 45 days, 5 hours, 54 minutesCAT5500> (enable)
CAT5500> (enable)
```

You can verify the requirements for the new software image using the respective release notes. Refer to the following release notes:

- Release Notes for Catalyst 5000 series switches

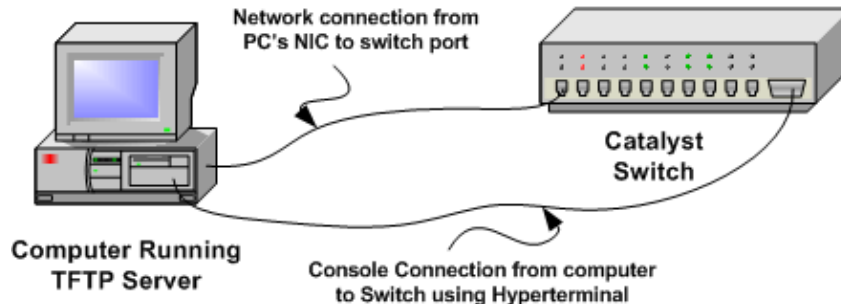
Download Software Image

The CatOS software image must be downloaded onto the PC that will act as the TFTP server prior to actual image upgrade. Download the software image from the Downloads. To download the software image, you

must be a registered user and you must be logged in.

Install TFTP Server

For sample output for this document, we have installed a Cisco TFTP server on a PC running Microsoft " Windows 2000 Professional. You can use any TFTP server that can be installed on any platform. It is not necessary that you use a PC with a Windows OS.



1. Download and install any shareware TFTP software from the Internet on the PC that you will be using to copy the CatOS software image to the switch. The TFTP server root directory must be the directory to which the software image is downloaded. You can download the images to the default root directory of the TFTP server or change the root directory path to the directory in which the software image is stored. For the Cisco TFTP server, you can change the root directory from the **View Menu->Options**.

Note: The document was written when the Cisco TFTP server was available for download via the Downloads. Cisco no longer supports the Cisco TFTP server. If you are using the Cisco TFTP server, disable the logging function to prevent excessive logging, which can disrupt the TFTP process. Disable logging on the Cisco TFTP server from the **View Menu->Options**, deselect **Enable Logging**, and select **Ok**. By default, logging is enabled.

2. Access the switch Command Line Interface (CLI) by connecting a console cable between the switch console port and the PC. Refer to Connecting a Terminal to the Console Port on Catalyst Switches to access the CLI using the hyperterminal.

Note: The switch can be upgraded using remote Telnet access. However, you will lose Telnet connectivity when the switch is reloaded during the software upgrade. The Telnet can be re-established once it is loaded with the new image, but to troubleshoot in case of failure, it is essential to have local console access. A switch upgrade using console access is preferred.

Backup Configuration and Software Image

Perform a backup of the switch configuration and the current software image to the PC running TFTP server. If your upgrade procedure fails due to reasons such as insufficient memory or not enough space on the bootflash of the switch to support the new image, you can always recover the switch to normal mode using the same image that was present in the switch. If you lose the switch configuration for any reason, you can always restore the configuration from the TFTP server. Refer to the following document for information on how to manage the configuration files and software images:

- Managing Software Images and Configuration Files on Catalyst Switches

Components Used

This document is not restricted to specific software and hardware versions.

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.

Catalyst 5000/5500 Series Switches

The Catalyst 5000 switches have a variety of Supervisor modules available: Supervisor I, II, II G, III G, and III. The software upgrade procedure is different for Catalyst switches with Supervisor I, II, II G, III G, and Catalyst switches with Supervisor III.

CatOS Supervisor I, II, II G, III G

In this section, you are presented with the information to configure the features described in this document.

1. By now, you should have verified the memory/boot ROM requirements, have the TFTP server on your PC, and the switch console accessed from the switch console port. If you are not ready with this setup, refer to Before You Begin section.
2. Configure the management IP address (sc0) and check the connectivity between the switch and the PC on which the TFTP server is installed. It is recommended that you configure the PC and the switch management IP address in the same VLAN. If they are in different VLANs, make sure to configure the default gateway on the PC and the switch so that they can ping each other.

