ROM Monitor Overview

This chapter provides an overview of ROM Monitor concepts and operations. For instructions on how to perform various tasks in ROM Monitor (ROMMON) mode, see the other chapters in this book.

This chapter includes these main topics:

Information About ROM Monitor

The ROM Monitor is a bootstrap program that initializes the CRS hardware and boots the Cisco IOS XR software when you power on or reload a router. A version of the ROM Monitor software exists on each card and is factory supplied. The ROM Monitor program provides an initial power-on environment for each card. If the Cisco IOS XR software is rebooted or unable to run, the corresponding card returns to the ROM Monitor mode.

When you connect a terminal to a card that is in the ROM Monitor mode, the ROM Monitor CLI prompt is displayed.

Cisco CRS Prompt

```
rommon B1>
```

The ROM Monitor software is known by many names. It is sometimes called ROMMON because of the CLI prompt in ROM Monitor mode. The ROM Monitor software is also called the boot software, boot image, or boot helper.

Although it is distributed with routers that use the Cisco IOS XR software, ROM Monitor is a separate program from the Cisco IOS XR software. During normal startup, the ROM Monitor initializes the cards, and then

control passes to the Cisco IOS XR software. After the Cisco IOS XR software takes over, ROM Monitor is no longer in use.

A copy of the ROM Monitor software exists on each card. If a card fails to boot the Cisco IOS XR software, the ROM Monitor software takes control and places the card in ROM Monitor mode. Because a card in ROM Monitor mode is not running the Cisco IOS XR software, that card becomes unavailable for normal router operations.

Understanding the Role of the DSC

The active Route Processor (RP) for the owner Secure Domain Router (SDR) is called the Designated Shelf Controller (DSC). This card performs system-wide functions, including the creation of additional non-owner SDRs. If the active DSC is placed in ROM Monitor mode, it is no longer running the Cisco IOS XR software. If a standby DSC is available, the standby RP resumes router operations. If a standby DSC is not available or is also placed in the ROM Monitor mode, then router operations stop.

Designated Secure Domain Router Shelf Controller (DSDRSC)

In addition to the DSC, each SDR in the system contains at least one DSDRSC. The DSDRSCs provide configuration and administrative functions for a single SDR only. The DSC also serves as the DSDRSC for the owner SDR.

When the Designated Secure Domain Router Shelf Controller (DSDRSC) in an SDR is placed in ROM Monitor mode, the router operations are transferred to the standby DSDRSC (if available). If both the primary and standby DSDRSCs are in ROM Monitor mode, then the router operations cease because the Cisco IOS XR software is no longer running.

Accessing ROM Monitor Mode on the DSC

In most situations, you interact with the ROM Monitor mode only on the DSC (DSDRSC for the owner SDR). The DSC contains the administration configuration for the entire system and distributes the required software to all the other nodes in the router. All the tasks in this document describe ROM Monitor mode accessed through the DSC for the system.

Remember, the DSC is also the Active RP of rack 0 and DSDRSC for the owner SDR.

Environmental Variables and the Configuration Register

Two primary connections exist between ROM Monitor and the Cisco IOS XR software: the ROM Monitor environment variables and the configuration register.

The ROM Monitor environment variables define the location of the Cisco IOS XR software and describe how to load it. After ROM Monitor has initialized the card, it uses the environment variables to locate and load the Cisco IOS XR software. The common environment variables are BOOT, IP_ADDRESS, DEFAULT_GATEWAY, TFTP_FILE, TURBOBOOT and SUBNET_MASK.

The configuration register is a software setting that controls how a card starts up. One of the primary uses of the configuration register is to control whether the card starts in ROM Monitor mode or Administration EXEC mode. The configuration register is set in either ROM Monitor mode or Administration EXEC mode as needed. Typically, you set the configuration register using the Cisco IOS XR software prompt on the active RP when you need to use ROM Monitor mode. When the maintenance in ROM Monitor mode is complete, you change the configuration register so the card reboots with the Cisco IOS XR software.

Note Throughout this guide, the term RP is used to refer to the RP cards supported on Cisco CRS routers. If a feature or an issue applies to only one platform, the accompanying text specifies the platform.

