Hardware Redundancy and Node Administration Commands on the Cisco IOS XR Software

This module describes the commands used to manage the hardware redundancy, power, and administrative status of the nodes on a router running Cisco IOS XR software.

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clear mbus-statistics location

To clear Mbus firmware statistics on a specific node, use the **clear mbus-statistics location** command in administration EXEC mode.

clear mbus-statistics location {*node-id*| **all**}

Syntax Description

node-id	Identifies the location of the node whose Mbus interface counters you want to clear. The *node-id* is expressed in the *rack*/*slot*/*module* notation. **Note** Enter the **show platform** command to see the location of all nodes installed in the router.
all	Clears Mbus interface counters for all nodes installed in the router.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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
sysmgr	execute

Examples

The following example shows how to clear all Mbus interface counters on a specific node:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# clear mbus-statistics location 0/0/CPU0
```

dsc serial

To define the serial ID for a rack, use the **dsc serial** command in administration configuration mode. To remove a serial ID entry from the designated shelf controller (DSC) table, use the **no** form of this command.

dsc serial *serial_id* **rack** *rack_num*

no dsc serial *serial_id* **rack** *rack_num*

Syntax Description

serial_id	Serial ID for a rack. The serial ID is included as an entry in the DSC table. Range is from 0 through 16 characters.
rack *rack_num*	Identifies the rack whose ID you are configuring to be the serial ID . **Note** For systems that include two line card chassis and one fabric chassis, the line card chassis IDs are 0 and 1, and the fabric chassis ID is F0.

Command Default

No default behavior or values

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The task ID was updated to system.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

For more information about identifying and selecting a DSC on your router, see *Cisco IOS XR Getting Started Guide for the Cisco XR 12000 Series Router*.

Note The serial ID is the hardware serial number that identifies the chassis.

Use the **show running-config** command to display and verify the defined serial ID for a rack.

Task ID

Task ID	Operations
system	read, write

Examples

The following example shows how to define the serial ID for a rack:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# configure
RP/0/0/CPU0:router(admin-config)# dsc serial TBC0610991700000 rack 1
```

Related Commands

Command	Description
show dsc	Displays the current designated shelf controller (DSC) configuration for the shelf or for the system.
show running-config	Displays the current running (active) configuration.

env disable

To disable environment monitoring on the chassis, use the **env disable** command in administration configuration mode. To reenable environment monitoring after it has been disabled, use the **no** form of this command.

env disable

no env disable

Syntax Description

This command has no keywords or arguments.

Command Default

Environment monitoring is enabled.

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

By default, environment monitoring related to temperature and voltage is enabled on a router running Cisco IOS XR software. If environmental monitoring is disabled, you are not alerted if the router overheats.

Task ID

Task ID	Operations
system	read, write

Examples

The following example shows how to disable environment monitoring with the **env disable** command:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# configure
RP/0/0/CPU0:router(admin-config)# env disable
```

facility-alarm contacts

To set or unset facilities for processing alarms related to temperature and power supply conditions, use the **facility-alarm contacts** command in administration EXEC mode.

facility-alarm contacts {**all**| **critical**| **major**| **minor**} {**audio**| **both**| **visual**} {**on**| **off**}

Syntax Description

all	Sets the facility alarm contacts so that an audio and visual alarm alerts the user to a facility alarm of any severity.
critical	Sets the facility alarm contacts so that an audio and visual alarm alerts the user to critical facility alarms.
major	Sets the facility alarm contacts so that an audio and visual alarm alerts the user to major facility alarms.
minor	Sets the facility alarm contacts so that an audio and visual alarm alerts the user to minor facility alarms.
audio	Sets the facility alarm contacts so that an audio alarm alerts the user to alarms of the specified severity.
both	Sets the facility alarm contacts so that an audio and visual alarm alerts the user to alarms of the specified severity.
visual	Sets the facility alarm contacts so that a visual alarm alerts the user to alarms of the specified severity.
on	Enables facility alarm contacts configuration.
off	Disables facility alarm contacts configuration.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.

Release	Modification
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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-system	read

Examples

The following example shows how to enable an audio alarm to alert the user when a critical facility-alarm occurs:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# configure
RP/0/0/CPU0:router(admin-config)# facility-alarm contacts critical audio on
```

Related Commands

Command	Description
show fpd package	Displays which SPAs and SIPs are supported with your current Cisco IOS XR software release, which FPD image you need for each card, and what the minimum hardware requirements are for the various modules.

fpd auto-upgrade

To enable the automatic upgrade of FPD images during a software upgrade, use the **fpd auto-upgrade** command in administration configuration mode. To disable automatic FPD upgrades, use the **no** form of this command.

fpd auto-upgrade

Syntax Description

This command has no keywords or arguments.

Command Default

FPD images are not automatically upgraded.

Command Modes

Administration configuration

Command History

Release	Modification
Release 4.0.1	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.

By default automatic upgrades of the FPD images are not performed during a software upgrade. Once the **fpd auto-upgrade** command is enabled, when you upgrade the software and an FPD upgrade is required, the FPD upgrade is done automatically before the router is rebooted. The automatic FPD upgrade works only if the FPD image is upgraded together with the mini installation PIE. For example, use the **install add** and **install activate** commands as shown here:

```
(admin)# install add comp-hfr-mini.pie hfr-fpd.pie hfr-mpls-p.pie
(admin)# install activate disk0:/comp-hfr-mini.pie disk0:/hfr-fpd.piedisk0: hfr-mpls-p.pie
```

Task ID

Task ID	Operation
system	read, write

Examples

The following example shows how to enable automatic FPD upgrades:

```
RP/0/0/CPU0:router(admin-config)# fpd auto-upgrade
```

Related Commands

Command	Description
upgrade hw-module fpd	Manually upgrades the current field-programmable device (FPD) image package on a module.
install add	Adds the contents of a PIE file to a storage device .

hw-module location

To reload a node or place a node in maintenance mode, use the **hw-module location** command in EXEC or administration EXEC mode.

EXEC Mode

hw-module location {*node-id* {**maintenance-mode**| **reload** {*path*| **plim**| **warm**}}| **all reload** *path*}

Administration EXEC Mode

hw-module location {*node-id*| **all**} **reload** [*path*| **warm**]

Syntax Description

node-id	Node whose hardware attributes you want to configure. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation. **Note** Enter the **show platform** command to see the location of all nodes installed in the router.
all	Indicates that you want to configure the hardware attributes for all nodes installed in the router.
maintenance-mode	Brings the node down and puts the node into maintenance mode.
reload	Resets power-cycle, reloads hardware, or both, on a specific node.
path	TFTP or disk path to the image you want to download onto the specific node or nodes.
plim	Specifies to reload the PLIM if applicable.
warm	Specifies a warm reload of the node.

Defaults

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.

Release	Modification
Release 3.4.0	The **maintenance-mode** keyword was added in EXEC mode.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 To reset a specific node or all nodes on the router, or to put a node into maintenance mode, use the **hw-module location** command in EXEC mode

To reset a specific node or all nodes, use the **hw-module location** command in administration EXEC mode.

Task ID

Task ID	Operations
root-lr	read
sysmgr	execute

Examples

The following example shows how to reset the hardware on all nodes in the router:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# hw-module location all reload

WARNING: This will take the requested node out of service.
Do you wish to continue?[confirm(y/n)]
```

hw-module power disable

To disable the node power-on feature on a specific line card, use the **hw-module power disable** command in administration configuration mode. To reenable the node power-on feature on a line card, use the **no** form of this command.

hw-module power disable location *node-id*

no hw-module power disable location *node-id*

Syntax Description

location *node-id*	Identifies the node whose power-on feature you want to disable. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.

Command Default

Power is on for all nodes.

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.8.0	No modification.
Release 3.9.0	The option to use this command without the **disable** keyword was removed.

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 platform** command to view a summary of the nodes in the router, including status information.

The **hw-module power disable** command is available for line cards only; it is not available for RP cards.

Task ID

Task ID	Operations
sysmgr	read, write
root-lr	read, write

Examples

The following example shows how to disable the node power-on feature on a line card:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# configure
RP/0/0/CPU0:router(admin-config)# hw-module power disable location 0/0/CPU0
```

Related Commands

Command	Description
show platform	Displays information and status for each node in the system.

hw-module profile feature

To enable a feature bundle on the router, use the **hw-module profile feature** command in administration configuration mode. To disable a feature bundle, use the **no** form of this command.

hw-module profile feature {**default| l2| imsg**}

no hw-module profile feature {**default| l2| imsg**}

Syntax Description

default	Feature profile that supports all features except provider backbone bridge (PBB)except iMSG Layer 2 aggregation..
l2	Feature profile that supports PBB, but does not support IPv6, reverse-path forwarding (RPF) and netflow.
imsg	Feature profile that does not support Layer 3 VPN over IP core.

Command Default

The default feature profile is **default**.

Command Modes

Administration configuration

Command History

Release	Modification
Release 4.0.1	This command was introduced.
Release 4.2.0	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.

If you do not configure the feature profile, the default profile is active. The default feature profile does not support provider backbone bridge (PBB). If you need support for PBB, configure the L2 feature profile.

If you do not reload the line cards after configuring the feature profile, the configured profile is not active and this warning message is displayed. You must reload the affected line card so that the configured profile matches the active profile.

```
LC/0/1/CPU0:Nov 5 02:50:42.732 : prm_server[236]: Configured
'hw-module profile feature l2' does not match active 'hw-module
profile feature default'. You must reload this line card in order
to activate the configured profile on this card or you must change
the configured profile.
```

If you have configured features that are not supported in your active feature profile, this warning is displayed. You should either change the feature profile configuration, or remove the non-supported features.

```
LC/0/1/CPU0:Nov 5 02:50:42.732 : prm_server[236]: Active 'hw-module
profile feature l2' does not support IPv6, RPF, or Netflow
features. Please remove all unsupported feature configurations.
```

If you do not configure the feature profile, the default profile is active. The default profile does not support iMSG Layer 2 aggregation. If you need to configure iMSG Layer 2 aggregation, use the iMSG profile.

Note When you change the profile, all Modular Multirate IP Services Engine cards in the router are reloaded.

Any configurations that existed before you change the profile that are not supported by the new profile, are disabled. You should manually remove all such configurations.

If you attempt to remove an existing feature profile configuration by using the **no** form of this command, this warning message is displayed and no action is taken. In other words, the configuration is not removed from the running configuration.

```
This is an invalid operation. Use 'hw-module profile feature
default' to revert to a base configuration.
```

Task ID

Task ID	Operation
system	read, write
root-lr	read, write

Examples

This example shows how to set the feature profile to L2:

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# configure
RP/0/RSP0/CPU0:router(admin-config)# hw-module profile
feature l2

Wed Dec  8 08:29:54.053 PST
L2 feature profile does NOT support the following features:
IPv6, RPF, Netflow.
In order to activate this new memory resource profile,
you must manually reboot the line cards.
RP/0/RSP0/CPU0:router(admin-config)# commit
```

Examples

This example shows how to set the feature profile to iMSG:

```
RP/0/0/CPU0:router(admin-config)# hw-module profile feature imsg

Thu Sep  8 22:17:39.739 DST
iMSG feature profile does NOT support the following features: Biscuit.
Upon commit, all E5 LCs will be reloaded
```

Related Commands

Command	Description
show hw-module profile	Displays the active profiles.

hw-module reset auto disable

To disable the node reset feature on a specific node, use the **hw-module reset auto disable** command in administration configuration mode. To reenable the reset feature on a specific node, use the **no** form of this command.

hw-module reset auto disable location *node-id*

no hw-module reset auto disable location *node-id*

Syntax Description

location *node-id*	Identifies the node on which you want to disable the auto reset feature in case of errors. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.

Command Default

The node reset feature is enabled for all nodes.

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.7.2	This command was introduced.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

Examples

This example shows how to disable the reset feature on a node:

```
RP/0/0/CPU0:router# admin
```

```
RP/0/0/CPU0:router(admin)# configure
RP/0/0/CPU0:router(admin-config)# hw-module reset auto disable location 0/0/CPU0
```

Related Commands

Command	Description
hw-module power disable	Disables the node power-on feature on a specific line card.

hw-module service maintenance-mode location

To configure the router to take a specific node into maintenance mode in the event of disaster recovery, use the **hw-module service maintenance-mode location** command in global configuration mode. To reset this configuration, use the **no** form of the command.

hw-module service maintenance-mode location *node-id*

no hw-module service maintenance-mode location *node-id*

Syntax Description

node-id	Location of the service card that you want to move into offline mode. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.

Command Default

In case of disaster recovery, the router reloads a failed line card if MDR is unsuccessful, and does not put the line card in maintenance mode.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.4.1	This command was introduced.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

In the event that a line card fails, the router attempts to restart all the processes on the line card without disrupting the traffic flow. This is called a *Minimum Disruptive Restart (MDR)*. If the MDR does not recover the line card, the router reloads the line card. You can configure the router to place the line card into maintenance mode after an unsuccessful MDR, instead of reloading it. Use the **hw-module service maintenance-mode location** command to configure the router to take a specified line card into maintenance mode after an unsuccessful MDR, instead of reloading the line card.

Maintenance mode is a mode in which only the processes that are required for collecting useful data for debugging run.

Task ID

Task ID	Operations
root-lr	read, write

Examples

The following example shows how to move the card at 0/1/CPU0 into maintenance mode:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# hw-module service maintenance-mode location 0/1/CPU0
```

Related Commands

Command	Description
hw-module location	Reloads a node or places a node in maintenance mode.
show services role	Displays the current service role on service cards installed in your router.

hw-module service offline location

To configure offline mode as the role for a specific node, use the **hw-module service offline location** command in global configuration mode. To disable offline mode, use the **no** form of the command.

hw-module service offline location *node-id*

no hw-module service offline location *node-id*

Syntax Description

node-id	Location of the service card that you want to move into offline mode. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.

Command Default

No default behavior or values

Command Modes

Global configuration

Command History

Release	Modification
Release 3.4.0	This command was introduced.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

Offline mode disables all configured service instances on a service card. If there is a service active on the service card, the service switches over to a standby location if a standby is configured.

