



Hardware Redundancy and Node Administration Commands on 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

<i>node-id</i>	Identifies the location of the node whose Mbus interface counters you want to clear. The <i>node-id</i> is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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

<i>serial_id</i>	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 <i>rack_num</i>	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 the proper task IDs. If you suspect 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, page 36	Displays the current 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 arguments or keywords.

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 the proper task IDs. If you suspect 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
```

Related Commands

Command	Description
env power-supply disable	Enables power supply monitoring on the chassis.

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 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 the proper task IDs. If you suspect 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, page 43	Displays audio and visual facility alarm information for the router.

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

<i>node-id</i>	Node whose hardware attributes you want to configure. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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.
<i>path</i>	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 the proper task IDs. If you suspect 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 reenble 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 <i>node-id</i>	Identifies the node whose power-on feature you want to disable. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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, page 80	Displays information and status for each node in the system.

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 reenale 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

disable	Disables the node reset feature on the specified node.
location <i>node-id</i>	Identifies the node you want to reload. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

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

Examples

The following example shows how to disable the reload 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 shutdown, page 25	Administratively shuts down a specified node.

hw-module service firewall location

To configure the firewall role as the role for a node, use the **hw-module service firewall location** command in global configuration mode. To remove the firewall role from a node, use the **no** form of this command.

hw-module service firewall location *node-id*

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

Syntax Description

<i>node-id</i>	Location in which you want the firewall role configured. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
----------------	--

Command Default

No default behavior or values

Command Modes

Global 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **hw-module service firewall location** command to configure the firewall role as the role for a node. The firewall role supports the firewall and VRF-Aware Service Infrastructure (VASI) services. A firewall or VASI interface service instance is activated on a service card only if the firewall role is configured as the role for the service card's location. A service card can be configured with only one role at a time. If you change the role of a service card, the card reboots in a mode that enables it to run the different services supported by the new role.

Use the **service-location** command to associate a service instance with a service card.

Use the **show services role** command to display the roles configured on service card locations.

The MSB is automatically reset to 1 whenever the firewall service role is reloaded.

Task ID

Task ID	Operations
root-lr	read, write

Examples

The following example shows how to configure the firewall service role on the MSB:

```
RP/0/0/CPU0:router(config)# hw-module service firewall location 0/3/CPU0
```

Related Commands

Command	Description
firewall	Configures a virtual firewall in Cisco IOS XR software.
interface vasi	Configures a VASI interface and enters interface configuration mode.
service-location, page 34	Associates a physical interface with a firewall, SBC or VASI interface service instance,
show services role, page 90	Displays the configured roles of the service cards.

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

<i>node-id</i>	Location of the service card that you want to move into offline mode. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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, page 11	Configures various hardware attributes for nodes.
show services role, page 90	Displays the configured roles of the service cards.

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

<i>node-id</i>	Location of the service card that you want to move into offline mode. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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, page 90	Displays the configured roles of the service cards.

hw-module service sbc

To configure the Session Border Controller (SBC) service as the role for a node, use the **hw-module service sbc** command in global configuration mode. To tear down and stop running the SBC process on the service card, use the **no** form of this command.

hw-module service sbc location *node-id*

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

Syntax Description

<i>node-id</i>	Location in which you want the SBC service role configured. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
----------------	---

Command Default

No default behavior or values

Command Modes

Global 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 3.8.0	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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **hw-module service sbc** command to configure the SBC role as the role for a node. The SBC role supports the SBC service. An SBC service instance is activated on a service card only if the SBC role is configured as the role for the service card's location. A service card can be configured with only one role at a time. If you change the role of a service card, the card reboots in a mode that enables it to run the different services supported by the new role.

Use the **service-location** command to associate a service instance with a service card.

Use the **show services role** command to display the roles configured on service card locations.

Task ID

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

Examples

The following example shows how to assign 0/1/CPU0 as the SBC service:

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

Related Commands

Command	Description
sbc	Configures an SBC instance and enters SBC configuration mode.
service-location, page 34	Associates a physical interface with a firewall, SBC, or VASI interface service instance.
show services role, page 90	Displays the configured roles of the service cards.

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 <i>node-id</i>	Identifies the node you want to shut down. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.
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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 the proper task IDs. If you suspect 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 EXEC mode to display the results of the **hw-module shutdown** command.

Task ID

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

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
```

