Upgrading and Troubleshooting Tasks

This chapter provides troubleshooting and ROMmon upgrading information. Troubleshooting information includes general show commands specific to the NPE-G100, error messages, and the like as well as references to specific Cisco 7304 troubleshooting documentation. The following topics are covered in this chapter:

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Upgrading ROMmon

Upgrading the rewriteable ROM Monitor (ROMmon) allows you to download a new ROMmon image instead of having to replace hardware (NPE-G100) to get a new image.

There are three ROMmon images: one “golden” (original image that shipped with your system)—always there (ROM 0—one-time programmable); and two others that you can configure the system to point to (ROM 1 and ROM 2). At boot up, the system starts with the golden image and then jumps to the one you have pointed the system to. If a new ROMmon image you are pointing to fails to boot up Cisco IOS for the first time, then the router will mark this ROMmon image as invalid and will revert to the golden image after a subsequent reset or power cycling.

After you have downloaded a new ROMmon image to the rewriteable ROMmon, you need to do a reload of IOS (recommended) for the new ROMmon to take effect. This is required for the new ROMmon to take effect; it is not required otherwise.

The first time a new ROMmon image is loaded, you must allow the system to boot up IOS before doing any additional resets or power cycling. If the ROMmon loading process is interrupted, the system will interpret this as a bootup failure of the new ROMmon image. The router will revert the ROMmon back to the golden image in ROM 0.

Note

Images are marked as invalid if the first Cisco IOS bootup is not completed after the ROMmon upgrade. Do not reset the router when it is doing an initial bootup.
Using the show rom-monitor Command

Use the `show rom-monitor` command to determine which ROMmon images are available. See the following example for information shown in the output of the `show rom-monitor` command:

```
Router> show rom-monitor

ROM IMAGE STATUS
—— —
ROM 0 (Golden ROM)   —
ROM 1 (Field Upgradeable)  APPROVED
ROM 2 (Field Upgradeable)  APPROVED  DEFAULT & IN USE

In ROM 0, ROMMON version is inaccessible when executing from either ROM 1 or ROM 2.

In ROM 1, ROMMON version is not available, possibly an older ROMMON.

In ROM 2, ROMMON version:
System Bootstrap, Version 12.1(12r)EX1, RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
Copyright (c) 2002 by Cisco Systems, Inc.
```

Using the upgrade rom-monitor Command

To program the ROM monitor use the following command:

```
upgrade rom-monitor {rom1 | rom2} file file_id
```

To set a particular ROMmon image as default, use the following command:

```
upgrade rom-monitor {rom0 | rom1 | rom2} default
```

The following example provides the output of a ROMmon upgrade:

```
Router>copy tftp://255.255.255.255/siff/WS_RM.srec.121-12r.EX1 disk0:
Destination filename [WS_RM.srec.121-12r.EX1]?
Accessing tftp://255.255.255.255/siff/WS_RM.srec.121-12r.EX1...
Loading siff/WS_RM.srec.121-12r.EX1 from 255.255.255.255 (via FastEthernet0)
: !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 975913 bytes]

975913 bytes copied in 20.372 secs (47905 bytes/sec)
Router#upgrade rom-monitor rom1 file disk0:WS_RM.srec.121-12r.EX1
ROM 1 update in progress
Erasing (this may take a while)...
Programming...
CC
Do you want to verify this image (may take a few minutes)? [yes/no]: y
Verifying ROM 1
  Reading from ROM 1...vDone
  Comparing with the source file...Passed

Set this ROMMON image as the default (will take effect on next reload)? [yes/no]: y
Router#reload

System configuration has been modified. Save? [yes/no]: n
Proceed with reload? [confirm]

System Bootstrap, Version 12.1(12r)EX1, RELEASE SOFTWARE (fc1)
TAC Support: http://www.cisco.com/tac
```
Copyright (c) 2002 by Cisco Systems, Inc.

C7300 platform with 131072 Kbytes of main memory

Currently running ROMMON from ROM 1

Note

It is advisable to load a known good IOS image after a ROMmon upgrade.

Troubleshooting ROMmon Upgrades

- If IOS fails to boot to the command prompt after a ROMmon upgrade, the ROMmon will revert to the “golden” ROM—ROM 0.
- If IOS fails after a ROMmon is newly upgraded, the new ROMmon is marked as bad and may not be selected for use again. Start the upgrade procedure again from the beginning.

Configuring Autoboot to Boot from the Network

To configure autoboot to boot from the network, you must have a usable network interface correctly configured. This procedure assumes your interface is configured and that a default gateway is set if the TFTP server is not local.

Follow these steps for configuring autoboot to boot from the network:

- **Step 1** Specify the IOS image using the boot system command.
- **Step 2** Specify the boot loader (optional).
- **Step 3** Ensure your configuration register is set to autoboot (0x2102).

See the following example:

```
Router> boot system tftp server_name://c7300-js-mz
Router> boot bootldr bootdisk:c7300-boot-mz
Router> config-reg 0x2102
Router> copy running-config startup-config
```

Configuring Autoboot to Boot from a Local Device

The procedure for booting from a local device is similar to booting from the network. However, if you are booting from a local device, specifying the bootloader image is not necessary.

