

Boot Commands

This module describes the commands used to boot or reset Cisco IOS XR software.

For more information about ROM Monitor (ROMMON) and boot tasks, see or .

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hw-module location all reload (administration EXEC)

To reload a hardware module on a specific node or all nodes on a single chassis or multishelf system, use the **hw-module location all reload** command in the Administration EXEC mode.

hw-module location { *node-id* | **all** } **reload**

Syntax Description

location	(Optional) Specifies the node to reload.
node-id	The *node-id* argument is expressed in the *rack/slot/module* notation.
all	The **all** keyword specifies all RP nodes.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 6.6.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

To reload a specific node on the router, specify the **reload** command with the **location** *node-id* keyword and argument. The *node-id* is expressed in the *rack/slot* notation.



Caution To prevent potential bootup issues, for NCS5500, avoid using the **reload all location all** command. Instead, use the **hw-module location all reload** command.

Task ID

Task ID	Operations
root-system	execute

This example shows how to reload all nodes on the router:

```
Router(admin)# hw-module location all reload
Thu Jun  5  22:28:23.382 UTC+00:00
Reloading the module will be traffic impacting if not properly drained. Continue to Reload
 hardware module ? [no,yes]
```

reload

To reload the route processor (RP), use the **reload** command in EXEC mode.

reload

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **reload** command to cause the RP to reload the Cisco IOS XR software according to the configuration register setting (for example, 0x0 to enter ROMMON mode and 0x2 to reload the RP to EXEC mode). If a standby RP is in the ready redundancy state, the **reload** command also causes the router to fail over to the standby RP. Use the **show redundancy** command in EXEC mode to display the status of the standby RP.

When the **reload** command is used and a switchover occurs, the running (active) software configuration is automatically maintained during switchover.



Caution If a standby RP is not installed or is not in the ready state, then the router experiences a loss of service while the active RP is reloading Cisco IOS XR software. To view the status of the standby RP, issue the **show redundancy** command in EXEC mode.

If you use the **reload** command and there is no available standby node, you are prompted to continue with the reload:

```
Router# reload

Standby card not present or not Ready for failover. Proceed?[confirm]y
```

Task ID

Task ID	Operations
root-lr	execute

The following example shows how to reload the active RP. If a standby RP is in the ready state, then the router fails over to the standby RP. If the standby RP is not installed or is not in the ready state, then the router enters ROMMON mode and routing operations stop.

```
Router# reload

  Updating Commit Database.  Please wait...[OK]
  Proceed with reload? [confirm] y

  PCI0 device[7]: Vendor ID 0x10ee
  PCI0 device[7]: Device ID 0x300e
  PCI1 device[7]: Device ID 0x1100
  PCI1 device[7]: Vendor ID 0x1013
  PCI1 device[8]: Device ID 0x649
  PCI1 device[8]: Vendor ID 0x1095
  PCI1 device[9]: Device ID 0x5618
  PCI1 device[9]: Vendor ID 0x14e4
  PCI1 device[10]: Device ID 0x5618
  PCI1 device[10]: Vendor ID 0x14e4
  System Bootstrap, Version 1.15(20040120:002852) ,
  Copyright (c) 1994-2004 by cisco Systems, Inc.
  Board type is 0x100000 (1048576)
  Enabling watchdog
  Broadcom 5618 #0 Found on PCI
  Broadcom 5618 #1 Found on PCI
  No. of BCM 56xx switches found 2 .
  BCM Switch #0 initialisation complete.
  BCM Switch #1 initialisation complete
  G4(7450-SMP-GT64260_A) platform with 2048 Mb of main memory

  rommon B1 >
```

reload (administration EXEC)

To reload a node or all nodes on a single chassis or multishelf system, use the **reload** command in the appropriate mode.

reload [**location** {*node-id* | **all**} | **rack** *rack-number*]

Syntax Description

location	(Optional) Specifies the node to reload.
node-id	The *node-id* argument is expressed in the *rack/slot/module* notation.
all	The **all** keyword specifies all RP nodes.
rack-number	Rack number of the line card chassis or fabric chassis.

Command Default

None

Command Modes

Administration EXEC

Command History

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Note Before reloading nodes on the router, we recommend using the **cfs check** command to check the sanity of the configuration file system and attempt to recover from internal inconsistencies.

