



ROMMON Release Notes for WS-X45-SUP8-E, WS-X45-SUP8L-E, and WS-X45-SUP9-E

Current Release: 15.1(1r)SG18—March 14, 2019

Prior Releases: 15.1(1r)SG17—October 8, 2018, 15.1(1r)SG14—August 08, 2017, 15.1(1r)SG10—May 09 2017, 15.1(1r)SG8—November 28th 2016, 15.1(1r)SG7—August 11th 2016, 15.1(1r)SG6—November 04th 2015, 15.1(1r)SG5—November 03rd 2014

This publication describes the new ROMMON image on WS-X45-SUP8-E, WS-X45-SUP8L-E, and WS-X45-SUP9-E.

This document consists of these sections:

- [ROMMON Image Overview, page 1](#)
- [Caveats, page 3](#)
- [Guidelines for Upgrading the ROMMON, page 4](#)
- [Upgrading the Supervisor Engine ROMMON from the Console, page 5](#)
- [Upgrading the Supervisor Engine ROMMON with Telnet, page 11](#)
- [Network Booting from ROMMON, page 18](#)
- [Related Documentation, page 18](#)

ROMMON Image Overview

The ROMMON image discussed here consists of new ROMMON software and FPGA images, which are supported only on WS-X45-SUP8-E, WS-X45-SUP8L-E and WS-X45-SUP9-E.

ROMMON IOS Version 15.1(1r)SG4

For Supervisor Engine 8-E—You must upgrade to ROMMON 15.1(1r)SG4 before upgrading the IOS-XE image to 3.6.xE.

ROMMON IOS Version 15.1(1r)SG6

Beginning with Cisco IOS XE Release 3.8.1E, Supervisor Engine 8L-E is available with ROMMON 15.1(1r)SG6.



Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

© 2003–2018 Cisco Systems, Inc. All rights reserved.

ROMMON IOS Versions 15.1(1r)SG7

Supports the Preboot Execution Environment (PXE) feature, also called PXE boot—A network boot loader that enables the switch to retrieve the software image and other files from a remote server, during the initial deployment, without requiring end-user intervention (Zero-Touch Provisioning).

You can specify a remote TFTP server to download the software image and other files.



Note If you are not using the PXE boot feature, you do not have to upgrade to ROMMON IOS Version 15.1(1r)SG7.

ROMMON IOS Version 15.1(1r)SG8

Starting with ROMMON IOS Version 15.1(1r)SG8, you can use the PXE boot feature to specify a remote TFTP or HTTP server.

With this ROMMON IOS version, the factory default setting for the configuration register value is 0x2106 (boot field 06). This is also the recommended setting if you are using an existing device and upgrading to this version.



Note If you are not using the PXE boot feature, you do not have to upgrade to ROMMON IOS Version 15.1(1r)SG8.

ROMMON IOS Version 15.1(1r)SG14

Beginning with Cisco IOS XE Release 3.10.0E, Supervisor Engine 9-E is available with ROMMON 15.1(1r)SG14. The Cisco IOS image bootup time is increased by 5 minutes, to ensure there is sufficient time for the standby Supervisor to come up in SSO. The time delay occurs only when upgrading the ROMMON on Supervisor Engine 9-E.

ROMMON IOS Version 15.1(1r)SG17

For information about enhancements in ROMMON IOS Version 15.1(1r)SG17, see [Caveats, page 3](#).

ROMMON IOS Version 15.1(1r)SG18

For information about enhancements in ROMMON IOS Version 15.1(1r)SG18, see [Caveats, page 3](#).

Caveats

The following caveat is fixed in ROMMON IOS Version 15.1(1r)SG18:

- In a Cisco Catalyst 4500 redundant chassis with dual supervisor (WS-X45-SUP8-E, WS-X45-SUP8L-E, and WS-X45-SUP9-E), during hardware failure on standby supervisor, active supervisor continues to function in redundant mode assuming that the standby supervisor is up and running Cisco IOS software.

Workaround: None. CSCvn79974

The following caveats are fixed in ROMMON IOS Version 15.1(1r)SG17:

- Cisco Catalyst WS-C4510R+E with dual SUP 9-E experiences unexpected failover and loss of connectivity. CSCvj85816
- Cisco Catalyst WS-C4510R+E fails to bootup after ROMMON upgrade. CSCvm52676

The following caveat is fixed in ROMMON IOS Version 15.1(1r)SG10:

- The ROMMON upgrade process has been improved by
 - Providing log messages that indicate failures in write processes, during an upgrade.
 - Increasing the number of times the system retries (in case of a failure), to three retries.
- CSCvd49800.

The following caveats are open for ROMMON IOS Version 15.1(1r)SG7:

- The PXE file download does not display accurate logs for ova download.

Workaround: None. CSCva41858

The following caveat is fixed in ROMMON Version 15.1(1r)SG6:

- A Catalyst 4500 Series switch with redundant Supervisor Engine 8-E may crash after a switchover - if there has been a ROMMON upgrade before the switchover.

