Upgrade a Router from ROMmon with the Boot Image

Contents

Introduction

This document describes how to upgrade a router from the ROM monitor (ROMmon) prompt with the TFTP functionality of the boot image.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

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

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.

What Is the Boot Image? (Rx-boot)

The boot image is a subset of the Cisco IOS® software that is used to download main Cisco IOS software images to the router with TFTP in recovery situations. The user can interact with this image through a command line interface signified by the prompt`Router(boot)#`.

Some platforms (Cisco 1600, 2500) have it in ROM; others (high-end routers) have it in bootflash. This image can be called xboot image, rxboot image, bootstrap image, or boot loader or helper image, which depends on your platform.

The boot image has limited capabilities. For example, it does not contain routing information.

Warning: Never save your configuration while in boot mode, as part of the configuration (such as the routing part) is lost if saved this way.

Load the Boot Image

If the router contains a valid boot image, it can be used to download a valid Cisco IOS Software image into the Flash with TFTP. In order to do this, perform these steps:

1. Change the configuration register to boot the boot image and set the configuration register as shown next (based on the prompt you have):

```
<#root>

rommon 1 >

confreg 0x2101

or
>

o/r 0x2101

You must reset or power cycle for the new configuration to take effect.

!--- This is the router output when a configuration register command is entered.
```

   The configuration register has now been changed to boot the boot image.

2. To boot the boot image, reset the router:

```
<#root>

rommon 2 >

reset

or

>

i
```

   The System Bootstrap message appears and the router boots its boot image. On the screen, you must see something like this:

```
System Bootstrap, Version 11.1(10)AA, EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)
Copyright (c) 1997 by cisco Systems, Inc.
C1600 processor with 18432 Kbytes of main memory
program load complete, entry point: 0x4018060, size: 0x1e1568
Restricted Rights Legend
```

```
.

.

!--- Output omitted.

.

.

Router(boot)>
```

You must now have a prompt similar to`Router(boot)>`.

3. If you are still in ROMmon, that means your boot image is either lost or corrupted. If your router has no valid image in Flash or Bootflash, and no other ROMmon upgrade procedure, the only way to recover is to have a similar router with a compatible Flash card, download the image on that router, and then move the Flash card to the one that is stuck.

4. Check the PCMCIA Filesystem Compatibility Matrix and Filesystem Information for Flash card compatibility information.

5. Connect the Ethernet interface 0 of your router to the network, through which you can reach the TFTP server. Configure the IP address on the Ethernet interface of the router.

```
<#root>

Router(boot)>

enable


Router(boot)#

configure terminal


Router(boot)(config)#

interface ethernet 0


Router(boot)(config-if)#

ip address 10.77.241.160 255.255.255.0


Router(boot)(config-if)#

no shutdown
```

6. Routers that run boot images do not have routing capabilities. Therefore, a default gateway for this router must be configured. Issue the **ip default-gateway** global configuration command to set the appropriate default gateway for this router. This must point to the IP address of the router attached to the same subnet as your Ethernet 0 interface.

```
<#root>

Router(boot)(config)#

ip default-gateway 10.77.241.129
```

7. Before you copy the Cisco IOS image from the TFTP server, make sure that the router has connectivity to the TFTP server.

```
<#root>

Router(boot)#

ping 10.77.233.94

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echoes to 10.77.233.94, timeout is 2 seconds:
.!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms

Router(boot)#
```

