Boot Commands on Cisco IOS XR Software

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

For more information about ROM Monitor (ROMMON) and boot tasks, see to the *Cisco IOS XR Getting Started Guide*.

config-register

To define the configuration register boot value, use the **config-register** command in Administration EXEC mode.

config-register *value* [**location all**]

Syntax Description

value	Hexadecimal or decimal value that represents the 16-bit configuration register value to be used the next time the router is reloaded. The value range is from 0x0 to 0xFFFF (0 to 65535 in decimal). For information about common configuration register settings, see Table 1.
location all	Specifies all RP nodes in a multishelf system.

Defaults

Enter the command **config-register** *value* to set the configuration register setting for the DSC (DSDRSC of the owner SDR).

By default, the configuration register value is 0x102 after a TURBOBOOT.

Command Modes

Administration EXEC

Command History

Release	Modification
Release 2.0	This command was introduced on the Cisco CRS-1.
Release 3.0	No modification.
Release 3.2	This command was first supported on the Cisco XR 12000 Series Router. This command was moved from global configuration mode to Administration configuration mode.
Release 3.3.0	Added support for the **location all** keywords.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, see the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

The configuration register setting is a 16-bit, user-configurable value that determines how the primary route processor (RP) functions during initialization. The configuration register can cause the RP to boot normally from the default configuration, or to enter ROMMON mode during a reload. Configuration register settings can also be used to perform tasks such as password recovery.

The **config-register** command is entered in Administration EXEC mode, on the Designated System Controller (DSC) of the system. The DSC is the primary RP of the owner secure domain router (owner SDR). When setting the configuration register value for the **config-register** command, note the following conditions:

- If both the primary and standby DSC are up and running when the configuration register value is set, the configuration register value applies to both the primary and standby DSC.

- By contrast, if only the primary DSC is up and running when the configuration register value is set and the standby DSC is introduced into the router at a later time, the router does *not* attempt to synchronize the configuration register value for the standby RP to that of the primary RP; in this situation, the configuration register setting applied to the standby DSC is determined by the configuration register value set in ROMMON mode.
- To set the configuration register value for all RPs in a multishelf system, enter the command **config-register** *value* **location all**.

Note To display the current configuration settings, use the command **show variables boot**.

The most commonly used configuration register settings are described in Table 1.

Table 1 Common Configuration Register Settings

Value	Description
0x0	RP enters ROMMON mode (`rommon B1>`) on the next system boot.
0x2	RP loads the Cisco IOS XR software software and default configuration on the next system boot. After logging in, the user can access EXEC mode.
0x102	Router disables the break key.
0x40	Router enters the password recovery mode on the next system boot.

Task ID

Task ID	Operations
root-lr	read, write

Examples

The following example shows how to set the configuration register on the DSC to 0x2. Setting the configuration registration to 0x2 causes the router to boot the Cisco IOS XR software and enter EXEC mode during a router reload.

```
RP/0/RP0/CPU0:router(admin)# config-register 0x2

Successfully set config-register to 0x2 on node 0/RP0/CPU0
Successfully set config-register to 0x2 on node 0/RP1/CPU0
```

Related Commands

Command	Description
reload	Defines how the node functions during a reset operation in ROMMON mode.
show variables boot	Displays the RP configuration register setting.
show version	Displays information on the Cisco IOS XR software.

reload

To reload the designated secure domian router system controller (DSDRSC), use the **reload** command in EXEC mode.

reload [force]

Syntax Description

force	(Optional) Forces the reload without performing any cleanup.

Defaults

The reload process performs cleanup.

Command Modes

EXEC

Command History

Releases	Modifications
Release 2.0	This command was introduced on the Cisco CRS-1.
Release 3.0	No modification.
Release 3.2	This command was first supported on the Cisco XR 12000 Series Router.
Release 3.3.0	No modification.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, see the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Use the **reload** command to cause the DSDRSC 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 DSDRSC is in Ready redundancy state, the **reload** command also causes the router to failover to the standby DSDRSC. Use the **show redundancy** command in EXEC mode to display the status of the standby RP.

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

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

Task ID

Task ID	Operations
root-lr	execute

Examples

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

```
RP/0/RP0/CPU0: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 >
```

Related Commands

Command	Description
config-register	Defines the configuration register setting in Administration EXEC mode.
reload	Defines how the node functions during a reset operation in ROMMON mode.
reload location	Performs a reload of a single node or all nodes in the system.
show redundancy	Displays the redundancy status of the RPs.

reload location

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

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

Syntax Description

node-id	The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.
all	Reloads all the nodes in the system.
force	Forces a node reload without cleaning up the data.
rack	Reloads all the nodes on a specified chassis.
rack-number	The rack number of the line card chassis or fabric chassis.

Defaults

The default behavior for reload is the **force** option.