Workaround: Perform a simultaneous upgrade on both supervisor engine. CSCuu14223

The following caveat is fixed in ROMMON Version 15.1(1r)SG5:

- Fixed the root-cause of PoE reset on the WS-X4248 and WS-X4548 modules on Supervisor Engine 8-E. CSCuq16235

The following caveat is fixed for ROMMON Version 15.1(1r)SG4:

- A switch using a config-register ending in 0x2 may drop into ROMMON if a powercycle interrupts the bootup.

Workaround: Use config-register 0x2101. CSCue19458

The following caveats are open for ROMMON Version 15.1(1r)SG4:

- No persistent record exists for kernel panics (like kernel software caveats, Layer 2 hardware glitches, and DDR parity errors), making [their] debugging impossible.

Workaround: Connect the system console to a device that records the output. CSCtj80874

- ROMMON prints R*E instead of R+E or R-E chassis type in the output of the **version** command in ROMMON.

Workaround: None. CSCul23608.

The following caveat is open for ROMMON Version 15.1(1r)SG.

- With IOS Release XE 3.3.0XE (15.1.(1)XO), ROMMON supports the Fa1 management interface at 10/100/1000Mbps full duplex mode only; 10/100/1000Mbps half-duplex is not supported. This prevents the FA1 management interface from operating when connected to a hub.



Note Only ROMMON version 15.1(1r)SG works on Supervisor Engine 8-E. However, the latest ROMMON version 15.1(1r)SG6 is backward compatible; we can boot IOS XE 3.3.0XE (15.1.(1)XO) images with the 15.1(1r)SG6 ROMMON.



Note This release also supports up to 4 Gigabytes of memory and a maximum length of the ROMMON command line from 128 to 256 bytes.

Guidelines for Upgrading the ROMMON



Caution

If your supervisor engine is shipped with a newer version of ROMMON then do not downgrade! The new ROMMON will have board settings based on a hardware revision of components, and old settings will not work.

The following [error] messages might be observed if IOS XE 3.6.0XE images are booted with older ROMMON images:

```
rommon 1 > boot bootflash:cat4500es8-universalk9.SPA.03.06.00.E.152-2.E.bin
File has bad file magic number:      0x0. Is it a valid file?
boot: cannot load "bootflash:cat4500es8-universalk9.SPA.03.06.00.E.152-2.E.bin?;

rommon 10 > boot tftp://198.51.100.1/cat4500es8-universalk9.SPA.03.06.00.E.152-2.E.bin
Link Speed      : 100Mb Full Duplex
Filename        : /cat4500es8-universalk9.SPA.03.06.00.E.152-2.E.bin
IpAddress       : 192.0.2.2
TftpServer      : 198.51.100.1
TftpBlkSize     : 1468
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*
File Size       : 199051336
MD5             : a32df24fdfc54776f20d83c092f24496
  Unsigned image, or verification is disabled!
Image Error!!!!
```



Note Do not perform a ROMMON upgrade and a system software (IOS) upgrade together, if it involves an RPR failover. After such an upgrade, one of the supervisor's interface configurations are lost (CSCvu66041).

Upgrading the Supervisor Engine ROMMON from the Console

 **Caution**

To avoid actions that might make your system unable to boot, read this entire section before starting the upgrade.

 **Note**

The examples in this section use the programmable read-only memory (PROM) upgrade IOS Version 15.1(1r)SG4 and Cisco IOS Release 15.2(2)E. For other releases, replace the ROMMON release and Cisco IOS software release with the appropriate releases and filenames. This document describes the procedure for a single supervisor system. You must perform the process on each supervisor in a dual supervisor system.

Follow this procedure to upgrade your supervisor engine ROMMON:

Step 1 Directly connect a serial cable to the console port of the supervisor engine.

 **Note**

This section assumes that the console baud rate is set to 9600 (default). If you want to use a different baud rate, change the configuration register value for your switch.

Step 2 Download the cat4500-e-ios-promupgrade-151-1r-SG4 program from Cisco.com, and place it on a TFTP server in a directory that is accessible from the switch that is upgraded.

The cat4500-e-ios-promupgrade-151-1r-SG4 program is available on Cisco.com at the same location from which Catalyst 4500 system images are downloaded.

Step 3 Use the **dir bootflash:** command to ensure that sufficient space exists in Flash memory to store the PROM upgrade image. If you are using an SD card, replace **bootflash:** with **slot0:**

Step 4 Download the cat4500-e-ios-promupgrade-151-1r-SG4 program into Flash memory using the copy tftp command.

The following example shows how to download the PROM upgrade image cat4500-e-promupgrade-150_1r_SG2 from the remote host 198.51.100.1 to bootflash:

```
Switch# copy tftp: bootflash:
Address or name of remote host [198.51.100.1]?
Source filename [cat4500-e-ios-promupgrade-151-1r-SG4]?
Destination filename [cat4500-e-ios-promupgrade-151-1r-SG4]?
Accessing tftp://198.51.100.1/cat4500-e-ios-promupgrade-151-1r-SG4...
Loading cat4500-e-ios-promupgrade-151-1r-SG4 from 198.51.100.1 (via
GigabitEthernet2/1):!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!
!!!!!!!!!!!!
[OK - 901380 bytes]
```

Step 5 On a dual-supervisor system, copy the same ROMMON image to the standby supervisor engine with the **copy bootflash: cat4500-e-ios-promupgrade-151-1r-SG4 slavebootflash** command.