To reload a specific node on the router, specify the **reload** command with the **location** *node-id* keyword and argument. The *node-id* is expressed in the *rack/slot* notation.

Task ID

Task ID	Operations
root-system	execute

The following example shows how to reload all nodes on the router:

```
Router(admin)# reload location all
Graceful reload of all nodes not supported
Assuming 'force'
Operation may result in file corruptions or loss of config. Proceed [Y/N]? y
```

Note To ensure the sanity of the configuration file system, enter the **cfs check** command on the router.

show epm trace boot

To display execution path monitoring traces, use the **show epm trace boot** command in administration EXEC mode.

show epm trace boot [**hexdump**] [**last** *n*] [**reverse**] [**stats**] [**tailf**] [**unique**][**verbose**] [**wrapping**][**file** *filename* **original**] [**location** {*node-id* | **all**}]

Syntax Description

hexdump	(Optional) Displays traces in hexadecimal format.
last *n*	(Optional) Displays the last *n* number of traces only.
reverse	(Optional) Displays the most recent traces first.
stats	(Optional) Displays execution path statistics.
tailf	(Optional) Displays new traces as they are added.
unique	(Optional) Displays unique entries only, along with the count of the number of times this entry appears.
verbose	(Optional) Displays additional internal debugging information.
wrapping	(Optional) Displays wrapping entries.
file *filename* **original**	(Optional) Specifies the filename of the file to display. You can specify up to four trace files.
location	(Optional) Specifies the node of the RP.
node-id	The *node-id* argument is expressed in the *rack/slot/module* notation. You can specify up to four nodes.
all	The **all** keyword specifies all RP nodes.

Command Default

None

Command Modes

Administration EXEC

Command History

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **show epm trace boot** command provides a simple way of tracking and time-stamping critical events to clearly understand their temporal relationship to one another and the amount of time spent performing critical operations.

Task ID

Task ID	Operations
basic services	read

The following example shows sample output from the **show epm trace boot** command:

```
Router(admin)# show epm trace boot

Mon Jun  1 03:16:36.946 PST
22 wrapping entries (1024 possible, 0 filtered, 22 total)
Oct  8 07:54:49.610 epm/boot 0/RP0/CPU0 t1  @ 00:00:06 - [init] process-start
Oct  8 07:55:25.710 epm/boot 0/RP0/CPU0 t1  @ 00:00:42 - [insthelper] process-start
Oct  8 07:57:08.992 epm/boot 0/RP0/CPU0 t1  @ 00:02:25 - [sysmgr] process-start
Oct  8 07:57:09.785 epm/boot 0/RP0/CPU0 t7  @ 00:02:26 - [sysmgr] start-level: start
Oct  8 07:57:10.722 epm/boot 0/RP0/CPU0 t1  @ 00:02:27 - [sw_dwnld_svr] process-start
Oct  8 07:57:12.482 epm/boot 0/RP0/CPU0 t11 @ 00:02:29 - [sysmgr] start-level: admin
Oct  8 07:57:13.385 epm/boot 0/RP0/CPU0 t1  @ 00:02:30 - [instdir] process-start
Oct  8 07:57:19.638 epm/boot 0/RP0/CPU0 t1  @ 00:02:36 - [instdir_lr] process-start
Oct  8 07:58:07.045 epm/boot 0/RP0/CPU0 t9  @ 00:03:23 - [sysmgr] admin-plane-up
Oct  8 07:58:52.057 epm/boot 0/RP0/CPU0 t4  @ 00:04:08 - [cfgmgr-rp] admin-config-start
Oct  8 07:58:59.973 epm/boot 0/RP0/CPU0 t4  @ 00:04:16 - [cfgmgr-rp] admin-config-done
Oct  8 07:59:00.079 epm/boot 0/RP0/CPU0 t9  @ 00:04:16 - [sysmgr] start-level: infra
Oct  8 07:59:00.615 epm/boot 0/RP0/CPU0 t1  @ 00:04:17 - [devc-conaux] exec-available
Oct  8 07:59:02.288 epm/boot 0/RP0/CPU0 t4  @ 00:04:18 - [cfgmgr-rp] admin-plane-mount-done
Oct  8 07:59:08.157 epm/boot 0/RP0/CPU0 t6  @ 00:04:24 - [instdir] ready-for-requests
Oct  8 07:59:15.999 epm/boot 0/RP0/CPU0 t6  @ 00:04:32 - [sysmgr] start-level: active
Oct  8 07:59:32.300 epm/boot 0/RP0/CPU0 t13 @ 00:04:48 - [sysmgr] start-level: final
Oct  8 07:59:38.143 epm/boot 0/RP0/CPU0 t9  @ 00:04:54 - [sysmgr] lr-plane-up
Oct  8 07:59:38.189 epm/boot 0/RP0/CPU0 t4  @ 00:04:54 - [cfgmgr-rp] lr-config-start
Oct  8 07:59:49.898 epm/boot 0/RP0/CPU0 t4  @ 00:05:06 - [cfgmgr-rp] lr-config-done
Oct  8 07:59:50.259 epm/boot 0/RP0/CPU0 t4  @ 00:05:06 - [cfgmgr-rp]
bulk-interface-config-start
Oct  8 07:59:50.351 epm/boot 0/RP0/CPU0 t7  @ 00:05:06 - [cfgmgr-rp] node-config-done
```