Task ID

Task ID	Operations
root-lr	read, write

Examples

The following example shows how to move the card at 0/1/CPU0 into offline mode:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# hw-module service offline location 0/1/CPU0
```

Related Commands

Command	Description
show services role	Displays the current service role on service cards installed in your router.

hw-module shutdown

To administratively shut down a specific node, use the **hw-module shutdown** command in administration configuration mode. To return a node to the up state, use the **no** form of this command.

hw-module shutdown location *node-id*

no hw-module shutdown location *node-id*

Syntax Description

location *node-id*	Identifies the node you want to shut down. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.

Command Default

Nodes are in the up state.

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

Nodes that are shut down still have power, but cannot load or operate Cisco IOS XR software.

Note Route processors (RPs) cannot be administratively shut down.

Enter the **show platform** command in System Admin EXEC mode to display the results of the **hw-module shutdown** command.

Examples

The following example shows how to administratively shut down the node 0/2/CPU0:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# configure
RP/0/0/CPU0:router(admin-config)# hw-module shutdown location 0/2/CPU0
```

Related Commands

Command	Description
hw-module power disable	Disables the node power-on feature on a specific line card.
hw-module reset auto disable	Disables the node reset feature on a specific node.

hw-module subslot reload

To reload Cisco IOS XR software on a specific subslot, use the **hw-module subslot reload** command in EXEC mode.

hw-module subslot *subslot-id* **reload**

Syntax Description

subslot-id	Specifies the subslot to be restarted. The *subslot-id* argument is entered in the *rack*/*slot*/*subslot* notation.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

This command reloads Cisco IOS XR software on the specified shared port adapter (SPA) and restarts the SPA interfaces. The SPA reloads with the current running configuration and active software set for the SPA.

Task ID

Task ID	Operations
root-lr	read, write

Examples

The following example shows how to restart the SPA in slot 2, subslot 1:

```
RP/0/0/CPU0:router# hw-module subslot 0/2/1 reload
```

Related Commands

Command	Description
hw-module subslot shutdown	Administratively shuts down a specific shared port adapter.

hw-module subslot shutdown

To administratively shut down a specific shared port adapter (SPA), use the **hw-module subslot shutdown** command in global configuration mode. To return a SPA to the up state, use the **no** form of this command.

hw-module subslot *subslot-id* **shutdown** [**powered**| **unpowered**]

no hw-module subslot *subslot-id* **shutdown**

Syntax Description

subslot-id	Specifies the subslot to be shut down. The *subslot-id* argument is entered in the *rack*/*slot*/*subslot* notation.
powered	(Optional) Retains power to the specified subslot.
unpowered	(Optional) Powers down completely the specified subslot.

Command Default

Shutdown is powered if no option is specified.

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

This command administratively shuts down the SPA in the specified subslot. Subslots that are shut down still have power but cannot load or operate Cisco IOS XR software.

Task ID

Task ID	Operations
root-lr	read, write

Examples

The following example shows how to shut down the SPA in subslot 1 of the SPA interface processor (SIP) in slot 2:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# hw-module subslot 0/2/1 shutdown powered
```

Related Commands

Command	Description
shutdown (global)	Disables an interface (forces an interface to be administratively down).

led mode

To change the message, mode or status of a router card LED display, use the **led mode** command in administration configuration mode. To revert to the default message, mode or status, use the **no** form of this command.

led mode {**blink**| **default**| **scroll**} {**lock**| **unlock**} *message* **location** *node-id*

Syntax Description

{**blink** | **default** | **scroll**}	Specifies the mode of the card LED display.
{**lock** | **unlock**}	Specifies the status of the card LED display.
message	Specifies the message to display on the card LED.
location *node-id*	Specifies the node for which to configure the LED information. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.

Command Default

Mode: default; status: unlocked; message: according to the state of the software

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

You must be in a user group associated with a task group that includes the proper task IDs. The command reference guides include the task IDs required for each command. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **show led** command to display the LED settings for a card or all cards.

Task ID

Task ID	Operation
system	read, write

Examples

This example shows how to change the message displayed on the card LED and the subsequent display in the **show led** command output:

```
RP/0/0/CPU0:router# admin
```

```
RP/0/0/CPU0:router(admin)# configure
RP/0/0/CPU0:router(admin-config)# led mode default unlock STBY_RP location 0/rp0/cpu0
RP/0/0/CPU0:router(admin-config)# end

Uncommitted changes found, commit them? [yes]:
RP/0/0/CPU0:router(admin)# show led location all | i 0/RP0/CPU0

     LOCATION        MESSAGE         MODE       STATUS
    ================================================
        0/0/SP       IOX-RUN        DEFAULT   UNLOCKED
        0/1/SP       IOX-RUN        DEFAULT   UNLOCKED
    0/RP0/CPU0        STBY_RP       DEFAULT   UNLOCKED
    0/RP1/CPU0       ACTV RP        DEFAULT   UNLOCKED
```

Related Commands

Command	Description
show led	Displays LED information for the router, or for a specific LED location

redundancy switchover

To cause the primary (active) route processor (RP) to fail over to the redundant standby RP, use the **redundancy switchover** command in EXEC or administration EXEC mode. To disable the forced switchover, use the **no** form of this command.

redundancy switchover [**location** *node-id*]

no redundancy switchover [**location** *node-id*]

Syntax Description

location *node-id*	(Optional) Specifies the primary RP on which to force a switchover. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	No modification.
Release 3.5.0	This command was supported in administration EXEC mode.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 **redundancy switchover** command to trigger a switchover from the primary RP to the standby RP. When the **redundancy switchover** command is issued, the running (committed) configuration is automatically saved and loaded during switchover, and the standby RP becomes the active primary RP, while the original primary RP becomes the standby RP.

Note The **redundancy switchover** command can be used only if the standby RP is in the ready state. Use the **show redundancy** command to view the status of the RPs.

Task ID

Task ID	Operations
root-lr	read, write

Examples

The following example shows partial output for a successful redundancy switchover operation:

```
RP/0/0/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

  Reload and boot info
  ----------------------
  RP reloaded Tue Mar 28 09:02:26 2006: 5 hours, 41 minutes ago
  Active node booted Tue Mar 28 09:02:56 2006: 5 hours, 41 minutes ago
  Last switch-over Tue Mar 28 09:09:26 2006: 5 hours, 34 minutes ago
  Standby node boot Tue Mar 28 09:10:37 2006: 5 hours, 33 minutes ago
  Standby node last went not ready Tue Mar 28 09:25:49 2006: 5 hours, 18 minutes
  go
  Standby node last went ready Tue Mar 28 09:25:51 2006: 5 hours, 18 minutes ago
  There has been 1 switch-over since reload
  ....
RP/0/0/CPU0:router# redundancy switchover

  Initializing DDR SDRAM...found 2048 MB
  Initializing ECC on bank 0
  ...
  Turning off data cache, using DDR for first time

  Initializing NVRAM...
  Testing a portion of DDR SDRAM ...done
  Reading ID EEPROMs ...
  Initializing SQUID ...
  Initializing PCI ...

  PCI0 device[1]: Vendor ID 0x10ee

  Configuring MPPs ...
  Configuring PCMCIA slots ...
  --More--
```

If the standby RP is not in the ready state, the switchover operation is not allowed. The following example shows output for a failed redundancy switchover attempt:

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

  This node (0/RP0/CPU0) is in ACTIVE role
  Partner node (0/RP1/CPU0) is in UNKNOWN role

RP/0/0/CPU0:router# redundancy switchover
```

```
Standby card not running; failover disallowed.
```

Related Commands

Command	Description
show redundancy	Displays the status of route processor redundancy.

service-location

To associate a physical location on a service card with a firewall, or VRF-Aware Service Infrastructure (VASI) interface service instance, and, optionally, to configure a standby location for service switchover, use the **service-location** command in the appropriate service configuration mode. To remove the association, use the **no** form of this command.

service-location preferred-active *node-id* [**preferred-standby** *node-id* **[auto-revert]**]

no service-location preferred-active *node-id* [**preferred-standby** *node-id* **[auto-revert]**]

Syntax Description

preferred-active *node-id*	Specifies the physical location of the service card on which you prefer that the service should be active. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
preferred-standby *node-id*	Specifies a standby physical location for the service. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
auto-revert	Specifies that the service revert to the preferred active firewall when the active node comes back up after a switchover. **Note** Do not use **auto-revert** with more than 100 contexts in your configuration.

Command Default

No default behavior or values

Command Modes

Firewall configuration

VASI interface configuration

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 **service-location** command to specify the location of the service card to handle a VASI virtual interface. The **service-location** command can be configured on either of the interface halves, but if it is configured on both, the locations given must match exactly. If the **service-location** command is not configured, both halves of the pair remain down.

Task ID	Operations
firewall	read, write

Examples

The following example shows how to create a firewall named “fw1” in Cisco IOS XR software and associate it with the physical location at 0/0/cpu0:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# firewall fw1
RP/0/0/CPU0:router(config-firewall)# service-location preferred-active 0/0/CPU0
preferred-standby 0/1/CPU0 auto-revert
```

The following example shows how to use the **service-location** command to enable a VASI interface:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# interface vasileft 1
RP/0/0/CPU0:router(config-if)# vrf red
RP/0/0/CPU0:router(config-if)# ipv4 address 10.1.2.171 255.255.255.0
RP/0/0/CPU0:router(config-if)# service-location preferred-active 0/0/CPU0 preferred-standby
 0/1/CPU0 auto-revert
```

Related Commands

Command	Description
default-interface-name	Configures the default interface that represents any unprotected interface in the router.
failure-action	Configures the action to take if a failure or misconfiguration occurs.
firewall	Configures a virtual firewall in Cisco IOS XR software.
firewall (interface)	Configures the firewall attachment.
interface vasi	Configures a VASI interface and enters interface configuration mode.
show services role, on page 99	Displays the configured roles of the service cards.

Command	Description
show services redundancy, on page 96	Displays all configured services and their active and standby physical locations.

Related Commands

Command	Description
show services role	Displays the current service role on service cards installed in your router.
show services redundancy	

show dsc

To display the current designated shelf controller (DSC) configuration for the shelf or for the system, enter the **show dsc** command in administration EXEC mode.

show dsc [**all**| **mine**| **location** *node-id*]

Syntax Description

all	Displays DSC information from all available nodes in the system.
mine	Displays information about the current node.
location *node-id*	Displays DSC information for a specific node. The *node-id* is expressed in the *rack*/*slot*/*module* notation.

Command Default

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The **node** keyword was replaced by the **location** keyword. The **show dsc** command was moved from the root-system task ID to the system task ID.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

For more information about identifying and selecting a DSC on your router, see *Cisco IOS XR Getting Started Guide for the Cisco XR 12000 Series Router*.

Task ID

Task ID	Operations
system	read

Examples

The following example shows sample output from the **show dsc** command with the **mine** keyword.

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# show dsc mine

  NODE            ROLE        PRIORITY      TBEACON   PRESENT  MIGRATION
  ======================================================================
  0/0/CPU0        DSC         3             2000      YES      ENABLED
  ----------------------------------------------------------------------
```

Table 1: show dsc Field Descriptions

Field	Description
NODE	Location of the node in the *rack*/*slot*/*module* notation.
ROLE	Role this node is performing.
PRIORITY	DSC priority assigned to this node.
TBEACON	Current DSC beacon timeout value.
PRESENT	Indicates whether the node is present in the slot.
SERIAL ID	Serial ID assigned to this node.
MIGRATION	Displays the current DSC migration functionality to the standby card. Can be one of the following: • ENABLE—Migration process is enabled • UNKNOWN—Migration configuration is unknown.

The following example shows sample output from the **show dsc** command with the **all** keyword:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# show dsc all

  NODE            ROLE        PRIORITY      TBEACON   PRESENT  MIGRATION
  ========================================================================
  0/0/CPU0        DSC         3             2000      YES      ENABLED
  ------------------------------------------------------------------------
  0/5/CPU0        NON-DSC     5             2000      YES      ENABLED
  ------------------------------------------------------------------------
```

Related Commands

Command	Description
dsc serial	Defines the serial ID for a rack.

show environment

To display environmental monitor parameters for the system, use the **show environment** command in EXEC mode or administration EXEC mode.

EXEC Mode:

show environment [**all**| **table**| **temperatures**| **voltages**] **[last]** [*node-id*]

Administration EXEC Mode:

show environment [**all**| **fans**| **last**| **leds**| **power-supply**| **table**| **temperatures**| **voltages**] [*node-id*]

Syntax Description

all	(Optional) Displays information for all environmental monitor parameters.
fans	(Optional) Displays information about the fans.
last	(Optional) Displays the environmental statistics at the time of the last shutdown.
leds	(Optional) Displays monitor parameters for LEDs on all cards in the node.
power-supply	(Optional) Displays power supply voltage and current information.
table	(Optional) Displays environmental parameter ranges.
temperatures	(Optional) Displays system temperature information.
voltages	(Optional) Displays system voltage information.
node-id	(Optional) Node whose information you want to display. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.

Command Default

All environmental monitor parameters are displayed.

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The **show environment** command was moved from the root-system task ID to the system task ID.
Release 3.4.0	No modification.

Release	Modification
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 environment** command displays information about the hardware that is installed in the system, including fans, LEDs, power supply voltage, and current information and temperatures.

Task ID

Task ID	Operations
system	read

Examples

The following example shows sample output from the **show environment** command with the **temperatures** keyword:

```
RP/0/0/CPU0:router# show environment temperatures

  R/S/I   Modules         Inlet           Exhaust         Hotspot
                          Temperature     Temperature     Temperature
                          (deg C)         (deg C)         (deg C)

  0/2/*   host              31, 27         43, 45         48
          cpu                                             31
          fabricq0                                        46
          fabricq1                                        44
          ingressq                                        34
          egressq                          41             43
          ingresspse                                      35
          egresspse                                       42
          plimasic          30, 31         42
  0/RP1/* host              38                            44
          cpu                                             36
          ingressq                                        42
          fabricq0                                        43
  0/SM0/* host              29, 29                        41, 33
```

Table 2: show environment temperatures Field Descriptions, on page 45 describes the significant fields shown in the display.