See the following example:

```
Router> boot system flash disk0:c7300-js-mz
Router> config-reg 0x2102
```
Bootldr Command

Use the `bootldr` command to specify the boot helper image for booting from the network. You can use the `bootldr` command in Cisco IOS or in ROMmon mode.

You can use the `bootldr` command in Cisco IOS:

```
Router> enable
Router#> config
Router(config)# boot bootldr bootdisk:c7300-boot-mz-my-image
Router(config)# copy system: running-config nvram: startup-config
```

The `show bootvar` command can be used in ROMmon mode to verify that parameter settings are correct.

In cases where the system will not boot up, you can also use the `bootldr` command in ROMmon mode. First check to see if `bootldr` is set correctly:

```
ROMMON> set
```

If `bootldr` is not set correctly, set it with the correct image:

```
ROMMON> BOOTLDR="bootdisk:c7300-boot-mz-my-image"
```

**Caution**

Be careful of typographical errors in ROMmon mode as there is no error checking.

You can use the ROMmon command `sync` to save the current parameters that remain after a power cycle to NVRAM.

Use the `set` command to check your configuration.

Failure to Boot After a SDRAM Upgrade or Replacement

If, after a SDRAM upgrade or replacement, the system fails to boot properly, or if the console terminal displays a checksum or memory error, ensure that the SODIMMs are installed correctly. If necessary, shut down the system and remove the network processing engine. Check each SODIMM by looking straight down on it and then at eye level. If a SODIMM appears to stick out or rest in the socket at an odd angle, remove it and reinsert it. Then replace the network processing engine and reboot the system for another installation check.

If after several attempts the system fails to restart properly, contact a service representative for assistance. Before you call, note any error messages, unusual LED states, or other indications that might help solve the problem.

NPE-G100 show Commands

Use the global `show version` or `show c7300` commands to obtain information about the NPE-G100, hardware, and software installed on your router. Examples of each follow.
Using the show version Command

Use the `show version` command to display the configuration of the system hardware including the NPE-G100 and the software version.

The following example of the `show version` command identifies an NPE-G100 installed in a Cisco 7304 router:

```
Router# show version
Cisco Internetwork Operating System Software
IOS (tm) 7300 Software (C7300-JS-M), Version 12.2(WINDSTAR_ISP.030330.), CISCO DEVELOPMENT TEST VERSION
Copyright (c) 1986-2003 by cisco Systems, Inc.
Compiled Sun 30-Mar-03 06:15 by
Image text-base:0x40008B50, data-base:0x423F8000

ROM: System Bootstrap, Version 12.2(14r)SZ, RELEASE SOFTWARE (fc1)
Currently running ROMMON from ROM 2
BOOTLDR:7300 Software (C7300-BOOT-M), Version 12.2(WINDSTAR_ISP.030330.), CISCO DEVELOPMENT TEST VERSION

G100 uptime is 19 minutes
System returned to ROM by reload at 16:06:46 EST Sat Feb 19 2000
System restarted at 16:10:01 EST Sat Feb 19 2000
System image file is "tftp://10.0.0.0/g100/c7300-js-mz.999-99.WINDSTAR_ISP_UB_030330"
cisco 7300 (NPEG100) processor (revision 0x00) with 229376K/32768K bytes of memory.
Processor board ID SCA07020053
SB-1 CPU at 700Mhz, Implementation 1025, Rev 0.2, 512KB L2 Cache
4 slot midplane, Version 67.49

Last reset from software reset or reload
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
3 Gigabit Ethernet/IEEE 802.3 interface(s)
6 Serial network interface(s)
2 Packet over SONET network interface(s)
1021K bytes of non-volatile configuration memory.
31744K bytes of ATA compact flash in bootdisk (Sector size 512 bytes).
62720K bytes of ATA compact flash in disk0 (Sector size 512 bytes).
Configuration register is 0x0
```

Using the show c7300 Command

Use the `show c7300` command to obtain information about the router.

```
Router# show c7300

+-------+---------+-------+-------------------+
| Slot  | Card Type | Status | Insertion time    |
+-------+---------+-------+-------------------+
| 0,1   | NPEG100  | Active| 00:20:07 ago      |
| 3     | 6T3      | Active| 00:20:02 ago      |
| 4     | 1OC12-POS| Active| 00:20:02 ago      |
| 5     | 1OC12-POS| Active| 00:20:02 ago      |
+-------+---------+-------+-------------------+

System is compliant with hardware configuration guidelines.
```
All the FPGAs in the system are up-to-date

Network IO Interrupt Throttling:
  throttle count=1571, timer count=1571
  active=0, configured=1
  netint usec=3000, netint mask usec=1000

**Troubleshooting**

For specific troubleshooting information, see the following documentation:

- *Cisco 7304 Router Troubleshooting Module*
- *Cisco 7304 Router Troubleshooting and Configuration Notes*
- *System Error Messages for the Cisco 7304 Router*
- *Cisco 7304 Tech Notes*