8. Copy the Cisco IOS image from the TFTP server to the Flash memory on the router.

```
<#root>

Router(boot)#

copy tftp flash


PCMCIA flash directory:
No files in PCMCIA flash
[0 bytes used, 16777216 available, 16777216 total]
Address or name of remote host [255.255.255.255]? 10.77.233.94

!--- Enter the IP address of the TFTP Server.

Source file name?

c1600-y-l.122-10d.bin


!--- This is the filename of the Cisco IOS image that you want to copy from


!--- the TFTP server.

Destination file name [c1600-y-l.122-10d.bin]?

!--- Press 'Enter'.

Accessing file 'c1600-y-l.122-10d.bin' on 10.77.233.94...
Loading c1600-y-l.122-10d.bin from 10.77.233.94 (via Ethernet0):
! [OK] Device needs erasure before copying new file Erase flash device before writing? [confi
```

```
!--- Press 'y' or 'Enter'.
!--- On Class B Flash file systems, the router gives you the option of erasing
!--- the existing contents of Flash memory before writing to it. If no free Flash
!--- memory is available, or if no files have ever been written to Flash memory,
!--- the erase routine is required before new files can be copied. If there is
!--- enough free Flash memory, the router gives you the option of erasing the
!--- existing Flash memory before writing to it. The system will inform you
!--- of these conditions and prompt you for a response.
!--- If you enter 'n' after the "Erase flash before writing?" prompt, the copy
!--- process continues. If you enter 'y' and confirm the erasure, the erase
!--- routine begins. Make sure to have ample Flash memory space before entering "n"
!--- at the erasure prompt.  Copy 'c1600-y-l.122-10d.bin' from server as 'c1600-y-l.122-10d.b
```

yes

```
!--- Entering 'yes' erases all the files in Flash.
Erasing device... eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee ...erased Loading c1600-y-l.122-10d.bin from 10.77.233.94
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
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!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! !!!!!!!!!!!!!!!!!!
[OK - 7220632/16777216 bytes]Verifying checksum... OK (0x6526) Flash device copy took 00:05:5
```

9. Change the configuration register value back to 2102 for the router to boot with the newly downloaded Cisco IOS image while you do the next reload.

<#root>

```
Router(boot)#
```

configure terminal

```
Router(boot)(config)#
```

config-register 0x2102

```
Router(boot)(config)#
```

exit

```
Router(boot)#
```

10. Reload the router with the **reload** command.

<#root>

```
Router(boot)#
```

reload

```
System configuration has been modified. Save? [yes/no]: no
```

```
  Building configuration...

  [OK]

  Proceed with reload? [confirm]

!--- Press 'Enter'.

  %SYS-5-RELOAD: Reload requested

  System Bootstrap, Version 11.1(10)AA, EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)
  Copyright (c) 1997 by cisco Systems, Inc.
  C1600 processor with 18432 Kbytes of main memory
  program load complete, entry point: 0x4018060, size: 0x1e1568
  .

  .


!--- Output omitted.


  .

  .

  Router>
```

11. To verify if the correct image has been loaded into the router, check the Cisco IOS image version in the router with the **show version** command.

<#root>

```
Router>

show version

Cisco Internetwork Operating System Software
Cisco IOS (tm) 1600 Software (C1600-Y-L), Version 12.2(10d), RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2003 by cisco Systems, Inc.
Compiled Wed 14-May-03 01:04 by pwade
Image text-base: 0x0803A510, data-base: 0x02005000

ROM: System Bootstrap, Version 11.1(10)AA, EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)

ROM: 1600 Software (C1600-BOOT-R), Version 11.1(10)AA, EARLY DEPLOYMENT RELEASE
SOFTWARE (fc1)

1603 uptime is 19 hours, 26 minutes

System returned to ROM by reload


System image file is "flash:c1600-y-l.122-10d.bin"


cisco 1603 (68360) processor (revision C) with 13824K/4608K bytes of memory.
```

```
Processor board ID 10240382, with hardware revision 00000000

Bridging software.

X.25 software, Version 3.0.0.

Basic Rate ISDN software, Version 1.1.

1 Ethernet/IEEE 802.3 interface(s)

1 ISDN Basic Rate interface(s)

System/IO memory with parity disabled

2048K bytes of DRAM onboard 16384K bytes of DRAM on SIMM

System running from FLASH

7K bytes of non-volatile configuration memory.

16384K bytes of processor board PCMCIA flash (Read ONLY)

Configuration register is 0x2102

Router>
```

The new Cisco IOS image that has been loaded from a TFTP server now runs.

Related Information

- **Configuration Fundamentals Configuration Guide, Cisco IOS Release 15M&T**
- **Cisco Technical Support & Downloads**