Table 2: show environment temperatures Field Descriptions

Field	Description
R/S/I	Rack number, slot number, and interface for which information is displayed, in the format *rack*/*slot*/*module*.
Modules	Module for which temperature information is displayed.
Inlet Temperature (deg C)	Current temperature of the inlet sensor, in degrees Celsius. **Note** The inlet temperature corresponds to the room air temperature entering the router.
Exhaust Temperature (deg C)	Current temperature of the exhaust sensor, in degrees Celsius. **Note** The exhaust temperature corresponds to the air being exhausted from the router.
Hotspot Temperature (deg C)	Current temperature of the hotspot, in degrees Celsius.

The following example shows sample output from the **show environment** command the with the **leds** keyword:

```
RP/0/0/CPU0:router# show environment leds

  0/2/*: Module (host) LED status says: OK
  0/2/*: Module (plimasic) LED status says: OK
  0/SM0/*: Module (host) LED status says: OK
```

Table 3: show environment leds Field Descriptions, on page 45describes the significant fields shown in the display.

Table 3: show environment leds Field Descriptions

Field	Description
rack_num/*slot_num*/*:	Rack number and slot number where the node resides.
Module (host) LED status says:	Current LED status of the specified node.

The following example shows sample output from the **show environment** command the with the **power-supply** keyword:

```
RP/0/5/CPU0:router(admin)# show env power-supply
Thu Aug  5 07:42:49.259 DST
                    48V       Current
R/S/I     Module    (V)         (A)
0/24/*    PEM1      No Module Present
          PEM2       52          15       PWR-GSR6-AC= Standard AC PS
0/25/*    PEM1      No Module Present
```

```
PEM2       52          16        PWR-GSR6-AC= Standard AC PS
```

This table describes the significant fields shown in the display.

Table 4: show environment power-supply Field Descriptions

Field	Description
R/S/I	Rack number, slot number, and interface for which information is displayed, in the format PEM/Power Module/* (for example 0/PM0/*).
Modules	Module for which power information is displayed.
Capacity	Power capacity of each power module in Watts.
Status	Operational status of power modules.
Power Draw	Real (measured) power drawn from each power module.
Voltage	Real (measured) power module voltage.
Current	Real (measured) power module current draw.
Power Shelves Type	AC or DC.
Total Power Capacity	Sum of the power capacity of each of the modules installed in the chassis.
Usable Power Capacity	Sum of the power capacity of each of the powered and operational power modules installed in the chassis.
Supply Failure Protected Capacity	Protected power capacity of the chassis with power module redundancy (ASR 9010 AC 3+3, ASR 9010 DC 5+1, ASR 9006 AC 2+1, ASR 9010 DC 2+1).
Feed Failure Protected Capacity	Feed protected power capacity. This value applies to the ASR 9010 AC system only.
Worst Case Power Used	Sum of the estimated power draw of each of the load modules in the chassis. Load modules can be fan trays, RSPs and line cards.
Worst Case Power Available	Usable power capacity minus the worst case power used.
Supply Protected Capacity Available	Supply failure protected capacity minus the worst case power used.
Feed Protected Capacity Available	Feed failure protected capacity minus the worst case power used.

show fpd package

To display which shared port adapters (SPA) and SPA interface processors (SIPs) are supported with your current Cisco IOS XR software release, which field-programmable device (FPD) image you need for each SPA and SIP, and what the minimum hardware requirements are for the SPA and SIP modules, use the **show fpd package** command in administration EXEC mode.

show fpd package

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.4.1	The **show fpd package** command output was updated to display the ROMMON images.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

If there are multiple FPD images for your card, use the **show fpd package** command to determine which FPD image to use if you only want to upgrade a specific FPD type.

Task ID

Task ID	Operations
sysmgr	read

Examples

The following example shows sample output from the **show fpd package** command:

```
RP/0/0/CPU0:Router# admin
Thu Jul  7 04:40:30.631 DST

================================ ============================================
                                        Field Programmable Device Package
                                 ============================================
                                                                  SW      Min Req   Min Req
Card Type            FPD Description            Type Subtype   Version   SW Ver    HW Vers
==================== ========================== ==== ======= =========== ========  =========
E3-OC12-ATM-4        CIS1 FPGA                  lc   fpga2   40971.00        0.0       0.0
                     IOB FPGA                   lc   fpga3   41091.00        0.0       0.0
                     SAF 0 FPGA                 lc   fpga4   45586.00        0.0       0.0
                     CIS2 FPGA                  lc   fpga1   40977.00        0.0       0.0
--------------------------------------------------------------------------------------------
E3-OC3-ATM-4         CIS1 FPGA                  lc   fpga2   40971.00        0.0       0.0
                     IOB FPGA                   lc   fpga3   41091.00        0.0       0.0
                     SAF 0 FPGA                 lc   fpga4   45586.00        0.0       0.0
                     CIS2 FPGA                  lc   fpga1   40977.00        0.0       0.0
--------------------------------------------------------------------------------------------
12000-ServEngCard    TREX FPGA                  lc   fpga2     162.45        0.0       0.0
                     TREX FPGA                  lc   fpga1       0.41257     0.0       0.0
--------------------------------------------------------------------------------------------
12000-SIP            HABANERO FPGA              lc   fpga2     240.03        0.0       0.0
                     JALAPENO FPGA              lc   fpga5     240.13        0.0       0.0
                     JALAPENO FPGA              lc   fpga5     240.13        0.0       0.0
                     JALAPENO FPGA              lc   fpga1     255.23        0.0       0.0
--------------------------------------------------------------------------------------------
E3-OC12-CH-1         Shiver FPGA                lc   fpga1       1.02        0.0       0.0
--------------------------------------------------------------------------------------------
SPA-IPSEC-2G         Sequoia                    spa  fpga2       1.01        0.0       1.0
                     Lodi                       spa  fpga1       1.22        0.0       1.0
                     SPA PROM                   spa  rommon      1.01        0.0       1.0
--------------------------------------------------------------------------------------------
SPA-4XT3/E3          SPA E3 Subrate FPGA        spa  fpga2       1.04        0.0       0.0
                     SPA T3 Subrate FPGA        spa  fpga3       1.04        0.0       0.0
                     SPA I/O FPGA               spa  fpga1       1.01        0.0       0.0
                     SPA ROMMON                 spa  rommon      2.12        0.0       0.0
```

SPA-2XT3/E3	SPA E3 Subrate FPGA	spa	fpga2	1.04	0.0	0.0
	SPA T3 Subrate FPGA	spa	fpga3	1.04	0.0	0.0
	SPA I/O FPGA	spa	fpga1	1.01	0.0	0.0
	SPA ROMMON	spa	rommon	2.12	0.0	0.0
SPA-4XCT3/DS0	SPA T3 Subrate FPGA	spa	fpga2	0.11	0.0	0.100
	SPA T3 Subrate FPGA	spa	fpga2	1.04	0.0	0.200
	SPA I/O FPGA	spa	fpga1	2.08	0.0	0.100
	SPA ROMMON	spa	rommon	2.12	0.0	0.100
SPA-2XCT3/DS0	SPA T3 Subrate FPGA	spa	fpga2	0.11	0.0	0.100
	SPA T3 Subrate FPGA	spa	fpga2	1.04	0.0	0.200
	SPA I/O FPGA	spa	fpga1	2.08	0.0	0.100
	SPA ROMMON	spa	rommon	2.12	0.0	0.100
SPA-1XCHSTM1/OC3	SPA T3 Subrate FPGA	spa	fpga2	1.04	0.0	0.0
	SPA I/O FPGA	spa	fpga1	1.08	0.0	0.0
	SPA ROMMON	spa	rommon	2.12	0.0	0.0
SPA-24CHT1-CE-ATM	SPA T3 Subrate FPGA	spa	fpga2	1.10	0.0	1.0
	SPA I/O FPGA	spa	fpga1	2.32	0.0	1.0
	SPA ROMMON	spa	rommon	1.03	0.0	1.0
SPA-2CHT3-CE-ATM	SPA T3 Subrate FPGA	spa	fpga2	1.10	0.0	1.0
	SPA I/O FPGA	spa	fpga1	2.22	0.0	1.0
	SPA ROMMON	spa	rommon	1.04	0.0	1.0
SPA-1CHOC3-CE-ATM	SPA OC3 Subrate FPGA	spa	fpga2	1.00	0.0	2.0
	SPA I/O FPGA	spa	fpga1	2.23	0.0	2.0
	SPA ROMMON	spa	rommon	1.04	0.0	2.0
SPA-IPSEC-2G-2	Sequoia	spa	fpga2	1.01	0.0	1.0
	Lodi	spa	fpga1	1.22	0.0	1.0
	SPA PROM	spa	rommon	1.01	0.0	1.0
SPA-1XCHOC48/DS3	SPA I/O FPGA	spa	fpga2	1.00	0.0	0.49
	SPA I/O FPGA	spa	fpga3	1.00	0.0	0.52
	SPA I/O FPGA	spa	fpga1	1.36	0.0	0.49
	SPA ROMMON	spa	rommon	2.02	0.0	0.49
SPA-1XCHOC12/DS0	SPA I/O FPGA	spa	fpga2	1.00	0.0	0.49

	SPA I/O FPGA	spa	fpga1	1.36	0.0	0.49
	SPA ROMMON	spa	rommon	2.02	0.0	0.49
SPA-OC192POS	SPA FPGA swv1.2	spa	fpga1	1.02	0.0	0.0
SPA-8XOC12-POS	SPA FPGA swv1.0	spa	fpga1	1.00	0.0	0.5
SPA-8XCHT1/E1	SPA I/O FPGA	spa	fpga1	2.08	0.0	0.0
	SPA ROMMON	spa	rommon	2.12	0.0	0.140
SPA-OC192POS-XFP	SPA FPGA swv1.2	spa	fpga1	1.02	0.0	0.0
	SPA FPGA swv1.2 hwv2	spa	fpga1	1.02	0.0	2.0
SPA-10X1GE	SPA FPGA swv1.10	spa	fpga1	1.10	0.0	0.0
SPA-5X1GE	SPA FPGA swv1.10	spa	fpga1	1.10	0.0	0.0
SPA-2XOC48POS/RPR	SPA FPGA swv1.0	spa	fpga1	1.00	0.0	0.0
SPA-4XOC48POS/RPR	SPA FPGA swv1.0	spa	fpga1	1.00	0.0	0.0
SPA-1XTENGE-XFP	SPA FPGA swv1.9	spa	fpga1	1.09	0.0	0.0
SPA-8X1FE	SPA FPGA swv1.1	spa	fpga1	1.01	0.0	0.0
SPA-1XOC48POS/RPR	SPA FPGA swv1.2	spa	fpga1	1.02	0.0	0.0
SPA-8XOC3-POS	SPA FPGA swv1.0	spa	fpga1	1.00	0.0	0.5
SPA-2XOC12-POS	SPA FPGA swv1.0	spa	fpga1	1.00	0.0	0.5
SPA-4XOC12-POS	SPA FPGA swv1.0	spa	fpga1	1.00	0.0	0.5
SPA-10X1GE-V2	SPA FPGA swv1.10	spa	fpga1	1.10	0.0	0.0
SPA-8X1GE-V2	SPA FPGA swv1.10	spa	fpga1	1.10	0.0	0.0
SPA-5X1GE-V2	SPA FPGA swv1.10	spa	fpga1	1.10	0.0	0.0
SPA-2X1GE-V2	SPA FPGA swv1.1	spa	fpga1	1.01	0.0	0.0
SPA-1X10GE-L-V2	SPA FPGA swv1.11	spa	fpga1	1.11	0.0	0.0
SPA-8X1FE-V2	SPA FPGA swv1.1	spa	fpga1	1.01	0.0	0.0
SPA-4XOC3-POS-V2	SPA FPGA swv1.0	spa	fpga1	1.00	0.0	0.5
SPA-1X10GE-L-IT	SPA FPGA swv1.0	spa	fpga1	1.00	0.0	0.0

```
----------------------------------------------------------------------------------------
SPA-1XOC3-ATM-V2     TATM SPA IOFPGA            spa  fpga1       2.02        0.0        0.0
----------------------------------------------------------------------------------------
SPA-2XOC3-ATM-V2     SPA TATM IOFPGA            spa  fpga1       2.02        0.0        0.0
----------------------------------------------------------------------------------------
SPA-3XOC3-ATM-V2     SPA TATM IOFPGA            spa  fpga1       2.02        0.0        0.0
----------------------------------------------------------------------------------------
SPA-1XOC12-ATM-V2    SPA TATM IOFPGA            spa  fpga1       2.02        0.0        0.0
----------------------------------------------------------------------------------------
```

This table describes the significant fields shown in the display:

Table 5: show fpd package Field Descriptions

Field	Description
Card Type	Module part number.
FPD Description	Description of all FPD images available for the SPA.
Type	Hardware type. Possible types can be: • spa—Shared port adapter • lc—Line card
Subtype	FPD subtype. These values are used in the **upgrade hw-module fpd** command to indicate a specific FPD image type to upgrade.
SW Version	FPD software version recommended for the associated module running the current Cisco IOS XR software.
Min Req SW Vers	Minimum required FPD image software version to operate the card. Version 0.0 indicates that a minimum required image was not programmed into the card.
Min Req HW Vers	Minimum required hardware version for the associated FPD image. A minimum hardware requirement of version 0.0 indicates that all hardware can support this FPD image version.

Note In the **show fpd package** command output, the "subtype" column shows the FPDs that correspond with each SPA image. To upgrade a specific FPD with the **upgrade hw-module fpd** command, replace the *fpga-type* argument with the appropriate FPD from the "subtype" column, as shown in the following example:

```
RP/0/0/CPU0:router(admin)# upgrade hw-module fpd fpga2 location 0/3/1 reload
```

Related Commands

Command	Description
show hw-module fpd	Displays field-programmable device (FPD) compatibility for all modules or a specific module.
upgrade hw-module fpd	Manually upgrades the current field-programmable device (FPD) image package on a module.

show hw-module fpd

To display field-programmable device (FPD) compatibility for all modules or a specific module, use the **show hw-module fpd** command in the EXEC or administration EXE mode.

show hw-module fpd location {*node-id*| **all**}

Syntax Description

location {*node-id* | **all**}	Specifies the location of the module. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation. Use the **all** keyword to indicate all nodes.