In this sample output, the time stamp following the @ sign is the elapsed time in the format hh:mm:ss since the execution phase started (for example, since node start, in the case of a boot).

show mirror

To display disk mirroring information, use the **show mirror** command in EXEC or administration EXEC mode.

show mirror [**location** {*node-id* | **all**}]

Syntax Description

location	(Optional) Specifies the node of the RP for which to display the mirroring information.
node-id	The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.
all	The **all** keyword specifies all RP nodes.

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
filesystem	read

The following is sample output from the **show mirror** command:

```
Router# show mirror


  Mirror Information for 0/RP0/CPU0.
  ==========================================================
   Mirroring Enabled
     Configured Primary:         disk0:
     Configured Secondary:       disk1:

   Current Mirroring State:      Syncing Files
     Current Physical Primary:   disk1:
     Current Physical Secondary: disk0:

   Mirroring Logical Device:     disk0:

   Physical Device     State       Flags
  ----------------------------------------------------------
    disk0:           Available     Enabled Formatted
    disk1:           Available     Enabled Formatted
    compactflash:    Not Present
    disk0a:          Available     Formatted
```

```
  disk1a:          Available     Formatted
  compactflasha:   Not Present

Mirroring Rommon Variable
 BOOT_DEV_SEQ_CONF = disk0:;disk1:
 BOOT_DEV_SEQ_OPER = disk1:
 MIRROR_ENABLE = Y
```

Table 1: show mirror Field Descriptions

Field	Description
Mirroring Enabled	Indicates whether mirroring is enabled or disabled.
Configured Primary	If mirroring is enabled, the configured primary disk for mirroring.
Configured Secondary	If mirroring is enabled, the configured secondary disk for mirroring.
Current Mirroring State	Current status of mirroring. Possible values are as follows: Syncing files—Files are being synchronized between the primary and secondary disks. Not Configured—Mirroring is not configured. Mirroring Paused—In this state, no mirroring is being done to the secondary device and the disk redundancy has been removed. The values of the BOOT_DEV_SEQ_OPER and MIRROR_ENABLE variables reflect this. Redundant—The primary and secondary disks are totally in synchronization. Any read or write failure on the primary device results in disk redundancy switchover such that all operations are performed on the secondary device.
Current Physical Primary	Current primary disk.
Current Physical Secondary	Current secondary disk.
Mirroring Logical Device	Device name used by the mirroring process to intercept all application requests to that named device before passing them through to one of the mirrored physical devices.
Physical Device	Physical disk in router.
State	Status of the disk. Possible values are as follows: Available—Disk exists in router and is available. Not present—Disk does not exist in router. Partitioning of disks is available only after the disk has been formatted with the **partition** keyword.
Flags	Enabled—Disk mirroring has been enabled on this device and the device is part of the mirroring process. Repaired—During the boot, some minor inconsistencies were discovered on the disk and were repaired to make the file system consistent. Formatted—Disk was formatted before mirroring was enabled.