The following example shows how to bring up a node using the **no** form of the **hw-module shutdown** command:

```
RP/0/0/CPU0:router# admin
RP/0/0/CPU0:router(admin)# configure
RP/0/0/CPU0:router(admin-config)# no hw-module shutdown location 0/2/CPU0
```

Related Commands

Command	Description
hw-module power disable, page 13	Disables the node power-on feature on a specific node.
hw-module reset auto disable, page 15	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

<i>subslot-id</i>	Specifies the subslot to be restarted. The <i>subslot-id</i> argument is entered in the <i>rack/slot/subslot</i> 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 the proper task IDs. If you suspect 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, page 29	Administratively shuts down a SPA.

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

<i>subslot-id</i>	Specifies the subslot to be shut down. The <i>subslot-id</i> argument is entered in the <i>rack/slot/subslot</i> 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 the proper task IDs. If you suspect 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	Disables an interface (forces an interface to be administratively down).

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 <i>node-id</i>	(Optional) Specifies the primary RP on which to force a switchover. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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, page 83	Displays the redundancy status of the RPs.

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 <i>node-id</i>	Specifies the physical location of the service card on which you prefer that the service should be active. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
preferred-standby <i>node-id</i>	Specifies a standby physical location for the service. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the command to specify the location of the service card to handle a VASI virtual interface. The 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 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 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, page 90	Displays the configured roles of the service cards.
show services redundancy, page 87	Displays all configured services and their active and standby physical locations.

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 <i>node-id</i>	Displays DSC information for a specific node. The <i>node-id</i> is expressed in the <i>rack/slot/module</i> notation.

Command Default

This command has no arguments or keywords.

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 the proper task IDs. If you suspect 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 <i>rack/slot/module</i> 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: <ul style="list-style-type: none"> • 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, page 5	Defines a 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 information for prior environmental monitor parameters.
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.
<i>node-id</i>	(Optional) Node whose information you want to display. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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, page 41](#) 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 <i>rack/slot/module</i> .
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, page 41](#) describes the significant fields shown in the display.

Table 3: show environment leds Field Descriptions

Field	Description
<i>rack_num/slot_num/*</i> :	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
```

Table 4: `show environment power-supply` Field Descriptions, page 42 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 arguments or keywords.

Command Default No default behavior or values

Command Modes Administration EXEC

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 the proper task IDs. If you suspect 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 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
RP/0/0/CPU0:Router(admin)# show fpd package

=====
Field Programmable Device Package
=====
Card Type          FPD Description          Type Subtype    SW Version    Min Req HW Vers
=====
SPA-4XT3/E3        SPA E3 Subrate FPGA     spa  fpga2      0.6           0.0
                   SPA T3 Subrate FPGA     spa  fpga3      0.14          0.0
                   SPA I/O FPGA            spa  fpga       0.24          0.0
                   SPA ROMMON              spa  rommon     2.12          0.0
-----
SPA-2XT3/E3        SPA E3 Subrate FPGA     spa  fpga2      0.6           0.0
                   SPA T3 Subrate FPGA     spa  fpga3      0.14          0.0
                   SPA I/O FPGA            spa  fpga       0.24          0.0
                   SPA ROMMON              spa  rommon     2.12          0.0
-----
SPA-4XCT3/DS0     SPA T3 Subrate FPGA     spa  fpga2      0.11          0.100
                   SPA T3 Subrate FPGA     spa  fpga2      0.15          0.200
                   SPA I/O FPGA            spa  fpga       1.4           0.100
                   SPA ROMMON              spa  rommon     2.12          0.100
-----
SPA-2XCT3/DS0     SPA T3 Subrate FPGA     spa  fpga2      0.11          0.100
                   SPA T3 Subrate FPGA     spa  fpga2      0.15          0.200
                   SPA I/O FPGA            spa  fpga       1.4           0.100
                   SPA ROMMON              spa  rommon     2.12          0.100
-----
SPA-OC192RPR-XFP  SPA FPGA swv1.2         spa  fpga       1.2           0.0
-----
SPA-OC192POS-XFP  SPA FPGA swv1.2         spa  fpga       1.2           0.0
                   SPA FPGA swv1.2 hww2    spa  fpga       1.2           2.0
-----
SPA-10X1GE        SPA FPGA swv1.7         spa  fpga       1.7           0.0
-----
SPA-5X1GE         SPA FPGA swv1.7         spa  fpga       1.7           0.0
-----
SPA-1XTENGE-XFP   SPA FPGA swv1.7         spa  fpga       1.7           0.0
-----
```