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	The **show hw-module fpd** command output was updated to display the ROMMON images.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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
sysmgr	read
root-lr	read

Examples

The following example shows how to display FPD compatibility for all modules in the router:

```
RP/0/0/CPU0:router# show hw-module fpd location all

==================================== ========================================
                                     Existing Field Programmable Devices
                                     ========================================
                                       HW                        Current SW Upg/
Location     Card Type               Version Type Subtype Inst   Version   Dng?
============ ======================= ======= ==== ======= ==== =========== ====
0/1/0        SPA-4XT3/E3               1.0   spa  fpga    0       0.24     No
                                             spa  rommon  0       2.12     No
                                             spa  fpga2   0       1.0      No
                                             spa  fpga3   0       1.0      No
------------------------------------------------------------------------------
0/1/1        SPA-4XCT3/DS0             0.253 spa  fpga    1       2.1      No
                                             spa  rommon  1       2.12     No
                                             spa  fpga2   1       0.15     No
------------------------------------------------------------------------------
0/3/0        SPA-2XOC48POS/RPR         1.0   spa  fpga    0       1.0      No
------------------------------------------------------------------------------
0/3/1        SPA-1XTENGE-XFP           3.2   spa  fpga    1       1.7      No
------------------------------------------------------------------------------


RP/0/0/CPU0:router# show hw-module fpd location 0/1/0
Sun Apr 18 10:51:33.776 DST

==================================== ========================================
                                     Existing Field Programmable Devices
                                     ========================================
                                       HW                        Current SW Upg/
Location     Card Type               Version Type Subtype Inst   Version   Dng?
============ ======================= ======= ==== ======= ==== =========== ====
0/1/0        SPA-1XTENGE-XFP           3.2   spa  fpga1   0       1.09     No
------------------------------------------------------------------------------
```

Table 6: show hw-module fpd Field Descriptions

Field	Description
Location	Location of the module in the *rack*/*slot*/*module* notation.
Card Type	Module part number.
HW Version	Hardware model version for the module.

Field	Description
Type	Hardware type. Can be one of the following types: • spa—Shared port adapter • lc—Line card
Subtype	FPD type. Can be one of the following types: • fabldr—Fabric downloader • fpga1—Field-programmable gate array • fpga2—Field-programmable gate array 2 • fpga3—Field-programmable gate array 3 • fpga4—Field-programmable gate array 4 • fpga5—Field-programmable gate array 5 • rommonA—Read-only memory monitor A • rommon—Read-only memory monitor B
Inst	FPD instance. The FPD instance uniquely identifies an FPD and is used by the FPD process to register an FPD.
Current SW Version	Currently running FPD image version.
Upg/Dng?	Specifies whether an FPD upgrade or downgrade is required. A downgrade is required in rare cases when the version of the FPD image has a higher major revision than the version of the FPD image in the current Cisco IOS XR software package.

Related Commands

Command	Description
show fpd package	Displays which SPAs and SIPs are supported with your current Cisco IOS XR software release, which FPD image you need for each card, and what the minimum hardware requirements are for the various modules.
upgrade hw-module fpd	Manually upgrades the current field-programmable device (FPD) image package on a module.

show hw-module profile

To display the active profiles on the router, use the **show hw-module profile** command in EXEC mode.

show hw-module profile feature {**all**| **location** *node-id*}

Syntax Description

feature	Displays information regarding active feature profiles.
location *node-id*	Displays the active profile for a particular node.

Command Modes

EXEC

Command History

Release	Modification
Release 4.0.1	The **feature** keyword was added.
Release 4.2.0	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.

The **show hw-module profile** command displays only active profiles. If a profile has been configured and the line card has not be reloaded since the configuration, the profile is not active. Use the **show running-config hw-module profile** command to view configured profiles.

Task ID

Task ID	Operation
root-lr	read

Examples

This example shows sample output from the **show hw-module profiles** command with the **feature** keyword:

```
RP/0/RSP0/CPU0router0# show hw-module profile feature

Thu Dec  9 03:30:42.633 PST

                Node: 0/0/CPU0:
----------------------------------------------------------------

Memory Resources for All NPs
----------------------------
Feature Profile: Default
```

```
                Node: 0/1/CPU0:
----------------------------------------------------------------

Memory Resources for All NPs
----------------------------
Feature Profile: Default

                Node: 0/4/CPU0:
----------------------------------------------------------------

Memory Resources for All NPs
----------------------------
Feature Profile: Default

                Node: 0/6/CPU0:
----------------------------------------------------------------

Memory Resources for All NPs
----------------------------
Feature Profile: Default


RP/0/0/CPU0:router# show hw-module profile feature all

Thu Sep  8 22:38:50.973 DST
----------------------------------------
BundleName      Features Not Supported
----------------------------------------
Default         iMSG
iMsg            Biscuit
----------------------------------------
Nodeno          Active Bundle Name
----------------------------------------
0               Not Supported
1               Default
2               Default
3               Default
4               Default
----------------------------------------
```

Related Commands

Command	Description
hw-module profile feature, on page 17	Enables a feature bundle on the router.

Related Commands

Command	Description
hw-module profile feature	Enables a feature bundle on the router.

show hw-module subslot brief

To display summary information related to a specified internal hardware device on a shared port adapter (SPA), use the **show hw-module subslot brief** command in EXEC mode.

show hw-module subslot [*node-id*] **brief** [*device* [*device-index* [*device-subindex*]]]

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
device	(Optional) Internal hardware device for which to display the specified information. Valid devices include: • **analog-digital-converter—**Displays analog-to-digital converter information. • **c2w—**Displays Cisco-to-wire bus device information. • **fpga—**Displays SPA field-programmable gate array information. • **framer—**Displays SONET framer information. (Not applicable to Ethernet SPAs.) • **hdlc—**Displays SPA hdlc information, where applicable. • **l2-tcam—**Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • **mac—**Displays SPA MAC information. (Not applicable to POS SPAs.) • **pluggable-optics—**Displays pluggable-optics module information. • **power-margining—**Displays power-margining device information. • **sar—**Displays SPA ATM SAR information. • **sdcc—**Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • **serdes—**Displays SPA serializer/deserializer information. • **spi4—**Displays system packet interface level 4.2 bus device information. • **temperature-sensor—**Displays temperature sensor information.
device-index	(Optional) Index of the specific device if there are multiple devices of the same type.
device-subindex	(Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

You can also enter a partially qualified location specifier by using the wildcard (*) character. For example, 0/1/* would display information for all modules on slot 1 in rack 0.

Use the **show hw-module subslot brief** command to obtain summary diagnostic information about a device on an interface on the SPA.

Task ID

Task ID	Operations
root-lr	read

Examples

The following example shows sample output for the **show hw-module subslot brief** command:

```
RP/0/0/CPU0:router# show hw-module subslot 0/1/0 brief

  Subslot 0/1/0 brief info:
  -------------------------
  SPA inserted: YES
  SPA type:     4xOC3 POS SPA
  SPA operational state: READY
  SPA cfg admin up: YES
```

Table 7: show hw-module subslot config Field Descriptions

Field	Description
SPA inserted	Indicates if a SPA is currently detected in the subslot.
SPA type	Description of SPA including the technology type, number of ports, height of SPA (HHSPA—single height, FHSPA—double height), and optics type.
SPA operational state	Current state of the SPA module.
SPA cfg admin up	Configured state of the SPA: YES—the SPA is not shut down; NO—the SPA is shut down.

show hw-module subslot config

To display information related to configuration of the specified internal hardware device on a shared port adapter (SPA), use the **show hw-module subslot config** command in EXEC mode.

show hw-module subslot [*node-id*] **config** [*device* [*device-index* [*device-subindex*]]]

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
device	(Optional) Internal hardware device for which to display the specified information. Valid devices include: • **analog-digital-converter—**Displays analog-to-digital converter information. • **c2w—**Displays Cisco-to-wire bus device information. • **fpga—**Displays SPA field-programmable gate array information. • **framer—**Displays SONET framer information. (Not applicable to Ethernet SPAs.) • **hdlc—**Displays SPA hdlc information, where applicable. • **l2-tcam—**Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • **mac—**Displays SPA MAC information. (Not applicable to POS SPAs.) • **pluggable-optics—**Displays pluggable-optics module information. • **power-margining—**Displays power-margining device information. • **sar—**Displays SPA ATM SAR information. • **sdcc—**Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • **serdes—**Displays SPA serializer/deserializer information. • **spi4—**Displays system packet interface level 4.2 bus device information. • **temperature-sensor—**Displays temperature sensor information.
device-index	(Optional) Index of the specific device if there are multiple devices of the same type.
device-subindex	(Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

You can also enter a partially qualified location specifier by using the wildcard (*) character. For example, 0/1/* would display information for all modules on slot 1 in rack 0.

Use the **show hw-module subslot config** command to obtain diagnostic information about the configuration of an interface on the SPA.

Task ID

Task ID	Operations
root-lr	read

Examples

The following example shows sample output for the **show hw-module subslot config** command:

```
RP/0/0/CPU0:router# show hw-module subslot 0/6/cpu0 config

 Thu Feb 19 00:33:02.921 PST

Subslot 0/6/0 config info:
-------------------------
SPA inserted: YES
SPA cfg admin up: YES
SPA cfg power up: YES

Subslot 0/6/1 config info:
```

```
------------------------
SPA inserted: YES
SPA cfg admin up: YES
SPA cfg power up: YES

Subslot 0/6/2 config info:
------------------------
SPA inserted: NO
SPA cfg admin up: YES
SPA cfg power up: NO

Subslot 0/6/3 config info:
------------------------
SPA inserted: NO
SPA cfg admin up: YES
SPA cfg power up: NO

Subslot 0/6/4 config info:
------------------------
SPA inserted: NO
SPA cfg admin up: YES
SPA cfg power up: NO

Subslot 0/6/5 config info:
------------------------
SPA inserted: NO
SPA cfg admin up: YES
SPA cfg power up: NO
```

Table 8: show hw-module subslot config Field Descriptions

Field	Description
SPA inserted	Indicates if a SPA is currently detected in the subslot.
SPA cfg admin up	Configured state of the SPA: YES—the SPA is not shut down; NO—the SPA is shut down.
SPA cfg power up	Indicates whether the subslot is currently configured as powered or not.

Related Commands

Command	Description
show controllers	Displays the controller type and other information.

show hw-module subslot counters

To display statistics related to the processing of internal hardware devices for a shared port adapter (SPA), use the **show hw-module subslot counters** command in EXEC mode.

show hw-module subslot [*node-id*] **counters** [*device* [*device-index* [*device-subindex*]]]

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
device	(Optional) Internal hardware device for which to display the specified information. Valid devices include: • **analog-digital-converter—**Displays analog-to-digital converter information. • **c2w—**Displays Cisco-to-wire bus device information. • **fpga—**Displays SPA field-programmable gate array information. • **framer—**Displays SONET framer information. (Not applicable to Ethernet SPAs.) • **hdlc—**Displays SPA hdlc information, where applicable. • **l2-tcam—**Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • **mac—**Displays SPA MAC information. (Not applicable to POS SPAs.) • **pluggable-optics—**Displays pluggable-optics module information. • **power-margining—**Displays power-margining device information. • **sar—**Displays SPA ATM SAR information. • **sdcc—**Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • **serdes—**Displays SPA serializer/deserializer information. • **spi4—**Displays system packet interface level 4.2 bus device information. • **temperature-sensor—**Displays temperature sensor information.
device-index	(Optional) Index of the specific device if there are multiple devices of the same type.
device-subindex	(Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

You can also enter a partially qualified location specifier by using the wildcard (*) character. For example, 0/1/* would display information for all modules on slot 1 in rack 0.

Use the **show hw-module subslot counters** command to display statistics related to the processing by the specified internal hardware device.

Task ID

Task ID	Operations
root-lr	read

Examples

The following example shows sample output for the **show hw-module subslot counters** command:

```
RP/0/0/CPU0:router# show hw-module subslot 0/1/cpu0 counters

Subslot 0/1/0 counts info:
-------------------------
SPA inserted: YES
SPA type:     8xGE SPA
SPA operational state: READY
SPA insertion time:  Wed Jan 14 11:33:24 2009
SPA last time ready: Wed Jan 14 11:33:37 2009
SPA uptime [HH:MM:SS]: 852:54:24
```

```
Subslot 0/1/1 counts info:
------------------------
SPA inserted: YES
SPA type:     5xGE SPA
SPA operational state: READY
SPA insertion time:  Wed Jan 14 11:33:24 2009
SPA last time ready: Wed Jan 14 11:33:38 2009
SPA uptime [HH:MM:SS]: 852:54:23
 --More--
```

Table 9: show hw-module subslot counters Field Descriptions

Field	Description
SPA inserted	Indicates if a SPA is currently detected in the subslot.
SPA type	Description of SPA including the technology type, number of ports, height of SPA (HHSPA—single height, FHSPA—double height), and optics type.
SPA operational state	Current state of the SPA module.
SPA insertion time	Time the SPA module was last physically inserted or power-cycled.
SPA last time ready	Time the SPA module last changed state to up or ready (the last time the module was loaded or reloaded).
SPA uptime	The time in service or amount of time since the module was last out of service due to a reload, power cycle, or configuration event.