Step 6 Enter the **reload** command to reset the switch, press **Ctrl-C** to stop the boot process, then re-enter ROMMON mode.

 **Note**

On a redundant system, this action causes a switchover.

The following example shows the output after a reset into ROMMON:

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

03:57:16:%SYS-5-RELOAD:Reload requested

Rom Monitor Program Version 15.0(1r)SG1

.
.(output truncated)
.

Established physical link 1Gb Full Duplex
Network layer connectivity may take a few seconds
rommon 1 >
```

Step 7 Run the PROM upgrade program by entering this command:**?boot bootflash:cat4500-e-ios-promupgrade-151-1r-SG4**



Caution

No intervention is necessary to complete the upgrade. To ensure a successful upgrade, do not interrupt the upgrade process. Do not perform a reset, power cycle, or OIR of the supervisor engine until the upgrade completes.

The following example shows the output from a successful upgrade, followed by a system reset:

```
boot bootflash:cat4500-e-ios-promupgrade-151-1r-SG4

Checking digital signature
[tftp://198.51.100.1/rommon/cat4500-e-ios-promupgrade-151-1r-SG4]
Digitally Signed Release Software with key version A
Loaded 621504 bytes successfully

*****
*
* Unified FPGA Upgrade Utility
* Copyright (c) 2012-2014 by Cisco Systems, Inc.
* All rights reserved.
*
*****

Version 15.1(1r)SG4
Compiled Thu 05-Jun-14 11:18 [RLS]

WS-X45-SUP8-E system detected
Unpacking FPGA:>

Image Name : Cat4K_WSX45SUP8E_FPGA_SIG
Image size : 692 bytes

Uncompressing image...

Image Name : Cat4K_WSX45SUP8E_FPGA_BIN
Image size : 1484960 bytes

Uncompressing image...

Validating FPGA:>
```

```

Cat4K_WSX45SUP8E_FPGA_BIN: Digitally signed image Release with key version A
FPGA[R] MD5 : d6106d9343b9595a0465449bf6c77f9b

Programming FPGA:>
-----
*****
Verifying FPGA:>
.....
FPGA[W] MD5 : d6106d9343b9595a0465449bf6c77f9b

Unpacking ROMMON:>

Image Name : Cat4K_WSX45SUP8E_PROM_SIG
Image size : 692 bytes

Uncompressing image...

Image Name : Cat4K_WSX45SUP8E_PROM_BIN
Image size : 524288 bytes

Uncompressing image...

Validating ROMMON:>

Cat4K_WSX45SUP8E_PROM_BIN: Digitally signed image Release with key version A
ROMMON[R] MD5 : b92b79fc3566c3700d3b2b87c5d0898f

Programming ROMMON:>
-----
*****

Verifying ROMMON:>
.....
ROMMON[W] MD5 : b92b79fc3566c3700d3b2b87c5d0898f

[S] Resetting System !!!!

```

The following example shows the output from a successful upgrade to 15.1(1r)SG17 on a WS-C4507R+E switch with Supervisor 9-E., followed by a system reset:

```

config-register = 0x2106
Autobooting using BOOT variable specified file.....

Current BOOT file is --- tftp://auto/firmwareupgrade-151_1r_SG17.SPA

Checking digital signature....
[tftp://auto/firmwareupgrade-151_1r_SG17.SPA]
Digitally Signed Release Software with key version A
Loaded 4586576 bytes successfully.

*****
*
* Firmware Upgrade Utility
* Copyright (c) 2012-2018 by cisco Systems, Inc.
* All rights reserved.
*
*****
Version 15.1(1r)SG17

```

```
Compiled Tue 18-Sep-18 20:40 [RLS]

WS-X45-SUP9-E system detected
Unpacking keys:>

Image Name : Cat4K_PKeyStorage
Image size : 65536 bytes

Uncompressing image...

Image Name : Cat4K_RKeyStorage
Image size : 65536 bytes

Uncompressing image...
PKey[R] MD5 : af8b02b29f8f4a678436eff2a57cfa7f
BKey[R] MD5 : af8b02b29f8f4a678436eff2a57cfa7f
RKey[R] MD5 : 9a3b7cc91a840dccd2a74b2637295933

Programming Keys:>
----
****

Verifying Keys:>
PKey[W] MD5 : af8b02b29f8f4a678436eff2a57cfa7f
BKey[W] MD5 : af8b02b29f8f4a678436eff2a57cfa7f
RKey[W] MD5 : 9a3b7cc91a840dccd2a74b2637295933

Unpacking Golden ROMMON:>

Image Name : Cat4K_WSX45SUP9E_GROM_SIG
Image size : 692 bytes

Uncompressing image...

Image Name : Cat4K_WSX45SUP9E_GROM_BIN
Image size : 557764 bytes

Uncompressing image...