Accessing ROM Monitor Mode with a Terminal Connection

When an RP is in ROM Monitor mode, you can access the ROM Monitor software only from a terminal connected directly to the console port of the card. Because the Cisco IOS XR software (EXEC mode) is not operating, the nonmanagement interfaces (such as POS interfaces) are not accessible. Basically, all Cisco IOS XR software resources are unavailable. The hardware is there, but no configuration exists to make use of the hardware.

Network Management Access and ROM Monitor Mode

Some people get confused when they start to use ROM Monitor mode. It is important to remember that ROM Monitor mode is a router mode, not a mode within the Cisco IOS XR software. It is best to remember that ROM Monitor software and the Cisco IOS XR software are two separate programs that run on the same router. At any given time, the router is running one of these programs, but it never runs both at the same time.

One area that can be confusing when using ROM Monitor and the Cisco IOS XR software is the area that defines the IP configuration for the Management Ethernet interface. Most router users get comfortable with configuring the Management Ethernet interface in the Cisco IOS XR software. When the router is in ROM Monitor mode, however, the router is not running the Cisco IOS XR software, so that Management Ethernet interface configuration is not available.

To access other devices, such as a TFTP server, while in ROM Monitor mode on the Cisco CRS, you must configure the ROM Monitor variables with IP access information.

Entering ROM Monitor Mode

The following sections describe two ways to enter ROM Monitor mode:

Prerequisites

Before you place a DSC in ROM Monitor mode, verify that the system is in a steady state:

1. Prepare the DSC:
    - Anticipate substantial downtime, including the loss of packet forwarding on the system.
    - Verify the sanity of the configuration file system using the **cfs check** command in EXEC mode.
    - Verify that all changes to the active router configuration are saved with the **commit** command in any configuration mode.
    - Verify that all changes to the active software set are saved with the **install commit** command in Administration EXEC mode.
    - Verify that all install commit processes are complete with the **show install committed** command in Administration EXEC mode. This command displays the committed packages that become active

during the next router boot. If any of the processes are not committed, use the **install commit** command in the Administration mode.

2. Verify that the other nodes in the system are in a steady state:
   - If a standby RP is installed, verify that it is in the ready state with the **show redundancy** command in EXEC mode.
   - Verify that all available nodes in the system are in IOS XR RUN state with the **show platform** command in EXEC mode.
3. This process is applicable to Cisco IOS XR 32 bit OS only.

After you have verified that the system is in a stable state, you can enter ROM Monitor mode by setting the configuration register setting and entering the **reload** command, as described in the following steps:

Resetting the Configuration Register and Reloading a DSC to ROM Monitor Mode

In normal operating conditions, it should not be necessary to use ROM Monitor mode. If you do find it necessary to place a designated shelf controller (DSC) in ROM Monitor mode, make sure that the system is in a steady state and that you are prepared for the consequences of a system reload.

SUMMARY STEPS

1. Verify the router is in a steady state.
2. Connect a terminal to the DSC console port and log in to the router.
3. **admin**
4. config-register 0x0 command, **exit** command and **reload** command or config-register 0x0 location all command and **reload location all** command.

DETAILED STEPS

	Command or Action	Purpose
Step 1	Verify the router is in a steady state.	Ensures that all configurations are saved and that no installation processes are running.
Step 2	Connect a terminal to the DSC console port and log in to the router.	Connects a terminal or PC to the DSC console port and establishes a router management session. For more information on connecting a terminal, see *Connecting and Communicating with the Router* in Cisco IOS XR Getting Started Guide for the Cisco CRS Router.
Step 3	**admin** **Example:** `RP/0/RP0/CPU0:router# admin`	Enters administration EXEC mode.