The following example shows sample output for the **show hw-module subslot counters** command with the **framer** keyword:

```
RP/0/0/CPU0:router# show hw-module subslot counters framer

  SPA device framer index 0 subindex 0 info:

  Milan Framer counters:
  STREAM 0
  Rx Bytes (48-bit) (#0x381fa078-0x883c): 163857232569448
  Rx Good Bytes (48-bit) (#0x381fa080-0x8840): 1964924
  Rx Good Packets (48-bit) (#0x381fa040-0x8820): 26234
  Tx Byte Cnt Reg (48-bit) (#0x381fe070-0xa838): 9375380
  Tx Good Bytes Cnt Reg (48-bit) (#0x381fe068-0xa834): 8909442
  Tx Transmitted Packet Cnt Reg (48-bit) (#0x381fe040-0xa820): 114692
```

show hw-module subslot errors

To display error information about internal hardware devices for a shared port adapter (SPA), use the **show hw-module subslot errors** command in EXEC mode.

show hw-module subslot [*node-id*] **errors** [*device* [*device-index* [*device-subindex*]]]

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
device	(Optional) Internal hardware device for which to display the specified information. Valid devices include: • **analog-digital-converter—**Displays analog-to-digital converter information. • **c2w—**Displays Cisco-to-wire bus device information. • **fpga—**Displays SPA field-programmable gate array information. • **framer—**Displays SONET framer information. (Not applicable to Ethernet SPAs.) • **hdlc—**Displays SPA hdlc information, where applicable. • **l2-tcam—**Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • **mac—**Displays SPA MAC information. (Not applicable to POS SPAs.) • **pluggable-optics—**Displays pluggable-optics module information. • **power-margining—**Displays power-margining device information. • **sar—**Displays SPA ATM SAR information. • **sdcc—**Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • **serdes—**Displays SPA serializer/deserializer information. • **spi4—**Displays system packet interface level 4.2 bus device information. • **temperature-sensor—**Displays temperature sensor information.
device-index	(Optional) Index of the specific device if there are multiple devices of the same type.
device-subindex	(Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

You can also enter a partially qualified location specifier by using the wildcard (*) character. For example, 0/1/* would display information for all modules on slot 1 in rack 0.

Use the **show hw-module subslot errors** command to display error information related to the specified internal hardware device on a SPA.

Task ID

Task ID	Operations
root-lr	read

Examples

The following example shows partial sample output for the **show hw-module subslot errors** command:

```
RP/0/0/CPU0:router# show hw-module subslot 0/1/0 errors

Subslot 0/1/0 errors info:
  ------------------------
  SPA inserted: YES
  SPA type:     4xOC3 POS SPA
  SPA operational state: READY
  SPA last reset reason:   UNKNOWN
  SPA last failure reason: UNKNOWN

  Subslot 0/1/1 errors info:
```

```
------------------------
SPA inserted: YES
SPA type:     1x10GE XFP SPA
SPA operational state: READY
SPA last reset reason:   UNKNOWN
SPA last failure reason: UNKNOWN

Subslot 0/1/2 errors info:
------------------------
SPA inserted: NO

Subslot 0/1/3 errors info:
------------------------
SPA inserted: NO

Subslot 0/1/4 errors info:
------------------------
SPA inserted: YES
SPA type:     4xOC48 POS/RPR HHSPA
SPA operational state: READY
SPA last reset reason:   UNKNOWN
SPA last failure reason: UNKNOWN

Subslot 0/1/5 errors info:
------------------------
SPA inserted: YES
SPA type:     8xGE SPA
SPA operational state: READY
SPA last reset reason:   UNKNOWN
SPA last failure reason: UNKNOWN

 --More--
```

Table 10: show hw-module subslot errors Field Descriptions

Field	Description
Subslot */*/* errors info	SPA for which error information is being displayed. The location of the SPA is expressed in the *rack*/*slot*/*module* notation.
SPA inserted	Indication if a SPA is currently detected in the subslot.
SPA type	Description of SPA including the technology type, number of ports, height of SPA (HHSPA—single-height, FHSPA—double-height), and optics type.
SPA operational state	Current operational state of the SPA module.
SPA last reset reason	Reason for the most recent reset of this SPA.
SPA last failure reason	Reason for the last failure on this SPA.

Related Commands

Command	Description
show controllers	Displays the controller type and other information.

show hw-module subslot plim-subblock

To display SPA firmware information for a shared port adapter (SPA), use the **show hw-module subslot plim-subblock** command in EXEC mode.

show hw-module subslot [*node-id*] **plim-subblock**

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 hw-module subslot plim-subblock** command to display SPA firmware information, both kernel and application information, as well as heartbeat and keepalive information. The **show hw-module subslot plim-subblock** command is mainly used for debugging purposes.

Task ID

Task ID	Operations
root-lr	read

Examples

The following example shows sample output for the **show hw-module subslot plim-subblock** command:

```
RP/0/0/CPU0:router# show hw-module subslot 0/5/0 plim-subblock

  Subslot 0/5/0 Plim Subblock Info:
  -------------------------------------

  Firmware information:
    SPA v4.10.1, ifs-spa_ppc_iox.elf
    Application v3.44.0, spa_ct3_pat_apps_iox.tar.gz

  SPA keepalive information:
    Heartbeat check disabled : FALSE
    Keepalive seq 372638, seen 372637, Time since last ipc keep 1s
```

Related Commands

Command	Description
show controllers	Displays the controller type and other information.

show hw-module subslot registers

To display register information about internal hardware devices for a shared port adapter (SPA), use the **show hw-module subslot registers** command in EXEC mode.

show hw-module subslot [*node-id*] **registers** [*device* [*device-index* [*device-subindex*]]]

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
device	(Optional) Internal hardware device for which to display the specified information. Valid devices include: • **analog-digital-converter—**Displays analog-to-digital converter information. • **c2w—**Displays Cisco-to-wire bus device information. • **fpga—**Displays SPA field-programmable gate array information. • **framer—**Displays SONET framer information. (Not applicable to Ethernet SPAs.) • **hdlc—**Displays SPA hdlc information, where applicable. • **l2-tcam—**Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • **mac—**Displays SPA MAC information. (Not applicable to POS SPAs.) • **pluggable-optics—**Displays pluggable-optics module information. • **power-margining—**Displays power-margining device information. • **sar—**Displays SPA ATM SAR information. • **sdcc—**Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • **serdes—**Displays SPA serializer/deserializer information. • **spi4—**Displays system packet interface level 4.2 bus device information. • **temperature-sensor—**Displays temperature sensor information.
device-index	(Optional) Index of the specific device if there are multiple devices of the same type.
device-subindex	(Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 command to display the nodes on the router.

You can also enter a partially qualified location specifier by using the wildcard (*) character. For example, 0/1/* would display information for all modules on slot 1 in rack 0.

Use the **show hw-module subslot registers** command to display register information for the specified internal hardware device on the SPA.

Task ID

Task ID	Operations
root-lr	read

Examples

The following example shows sample output for the **show hw-module subslot registers** command:

```
RP/0/0/CPU0:router# show hw-module subslot 0/1/cpu0 registers

 Thu Feb 19 00:38:32.908 PST

Subslot 0/1/0 registers info:
---------------------------
SPA hardware ID : 0x0
SPA SW FPGA rev.: 0x1000A
```

```
Subslot 0/1/1 registers info:
----------------------------
SPA hardware ID : 0x0
SPA SW FPGA rev.: 0x1000A

Subslot 0/1/2 registers info:
----------------------------
SPA hardware ID : 0x0
SPA SW FPGA rev.: 0x1000A

Subslot 0/1/3 registers info:
----------------------------
SPA hardware ID : 0x0
SPA SW FPGA rev.: 0x1000A

Subslot 0/1/4 registers info:
----------------------------
SPA hardware ID : 0x0
SPA SW FPGA rev.: 0x1000A

Subslot 0/1/5 registers info:
----------------------------
SPA hardware ID : 0x0
SPA SW FPGA rev.: 0x1000A
```

Table 11: show hw-module subslot registers Field Descriptions

Field	Description
SPA hardware ID	SPA hardware identifier in hexadecimal format.
SPA SW FPGA rev.	SPA software field-programmable gate array (FPGA) revision number in hexadecimal format.

Related Commands

Command	Description
show controllers	Displays the controller type and other information.

show hw-module subslot status

To display status information about internal hardware devices for a shared port adapter (SPA), use the **show hw-module subslot status** command in EXEC mode.

show hw-module subslot [*node-id*] **status** [*device* [*device-index* [*device-subindex*]]]

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
device	(Optional) Internal hardware device for which to display the specified information. Valid devices include: • **analog-digital-converter—**Displays analog-to-digital converter information. • **c2w—**Displays Cisco-to-wire bus device information. • **fpga—**Displays SPA field-programmable gate array information. • **framer—**Displays SONET framer information. (Not applicable to Ethernet SPAs.) • **hdlc—**Displays SPA hdlc information, where applicable. • **l2-tcam—**Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • **mac—**Displays SPA MAC information. (Not applicable to POS SPAs.) • **pluggable-optics—**Displays pluggable-optics module information. • **power-margining—**Displays power-margining device information. • **sar—**Displays SPA ATM SAR information. • **sdcc—**Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • **serdes—**Displays SPA serializer/deserializer information. • **spi4—**Displays system packet interface level 4.2 bus device information. • **temperature-sensor—**Displays temperature sensor information.
device-index	(Optional) Index of the specific device if there are multiple devices of the same type.
device-subindex	(Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

You can also enter a partially qualified location specifier by using the wildcard (*) character. For example, 0/1/* would display information for all modules on slot 1 in rack 0.

Use the **show hw-module subslot status** command to obtain status information about an interface on the SPA.

Task ID

Task ID	Operations
root-lr	read

Examples

The following example shows sample output for the **show hw-module subslot status** command with the **temperature-sensor** option:

```
RP/0/0/CPU0:router# show hw-module subslot 0/2/CPU0 status temperature-sensor

   SPA device temperature-sensor index 0 subindex 0 info:

  DS1631 (0x0803c2e4) device status:
  temperature = 0x1c80 (28.5 degree C)

   SPA device temperature-sensor index 0 subindex 0 info:

  DS1631 (0x08063bec) device status:
```

```
temperature = 0x1e00 (30.0 degree C)
```

Table 12: show hw-module subslot status Field Descriptions

Field	Description
DS1631 (0x0803c2e4) device status	Device for which the temperature status is displayed.
temperature = 0x1c80 (28.5 degree C)	Current temperature of the specified device, in hexadecimal format and degrees Celsius.

Related Commands

Command	Description
show controllers	Displays the controller type and other information.

show inventory

To retrieve and display information about all the Cisco products that are installed in the router, use the **show inventory** command in EXEC or administration EXEC mode.

EXEC Mode

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

Administration EXEC Mode

show inventory [*node-id*| **all**| **chassis**| **fans**| **location** {*node-id*| **all**}| **power-supply**| **raw**]

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.
all	(Optional) Displays inventory information for all the physical entities in the chassis.
location {*node-id*|**all**}	(Optional) Displays inventory information for a specific node, or for all nodes in the chassis.
raw	(Optional) Displays raw information about the chassis for diagnostic purposes.
chassis	(Optional) Displays inventory information for the entire chassis.
fans	(Optional) Displays inventory information for the fans.
power-supply	(Optional) Displays inventory information for the power supply.

Command Default

All inventory information for the entire chassis is displayed.

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The root-system task ID was removed from the **show inventory** command.
Release 3.4.0	No modification.
Release 3.5.0	Support for SFP information was added.

Release	Modification
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

If a Cisco entity is not assigned a product ID (PID), that entity is not retrieved or displayed.

Enter the **show inventory** command with the **raw** keyword to display every RFC 2737 entity installed in the router, including those without a PID, unique device identifier (UDI), or other physical identification.

Note The **raw** keyword is primarily intended for troubleshooting problems with the **show inventory** command itself.

If any of the Cisco products do not have an assigned PID, the output displays incorrect PIDs, and version ID (VID) and serial number (SN) elements may be missing.

For UDI compliance products, the PID, VID, and SN are stored in EEPROM and NVRAM. Use the **show inventory** command to display this information.

Information for the following entities is not provided :

- Power supply
- Fan trays and fans
- Flash memory devices
- Hard disk

Examples

The following example shows partial sample output from the **show inventory** command with the **raw** keyword:

```
RP/0/0/CPU0:router(admin)# show inventory raw

NAME: "0/1/*", DESCR: "Cisco CRS-1 Series Modular Services Card"
PID: CRS-MSC           , VID: V02, SN: SAD09280BS9

NAME: "0/1/* - host", DESCR: "host"
PID:                   , VID: N/A, SN:

NAME: "0/1/* - host - Inlet0", DESCR: "Temperature Sensor"
PID:                   , VID: N/A, SN:

NAME: "0/1/* - host - Inlet1", DESCR: "Temperature Sensor"
PID:                   , VID: N/A, SN:
```

```
NAME: "0/1/* - host - Exhaust0", DESCR: "Temperature Sensor"
PID:                    , VID: N/A, SN:

NAME: "0/1/* - host - Exhaust1", DESCR: "Temperature Sensor"
PID:                    , VID: N/A, SN:

NAME: "0/1/* - host - Hotspot0", DESCR: "Temperature Sensor"
PID:                    , VID: N/A, SN:

NAME: "0/1/* - host - 1.25V_ME0", DESCR: "Voltage Sensor"
PID:                    , VID: N/A, SN:
--More--
```

Table 13: show inventory Field Descriptions, on page 81 describes the significant fields shown in the display.

Table 13: show inventory Field Descriptions

Field	Description
NAME	Hardware for which the inventory information is displayed. If you are displaying the chassis inventory, this field shows “chassis.” If you are displaying raw inventory, or all inventory information for all nodes in the chassis, this field shows the node name in partially qualified format. For a node, the NAME is expressed in *rack*/*slot*/*module* notation.
DESCR	Describes the chassis or the node. Chassis descriptions provide the name of the chassis and its Gbps. Node descriptions provide the type of node and its software version.
PID	Physical model name of the chassis or node.
VID	Physical hardware revision of the chassis or node.
SN	Physical serial number for the chassis or node.

show led

To display LED information for the router, or for a specific LED location, use the **show led** command in EXEC or administration EXEC mode.

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

Syntax Description

location {*node-id* | **all**}	(Optional) Specifies the node for which to display LED information. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation. Use the **all** keyword to indicate all nodes.

Command Default

If no node is specified, information about all LEDs on the router is displayed.