Validating Golden ROMMON:>

Cat4K_WSX45SUP9E_GROM_BIN: Digitally signed image Release with key version A

ROMMON[R] MD5 : 1c299262aac1e5441e649b676ee5136b

Programming ROMMON:>
-----
*****

Verifying ROMMON:>
.....
ROMMON[W] MD5 : 1c299262aac1e5441e649b676ee5136b

Unpacking FPGA:>

Image Name : Cat4K_WSX45SUP9E_FPGA_SIG
Image size : 692 bytes

Uncompressing image...

Validating FPGA:>
```


Cat4K_WSX45SUP9E_FPGA_BIN: Digitally signed image Release with key version A

FPGA[R] MD5 : 08200d68dbcf88cfff6e7d72af125b86

Programming FPGA:>

Verifying FPGA:>

.....

Authenticating FPGA:>

+++++

Programming FPGA Header:>

*

Unpacking ROMMON:>

Image Name : Cat4K_WSX45SUP8E_PROM_SIG

Image size : 692 bytes

Uncompressing image...

Image Name : Cat4K_WSX45SUP8E_PROM_BIN

Image size : 524288 bytes

Uncompressing image...

Validating ROMMON:>

Cat4K_WSX45SUP8E_PROM_BIN: Digitally signed image Release with key version A

ROMMON[R] MD5 : 7f2c966146ed396710d61d2194eb17ae

Programming ROMMON:>

Verifying ROMMON:>

.....

ROMMON[W] MD5 : 7f2c966146ed396710d61d2194eb17ae

[S]

Saving Upgrade State...

FPGA[R] Upgrade will take 3 to 4 minutes

Resetting System !!!!

Verifying FPGA (P) Signature PASSED

Verifying ROMMON (P) Signature PASSED

```
*****
*
* Rom Monitor
* Copyright (c) 2012-2018 by cisco Systems, Inc.
* All rights reserved.
*
*****
```

Rom Monitor (P) Version 15.1(1r)SG17

Compiled Tue 18-Sep-18 20:39 [RLS]

- Step 8** Boot the Cisco IOS software image. This may happen automatically if the system is configured to auto-boot.
- Step 9** On a redundant system, hook up a console to the now-active supervisor engine. After the system achieves an SSO state, repeat steps 6-8.
- Step 10** Use the **show module** command to verify that you have upgraded the ROMMON:

```
Switch# show module
Chassis Type : WS-C4503-E

Power consumed by backplane : 0 Watts

Mod Ports Card Type                               Model                               Serial No.
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
 1     4  Sup 7-E 10GE (SFP+), 1000BaseX (SFP)    WS-X45-SUP7-E                       CAT1418L059
 3    48  10/100/1000BaseT (RJ45)                  WS-X4648-RJ45-E                     JAE14460A8U

M MAC addresses                                Hw  Fw          Sw          Status
-----+-----+-----+-----+-----+-----+-----+-----+
 1 001b.2a68.48c0 to 001b.2a68.48c3 0.8 15.0(1r)SG(3 03.02.00.2.32    Ok
 3 c471.fe3e.a8c0 to c471.fe3e.a8ef 1.0                               Ok
```

The following example shows the output of the **show module** command after upgrading the ROMMON version to 15.1(1r)SG17 on a WS-C4507R+E switch with Supervisor 9-E.

```
Switch# show module
Chassis Type : WS-C4507R+E

Power consumed by backplane : 40 Watts

Mod Ports Card Type                               Model                               Serial No.
-----+-----+-----+-----+-----+-----+-----+-----+
 1    48  10/100/1000BaseT Premium POE E Series    WS-X4748-RJ45V+E                     CAT1648L8CB
 2    48  10/100/1000BaseT POE E Series              WS-X4648-RJ45V-E                     JAE1234SQI2
 3     2  Sup 9-E 40GE (QSFP+), 10GE (SFP+), 100 WS-X45-SUP9-E                       CAT2122L34S
 4     2  Sup 9-E 40GE (QSFP+), 10GE (SFP+), 100 WS-X45-SUP9-E                       CAT2122L361
 5    48  10/100/1000BaseT Premium POE E Series    WS-X4748-RJ45V+E                     CAT1808L3HC
 6    48  100/1000/2500/5000/10GBaseT UPOE E Ser WS-X4748-12X48U+E                     CAT1911L3NG

M MAC addresses                                Hw  Fw          Sw          Status
-----+-----+-----+-----+-----+-----+-----+
 1 e02f.6df3.5da0 to e02f.6df3.5dcf 1.3                               Ok
 2 0021.d87a.bbe0 to 0021.d87a.bc0f 1.1                               Ok
 3 74a2.e689.db00 to 74a2.e689.db07 0.2 15.1(1r)SG17 03.10.00.E    Ok
 4 74a2.e689.db08 to 74a2.e689.db0f 0.2 15.1(1r)SG17 03.10.00.E    Ok
 5 7426.ac47.f688 to 7426.ac47.f6b7 1.5                               Ok
 6 64f6.9ded.f8d0 to 64f6.9ded.f8ff 0.6 0.0                          Ok

Mod Redundancy role      Operating mode      Redundancy status
-----+-----+-----+-----+-----+-----+-----+
 3 Standby Supervisor    SSO                  Standby hot
 4 Active Supervisor     SSO                  Active

Mod LinecardMode
-----+-----+-----+-----+-----+-----+
 6     3
```

- Step 11** Use the **delete** command on the active supervisor to delete the PROM upgrade program from bootflash.

The following example shows how to delete cat4500-e-ios-promupgrade-151-1r-SG4 image from bootflash:

```
Switch# delete bootflash: cat4500-e-ios-promupgrade-151-1r-SG4
```

Step 12 On a redundant system, also delete the upgrade file from the standby supervisor engine.