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.3.0	This command was introduced on the Cisco CRS-1 and Cisco XR 12000 Series Routers.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, see the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Note Before reloading nodes on a Cisco CRS-1, we recommending using the **cfs check** command to check the sanity of the configuration file system and attempt to recover from internal inconsistencies. Enter the **cfs check** command on each SDR that has nodes impacted by the reload. If you enter the **reload location all** command, run the **cfs check** command on every SDR in the system before reloading the router.

- To reload all the nodes in all chassis in a multishelf system, use the **reload location all** command.
- To reload all the nodes in a specific chassis, use the **reload location rack** *rack-number* command. This command cannot be used to reload the DSC line card chassis in Release 3.3.0 (rack 0). DSC failover between racks is not supported in this release.
- To reload a specific node on the router specify the **reload location** *node-id* command. The *node-id* is expressed *rack*/*slot*/*module*.
- To ensure a graceful reload and ensure the sanity of the configuration file system, enter the **cfs check** command on each SDR that has nodes impacted by the reload.

Task ID

Task ID	Operations
root-system	execute

Examples

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

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

Graceful reload of all nodes not supported
Assuming 'force'
Operation may result in file corruptions or loss of config. Proceeed [Y/N]? Y
```

Note To ensure the sanity of the configuration file system enter the **cfs check** command on each SDR impacted by the reload operation. If you enter the **reload location all** command, run the **cfs check** command on every SDR in the system before reloading the router.

The following example shows how to reload all the nodes in a single chassis:

```
RP/0/RP0/CPU0:router(admin)# reload rack 1

Graceful reload of a rack in admin mode is not supported
Assuming 'force' mode
Operation may result in file corruption or loss of config. Proceed? [confirm]
```

In Release 3.3.0, you cannot reload the chassis containing the DSC. The following example shows the message displayed if an attempt is made to reload rack 0 (line card chassis 0) in a multishelf system:

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

Reload of rack 0 is not supported in 3.3 release.
```

Related Commands

Command	Description
cfs check	Verifies the Configuration File System (CFS).
config-register	Defines the configuration register setting in Administration EXEC mode.
reload	Defines how the node functions during a reset operation in ROMMON mode.
reload	Performs a reload of the route processor.
show redundancy	Displays the redundancy status of the RPs.

show variables boot

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

show variables boot

Syntax Description

This command has no keywords or argument.

Defaults

No defaults behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.3.0	This command was introduced on the Cisco CRS-1 and Cisco XR 12000 Series Routers.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, see the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

Use the **show variables boot** command to display system boot variables for the router. This command displays the configuration register setting and boot file setting for the RPs in the system.

The configuration register setting is set with the command config-register. The boot variable is set in ROM Monitor mode. For more information on ROM Monitor mode, see the *Cisco IOS XR ROM Moniotr Guide*.

Task ID

Task ID	Operations
root-lr	read

Examples

The following is sample output from the **show variables boot** command.

```
RP/0/RP0/CPU0:router# show variables boot

Node 0/RP0/CPU0:
    BOOT variable = disk0:hfr-os-mbi-3.3.30/mbihfr-rp.vm,1;
    CONFREG variable = 0x2

Node 0/RP1/CPU0:
    BOOT variable = disk0:hfr-os-mbi-3.3.30/mbihfr-rp.vm,1;
    CONFREG variable = 0x2
```

Related Commands

Command	Description
config-register	Defines the configuration register setting in Administration EXEC mode.
show variables system	Displays internal system environmental variables set on the router.
show version	Displays information on the Cisco IOS XR software.

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 argument.

Defaults

No defaults behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 2.0	This command was introduced on the Cisco CRS-1.
Release 3.0	No modification.
Release 3.2	This command was first supported on the Cisco XR 12000 Series Router. Removed the **boot** keyword.
Release 3.3.0	No modification.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. For detailed information about user groups and task IDs, see the *Configuring AAA Services on Cisco IOS XR Software* module of the *Cisco IOS XR System Security Configuration Guide*.

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

The **boot** keyword was removed from the **show variables system** command in Cisco IOS XR Software Release 3.2. To display the configuration register setting, use the **show variables boot** command in Administration EXEC mode.

Task ID

Task ID	Operations
basic-services	read

Examples

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

```
RP/0/RP0/CPU0: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_RP0_CPU0
EXIT_STATUS=0
SYSMGR_RESTART_REASON=0
AAA_USER=egran
EXEC_PID=18280619
TASKID_MAP_SIZE=72
HOME=/disk0:/usr
TMPDIR=/disk0:/var/tmp
PWD=/disk0:/usr
```

Related Commands

Command	Description
config-register	Defines the configuration register setting in Administration EXEC mode.
show variables boot	Displays the configuration register setting and boot file setting for the RPs in the system.
show version	Displays information on the Cisco IOS XR software.