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The **show led** command was moved from the root-system task ID to the system task ID. The **show led** command was supported in administration EXEC mode.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

Enter the **show platform** command to see the location of all nodes installed in the router.

Examples

The following example sample output from the **show led** command with the **all** keyword:

```
RP/0/0/CPU0:router# show led location all

       LOCATION        MESSAGE         MODE       STATUS
      ================================================
        0/0/CPU0       ACTVRP         DEFAULT   UNLOCKED
        0/1/CPU0           PSC1       DEFAULT   UNLOCKED
        0/2/CPU0       IOX RUN        DEFAULT   UNLOCKED
        0/3/CPU0       IOX RUN        DEFAULT   UNLOCKED
        0/4/CPU0       IOX RUN        DEFAULT   UNLOCKED
        0/5/CPU0       IOX RUN        DEFAULT   UNLOCKED
```

Table 14: show led location Field Descriptions

Field	Description
LOCATION	Location of the node. LOCATION is expressed in the *rack*/*slot*/*module* notation.
MESSAGE	Current message displayed by the LED.
MODE	Current operating mode of the specified node.
STATUS	Current status of the specified node.

Related Commands

Command	Description
led mode	Changes the message, mode or status of a router card LED display.

show mbus

To display Mbus Controller Area Network (CAN) errors and interface counters, use the **show mbus** command in administration EXEC mode.

show mbus {**can-error**| **counters**} **location** {*node-id*| **all**}

Syntax Description

can-error	Displays CAN bus error statistics.
counters	Displays information about the firmware packets that were dropped.
location{*node-id* | **all**}	Specifies the node for which to display Mbus information. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation. Use the **all** keyword to indicate all nodes.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The root-system task ID was removed from the **show mbus** command.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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
sysmgr	read

Examples

This example shows sample output from the **show mbus** command with the **can-error** and **location** keywords:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# show mbus can-error location 0/0/CPU0

  Slot #  Stuff   Form    Ack     Bit_1   Bit_0   CRC
  0       0       0       0       0       0       0
```

Table 15: show mbus can-error Field Descriptions

Field	Description
Slot	Slot that contains the node whose Mbus counters are displayed.
Stuff	Number of stuff errors on the node.
Form	Number of form errors on the node.
Ack	Number of acknowledgement errors on the node.
Bit_1	Number of Bit_1 errors on the node.
Bit-0	Number of Bit_0 errors on the node.
CRC	Number of cyclic redundancy check (CRC) errors.

The following example shows sample output from the **show mbus** command with the **location** keyword:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# show mbus counters location 0/0/CPU0

  Slot #  Mbox    Mbox    Mbus    Mbus    Obj
          Xmit    Rcv     Xmit    Rcv     Ovr_wr
  0       0       0       0       0       0
```

Table 16: show mbus counters Field Descriptions

Field	Description
Slot	Identifies the slot that contains the node whose Mbus counters are displayed.

Field	Description
Mbox Xmit	Number of packets dropped due to Mbox transmit errors. **Note** *MBox* is a chunk of the Maintenance Processor Data Memory (MP DMEM) that receives MIPC messages. The Norm Priority mailbox has a buffer of 32 KB, while the high-priority Mbox has a buffer of 8 KB.
Mbox Rcv	Number of packets dropped due to Mbox receive errors.
Mbus Xmit	Number of packets dropped due to Mbus transmit errors. **Note** The Mbus is a low-bandwidth (1 megabit per second) serial bus that connects cards, switch fabric cards, power supplies, and blower/fan assemblies to the performance route processors (PRPs) and counters.
Mbus Rcv	Number of packets dropped due to Mbus receive errors.
Obj Ovr_wr	Number of packets that were overwritten.

Related Commands

Command	Description
clear mbus-statistics location, on page 3	Clears all Mbus interface counters on a specific node.

show operational

To display all operational data provided as XML schema, use the **show operational** command in EXEC or administration EXEC mode.

show operational *mda-class*[*mda-class*][*mda-class/naming=value*]**[descriptive]**

Syntax Description

mda-class	Name of the management data API (MDA) class to output. To specify a class name in hierarchy, all classes must be specified from the top of the class to the specific class name that you are interested in. MDA classes are case-sensitive. To view all available MDA classes, use the question mark (**?**) online help function.
descriptive	Displays more descriptive information.

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

Although the **show operational** command uses the schema database, the command displays the information in a string format like the other **show** commands. No XML related setups or knowledge is required to use the command.

Task ID

Task ID	Operations
Depends on the MDA class for which you are displaying the information	read

Examples

The following example shows sample output from the **show operational** command. Not all the output is shown.

```
RP/0/0/CPU0:router# show operational BGP DefaultVRF GlobalProcessInfo descriptive
[BGP DefaultVRF GlobalProcessInfo]
InStandaloneMode: true[Standalone or Distributed mode]
RouterID: 0.0.0.0[Router ID for the local system]
ConfiguredRouterID: 0.0.0.0[Configured router ID]
LocalAS: 10[Local autonomous system #]
RestartCount: 1[No of times BGP has started]
ISRedistributeIBGPToIGPsEnabled: false[Redistribute iBGP into IGPs enabled]
IsFastExternalFalloverEnabled: true[Fast external fallover enabled]
IsBestpathMissingMEDIsWorstEnabled: false[Bestpath: Treat missing MED as worst]
.
.
.
DefaultLocalPreference: 100[Default local preference]
KeepAliveTime: 60[Default keepalive timer (seconds)]
HoldTime: 180[Default hold timer (seconds)]
GenericScanPeriod: 60[Period (in seconds) of generic scanner runs]
.
.
.
VrfIsActive: true[VRF state ]
VrfName: "default"[Name of the VRF ]
```

This example shows sample output from the **show operational** command where only the top-level MDA class is specified. Not all of the output is shown.

```
RP/0/0/CPU0:router# show operational Inventory

Thu Feb 19 00:54:41.251 PST
[Inventory]
RackTable
  Rack/Number=0
    SlotTable
      Slot/Number=0
        CardTable
          Card/Number=0
            PortSlotTable
              PortSlot/Number=0
                Port
                  BasicAttributes
                    BasicInfo
                      Description: CPU_PORT_0
                      VendorType: 1.3.6.1.4.1.9.12.3.1.10
                      Name: 0/0/SP/0
                      IsFieldReplaceableUnit: false
                      CompositeClassCode: 983040
                BasicAttributes
                  BasicInfo
                    Description: CE Port Slot
                    VendorType: 1.3.6.1.4.1.9.12.3.1.5.115
                    Name: portslot 0/0/SP/0
                    IsFieldReplaceableUnit: false
                    CompositeClassCode: 0
            SensorTable
              Sensor/Number=0
                BasicAttributes
                  BasicInfo
                    Description: Temperature Sensor
                    VendorType: 1.3.6.1.4.1.9.12.3.1.8.42
                    Name: 0/0/* - host - Inlet0
                    CompositeClassCode: 720898
                    EnvironmentalMonitorPath: /admin/oper/inventory/
                     rack/0/entity/0/entity/0/entity/0/entity/0/attrib/
```

```
                Sensor/Number=1
                  BasicAttributes
                    BasicInfo
                      Description: Temperature Sensor
                      VendorType: 1.3.6.1.4.1.9.12.3.1.8.42
                      Name: 0/0/* - host - Inlet1
                      CompositeClassCode: 720898
                      EnvironmentalMonitorPath: /admin/oper/inventory/
                       rack/0/entity/0/entity/0/entity/0/entity/1/attrib/
                Sensor/Number=2
                  BasicAttributes
                    BasicInfo
                      Description: Temperature Sensor
                      VendorType: 1.3.6.1.4.1.9.12.3.1.8.42
                      Name: 0/0/* - host - Exhaust0
                      CompositeClassCode: 720898
--More--
```

show platform

To display information and status for each node in the system, use the **show platform** command in EXEC or administration EXEC mode.

show platform aib trace {**all**| **fast**| **slow**} **client** *client-name* **errors events[hexdump]** [**last** *n*] **[reverse] [stats] [tailf] [unique][updates][verbose] [wrapping]**[**file** *filename* **original**][**location** {*node-id*| **all**}]

Syntax Description

aib trace	Displays adjacency information base (AIB) traces.
all	Displays trace data for all events.
fast	Displays trace data for frequent events.
slow	Displays trace data for infrequent events.
client *client-name*	Displays the trace for AIB client calls.
errors	Displays the trace for AIB client errors.
events	Displays the trace for AIB client events.
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.
updates	(Optional) Displays trace AIB client API updates.
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 {*node-id* | **all**}	(Optional) Specifies the node of the RP. The *node-id* argument is entered in the *rack*/*slot*/*module* notation. You can specify up to four nodes. The **all** keyword specifies all RP nodes.

Command Default No default behavior or values

Command Modes Administration EXEC

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The **show platform** command was first supported in administration EXEC mode.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	Support for the **aib** keyword was added.

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 platform** command provides a summary of the nodes in the system, including node type and status.

Enter the **show platform** command in administration EXEC mode to display output for the entire system. Enter the **show platform** command in EXEC mode to display output for only those nodes that belong to the SDR on which the command is executed.

Examples The following example shows sample output from the **show platform** command:

```
RP/0/0/CPU0:router# show platform

Tue Jul 28 06:02:02.397 DST
Node            Type            PLIM            State           Config State
--------------------------------------------------------------------------------
0/0/CPU0        L3 Service Eng  N/A             Card Power down NPWR,NSHUT,MON
0/1/CPU0        L3 Service Eng  N/A             Card Power down NPWR,NSHUT,MON
0/2/CPU0        L3LC Eng 5+     Jacket Card     IOS XR RUN      PWR,NSHUT,MON
0/2/0           SPA             SPA-4XOC3-POS-V READY           PWR,NSHUT
0/2/1           SPA             SPA-IPSEC-2G-2  READY           PWR,NSHUT
0/2/2           SPA             SPA-8XFE-TX     READY           PWR,NSHUT
0/3/CPU0        L3LC Eng 5+     Jacket Card     IOS XR RUN      PWR,NSHUT,MON
0/3/1           SPA             SPA-1XCHOC12/DS READY           PWR,NSHUT
```

```
0/4/CPU0        L3LC Eng 5+     Jacket Card     IOS XR RUN      PWR,NSHUT,MON
0/4/0           SPA             SPA-2X1GE-V2    READY           PWR,NSHUT
0/4/1           SPA             SPA-2XOC48POS/R READY           PWR,NSHUT
0/4/2           SPA             SPA-2CHT3-CE-AT READY           PWR,NSHUT
0/4/3           SPA             SPA-4XT3/E3     READY           PWR,NSHUT
0/5/CPU0        PRP(Active)     N/A             IOS XR RUN      PWR,NSHUT,MON
```

This table describes the significant fields shown in the display.

Table 17: show platform Field Descriptions

Field	Description
Node	Identifier of the node in the *rack*/*slot*/*module* notation.
Type	Type of node.
PLIM	Type of physical layer interface module currently supported on the module.
State	Current state of the specified node.
Config State	Current status of the specified node.

This example shows sample output for the **show platform** command with the **aib trace** keywords:

```
RP/0/5/CPU0:router# show platform aib trace slow last 10

Tue Sep 22 12:05:42.382 DST
6 unique entries (768 possible, 0 filtered)
Sep 17 00:38:09.189 c12000_aib/slow/GSR_AIB_LTRACE 0/5/CPU0 1# t1
  Starting a ltrace in gsr_aib
Sep 17 00:46:01.105 c12000_aib/slow/GSR_AIB_FIB_MBOX_LTRACE 0/5/CPU0 3# t3
  Starting a ltrace in gsr_aib_fib_mbox
Sep 17 00:46:01.107 c12000_aib/slow/GSR_AIB_LB_MBOX_API_LTRACE 0/5/CPU0 3# t3
  Starting a ltrace in gsr_aib_lb_mbox_api
Sep 17 05:10:06.560 c12000_aib/slow/GSR_AIB_FIB_MBOX_LTRACE 0/5/CPU0 88# t3
  GSR_SVI_FIBMB_GET_INFO: Invalid non-svi ext_type 0 for adj 0x9c389b68
Sep 21 20:03:18.977 c12000_aib/slow/GSR_AIB_FIB_MBOX_LTRACE 0/5/CPU0 42# t4
  GSR_FIBMB_GET_L3_INFO: err, mbp: 0x9d3764d0 flags: 0x0
Sep 22 12:05:04.505 c12000_aib/slow/GSR_AIB_LTRACE 0/5/CPU0 41664# t1
  AIB_PLATFORM_ALLOC_INDEX_GSR: Alloc failed Resource temporarily unavailable
```

Related Commands

Command	Description
show environment	Displays environmental monitor parameters for the system.

show redundancy

To display the status of route processor redundancy, use the **show redundancy** command in EXEC mode.

show redundancy [[**driver [lc]**]**location** {*node-id*| **all**}| **statistics**| **summary**]

Syntax Description

driver	(Optional) Dumps the arbitration driver data.
lc	(Optional) Displays the primary standby arbitration line card data.
location {*node-id* | **all**}	(Optional) Specifies the node for which to display LED information. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation. Use the **all** keyword to indicate all nodes.
statistics	(Optional) Displays redundancy statistics information.
summary	(Optional) Displays a summary of all redundant node pairs in the router.

Command Default

Route processor redundancy information is displayed for all nodes in the system.

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	The **statistics** and **trace** keywords were added.
Release 3.6.0	Nonstop routing (NSR) indication was added to the command display.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 redundancy** command to display the redundancy status of the route processors (RPs). The **show redundancy** command also displays the boot and switchover history for the RPs. To view the nonstop routing (NSR) status of the standby RPs in the system, use the **summary** keyword.