Field	Description
BOOT_DEV_SEQ_CONF=	ROM Monitor environmental variable for the boot disk sequence. This variable is is set when mirroring is enabled through the **mirror** configuration command. The devices in this ROMMON variable declare the primary and the secondary devices of the mirroring process. The first device is the primary device and the second device is the secondary device in the mirroring process. **Note** This variable is also shared by the disk backup feature. This variable can also be set or unset using the system boot-sequence command of the disk backup feature. But the use of system boot-sequence and system backup commands is blocked, if mirroring is enabled.
BOOT_DEV_SEQ_OPER=	ROM Monitor environmental variable that reflects the state of the disk redundancy status. When mirroring is enabled and the state is redundant, this variable is set to the primary device followed by the secondary device. When mirroring is not in the redundancy state, then this variable is updated to contain only the primary device.
MIRROR_ENABLE	ROM Monitor environmental variable whose value reflects the mirroring status. If it is set to Y, then mirroring is enabled. If it is set to P, then mirroring is paused. If empty, mirroring is not enabled.

show reboot

To display reboot information for a node, use the **show reboot** command in the appropriate mode.

show reboot {**history** | [**reverse**]} **location** *node-id*

Syntax Description

first	(Optional) Displays information about the first ungraceful reboot.
last	(Optional) Displays information about the last ungraceful reboot.
crashinfo	Displays crash information for an ungraceful reboot.
syslog	Displays the syslogs related to an ungraceful reboot.
trace	Displays trace information for an ungraceful reboot.
graceful	Displays information about the last graceful reboot.
history	Displays the reboot history of a specific node.
reverse	(Optional) Displays the reboot history information in reverse chronological order. **Note** Starting from Cisco IOS XR Release 24.3.1, the **reverse** keyword is deprecated and will not be supported in future releases.
location *node-id*	Specifies which node to reload. The *node-id* argument is expressed in the *rack/slot* notation.

Command Default

None

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 24.3.1	The **reverse** keyword is deprecated and will not be supported in future releases. Hence the **show reboot history reverse location** command is also not supported.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The **history** keyword for the **show reboot** command displays all reboot causes stored for previous node resets.

Crash information (**crashinfo**), syslog, and kernel dumper ltrace (**trace**) can be displayed for the first or last reboot if it is an ungraceful reboot.

Task ID

Task ID	Operations
system	read

This example shows sample output from the **show reboot** command with the **history** keyword:

```
Router# show reboot first crashinfo location 0/rp0/cpu0

Crashinfo Timestamp: Thu Jul 19 20:32:57 2007

20070719 20:32:57

Crash Reason: Cause code 0x21000010 Cause: Missed deadline,
  client: sc-reddrv-main, timeout: 5 Process: wd-critical-mon
Traceback: fc1941a0 fc194290 48200738 482013cc 48201c04 fc1d4fb0 Timezone UTC0

Exception at 0xfc1944c8 signal 5 c=1 f=3

Active process(s):
pkg/bin/wd-critical-mon Thread ID 1 on cpu 0
pkg/bin/l3test Thread ID 0 on cpu 1

       REGISTER INFO
      r0        r1        r2        r3
R0   01000000  4817e8c0  4820e208  000000de
       r4        r5        r6        r7
R4   fc1b4856  7fffffff  4817e738  fc1b4856
       r8        r9       r10       r11
R8   00000000  602cf522  00000000  00000000
      r12       r13       r14       r15
R12  602cf51c  4820e1a0  00000000  00000000
      r16       r17       r18       r19
R16  00000000  00000000  00000000  00000000
      r20       r21       r22       r23
R20  00000000  00000000  48200000  48200000
      r24       r25       r26       r27
R24  48200000  48200000  48200000  48200000
      r28       r29       r30       r31
R28  00000028  00000001  21000010  6029b000
        cnt        lr       msr        pc
R32  00000000  fc194290  0002d932  fc1944c8
        cnd       xer
R36  44000094  20000006

                SUPERVISOR REGISTERS

               Memory Management Registers

               Instruction BAT Registers
                Index #                Value
               IBAT0U #              0x1ffe
               IBAT0L #                0x12
               IBAT1U #                   0
               IBAT1L #                   0
               IBAT2U #          0x30000ffe
               IBAT2L #          0xf0000032
               IBAT3U #          0xfffc0003
               IBAT3L #             0x40011

               Data BAT Registers
                Index #                Value
```

```
                DBAT0U #             0x1ffe
                DBAT0L #               0x12
                DBAT1U #                  0
                DBAT1L #         0x10000012
                DBAT2U #         0x30000ffe
                DBAT2L #         0xf000006a
                DBAT3U #         0xfffc0003
                DBAT3L #            0x40011

                Segment Registers
                 Index #              SR-Value
                     0 #                     0
                     1 #                     0
                     2 #                     0
                     3 #                     0
                     4 #                     0
                     5 #                     0
                     6 #                     0
                     7 #                     0
                     8 #                     0
                     9 #                     0
                    10 #                     0
                    11 #                     0
                    12 #                     0
                    13 #                     0
                    14 #                     0
                    15 #                     0

                Exception Handling Registers
       Data Addr Reg #                DSISR
        0x602cf440 #         0x42000000
     SPRG0 #      SPRG1 #      SPRG2 #      SPRG3
     0x1 # 0x21000010 # 0x6029b000 #        0
   SaveNRestore SRR0 #    SaveNRestore SRR1
        0xfc1944c4 #            0x2d932

Miscellaneous Registers
    Processor Id Reg #                  0
                HID0 #         0x8410c0bc
                HID1 #         0x9001ac80

               MSSCR0 #            0x88000
               MSSSR0 #                  0

 STACK TRACE
#0 0xfc194290
#1 0x48200738
#2 0x482013cc
#3 0x48201c04
#4 0xfc1d4fb0
```