```
!--- The management(sc0) IP address is configured on the switch.
```

```
Cat5500> (enable) set interface sc0 1 10.10.10.1 255.255.255.0  
Interface sc0 vlan set, IP address and netmask set.
```

```
!--- Verify the management(sc0) IP address.
```

```
Cat5500> (enable) show interface  
s10: flags=51<UP,POINTOPOINT,RUNNING>  
      slip 0.0.0.0 dest 0.0.0.0
```

```
!--- We have set the sc0 in VLAN1 and  
!--- the switch port connecting to the PC is in VLAN1.
```

```
s10: flags=63<UP,BROADCAST,RUNNING>  
      vlan 1 inet 10.10.10.1 netmask 255.255.255.0 broadcast 10.10.10.255
```

```
Cat5500> (enable)
```

```
!--- Verify the IP connectivity between  
!--- the switch and PC with the TFTP server.
```

```
Cat5500> (enable) ping 10.10.10.2  
10.10.10.2 is alive
```

3. Check the bundled software image, which is currently stored in bootflash by issuing the **show flash** command. You can not view the single software image, which is downloaded from the software center.

```
!--- The switch Flash currently has the CatOS 4.5(2)  
!--- image stored on bootflash.
```

```
Cat5500> (enable) show flash
```

File	Version	Sector	Size	Built
c5000 nmp	4.5(2)	02-11	1985149	06/26/99 16:33:50
epld	4.5	30	73392	06/26/99 16:33:50

```

lcp xa2 4.5(2) 12-15 57658 06/26/99 09:33:26
lcp xa1 4.5(2) 12-15 88022 06/26/99 09:31:30
lcp atm 4.5(2) 12-15 26185 06/26/99 09:24:00
mcp 360 4.5(2) 12-15 223688 06/26/99 09:33:49
lcp tr 4.5(2) 12-15 32127 06/26/99 09:24:42
lcp c5ip 4.5(2) 12-15 25506 06/26/99 09:28:29
lcp 64k 4.5(2) 12-15 54352 06/26/99 09:28:27
atm/fddi 4.5(2) 12-15 26209 06/26/99 09:23:17
lcp 360 4.5(2) 12-15 130060 06/26/99 09:29:25
lcp 4.5(2) 12-15 26236 06/26/99 09:23:15
smcp 4.5(2) 12-15 33174 06/26/99 09:17:01
mcp 4.5(2) 12-15 25092 06/26/99 09:20:14

```

Cat5500> (enable)

- Copy the new software image into the bootflash from TFTP server and verify that the image is properly copied. The image that was copied will be uncompressed by the switch and will override the previous image present on the Flash.

!--- The new software image is downloaded from TFTP server.

Cat5500> (enable) **download 10.10.10.2 cat5000-sup.5-5-15.bin**

Download image cat5000-sup.5-5-15.bin from 10.10.10.2 to module 1 FLASH (y/n) [n]? y

|

Finished network single module download. (3212988 bytes)

FLASH on Catalyst:

Type	Address	Location
AMD 29F016	20000000	NMP (P3) 8MB SIM

Erasing flash sector...done.

Programming flash sector...done.

Erasing flash sector...done.

Programming flash sector...done.

Erasing flash sector...done.

Programming flash sector...done.

The system needs to be reset to run the new image.

Cat5500> (enable)

!--- The new image for CatOS version 5.5(15) has been copied

!--- on the bootflash.

Cat5500> (enable) **show flash**

File	Version	Sector	Size	Built
c5000 nmp	5.5(15)	02-19	2272289	
epld	5.5	30	73392	-
lcp xa2	5.5(15)	20-25	62226	06/10/02 16:35:13
lcp xa1	5.5(15)	20-25	95716	06/10/02 16:33:14
lcp atm	5.5(15)	20-25	26622	06/10/02 16:26:56
mcp 360	5.5(15)	20-25	296744	06/10/02 16:35:49
lcp tr	5.5(15)	20-25	32596	06/10/02 16:27:47
lcp c5ip	5.5(15)	20-25	25911	06/10/02 16:29:35
lcp 64k	5.5(15)	20-25	61793	06/10/02 16:29:33