Task ID

Task ID	Operations
system	read
basic-services	read (for **statistics** keyword)

Examples

Examples

The following example shows sample output from the **show redundancy** command:

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

Redundancy information for node 0/0/CPU0:
==========================================
Node 0/0/CPU0 is in ACTIVE role
Node 0/0/CPU0 has no valid partner

Reload and boot info
----------------------
PRP reloaded Wed Mar 15 19:50:31 2006: 1 week, 5 days, 18 hours,
57 minutes ago
Active node booted Wed Mar 15 19:50:31 2006: 1 week, 5 days, 18 hours,
57 minutes ago

Redundancy information for node 0/1/CPU0:
==========================================
Node 0/1/CPU0 is in ACTIVE role
Node 0/1/CPU0 has no valid partner

Reload and boot info
----------------------
PSC1 reloaded Wed Mar 15 19:51:31 2006: 1 week, 5 days, 18 hours, 56 minutes ago
Active node booted Wed Mar 15 19:51:31 2006: 1 week, 5 days, 18 hours, 56 minutes ago
```

Table 18: show redundancy Field Descriptions

Field	Description
Node */*/* is in *XXX* role	Current role of the primary route processor, where (*/*/*) is the route processor ID in the format *rack*/*slot*/*module*, and *XXX* is the role of the route processor (active or standby). In the example, this field shows that the node with the ID 0/RP0/CPU0 is in active role.

Field	Description
Partner node (*/*/*) is in *XXX* role	Current role of the secondary (or partner) route processor, where (*/*/*) is the route processor ID in the *rack*/*slot*/*module* format, and *XXX* is the role of the route processor (active or standby). In the example, this field shows that the node with the ID 0/RP1/CPU0 is in standby role.
Standby node in (*/*/*) is ready	Current state of the standby node, where (*/*/*) is the standby route processor ID. In the example, the standby node is ready.
Reload and boot info	General overview of the active and standby route processors' reload and boot history.

Related Commands

Command	Description
redundancy switchover	Causes the primary (active) route processor (RP) to fail over to the redundant standby RP.

show services redundancy

To display all configured services and their active and standby physical locations, use the **show services redundancy** command in EXEC mode.

show services redundancy [**type** *service*] [**brief**| **detail**| **summary**] [**location** *node-id*]

Syntax Description

type *service*	Displays data for a specified service type only.
brief	Displays brief data.
detail	Displays detailed data, including auto-revert setting.
summary	Displays summary data.
location *node-id*	Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module module* notation.

Command Default

Displays brief data, as when the **brief** keyword is used.

Command Modes

EXEC

Command History

Release	Modification
Release 3.3.0	This command was introduced.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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.

Examples

This example shows sample brief data for all services:

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

Tue Nov 11 10:09:57.382 PST DST
Service type     Name                      Pref. Active        Pref. Standby
-------------------------------------------------------------------------------
Firewall         Admin_1                   0/1/CPU0 Active
SBC              service-1                 0/0/CPU0 Active
IPSec            service-ipsec1            0/2/1    Active
GRE              service-gre1              0/2/1    Active
```

The following sample output shows details of all configured services:

```
RP/0/0/CPU0:router# show services redundancy detail

Tue Nov 11 09:24:15.541 PST DST
Service 'Admin_1' of type 'Firewall':
  Preferred active at 0/1/CPU0, Active
  Auto-revert is OFF
Service 'service-1' of type 'SBC':
  Preferred active at 0/0/CPU0, Active
  Auto-revert is OFF
Service 'service-ipsec1' of type 'IPSec':
  Preferred active at 0/2/1, Active
  Auto-revert is OFF
Service 'service-gre1' of type 'GRE':
  Preferred active at 0/2/1, Active
  Auto-revert is OFF
```

The following sample output shows a summary of all configured services:

```
RP/0/0/CPU0:router# show services redundancy summary

  Tue Nov 11 10:08:25.252 PST DST
  Service type      Offline Act Only Act+Stby    Total
  ---------------------------------------------------
  Firewall         00000000 00000001 00000000 00000001
  SBC              00000000 00000001 00000000 00000001
  IPSec            00000000 00000001 00000000 00000001
  GRE              00000000 00000001 00000000 00000001
```

Related Commands

Command	Description
firewall	Configures a virtual firewall in Cisco IOS XR software.
interface service-gre	Creates a static IPSec-protected generic routing encapsulation (GRE) interface.
interface service-ipsec	Creates a static IPSec virtual interface.
interface vasi	Configures a VASI interface and enters interface configuration mode.
sbc	Configures an SBC instance and enters SBC configuration mode.

Command	Description
service-location, on page 37	Associates a physical interface with a firewall, SBC, or VASI interface service instance,

show services role

To display the current service role on service cards, use the **show services role** command in EXEC mode.

show services role [detail] [**location** *node-id*]

Syntax Description

detail	Displays the reason a role has not been enacted, if applicable.
location *node-id*	Location for which to display the specified information. The *node-id* argument is entered in the *rack*/*slot*/*module* notation.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.5.0	This command was introduced.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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	Operations
interface	read

Examples

This example displays sample output from the **show services role** command:

```
RP/0/0/CPU0:router# show services role
Thu Mar  1 14:53:55.530 PST
Node       Configured Role     Enacted Role        Enabled Services
```

```
------------------------------------------------------------------------------
0/3/CPU0    SESH                SESH                ServiceInfra
```

Related Commands

Command	Description
hw-module service offline location	Configures offline mode as the role for a specific node.

show version

To display the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images, use the **show version** command in EXEC mode.

show version

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The **show version** command was moved from the sysmgr task ID to the basic-services task ID.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 version** command displays a variety of system information, including hardware and software version, router uptime, boot settings (configuration register), and active software.

Task ID

Task ID	Operations
basic-services	read

Examples

This example shows partial output from the **show version** command:

```
RP/0/5/CPU0:router# show version

Thu Feb 19 14:31:51.061 PST DST

Cisco IOS XR Software, Version 3.8.0.30I[SIT_IMAGE]
Copyright (c) 2009 by Cisco Systems, Inc.

ROM: System Bootstrap, Version 12.0(20051020:160303) [sjabbar-CSCsa64979_4 1.17dev(0.5)]
DEVELOPMENT SOFTWARE
Copyright (c) 1994-2005 by cisco Systems,  Inc.

PE21_C12406 uptime is 1 week, 2 days, 13 hours, 46 minutes
System image file is "disk0:c12k-os-mbi-3.8.0.30I/mbiprp-rp.vm"

cisco 12406/PRP (7457) processor with 2097152K bytes of memory.
7457 processor at 1266Mhz, Revision 1.2

2 Cisco 12000 Series - Multi-Service Blade Controllers
2 Cisco 12000 Series SPA Interface Processor-601/501/401
1 Cisco 12000 Series Performance Route Processor
3 Management Ethernet
8 PLIM_QOS
6 T3
6 SONET/SDH
6 Packet over SONET/SDH
2 GigabitEthernet/IEEE 802.3 interface(s)
28 T1
2 Asynchronous Transfer Mode
3 ATM network sub-interface(s)
10 VLAN sub-interface(s)
4 Serial network interface(s)
8 FastEthernet
2 FR point-to-point sub interface
1018k bytes of non-volatile configuration memory.
800560k bytes of disk0: (Sector size 512 bytes).
800560k bytes of disk1: (Sector size 512 bytes).
65536k bytes of Flash internal SIMM (Sector size 256k).

Boot device on node 0/0/CPU0 is mem:
Package active on node 0/0/CPU0:
c12k-sbc, V 3.8.0.30I[SIT_IMAGE], Cisco Systems, at disk0:c12k-sbc-3.8.0.30I
    Built on Mon Feb  2 10:10:13 PST 2009
    By sjc-lds-364 in /auto/ioxbuild5/production/3.8.0.30I.SIT_IMAGE/c12k/workspace for
c4.2.1-p0

c12k-ipsec-service, V 3.8.0.30I[SIT_IMAGE], Cisco Systems, at
disk0:c12k-ipsec-service-3.8.0.30I
    Built on Mon Feb  2 08:38:02 PST 2009
    By sjc-lds-364 in /auto/ioxbuild5/production/3.8.0.30I.SIT_IMAGE/c12k/workspace for
c4.2.1-p0
 --More--
```

Table 19: show version Field Descriptions

Field	Description
Cisco IOS XR Software, Version #	Cisco IOS XR software version number currently running on the router.
ROM	System bootstrap version number currently running on the router.

Field	Description
router uptime	Number of uninterrupted days, hours, minutes, and seconds the system has been up and running.
System image file is	Location and name of the system image file currently running on the router.
Packet over SONET/SDH network interface(s)	Number of Packet-over-SONET/SDH interfaces available on the current router.
SONET/SDH Port controller(s)	Number of SONET or SDH[1] interfaces available on the current router.
Ethernet/IEEE 802.3 interface(s)	Number of Ethernet or IEEE 802.3 interfaces available on the current router.
GigabitEthernet/IEEE interface(s)	Number of Gigabit Ethernet or IEEE 802.3 interfaces available on the current router.
bytes of non-volatile configuration memory	Available volatile configuration memory, in bytes.
bytes of ATA PCMCIA card at disk 0	ATA PCMCIA[2] available on the card in disk 0, in bytes.
Package active on node 0/1/SP	Details about the current software package that is running on the SP node in slot 1.

1 SDH = Synchronous Digital Hierarchy
2 ATA PCMCIA = AT Attachment Personal Computer Memory Card Industry Association

show upgrade

To display information regarding the current fabric downloader, mbus ROM and ROM monitor images, including whether or not an upgrade is required, use the **show upgrade** command in administration EXEC mode.

show upgrade {**all**| **fabric-downloader**| **mbus-rom**| **rommon**} **location** {**all**| *node-id*}

Syntax Description

all	Displays upgrade information regarding all hardware-related images.
fabric-downloader	Displays upgrade information regarding the fabric downloader image.
mbus-rom	Displays upgrade information regarding the MBus ROM agent image.
rommon	Displays upgrade information regarding the ROM monitor image.
location all	Displays upgrade information for all cards in the router.
location *node-id*	Displays upgrade information for a specific node. The *node-id* is expressed in the *rack*/*slot*/*module* notation. **Note** Enter the **show platform** command to see the location of all nodes installed in the router.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.9.0	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.

Task ID

Task ID	Operation
sysmgr	read

Examples

This example illustrates sample output from the **show upgrade** command with the **all** keyword:

```
RP/0/0/CPU0:router(admin)# show upgrade all location all

Wed Jan 28 19:59:26.373 UTC
Node          Type               PLIM             Fab-Dwnldr    Mbus-Rom     Rommon
                                                   Upgrade       Upgrade      Upgrade
                                                   Required      Required     Required
-------------------------------------------------------------------------------------
0/0/CPU0      PRP(Active)        N/A              N/A           Yes          Yes
0/1/CPU0      L3LC Eng 5+        Jacket Card      No            Yes          No
0/2/CPU0      L3LC Eng 5+        Jacket Card      Yes           Yes          No
0/3/CPU0      L3LC Eng 5+        Jacket Card      Yes           Yes          No
0/4/CPU0      L3 Service Eng     N/A              Yes           Yes          No
0/5/CPU0      L3LC Eng 5+        Jacket Card      No            Yes          No
0/6/CPU0      L3LC Eng 5         Jacket Card      Yes           Yes          No
0/7/CPU0      L3LC Eng 3         OC12-ATM-4       No            Yes          No
0/8/CPU0      PRP(Standby)       N/A              N/A           Yes          Yes
0/9/CPU0      L3LC Eng 3         OC3-POS-4        No            Yes          No
0/16/CPU0     CSC10              N/A              N/A           Yes          N/A
0/17/CPU0     CSC10(P)           N/A              N/A           Yes          N/A
0/18/CPU0     SFC10              N/A              N/A           Yes          N/A
0/19/CPU0     SFC10              N/A              N/A           Yes          N/A
0/20/CPU0     SFC10              N/A              N/A           Yes          N/A
0/21/CPU0     SFC10              N/A              N/A           Yes          N/A
0/22/CPU0     SFC10              N/A              N/A           Yes          N/A
0/24/CPU0     ALARM10            N/A              N/A           Yes          N/A
0/25/CPU0     ALARM10            N/A              N/A           Yes          N/A
0/29/CPU0     GSR16-BLOWER       N/A              N/A           Yes          N/A
```

This example illustrates sample output from the **show upgrade** command with the **fabric-downloader** keyword.

```
RP/0/0/CPU0:router(admin)# show upgrade fabric-downloader location all

Wed Jan 28 19:59:46.550 UTC
Node        Type             PLIM             Current          Image            Upgrade
                                              Fab Downloader   Fab Downloader   Required
                                              Version          Version
-------------------------------------------------------------------------------------
0/0/CPU0    PRP(Active)      N/A              N/A              N/A              N/A
0/1/CPU0    L3LC Eng 5+      Jacket Card      4.7              4.7              No
0/2/CPU0    L3LC Eng 5+      Jacket Card      4.5              4.7              Yes
0/3/CPU0    L3LC Eng 5+      Jacket Card      4.5              4.7              Yes
0/4/CPU0    L3 Service Eng   N/A              3.1              3.2              Yes
0/5/CPU0    L3LC Eng 5+      Jacket Card      4.7              4.7              No
0/6/CPU0    L3LC Eng 5       Jacket Card      4.5              4.7              Yes
0/7/CPU0    L3LC Eng 3       OC12-ATM-4       8.0              8.0              No
0/8/CPU0    PRP(Standby)     N/A              N/A              N/A              N/A
0/9/CPU0    L3LC Eng 3       OC3-POS-4        8.0              8.0              No
0/16/CPU0   CSC10            N/A              N/A              N/A              N/A
0/17/CPU0   CSC10(P)         N/A              N/A              N/A              N/A
0/18/CPU0   SFC10            N/A              N/A              N/A              N/A
0/19/CPU0   SFC10            N/A              N/A              N/A              N/A
0/20/CPU0   SFC10            N/A              N/A              N/A              N/A
0/21/CPU0   SFC10            N/A              N/A              N/A              N/A
0/22/CPU0   SFC10            N/A              N/A              N/A              N/A
0/24/CPU0   ALARM10          N/A              N/A              N/A              N/A
0/25/CPU0   ALARM10          N/A              N/A              N/A              N/A
0/29/CPU0   GSR16-BLOWER     N/A              N/A              N/A              N/A
```