```
Switch# # delete slavebootflash: cat4500-e-ios-promupgrade-151-1r-SG4
```

The ROMMON has now been upgraded.

Upgrading the Supervisor Engine ROMMON with Telnet



Caution

To avoid actions that might make your system unable to boot, read this entire section before starting the upgrade.

Follow this procedure to upgrade your supervisor engine ROMMON to Release 15.0(1r)SG2. This procedure can be used when console access is not available and when the ROMMON upgrade must be performed remotely.



Note

In the following section, use the PROM upgrade version bootflash:cat4500-e-ios-promupgrade-150-1r-SG2.

Step 1 Establish a Telnet session to the supervisor engine.



Note

In the following discussion, we assume that at least one IP address has been assigned to either an SVI or a routed port.

Step 2 Download the bootflash:cat4500-e-ios-promupgrade-150-1r-SG2 program from Cisco.com, and place it on a TFTP server in a directory that is accessible from the switch to be upgraded.

The bootflash:cat4500-e-ios-promupgrade-150-1r-SG2 programs are available on Cisco.com at the same location from which you download Catalyst 4500 system images.

Step 3 Use the **dir bootflash:** command to ensure that there is sufficient space in Flash memory to store the PROM upgrade image. If there is insufficient space, delete one or more images.

If you are using an SD card, replace **bootflash:** with **slot0:**.

Step 4 Download the bootflash:cat4500-e-ios-promupgrade-150-1r-SG2 program into Flash memory using the **copy tftp** command.

The following example shows how to download the PROM upgrade image bootflash:cat4500-e-ios-promupgrade-150-1r-SG2 from the remote host 198.51.100.1 to bootflash:

```
Switch# copy tftp: bootflash:
Address or name of remote host [198.51.100.1]?
Source filename [bootflash:cat4500-e-ios-promupgrade-150-1r-SG2]?
Destination filename [cat4500-e-ios-promupgrade-150-1r-SG2]?
Accessing tftp://198.51.100.1/ bootflash:cat4500-e-ios-promupgrade-150-1r-SG2...
Loading bootflash:cat4500-e-ios-promupgrade-150-1r-SG2 from 198.51.100.1 (via
FastEthernet2/1):!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

```
!!!!!!!!!!!!!!!!!!!!!!
[OK - 455620 bytes]

455620 bytes copied in 2.644 secs (172322 bytes/sec)
Switch#
```

Step 5 Use the **no boot system flash bootflash:file_name** command to clear all BOOT variable commands in the configuration file. In this example, the BOOT variable was set to boot the image cat4500e-universal.SPA.03.02.00.SG.150-2.SG.bin from bootflash:

```
Switch# configure terminal
Switch(config)# no boot system flash
bootflash:cat4500e-universal.SPA.03.02.00.SG.150-2.SG.bin
Switch(config)# exit
Switch# write
Building configuration...
Compressed configuration from 3641 to 1244 bytes [OK]
Switch#
```

Use the boot system flash bootflash:file_name command to set the BOOT variable. You will use two BOOT commands: one to upgrade the ROMMON and a second to load the Cisco IOS software image after the ROMMON upgrade is complete. Notice the order of the BOOT variables in the example below. At bootup the first BOOT variable command upgrades the ROMMON. When the upgrade is complete the supervisor engine will autoboot, and the second BOOT variable command will load the Cisco IOS software image specified by the second BOOT command



Note For a successful ROMMON upgrade, the config-register must be set to enable reading the **boot system** commands (i.e. the last digit of the configuration register is set to 2; for example, 0x0102.)

In this example, we assume that the console port baud rate is set to 9600 bps and that the config-register is set to 0x0102.

Use the config-register command to autoboot using image(s) specified by the BOOT variable. Configure the BOOT variable to upgrade the ROMMON and then autoboot the IOS image after the ROMMON upgrade is complete. In this example, we are upgrading the ROMMON to version 15.0(1r)SG2. After the ROMMON upgrade is complete, the supervisor engine will boot Cisco IOS-XE software Release 03.02.03.SG.

config-register to 0x0102.

```
Switch# configure terminal
Switch(config)# boot system flash bootflash:cat4500-e-ios-promupgrade-150-1r-SG2
Switch(config)# boot system flash
bootflash:cat4500e-universal.SPA.03.02.03.SG.150-2.SG3.bin
Switch(config)# config-register 0x2102
Switch(config)# exit
Switch# write
Building configuration...
Compressed configuration from 3641 to 1244 bytes [OK]
Switch#
```

Step 6 Use the **show bootvar** command to verify the boot string. The BOOT variable in this example will first run the PROM upgrade to upgrade ROMMON. Then, the upgrade software will reload and the supervisor engine will load the Cisco IOS software image.

```
Switch# show bootvar
BOOT variable =
bootflash:cat4500-e-ios-promupgrade-150-1r-SG2,1;bootflash:cat4500e-universal.SPA.03.02.03
.SG.150-2.SG3.bin,1;
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
```

Configuration register is 0x2102

- Step 7** Run the PROM upgrade program by issuing the **reload** command. Issuing this command will terminate your Telnet session.