atm/fddi	5.5(15)	20-25	26637	06/10/02 16:26:06
lcp 360	5.5(15)	20-25	141156	06/10/02 16:30:44
lcp	5.5(15)	20-25	27521	06/10/02 16:26:04
smcp	5.5(15)	20-25	41709	06/10/02 16:24:08
mcp	5.5(15)	20-25	24500	06/10/02 16:25:07

Cat5500> (enable)

- Reset the switch so that after the reload, the switch boots with the new software image.

Cat5500> (enable) **reset**

This command will reset the system.

Do you want to continue (y/n) [n]? y

Cat5500> (enable) 2002 Oct 10 19:56:46 %SYS-5-SYS_RESET:System reset from Console//

ATE0
ATS0=1

ROM Power Up Diagnostics of Aug 19 1997

Init NVRAM Log
LED Test done
ROM Checksum passed
Dual Port RAM r/w Test passed
ID PROM passed
System DRAM Size(mb) 32
DRAM Data Bus Test passed
DRAM Address Test passed
DRAM Byte/Word Access Test .. passed
EARL Test passed

BOOTROM Version 2.4(1), Dated Aug 19 1997 11:00:58
BOOT date: 10/10/02 BOOT time: 19:56:59
Uncompressing NMP image. Using zlib uncompression method
NMP image is successfully uncompressed in DRAM
Downloading epld sram device please wait ...
Programming successful for Altera 10K10 SRAM EPLD
Updating epld flash version from 0000 to 0600

Running System Diagnostics from this Supervisor (Module 1)
This may take up to 2 minutes...please wait

Cisco Systems Console

Enter password:
Cat5500>

6. Verify the upgraded software version on the switch.

Cat5500> (enable) **show version**
WS-C5500 Software, Version McpSW: 5.5(15) NmpSW: 5.5(15)

!--- The switch is running CatOS version 5.5(15).

Copyright (c) 1995-2002 by Cisco Systems
NMP S/W compiled on Jun 10 2002, 16:21:08
MCP S/W compiled on Jun 10 2002, 16:24:08

System Bootstrap Version: 2.4(1)

Hardware Version: 2.1 Model: WS-C5500 Serial #: 007410622

Mod	Port	Model	Serial #	Versions
1	2	WS-X5506	007410622	Hw : 2.1 Fw : 2.4(1) Fw1: 2.4(1) Sw : 5.5(15)
2	12	WS-F5511	007412541	Hw : 1.0
		WS-X5113	003126652	Hw : 1.6 Fw : 1.2 Sw : 5.5(15)

Module	DRAM			FLASH			NVRAM		
	Total	Used	Free	Total	Used	Free	Total	Used	Free
1	32768K	15172K	17596K	8192K	6656K	1536K	256K	167K	89K

Uptime is 0 day, 0 hour, 1 minute
Cat5500> (enable)

CatOS Supervisor III(WS-X5530)

The Catalyst 5000 Supervisor III supports two slots for the PCMCIA Flash card. If you have the PCMCIA Flash card installed on your switch, you have the choice to copy the new software image on bootflash or the PCMCIA Flash card. The bootflash is used in the procedure below. If you are using the PCMCIA Flash card, replace the **bootflash:** word in all of the commands below with **slot0:** or **slot1:**, depending on whether you have the image in slot 0 or slot 1.

1. By now, you should have verified the memory/boot ROM requirements, have the TFTP server on your PC, and the switch console accessed from the switch console port. If you are not ready with this setup, refer to Before You Begin section.
2. Configure the management IP address (sc0) and check the connectivity between the switch and the PC on which the TFTP server is installed. It is recommended that you configure the PC and the switch management IP address in the same VLAN. If they are in different VLANs, make sure to configure the default gateway on the PC and the switch so that they can ping each other.