show variables boot

To display boot file setting for the in the system, use the **show variables boot** command in Administration EXEC mode.

show variables boot

Syntax Description

location	(Optional) Specifies the node to reload.
node-id	The *node-id* argument is expressed in the *rack/slot/module* notation.
all	Use the **all** keyword to indicate all nodes.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
root-lr	read

This example shows sample output from the **show variables boot** command:

```
Router# show variables boot
Tue Nov 12 12:20:28.357 UTC
root=/dev/panini_vol_grp/xr_lv0 platform=fretta boardtype=RP vmtype=xr-vm prod=1 crashkernel=0
 bigphysarea=200M quiet clocksource=jiffies elevator=noop
RP/0/RP0/CPU0:pp-r1-pod1#
```

show variables system

To display internal system environmental variables set on the router, use the **show variables system** command in EXEC mode.

show variables system

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

EXEC

Command History

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show variables system** command to display system environmental variables for the router.

To display the configuration register setting, use the **show variables boot** command in administration EXEC mode.

Task ID

Task ID	Operations
basic-services	read

This example illustrates sample output from the **show variables system** command. The output is meant to be interpreted by Cisco personnel.

```
Router# show variables system

  TERM=vt220
  GDB_PDEBUG=-P1
  TERM=vt100
  DIR_PREFIX=.
  LOADPATH=/pkg
  LD_LIBRARY_PATH=/pkg/lib
  PATH=/pkg/bin
  BFM_CONFIG_PATH=/pkg/bfm/config
  BGP_PATH=/pkg/bgp
  CONFIGS_PATH=/pkg/configs
  CRAFT_PATH=/pkg/cwi
  CTF_PATH=/pkg/ctf
  DM_RULES_PATH=/pkg/dm/rules
  ETC_PATH=/pkg/etc
  FPD_PATH=/pkg/fpd
  IM_RULES_PATH=/pkg/rules
  INIT_STARTUP_PATH=/pkg/init.d
  INSTHELPER_PATH=/pkg/other
  MAN_PATH=/pkg/man
  MIB_LIBRARY_PATH=/pkg/lib/mib
  MIB_PATH=/pkg/mib
```

```
NETIO_SCRIPT_PATH=/pkg/script
PARSER_PATH=/pkg/parser
PARTITIONS_PATH=/pkg/partitions
QOS_PATH=/pkg/qos
SCHEMA_PATH=/pkg/schema
STARTUP_PATH=/pkg/startup
TCL_LIBRARY=/pkg/lib/tcl
UCODE_PATH=/pkg/gsr/ucode
UCODE_ROOT_PATH=/pkg/ucode
VCM_RULES_PATH=/pkg/vcmrules
JOB_ID=0
INSTANCE_ID=1
SYSMGR_TUPLE=
SYSMGR_NODE=node0_RSP0_CPU0
EXIT_STATUS=0
SYSMGR_RESTART_REASON=0
AAA_USER=labuser
EXEC_PID=18280619
TASKID_MAP_SIZE=72
HOME=/disk0:/usr
TMPDIR=/disk0:/var/tmp
PWD=/disk0:/usr
```