Caution

Verify the boot string in step 6. No intervention is necessary to complete the upgrade. To ensure a successful upgrade, do not interrupt the upgrade process. Do not perform a reset, power cycle, or OIR of the supervisor engine until the upgrade is complete.

The following example shows the console port output from a successful ROMMON upgrade followed by a system reset. Your Telnet session is disconnected during the ROMMON upgrade, so you will not see this output. This step could take 2-3 minutes to complete. You will need to reconnect your Telnet session after 2-3 minutes when the Cisco IOS-XE software image and the interfaces are loaded.

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

*Feb  3 17:08:30.633: %SYS-5-RELOAD: Reload requested by console. Reload reason: Reload
commandPlease stand by while rebooting the system..

Restarting system.

Rommon signature verification PASSED for golden image
Rommon signature verification PASSED for primary image
FPGA signature verification PASSED for primary image

*****
*
* Welcome to Rom Monitor for  WS-X45-SUP7-E System.
* Copyright (c) 2008-2010 by Cisco Systems, Inc.
* All rights reserved.
*
*****

Rom Monitor Program Version 15.0(1r)SG1
CPU Rev: 2.1, Board Rev: 6, Board Type: 101, CPLD Moka Rev: 7.0x2643.0x5956
Chassis: WS-C4507R-E

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

Type control-C to prevent autobooting.
. .
Established physical link 100Mb Full Duplex
Network layer connectivity may take a few seconds
. . .

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

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

Current BOOT file is --- bootflash:cat4500-e-ios-promupgrade-150-1r-SG2
loading image
```

Checking digital signature
 flash1:/USER/cat4500-e-ios-promupgrade-150-1r-SG2: Digitally Signed Release Software with
 key version A

```
*****
*
*   ROM Monitor/FPGA Upgrade for   WS-X45-SUP7-E System *
*
*   Copyright (c) 2008-2011 by Cisco Systems, Inc.      *
*   All rights reserved.                                *
*
*****
```

Upgrading image/FPGA... DO NOT RESET the system
 unless instructed or upgrade will fail !!!

Image Name : Cat4K_Mpc8572_Rommon_2MB
 Image size : 2097152 bytes

Uncompressing image....
 Done!

Cat4K_Mpc8572_Rommon_2MB: Digitally Signed Release Software with key version A

```
*****
*           ** Now Upgrading Primary ROMMON Image **           *
*****
erasing... *****
writing... *****
reading... verifying... Done!
```

Image Name : Cat4K_MOKA_Sig
 Image size : 432 bytes

Uncompressing image....
 Done!

Image Name : Cat4K_MOKA_Fpga
 Image size : 594412 bytes

Uncompressing image....
 Done!

Cat4K_MOKA_Fpga: Digitally Signed Release FPGA with key version A

Image Name : Cat4K_MOKA_Fpga
 Image size : 594412 bytes

Uncompressing image....
 Done!

```
*****
*           ** Now Programming FPGA Image **           *
*****
erasing... *****
writing... *****
reading... verifying... Done!
```

Image Name : Cat4K_MOKA_Sig
 Image size : 432 bytes

```
Uncompressing image....
Done!
```

```
*****
*           ** Now Programming FPGA Signature **           *
*****
erasing... *
writing... *
reading... verifying... Done!
```

```
*****
System will now reset itself and reboot within few seconds
*****
```

```
.
.(output truncated)
.
**** The system will autoboot in 5 seconds ****
```

```
Type control-C to prevent autobooting.
.
Established physical link 100Mb Full Duplex
Network layer connectivity may take a few seconds
. . .
```

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

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

```
Current BOOT file is --- bootflash:cat4500e-universal.SPA.03.02.03.SG.150-2.SG3.bin
loading image
```

- Step 8** Use the **no boot system flash bootflash:file_name** command to clear the BOOT command used to upgrade the ROMMON.

```
Switch# configure terminal
Switch(config)# no boot system flash bootflash:cat4500-e-ios-promupgrade-150-1r-SG2
Switch(config)# exit
Switch# write
Building configuration...
Compressed configuration from 3641 to 1244 bytes [OK]
Switch#
```

- Step 9** Use the **show version** command to verify that the ROMMON has been upgraded.