```
!--- Configure the management(sc0) IP address on the switch.
```

```
Cat5000> (enable) set interface sc0 1 10.10.10.1 255.255.255.0  
Interface sc0 vlan set, IP address and netmask set.  
Cat5000> (enable) show interface  
s10: flags=51<UP,POINTOPOINT,RUNNING>  
      slip 0.0.0.0 dest 0.0.0.0
```

```
!--- We have set the management interface(sc0) in VLAN1 and  
!--- the switch port connecting to PC is in VLAN1.
```

```
s10: flags=63<UP,BROADCAST,RUNNING>  
      vlan 1 inet 10.10.10.1 netmask 255.255.255.0 broadcast 10.10.10.255
```

```
!--- IP connectivity with the PC running TFTP server is verified.
```

```
Cat5000> (enable) ping 10.10.10.2  
10.10.10.2 is alive
```

3. Verify that you have enough space available in the bootflash to copy the new image from TFTP server into the bootflash. You can check the size of the new image on the PC on which it's downloaded.

```
Cat5000> (enable) dir bootflash:  
-#- -length- -----date/time----- name  
  2  3463725 Dec 05 2002 00:35:36 cat5000-sup3.4-5-6a.bin
```

```
4117712 bytes available (3484464 bytes used)  
Cat5000> (enable)
```

```
!--- Currently, there is 4 MB of free space available on bootflash.  
!--- The new image size is more than 4 MB. Delete the current image from  
!--- bootflash so that there is more space to copy the new image.
```

```
Cat5000> (enable) delete bootflash:cat5000-sup3.4-5-6a.bin  
Delete image file (y/n) [n]? y
```

```
!--- The current image is deleted from the bootflash, but not  
!--- removed permanently from bootflash. Squeeze the  
!--- bootflash so that deleted image is permanently removed from bootflash.
```

```
Cat5000> (enable) squeeze bootflash:  
All deleted files will be removed, proceed (y/n) [n]? y  
Squeezing operation may take a while, proceed (y/n) [n]? y  
Erasing squeeze log
```


System Bootstrap Version: 5.1(2)

Hardware Version: 3.4 Model: WS-C5000 Serial #: 015562805

Mod	Port	Model	Serial #	Versions
1	0	WS-X5530	015562805	Hw : 3.4 Fw : 5.1(2) Fw1: 4.4(1) Sw : 5.5(16)
		WS-F5521	015559746	Hw : 2.0
3	12	WS-X5213	002295335	Hw : 1.2 Fw : 1.4 Sw : 0.0
5	2	WS-X5168	023516424	Hw : 3.0 Fw : 0.0 Fw1: 5.1(1) Sw : 0.0

Module	DRAM			FLASH			NVRAM		
	Total	Used	Free	Total	Used	Free	Total	Used	Free
1	32768K	19542K	13226K	8192K	5623K	2569K	512K	168K	344K

Uptime is 0 day, 0 hour, 0 minute
Cat5000> (enable)

Cisco IOS on RSM/RSFC Module

The following document explains the step-by-step procedure for upgrading the Cisco IOS on RSM:

- How-to Upgrade Software Images on Catalyst Switch Layer 3 Modules

The following document explains the procedure for upgrading the Cisco IOS on the RSFC:

- Maintaining and Administering the RSFC

Software Upgrade with Redundant Supervisors

You can not use the normal software upgrade procedure as mentioned above for Catalyst 5000/5500 switches that have redundant supervisor modules. Refer to the following document for upgrading the Catalyst 5000/5500 switches in redundant mode:

- *Performing a Minimal Downtime Software Upgrade* section of section of Using Redundant Supervisor Engines

Verify

There is currently no verification procedure available for this configuration.

Troubleshooting Guidelines

This section provides information you can use to troubleshoot your configuration.

Software Upgrade Failed / Switch is in ROMmon

Your software upgrade may fail due to reasons such as IP connectivity problems between the switch and TFTP server, incorrectly set boot variables, or the power may be off while copying the software image to the switch. These issues may cause your switch to boot in ROMmon. If your switch is in ROMmon and you do not have a valid image present on the bootflash or PCMCIA Flash card, you can recover your switch to normal mode using the software recovery procedure. Refer to the following documents for software recovery procedures:

- [Recovering Catalyst 4000, 5000, and 6000 Series Switches from Corrupted or Missing Software, or an Upgrade Failure, or from ROMmon Mode](#)
- [Recovering a Catalyst 5000 RSM from a Corrupted or Missing Image, Boot, or ROMmon Mode](#)

Known Issue: Switch Configuration Lost Due to Software Downgrade

A software downgrade on a switch running CatOS will always cause the configuration to be lost. On Catalyst 5000s with Supervisor III, issue the **copy config tftp** command to back up your configuration to a TFTP server, or issue the **copy config flash** command to back up the configuration to a Flash device. If you have Catalyst 5000 switch with Supervisor I, II, IIG or IIIG, issue the **write network** command to back up the configuration to a TFTP server.

On Catalyst 5000s with Supervisor III, to restore the configuration after successful downgrade, issue the **copy tftp config** or **copy flash config** commands to get the configuration file from the TFTP server or Flash device. If you have Catalyst 5000 switch with Supervisor I, II, IIG or IIIG, issue the **configure {host} {file}** command to restore the configuration.

Refer to the Catalyst 5000 Command Reference Guide for the command syntax and more information in the use of these commands.

Related Information

- [How-to Upgrade Software Images on Catalyst Switch Layer 3 Modules](#)
- [Recovering Catalyst 4000, 5000, and 6000 Series Switches from Corrupted or Missing Software, or an Upgrade Failure, or from ROMmon Mode](#)
- [Recovering a Catalyst 5000 RSM from a Corrupted or Missing Image, Boot, or ROMmon Mode](#)
- [Upgrading Software Images and Working with Configuration Files on Catalyst Switches](#)
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