	Command or Action	Purpose

Step 4	config-register 0x0 command, **exit** command and **reload** command or config-register 0x0 location all command and **reload location all** command.
	Example:
	`RP/0/RP0/CPU0:router(admin)# config-register 0x0`
	`RP/0/RP0/CPU0:router(admin)# exit`
	`RP/0/RP0/CPU0:router# reload`
	`Or,`
	`RP/0/RP0/CPU0:router(admin)# config-register 0x0 location all`
	`RP/0/RP0/CPU0:router(admin)# reload location all`
		• Enter the following commands to place only the DSC in ROM Monitor mode:
		• Enter the config-register 0x0 command to set the configuration register for ROM Monitor mode during the next card reload.
		• Enter the exit command to exit administration EXEC mode.
		• Enter the **reload** command to reload the DSC and enter ROM Monitor mode.
		Note • If there is a standby DSC, the configuration register on the standby DSC is also set to 0x0. When you place the active RP in ROM Monitor mode, the system fails over to the standby RP, which then becomes the active RP. If both RPs need to be in ROM Monitor mode, connect to the new active RP and enter the **reload** command.
		• Enter the following commands to place all RPs and SCs in ROM Monitor mode:
		• Enter the **config-register** 0x0 **location all** command to reset the configuration register for all RPs in the system.
		• Enter the **reload location all** command in administration EXEC mode to reload all RPs in the system.
		Note Make sure you have access to the console ports of both RPs on the system. To enter the system to the ROM Monitor mode, press **Ctrl-C** a few times on both RP consoles until you get to the ROM Monitor mode.
		Caution Resetting the configuration register may change the baud rate for the console. The default baud rate is 9600.
		Tip To verify the configuration register setting, enter the **show variables boot** command in the administration EXEC mode.

Verifying the Router State: Example

The following example shows the redundancy roles of both RPs and shows that both are operating in IOS XR RUN state:

```
RP/0/RP0/CPU0:router#show redundancy

Redundancy information for node 0/RP0/CPU0:
==========================================
Node 0/RP0/CPU0 is in ACTIVE role
Partner node (0/RP1/CPU0) is in STANDBY role
Standby node in 0/RP1/CPU0 is ready
Standby node in 0/RP1/CPU0 is NSR-ready

Reload and boot info
----------------------
RP reloaded Mon May 17 21:51:57 2010: 2 weeks, 5 days, 6 hours, 20 minutes ago
Active node booted Mon May 17 21:51:57 2010: 2 weeks, 5 days, 6 hours, 20 minutes ago
Standby node boot Mon May 17 21:51:32 2010: 2 weeks, 5 days, 6 hours, 20 minutes ago
Standby node last went not ready Mon May 17 22:03:03 2010: 2 weeks, 5 days, 6 hours, 9
minutes ago
Standby node last went ready Mon May 17 22:03:03 2010: 2 weeks, 5 days, 6 hours, 9 minutes
 ago
Standby node last went not NSR-ready Fri Jun  4 17:59:52 2010: 1 day, 10 hours, 12 minutes
 ago
Standby node last went NSR-ready Fri Jun  4 18:00:28 2010: 1 day, 10 hours, 11 minutes ago
There have been 0 switch-overs since reload

Active node reload "Cause: Lost DSC"
Standby node reload "Cause: User reload request"

Sun Jun  6 04:14:44.888 DST
Node            Type                PLIM              State           Config State
-------------------------------------------------------------------------------------
0/6/CPU0        MSC                 Jacket Card       IOS XR RUN      PWR,NSHUT,MON
0/6/0           MSC(SPA)            4XOC3-POS         OK              PWR,NSHUT,MON
0/6/1           MSC(SPA)            1x10GE            OK              PWR,NSHUT,MON
0/6/4           MSC(SPA)            8XOC3/OC12-POS    OK              PWR,NSHUT,MON
0/6/5           MSC(SPA)            8X1GE             OK              PWR,NSHUT,MON
0/RP0/CPU0      RP(Active)          N/A               IOS XR RUN      PWR,NSHUT,MON
0/RP1/CPU0      RP(Standby)         N/A               IOS XR RUN      PWR,NSHUT,MON
```

Placing the DSC in ROM Monitor Mode: Example

The following example shows how to place the RP0 in the ROM Monitor mode:

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)#
 config-register 0x0


RP/0/RP0/CPU0:router(admin)# reload

Proceed with reload? [confirm]
System Bootstrap, Version 12.0(20040624:164256) [assafb-misc1 1.14dev(0.91)] DEV
ELOPMENT SOFTWARE
Copyright (c) 1994-2004 by cisco Systems, Inc.
```

```
DRAM DIMM Slot 1: 512M found, Slot 2: Empty
MPC7450 platform with 524288 Kbytes of main memory

rommon 1 >
Configuring MPPs ...
Configuring PCMCIA slots ...

System Bootstrap, Version 2.06 ,
Copyright (c) 1994-2009 by Cisco Systems, Inc.

Acquiring backplane mastership .... successful
Preparing for fan initialization.............. ready
Setting fan speed to 4000 RPMs  successful
Reading backplane EEPROM ...
Released backplane mastership ...