```
Switch# show version
Cisco IOS Software, IOS-XE Software, Catalyst 4500 L3 Switch Software
(cat4500e-UNIVERSAL-M), Version 03.02.03.SG RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Mon 09-Jan-12 03:25 by prod_rel_team
```

```
Cisco IOS-XE software, Copyright (c) 2005-2010 by cisco Systems, Inc.
All rights reserved. Certain components of Cisco IOS-XE software are
licensed under the GNU General Public License ("GPL") Version 2.0. The
software code licensed under GPL Version 2.0 is free software that comes
with ABSOLUTELY NO WARRANTY. You can redistribute and/or modify such
GPL code under the terms of GPL Version 2.0. For more details, see the
```

documentation or "License Notice" file accompanying the IOS-XE software, or the applicable URL provided on the flyer accompanying the IOS-XE software.

Image text-base: 0x100A17B4, data-base: 0x13CCB460

ROM: 15.0(1r)SG2
Jawa Revision 7, Snowtrooper Revision 0x0.0x116

Switch uptime is 4 minutes
Uptime for this control processor is 4 minutes
System returned to ROM by power-on
System image file is "bootflash:cat4500e-universal.SPA.03.02.03.SG.150-2.SG3.bin"

License Information for 'WS-X45-SUP7-E'
License Level: entservices Type: Default. No valid license found.
Next reboot license Level: entservices

cisco WS-C4507R+E (MPC8572) processor (revision 6) with 2097152K/20480K bytes of memory.
Processor board ID FOX1418GEW0
MPC8572 CPU at 1.5GHz, Supervisor 7
Last reset from PowerUp
2 Virtual Ethernet interfaces
24 Gigabit Ethernet interfaces
8 Ten Gigabit Ethernet interfaces
511K bytes of non-volatile configuration memory.

Configuration register is 0x2102

The following example shows the output of the **show version** command after upgrading the ROMMON version to 15.1(1r)SG17 on a WS-C4507R+E switch with Supervisor 9-E.

```
Switch#show version
Cisco IOS Software, IOS-XE Software, Catalyst 4500 L3 Switch Software
(cat4500es8-UNIVERSALK9-M), Version 03.10.00.E RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2017 by Cisco Systems, Inc.
Compiled Wed 26-Jul-17 01:26 by prod_rel_team
```

Cisco IOS-XE software, Copyright (c) 2005-2015 by cisco Systems, Inc.
All rights reserved. Certain components of Cisco IOS-XE software are licensed under the GNU General Public License ("GPL") Version 2.0. The software code licensed under GPL Version 2.0 is free software that comes with ABSOLUTELY NO WARRANTY. You can redistribute and/or modify such GPL code under the terms of GPL Version 2.0.
(<http://www.gnu.org/licenses/gpl-2.0.html>) For more details, see the documentation or "License Notice" file accompanying the IOS-XE software, or the applicable URL provided on the flyer accompanying the IOS-XE software.

ROM: 15.1(1r)SG17
switch1 uptime is 53 minutes
Uptime for this control processor is 25 minutes
System returned to ROM by SSO Switchover


```
System image file is
"tftp://198.51.100.1/cat4500es8-universalk9.SPA.03.10.00.E.152-6.E.bin"
Jawa Revision 5, RadTrooper Revision 0x0.0x41, Conan Revision 0x1658
```

```
Last reload reason: redundancy reset
```

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute or use encryption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at: <http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to export@cisco.com.

```
License Information for 'WS-X45-SUP9-E'
  License Level: entservices   Type: Permanent Right-To-Use
  Next reboot license Level: entservices
```

```
cisco WS-C4507R+E (P5040) processor (revision 2) with 4194304K bytes of physical memory.
Processor board ID FXS1904Q368
P5040 CPU at 2.2GHz, Supervisor 9-E
Last reset from Reset by peer
2 Virtual Ethernet interfaces
180 Gigabit Ethernet interfaces
12 Ten Gigabit Ethernet interfaces
4 Forty Gigabit Ethernet interfaces
511K bytes of non-volatile configuration memory.
```

```
Configuration register is 0x2106
```

Step 10 Use the **delete** command to delete the PROM upgrade program from bootflash.

The following example shows how to delete the cat4500-e-ios-promupgrade-150-1r-SG2 image from bootflash and reclaim unused space:

```
Switch# delete bootflash:cat4500-e-ios-promupgrade-150-1r-SG2
Delete filename [cat4500-e-ios-promupgrade-150-1r-SG2]?
Delete bootflash:cat4500-e-ios-promupgrade-150-1r-SG2? [confirm]

Switch#
```

Step 11 Use the **show bootvar** command to verify that the ROMMON upgrade program has been removed from the BOOT variable.