This example illustrates sample output from the **show upgrade** command with the **mbus-rom** keyword:

```
RP/0/0/CPU0:router(admin)# show upgrade mbus-rom location all

Wed Jan 28 19:59:36.599 UTC
Node        Type             PLIM           Current      Image       Upgrade
```

```
                                                 Mbus Rom     Mbus Rom    Required
                                                 Version      Version
------------------------------------------------------------------------------------
0/0/CPU0    PRP(Active)        N/A               3.54         4.4         Yes
0/1/CPU0    L3LC Eng 5+        Jacket Card       4.2          4.4         Yes
0/2/CPU0    L3LC Eng 5+        Jacket Card       3.51         4.4         Yes
0/3/CPU0    L3LC Eng 5+        Jacket Card       3.46         4.4         Yes
0/4/CPU0    L3 Service Eng     N/A               3.3          4.4         Yes
0/5/CPU0    L3LC Eng 5+        Jacket Card       3.54         4.4         Yes
0/6/CPU0    L3LC Eng 5         Jacket Card       3.46         4.4         Yes
0/7/CPU0    L3LC Eng 3         OC12-ATM-4        3.54         4.4         Yes
0/8/CPU0    PRP(Standby)       N/A               3.46         4.4         Yes
0/9/CPU0    L3LC Eng 3         OC3-POS-4         3.46         4.4         Yes
0/16/CPU0   CSC10              N/A               3.53         4.4         Yes
0/17/CPU0   CSC10(P)           N/A               3.53         4.4         Yes
0/18/CPU0   SFC10              N/A               3.46         4.4         Yes
0/19/CPU0   SFC10              N/A               3.46         4.4         Yes
0/20/CPU0   SFC10              N/A               3.46         4.4         Yes
0/21/CPU0   SFC10              N/A               3.46         4.4         Yes
0/22/CPU0   SFC10              N/A               3.46         4.4         Yes
0/24/CPU0   ALARM10            N/A               3.46         4.4         Yes
0/25/CPU0   ALARM10            N/A               3.46         4.4         Yes
0/29/CPU0   GSR16-BLOWER       N/A               3.46         4.4         Yes
```

This example illustrates sample output from the **show upgrade** command with the **rommon** keyword:

```
RP/0/0/CPU0:router(admin)# show upgrade rommon location all

Wed Jan 28 19:59:57.839 UTC
Node      Type               PLIM              Current      Image       Upgrade
                                               Rommon       Rommon      Required
                                               Version      Version
-------------------------------------------------------------------------------
0/0/CPU0  PRP(Active)        N/A               1.17         1.20        Yes
0/1/CPU0  L3LC Eng 5+        Jacket Card       17.1         17.1        No
0/2/CPU0  L3LC Eng 5+        Jacket Card       17.1         17.1        No
0/3/CPU0  L3LC Eng 5+        Jacket Card       17.1         17.1        No
0/4/CPU0  L3 Service Eng     N/A               1.3          1.3         No
0/5/CPU0  L3LC Eng 5+        Jacket Card       19.0         17.1        No
0/6/CPU0  L3LC Eng 5         Jacket Card       17.1         17.1        No
0/7/CPU0  L3LC Eng 3         OC12-ATM-4        17.1         17.1        No
0/8/CPU0  PRP(Standby)       N/A               1.18         1.20        Yes
0/9/CPU0  L3LC Eng 3         OC3-POS-4         17.1         17.1        No
0/16/CPU0 CSC10              N/A               N/A          N/A         N/A
0/17/CPU0 CSC10(P)           N/A               N/A          N/A         N/A
0/18/CPU0 SFC10              N/A               N/A          N/A         N/A
0/19/CPU0 FC10               N/A               N/A          N/A         N/A
0/20/CPU0 SFC10              N/A               N/A          N/A         N/A
0/21/CPU0 SFC10              N/A               N/A          N/A         N/A
0/22/CPU0 SFC10              N/A               N/A          N/A         N/A
0/24/CPU0 ALARM10            N/A               N/A          N/A         N/A
0/25/CPU0 ALARM10            N/A               N/A          N/A         N/A
0/29/CPU0 GSR16-BLOWER       N/A               N/A          N/A         N/A
```

Related Commands

Command	Description
upgrade all	Upgrades the fabric downloader, ROM Monitor, Mbus and FPD image package on a module.
upgrade fabric-downloader	Upgrades the fabric downloader image package on a module.
upgrade mbus	Upgrades the Mbus agent ROM image on a module.

upgrade all

To upgrade the fabric downloader, ROMMON, Mbus, and current field-programmable device (FPD) image package on a module or on all modules installed in a router, use the **upgrade all** command in administration EXEC mode.

upgrade all location {*node-id*| **all**} **[force]**

Syntax Description

location {*node-id* | **all**}	Specifies the nodes for which to upgrade the images. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation. Use the **all** keyword to indicate all nodes.
force	Skips the version check and forces an upgrade.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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
sysmgr	read, write

Examples

The following example shows how to upgrade all images on all line cards that are installed in the router:

```
RP/0/0/CPU0:Router# admin
RP/0/0/CPU0:router(admin)# upgrade all location all
```

Related Commands

Command	Description
clear mbus-statistics location, on page 3	Clears all Mbus interface counters on a specific node.
show mbus, on page 84	Displays Mbus CAN errors and interface counters.
show platform, on page 90	Displays information and status for each node in the system.

upgrade bsl

To upgrade the bootstrap loader on the PRP-3, use the **upgrade bsl** command in administration EXEC mode.

upgrade bsl location {**all**| *node-id*}

Syntax Description

location all	Upgrades the bootstrap loader on all RPs in the router.
location *node-id*	Upgrades the bootstrap loader on a specific RP. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.9.0	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.

The **upgrade bsl** command upgrades the bootstrap loader (BSL) firmware on the PRP-3 board. When the PRP-3 is powered up or reloaded, the BSL is the firmware that is responsible for the minimal initialization of the PRP-3 hardware and the launching of the ROM monitor firmware.

Task ID

Task ID	Operation
sysmgr	read, write

Examples

Related Commands

upgrade fabric-downloader

To upgrade the fabric downloader image package on a module or on all modules installed in a router, use the **upgrade fabric-downloader** command in administration EXEC mode.

upgrade fabric-downloader location {*node-id*| **all**} **[force]**

Syntax Description

location{*node-id* | **all**}	Specifies the node for which to upgrade the fabric downloader. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation. Use the **all** keyword to indicate all nodes. **Note** Enter the **show platform** command to see the location of all nodes installed in the router.
force	Skips the version check and forces an upgrade.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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
sysmgr	read, write

Examples

This example shows how to upgrade the fabric-downloader image package on a specific node:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# upgrade fabric-downloader location 0/0/CPU0
```

Related Commands

Command	Description
show platform, on page 90	Displays information and status for each node in the system.

upgrade hw-module fpd

To manually upgrade the current field-programmable device (FPD) image package on a module, use the **upgrade hw-module fpd** command in administration EXEC mode.

upgrade hw-module fpd {**all**| **fabldr**| *fpga-type*| **rommon**} [**force**]**location** [*node-id*| **all**] **[reload]**

Syntax Description

all	Upgrades all FPD images on the selected module.
fabldr	Upgrades the fabric-downloader FPD image on the module.
fpga-type	Upgrades a specific field-programmable gate array (FPGA) image on the module. Use the **show fpd package** command to view all available FPGA images available for a specific module.
rommon	Upgrades the ROMMON image on the module.
force	(Optional) Forces the update of the indicated FPD image package on a shared port adapter (SPA) that meets the minimum version requirements. Without this option, the manual upgrade upgrades only incompatible FPD images.
location {*node-id* |**all**}	Specifies the node for which to upgrade the FPD image. The *node-id* argument is expressed in the *rack*/*slot*/*subslot* notation. Use the **all** keyword to indicate all nodes.
reload	Reloads the module after the FPD image has been updated. If you do not use the **reload** keyword, you must manually reload the module before the FPD upgrade is complete. Use the **hw-module reset** or **hw-module subslot reload** command in EXEC mode to reload the module.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The **reload** keyword was added to this command. Support for multiple FPGA images was added.
Release 3.4.0	No modification.
Release 3.5.0	No modification.

Release	Modification
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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 The use of the force option when doing a fpd upgrade is not recommended except under explicit direction from Cisco engineering or TAC.

During the upgrade procedure, the module must be offline (shut down but powered).

Naming notation for the *node-id* argument is *rack*/*slot*/*subslot*; a slash between values is required as part of the notation.

- *rack* —Chassis number of the rack.
- *slot* —Physical slot number of the SPA interface processor (SIP).
- *subslot* —Subslot number of the SPA.

For more information about the syntax for the router, use the question mark (?) online help function.

When you start the FPD upgrade procedure or log into a router that is running the FPD upgrade procedure, the following message is displayed to the screen on TTY, console and AUX ports:

```
FPD upgrade in progress on some hardware, reload/configuration change on those
is not recommended as it might cause HW programming failure and result in RMA
of the hardware.
```

If you enter administration mode while the FPD upgrade procedure is running, the following message is displayed to the screen on TTY, console and AUX ports:

```
FPD upgrade in progress on some hardware, reload/configuration change on those
is not recommended as it might cause HW programming failure and result in RMA
of the hardware. Do you want to continue? [Confirm (y/n)]
```

If you enter global configuration mode while the FPD upgrade procedure is running, the following message is displayed to the screen on TTY, console and AUX ports:

```
FPD upgrade in progress on some hardware, configuration change on those is not
recommended as it might cause HW programming failure and result in RMA of the
hardware. Do you want to continue? [Confirm (y/n)]
```

When the FPD upgrade global timer expires, the following warning message displayed to the screen.

```
FPD upgrade has exceeded the maximum time window, the process will terminate now.
Please check the status of the hardware and reissue the upgrade command if required.
```

If a PRP switchover occurs while an FPD upgrade is running, the following message is dislayed to the screen:

```
FPD upgrade failed due to RP FO, FPGA upgrade may be in indeterminate state.
Please reissue the FPD upgrade command.
```

Examples

The following example shows how to upgrade the default FPGA on a SPA:

```
RP/0/0/CPU0:Router# admin
RP/0/0/CPU0:Router(admin)# upgrade hw-module fpd fpga location 0/3/0

% RELOAD REMINDER:
  - The upgrade operation of the target module will not interrupt its normal
    operation. However, for the changes to take effect, the target module
    will need to be manually reloaded after the upgrade operation. This can
    be accomplished with the use of "hw-module <target> reload" command.
  - If automatic reload operation is desired after the upgrade, please use
    the "reload" option at the end of the upgrade command.
  - The output of "show hw-module fpd location" command will not display
    correct version information after the upgrade if the target module is
    not reloaded.
Continue? [confirm] y

LC/0/3/CPU0:Dec 22 06:46:59.732 : spa_192_jacket_v2[203]: %SPA_FPD-6-UPDATE_START :
SPA-4XCT3/DS0[0]: Starting update of FPD 'fpga' image
LC/0/3/CPU0:Dec 22 06:47:23.518 : spa_192_jacket_v2[203]: %SPA_FPD-6-UPDATE_PASSED :
SPA-4XCT3/DS0[0]: Successfully updated FPD 'fpga' image
Successfully upgraded spa fpga instance 0 on location 0/3/0.
```

Related Commands

Command	Description
show fpd package	Displays which SPAs and SIPs are supported with your current Cisco IOS XR software release, which FPD image you need for each card, and what the minimum hardware requirements are for the various modules.
show hw-module fpd	Displays field-programmable device (FPD) compatibility for all modules or a specific module.

upgrade mbus

To upgrade the Mbus agent ROM image on a module or on all modules installed in a router, use the **upgrade mbus** command in administration EXEC mode.

upgrade mbus [force] location {*node-id*| **all**}

Syntax Description

force	Skips the version check and forces an upgrade.
location {*node-id* | **all**}	Specifies the node for which to upgrade the Mbus agent ROM. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation. Use the **all** keyword to indicate all nodes. Enter the **show platform** command to see the location of all nodes installed in the router.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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
sysmgr	read, write

Examples

This example shows how to upgrade the Mbus agent ROM on a specific node:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# upgrade mbus location 0/0/CPU0

Upgrading the MBUS agent rom on slot 0
RP/0/0/CPU0:Nov 18 16:52:23.296 : upgrade_mbus[65703]: %MBUS-6-API_INFO_DUMP :
 download status slot 0, DOWNLOAD_SUCCESS
RP/0/0/CPU0:Nov 18 16:52:33.422 : upgrade_mbus[65703]: %MBUS-6-API_INFO_DUMP :
 download status slot 0, PROGRAM_ROM SUCCESS
Upgrade complete.  Use admin CLI "test mbus soft-reset-agent" or OIR the card
 to force new MBUS Rom image to execute.
```

Related Commands

Command	Description
clear mbus-statistics location, on page 3	Clears all Mbus interface counters on a specific node.
show mbus, on page 84	Displays Mbus CAN errors and interface counters.
show platform, on page 90	Displays information and status for each node in the system.

upgrade rommon

To upgrade the ROMMON image on a module or on all modules installed in the router, use the **upgrade rommon** command in administration EXEC mode.

upgrade rommon location {**all**| *node-id*} **[force]**

Syntax Description

location *node-id*	Upgrades the ROMMON on a specific line card. The *node-id* is expressed in the *rack*/*slot*/*module* notation. **Note** Enter the **show platform** command to see the location of all nodes installed in the router.
location all	Upgrades the ROMMON on all modules installed in a router.
force	(Optional) Skips the version check and forces an upgrade.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

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	Operation
sysmgr	read, write

Examples

This example shows how to upgrade the ROMMON image on a specific node:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# upgrade rommon location 0/4/CPU0

========= Line Card (Slot 4) =========
Upgrading linecard rom-monitor
Erasing sectors: eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Programming image: ppppppppp
Verifying image: vvvvvvvvv
Upgraded linecard rom-monitor successfully
```

Related Commands

Command	Description
show platform, on page 90	Displays information and status for each node in the system.