Board type is 0x100002 (1048578)

Switch 0 initialized
Backplane FE port Up... Enabling
Enabling watchdog
G4(7457-NonSMP-MV64360 Rev 3) platform with 4096 MB of main memory

rommon B1 >
```

Manually Halting the Initialization Process During System Reload

To force the DSC to stop loading and enter ROM Monitor mode, press Ctrl-C when you see the following message:

```
MBI validation sending request.
HIT Ctrl-C to abort
TYPE 'Send Break'to abort
```

This message usually appears during the first 20 seconds of system startup. Press the Ctrl-C key combination immediately. It may be necessary to press the **Ctrl-C** keys repeatedly during this time to ensure that the initialization process stops and the system enters ROM Monitor mode. This ends your Telnet session to the console or auxiliary port.

This operation can be performed only from a terminal directly connected to the DSC console port. For more information, see the “Connecting and Communicating with the Router” section in Cisco IOS XR Getting Started Guide for the Cisco CRS Router.

Note When the DSC is placed in ROMMON, it switches over to the standby DSC, which can then also be placed in ROMMON. Repeat this process for both RP cards.

How to Set Console Baud in Cisco IOS XR 64 Bit OS

Rommon is not supported in Cisco IOS XR 64 bit OS. Therefore, to set the console baud rate, do the following:

1. Roll back to Cisco IOS XR 32 bit OS.
2. Set the console baud rate in rommon.

3. Roll back to Cisco IOS XR 64 bit OS.

To enter into rommon mode, select the **IOS-XR (32 bit Classic XR)** in boot option, as follows:

```
Please select the operating system and the boot device:
     1) IOS-XR (32 bit Classic XR)
     2) IOS-XR 64 bit Boot previously installed image
     3) IOS-XR 64 bit Mgmt Network boot using DHCP server
     4) IOS-XR 64 bit Mgmt Network boot using local settings (iPXE)
     (Press 'p' for more option)
Selection [1/2/3/4]: 1
Selected IOS-XR (32 bit Classic XR), Continue ? Y/N: y
```

Now in rommon, type **confreg**, and you will be prompted to change the boot settings, as follows:

```
rommon 2 > confreg

Configuration Summary
(Virtual Configuration Register: 0x2142)
enabled are:
console baud: 9600

do you wish to change the configuration? y/n  [n]:  y
enable  "diagnostic mode"? y/n  [n]:  n
change console baud rate? y/n  [n]:  y
enter rate: 0 = 9600,  1 = 4800,  2 = 1200,  3 = 2400 4 = 19200, 5 = 38400, 6 = 57600, 7 =
 115200  [0]:  7
change the boot characteristics? y/n  [n]:  n

Configuration Summary
(Virtual Configuration Register: 0x3962)
enabled are:
console baud: 115200
boot: MBI Boot
```

Type **y** to change the console baud rate. Select the baud rate option **7** to change the baud rate settings to 115200. The Configuration Summary in the above output shows that the console baud rate updated to 115200.

You must reset or power cycle for the new confreg value to take effect, as follows:

```
rommon 3 > reset -h
```

ROM Monitor Commands

The commands in the ROM Monitor mode are different from those available in the Cisco IOS XR software. You can run ROM Monitor commands only while in ROM Monitor mode, and you cannot run Cisco IOS XR software commands. This section includes the following topics:

Commonly Used ROM Monitor Commands

The table below summarizes the commands commonly used in ROM Monitor. For specific instructions on using these commands, refer to the relevant procedure in this document.

Table 1: Commonly Used ROM Monitor Commands

ROMMON Command	Description
boot *image*	Manually boots a vm Cisco IOS XR software image.
boot *image* **–o** *config-file-path*	Manually boots the Cisco IOS XR software with a temporary alternative administration configuration file.
boot *image* **–a** *config-file-path*	Manually boots the Cisco IOS XR software with an alternative SDR configuration file.
confreg	Changes the config-register setting. **Note** When the value of confreg is 0, it means autoboot is disabled and you need to manually boot the Cisco IOS XR software image from the ROM Monitor mode. However, if the value of confreg is non-zero value of 0x2, it means autoboot is enabled and the ROM Monitor mode automatically boots the Cisco IOS XR software image given in the BOOT= environment variable.
dev	Displays the available local storage devices (for example, disk0: and disk1:).
dir	Displays the files on a storage device.
dumpplaneeeprom	Displays the chassis serial number in a Cisco CRS router.
reset	Resets the node.
set	Displays the currently set ROM Monitor environmental settings.
sync	Saves the new ROM Monitor environmental settings.
unset	Removes an environmental variable setting.
version	Displays the ROM Monitor version.

Displaying the Available ROM Monitor Commands

The table below describes the available **help** commands for ROM Monitor mode.

Table 2: Help Commands in ROMMON

	Description
help or **?**	Displays a summary of all available ROM Monitor commands.
-?	Displays information about command syntax.

Note Commands are case sensitive. You can halt any command by pressing **Ctrl-C**.

Displaying the Available ROM Monitor Commands: Examples

The following example shows what appears when you enter the **?** command on a Cisco CRS:

```
rommon B5 > ?
addrloop            walk 1 thru range of addresses
alias               set and display aliases command
alter               alter locations in memory
bcm_init            Initialise Broadcom switch for ROMMON
getPciReg           Get BCM 5600 PCI memory mapped Reg.
setPciReg           Set BCM 5600 PCI Memory mapped Reg.
getSocReg           Get BCM 5600 On-chip reg value
setSocReg           Set BCM 5600 On-chip reg value
getMiiReg           Get BCM 5600 FE PHY Regs.
setMiiReg           Set BCM 5600 FE PHY Regs.
bcm_links_update    Update links status of BCm 5600
show_bcm_regs       Show all Broadcom switch registers
show_bcm_raw        Show Broadcom Switches port info
berrscan            scan range of addresses for bus errors
boot                boot up an external process
break               set/show/clear the breakpoint
call                call a subroutine at address with converted hex args
cat                 concatenate files
checksum            checksum a block of memory
clrerr              clear the error log
compare             compare two blocks of memory
dcompare            compare two blocks of memory accessed as 8 bytes
confreg             configuration register utility
cont                continue executing a downloaded image
context             display the context of a loaded image
cpu                 cpu / system information and control
dev                 list the device table
dir                 list files in file system
dis                 disassemble instruction stream
dnld                serial download a program module
dump                display a block of memory
ddump               display a block of memory as double words
echo                monitor echo command
errlog              display the error log
fdump               file dump utility
fill                fill a block of memory
dfill               fill a block of memory with double words
dpar                test the CPU bus data parity
flash               flash services command
frame               print out a selected stack frame
```

```
getPci0ConfigReg    print out PCI0 config space reg
getPci1ConfigReg    print out PCI1 config space reg
setPci0ConfigReg    set PCI0 config space reg
setPci1ConfigReg    set PCI1 config space reg
help                monitor builtin command help
history             monitor command history
hang_i2c_bus        cause a hang on the I2C bus
test_unhang_i2c_bus  cause unhang sequence to be generated on the I2C bus
ifill               fill a block of memory w/incrementing pattern
initfs              re-initialize the file system access structures
jump                call a subroutine at address with argc/argv
launch              launch a downloaded image
memdebug            write/read/verify scope loop
meminfo             main memory information
memloop             write or read scope loop
memtest             simple memory test
move                move a block of memory
pingdsc             validate MBI and rack number w/ the dSC
prt6729             print CLPD6729 internal registers
dmove               move a block of memory accessed as 8 bytes
dumpspd             Dump the Serial Presents Detect info from the SDRAM DIMMs
dumpplaneeeprom     Dump the contents of the back plane
dumpphys            Dumps registers of all ethernet phys
readi2c             read an I2c device
repeat              repeat a monitor command
reset               system reset
resetd              dump core and reset a card
resetsp             reset an sp card
scanpci0            scan for devices on PCI bus 0
scanpci1            scan for devices on PCI bus 1
set                 display the monitor variables
setprocmask         Change the mask of CPUs passed to the OS in EMT_GET_SMP_MASK
setromA             Set rommon to force it to rommon A upon next reset
showerr             show crash error message
smptest             Test the other CPU on an SMP board
speed               timed performance loop
stack               produce a stack trace
sync                write monitor environment to NVRAM
tcal                timer calibration test
tftpdnld            tftpdnld no longer available, use boot
tscope              timer scope loop
unalias             unset an alias
unset               unset a monitor variable
version             display rommon software, board, version
watchdog            test watchdog rebooting of the box
writei2c            Write to an I2C device
```

The following example shows the parameters for the **dir** (directory) command:

```
rommon B5> dir -?
bad device name
usage: dir <device>
```

Note Fat 32 devices are not readable from ppc ROMMON.

Changing the ROM Monitor Prompt

You can change the prompt in ROM Monitor mode by using the **PS1=** command as shown in the following example:

```
rommon B5> PS1= "CRS_rp1_rommon!>”
```

Changing the prompt is useful if you are working with multiple routers in ROM Monitor at the same time. This example specifies that the prompt is CRS_rp1_rommon followed by the line number.

Displaying the Configuration Register Setting

To display the current configuration register setting, enter the **confreg** command without parameters as follows:

```
rommon B5> confreg

Configuration Summary
(Virtual Configuration Register: 0x0)
enabled are:
console baud: 9600
boot: the ROM Monitor

do you wish to change the configuration? y/n  [n]:
```

The configuration register setting is labeled Virtual Configuration Register. Enter the **no** command to avoid changing the configuration register setting.

Environment Variables

The ROM Monitor environment variables define the attributes of the ROM Monitor, such as the IP address for an RP control Ethernet port or the location of the Cisco IOS XR software and describe how to load it. Environmental variables are entered like commands and are always followed by the equal sign (=). Environment variable settings are entered in capital letters, followed by a definition. For example:

```
TURBOBOOT=on,disk0,format
```

Under normal operating conditions, you do not need to modify these variables. They are cleared or set only when you need to make changes to the way ROM Monitor operates.

Frequently Used Environmental Variables

The table below shows the main ROM Monitor environmental variables. For instructions on how to use these variables, see the relevant instructions in this document.

Environmental variable	Description
IP_ADDRESS=*ip_address*	Sets the IP address for the Management Ethernet interface on the DSC. (On the Cisco CRS RP only.)

Environmental variable	Description
IP_SUBNET_MASK=*ip_address*	Sets the subnet mask for the Management Ethernet interface on the DSC. (On the Cisco CRS RP only.)
DEFAULT_GATEWAY=*ip_address*	Sets the default gateway that serves the DSC. (On the Cisco CRS RP only.)
TFTP_SERVER=*ip_address*	Sets the IP address of the TFTP server where a bootable software image is located.
TFTP_FILE=*drive:path/file*	Sets the default gateway that serves the DSC. (On the Cisco CRS RP only.)
TURBOBOOT=*on=on, boot-device, options*	Completely replaces the existing software when the router is reloaded.
BOOT=*drive:path/file*	Sets the directory and filename of a a bootable software image.
AUX_AUTHEN_LEVEL=*number*	Completely replaces the existing software when the router is reloaded.
IOX_ADMIN_CONFIG_FILE= *drive:path/file*	Identifies the boot software for a node. This variable is usually set automatically when the router boots.
IOX_CONFIG_FILE=*drive:path/file*	Bypasses ksh authentication. A reboot is required only on the card that has to bypass authentication.
IOX_CONFIG_MEDIUM=*drive:path*	Permanently changes the default location where configuration files are saved.

Displaying Environment Variable Settings

To display the current environment variable settings, enter the **set** command :

```
rommon B1> set


PS1=rommon ! >
TFTP_SERVER=172.23.16.81
IP_ADDRESS=172.29.52.71
IP_SUBNET_MASK=255.255.255.0
DEFAULT_GATEWAY=172.29.52.1
IOX_ADMIN_CONFIG_FILE=
TURBOBOOT=
BOOT_DEV_SEQ_CONF=disk0:;disk1:
MIRROR_ENABLE=Y
?=0
ReloadReason=68
BSI=0
BOOT_DEV_SEQ_OPER=disk0:;disk1:
EASYBAKE=0x0
BOOT=disk0:/mbihfr-rp.vm,1;
```

Entering Environment Variable Settings

Environment variable settings are entered in capital letters, followed by a definition. The following example shows the environmental variables used to configure the control Ethernet port on a Cisco CRS Router:

```
rommon B1> IP_ADDRESS=1.1.1.1
rommon B2> IP_SUBNET_MASK=255.255.254.0
rommon B3> DEFAULT_GATEWAY=1.1.0.1
```

Saving Environment Variable Settings

To save the current environment variable settings, enter the **sync** command:

```
rommon B1> sync
```

Note Environmental values that are not saved with the **sync** command are discarded whenever the system is reset or booted.

Clearing Environment Variable Settings

To clear the environment variable settings, enter the **unset** command:

```
rommon B1> unset
```

To make the change permanent, use the **sync** command.

Note Environmental values that are not saved with the **sync** command are discarded whenever the system is reset or booted.

Viewing Chassis Serial Numbers

The chassis serial number is required for multishelf routers and can be read from an SC or RP that is running in ROM Monitor mode. RP may be necessary if the physical label is missing or damaged.

Note You can view the chassis serial numbers using the Cisco IOS XR software.

1. Attach a console to the console port of an SC or RP in the chassis. (Only the SC or RP needs to run to perform this procedure. Other cards need not be inserted.)
2. Apply power to the chassis.
3. Enter ROM Monitor mode.

4. Enter the dumpplaneeeprom command in privilege mode of the ROM Monitor prompt to display the chassis serial number. In the following example, the serial number is TBC0636606900000:

```
rommon B3 > priv
rommon B4 > dumpplaneeeprom
EEPORM data backplane
000000  00 00 01 e2 00 00 00 00 00 00 00 00 00 00 00 00 ................
000010  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000020  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000030  00 00 00 00 00 00 08 00 45 3b 61 01 04 00 00 00 ........E;a.....
000040  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000050  54 42 43 30 36 33 36 36 30 36 39 30 30 30 30 30 TBC0636606900000
000060  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000070  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000080  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000090  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000a0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000b0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000c0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000d0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000e0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000f0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
```

```
rommon B3 > priv
rommon B4 > dumpplaneeeprom
EEPORM data backplane
000000  00 00 01 e2 00 00 00 00 00 00 00 00 00 00 00 00 ................
000010  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000020  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000030  00 00 00 00 00 00 08 00 45 3b 61 01 04 00 00 00 ........E;a.....
000040  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000050  54 42 43 30 36 33 36 36 30 36 39 30 30 30 30 30 TBC0636606900000
000060  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000070  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000080  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
000090  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000a0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000b0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000c0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000d0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000e0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
0000f0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 ................
```

Note The chassis serial number is displayed in the output to the right (row “00050”). A similar number is present for every chassis.

5. Return the router to EXEC mode.

Exiting ROM Monitor Mode

To exit ROM Monitor mode, you must change the configuration register to 0x102 and reset the RP. This process can be done by either entering CLI commands or responding to prompts.

Resetting to EXEC Mode with CLI Commands

Perform this task to reset the configuration register in ROM Monitor mode and start the RP in EXEC mode.

SUMMARY STEPS

1. **confreg 0x102**
2. **reset**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**confreg 0x102** **Example:** `rommon B1> confreg 0x102`	Resets the configuration register to enter EXEC mode after the system is reset.
Step 2	**reset** **Example:** `rommon B1> reset`	Resets and initializes the router.

Resetting the Configuration Register Using Prompts

To change the configuration register settings in the ROM Monitor mode, enter the **confreg** command at the ROM Monitor mode. Entering this command displays the configuration summary and the prompts used to change the configuration.

SUMMARY STEPS

1. **confreg**
2. Respond to each prompt as instructed.
3. **reset**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**confreg** **Example:** `rommon B1> confreg`	Starts the configuration register configuration prompts.

	Command or Action	Purpose
Step 2	Respond to each prompt as instructed.	See the example that follows this procedure for more information.
Step 3	**reset** **Example:** `rommon B2> reset`	Resets and initializes the router.

Attaching to Primary RP from Standby RP

You must follow these steps in order to attach to the primary RP from standby RP:

- From the console port of the standby RP, press the ESC key.
- Type **ksh** and press ENTER key.
- Login with a local username and password.
- Attach to the peer RP using **attach** *node* command.
- Launch the console using **/pkg/bin/exec -a** command.

Additional References

The following sections provide references related to the ROM Monitor.

Related Documents

Related Topic	Document Title
Display chassis serial numbers (Cisco CRS Routers)	*Displaying the Chassis Serial Numbers* in *Cisco IOS XR System Management Configuration Guide for the Cisco CRS Router*
Connecting a terminal to a router	*Connecting and Communicating with the Router* in *Cisco IOS XR Getting Started Guide for the Cisco CRS Router*
Configuring a router with Cisco IOS XR software	Cisco IOS XR Software Documentation: http://www.cisco.com/en/US/products/ps5845/tsd_products_support_series_home.html

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support