```
Switch# show bootvar
BOOT variable = bootflash:cat4500e-universal.SPA.03.02.03.SG.150-2.SG3.bin,1
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x0102
```

The ROMMON has now been upgraded.

Network Booting from ROMMON

Starting with ROMMON IOS Version 15.0(1r)SG7, you can use the PXE boot feature to specify a remote TFTP server to download the software image and other files.

Starting with ROMMON IOS Version 15.0(1r)SG8, you can use the PXE boot feature to specify a remote TFTP or HTTP server to download the software image and other files.

PXE boot requires the configuration of a DHCP server, and the boot field set to one of the autoboot options in the ROMMON.

For ROMMON IOS Versions before 15.0(1r)SG, network booting using a boot loader image is not supported. Instead, use one of the following options to boot an image:

1. Boot from an SD card by entering the following command:

```
rommon 1> boot slot0:<bootable_image>
```

2. Use ROMMON TFTP boot.



Note To use ROMON tftp boot, the TFTP server must be accessible from the Ethernet management port on the supervisor engine.

To boot from ROMMON, perform the following tasks while in ROMMON mode:

- a. Ensure that the Ethernet management port on the supervisor engine is physically connected to the network.
- b. Set IP address of the Ethernet management port on the supervisor engine by entering the following command: **set interface fa1 ip_address ip_mask**

For example, to set the supervisor engine Ethernet port with an IP address 192.0.2.2 and IP mask 255.255.255.0, enter the following command:

```
rommon 2> set interface fa1 192.0.2.2 255.255.255.0
```

- c. Set default gateway for the Ethernet management port on the supervisor engine by entering the following command: **set ip route default gateway_ip_address**. The default gateway should be directly connected to the supervisor engine Ethernet management port subnet.
- d. Ping the TFTP server to ensure that there is connectivity to the server from the Ethernet management port on the supervisor engine by entering the following command: **ping tftp_server_ip_address**.
- e. Once the ping is successful, boot the image from the TFTP server by entering the following command: **boot tftp://tftp_server_ip_address / image_path_and_file_name**

For example, to boot the Cisco IOS XE image cat4500es8-universalk9.03.01.00.SG.151-1.XO.bin located on the TFTP server 198.51.100.1, enter the following command:

```
rommon 3> boot
tftp://198.51.100.1/tftpboot/cat4500es8-universalk9.03.01.00.SG.151-1.XO.bin
```

Related Documentation

Although their Release Notes are unique, the 4 platforms (Catalyst 4500, Catalyst 4900, Catalyst ME 4900, and Catalyst 4900M) use the same *Software Configuration Guide*, *Command Reference Guide*, and *System Message Guide*. Refer to the following home page for additional information:

http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_release_notes_list.html

Hardware Documents

Installation guides and notes including specifications and relevant safety information are available at the following URLs:

- *Catalyst 4500 E-series Switches Installation Guide*
<http://www.cisco.com/en/US/docs/switches/lan/catalyst4500/hardware/catalyst4500e/installation/guide/Eseries.html>
- For information about individual switching modules and supervisors, refer to the *Catalyst 4500 Series Module Installation Guide* at:
http://www.cisco.com/en/US/docs/switches/lan/catalyst4500/hardware/configuration/notes/OL_25315.html
- *Regulatory Compliance and Safety Information for the Catalyst 4500 Series Switches*
http://www.cisco.com/en/US/docs/switches/lan/catalyst4500/hardware/regulatory/compliance/78_13233.html
- Installation notes for specific supervisor engines or for accessory hardware are available at:
http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_installation_guides_list.html

Software Documentation

Software release notes, configuration guides, command references, and system message guides are available at the following URLs:

- Catalyst 4500E release notes are available at:
http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_release_notes_list.html

Software documents for the Catalyst 4500 E-Series switches are available at the following URLs:

- *Catalyst 4500 Series Software Configuration Guide*
http://www.cisco.com/en/US/products/hw/switches/ps4324/products_installation_and_configuration_guides_list.html
- *Catalyst 4500 Series Software Command Reference*
http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_command_reference_list.html
- *Catalyst 4500 Series Software System Message Guide*
http://www.cisco.com/en/US/products/hw/switches/ps4324/products_system_message_guides_list.html

Cisco IOS Documentation

Platform- independent Cisco IOS documentation may also apply to the Catalyst 4500 switches. These documents are available at the following URLs:

- Cisco IOS configuration guides, Release 12.x

http://www.cisco.com/en/US/products/ps6350/products_installation_and_configuration_guides_list.html

- Cisco IOS command references, Release 12.x

http://www.cisco.com/en/US/products/ps6350/prod_command_reference_list.html

You can also use the Command Lookup Tool at:

<http://tools.cisco.com/Support/CLILookup/cltSearchAction.do>

- Cisco IOS system messages, version 12.x

http://www.cisco.com/en/US/products/ps6350/products_system_message_guides_list.html

You can also use the Error Message Decoder tool at:

<http://www.cisco.com/cgi-bin/Support/Errordecoder/index.cgi>

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section.

CCDE, CCENT, Cisco Eos, Cisco Lumin, Cisco Nexus, Cisco StadiumVision, Cisco TelePresence, the Cisco logo, DCE, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn and Cisco Store are service marks; and Access Registrar, Aironet, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, EtherFast, EtherSwitch, Event Center, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, IronPort, the IronPort logo, LightStream, Linksys, MediaTone, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, Network Registrar, PCNow, PIX, PowerPanels, ProConnect, ScriptShare, SenderBase, SMARTnet, Spectrum Expert, StackWise, The Fastest Way to Increase Your Internet Quotient, TransPath, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0807R)

© 2003–2020, Cisco Systems, Inc.
All rights reserved.