Table 1 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: <ul style="list-style-type: none"> • spa—Shared port adapter

Field	Description
	<ul style="list-style-type: none"> 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, page 46	Displays the FPD compatibility for all modules or for a specific module.
upgrade hw-module fpd, page 103	Manually upgrades the current 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 { <i>node-id</i> all }	Specifies the location of the module. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
sysmgr	read

Task ID	Operations
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
=====
Location      Card Type      HW      Current SW Upg/
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
=====
Location      Card Type      HW      Current SW Upg/
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 <i>rack/slot/module</i> notation.
Card Type	Module part number.
HW Version	Hardware model version for the module.
Type	Hardware type. Can be one of the following types: <ul style="list-style-type: none"> • spa—Shared port adapter • lc—Line card
Subtype	FPD type. Can be one of the following types:

Field	Description
	<ul style="list-style-type: none"> • 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, page 43	Displays which FPD image package is needed for the router to properly support the modules for the running Cisco IOS XR software release. Also indicates all available FPD images that are available for a specific module.
upgrade hw-module fpd, page 103	Manually upgrades the current FPD image package on a module.

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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • 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.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(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 the proper task IDs. If you suspect 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 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 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 8: show hw-module subslot config Field Descriptions, page 54](#) describes the significant fields shown in the display.

Table 7: show hw-module subslot config Field Descriptions

Field	Description
SPA inserted	Indicates if a SPA is currently detected in the subslot.

Field	Description
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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • 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.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(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 the proper task IDs. If you suspect 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
```

show hw-module subslot config

```

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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • 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.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(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 the proper task IDs. If you suspect 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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • 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.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(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 the proper task IDs. If you suspect 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:
```

show hw-module subslot errors

```

-----
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 <i>rack/slot/module</i> 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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • 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.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(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 the proper task IDs. If you suspect 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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • 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.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(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 the proper task IDs. If you suspect 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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
all	(Optional) Displays inventory information for all the physical entities in the chassis.
location { <i>node-id</i> 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 the proper task IDs. If you suspect 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

Task ID

Task ID	Operations
sysmgr	read

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, page 71](#) 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 <i>rack/slot/module</i> 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 { <i>node-id</i> all }	(Optional) Specifies the node for which to display LED information. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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.

Task ID

Task ID	Operations
system	read

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 <i>rack/slot/module</i> notation.
MESSAGE	Current message displayed by the LED.
MODE	Current operating mode of the specified node.
STATUS	Current status of the specified node.

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 { <i>node-id</i> all }	Specifies the node for which to display Mbus information. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID

Task ID	Operations
sysmgr	read

Examples

The following example shows sample output from the 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
```

describes the significant fields shown in the display.

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 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
```

describes the significant fields shown in the display.

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 <i>MBox</i> 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, 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

<i>mda-class</i>	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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Although the 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 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 ]
```

The following example shows sample output from the 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 <i>client-name</i>	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 <i>n</i>	(Optional) Displays the last <i>n</i> 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 <i>filename original</i>	(Optional) Specifies the filename of the file to display. You can specify up to four trace files.
location { <i>node-id</i> all}	(Optional) Specifies the node of the RP. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation. You can specify up to four nodes. The all keyword specifies all RP nodes.

Command Default No default behavior or values

Command Modes EXEC
Administration EXEC

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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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

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

Task ID	Task ID	Operations
	sysmgr	read

Examples The following example shows sample output from the 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
```

show platform

```

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

```

describes the significant fields shown in the display.

Table 17: show platform Field Descriptions

Field	Description
Node	Identifier of the node in the <i>rack/slot/module</i> 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.

The following example shows sample output for the 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, page 39	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 { <i>node-id</i> all }	(Optional) Specifies the node for which to display LED information. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the command to display the redundancy status of the route processors (RPs). The 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

The following example shows sample output from the command:

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

Mon Apr 26 16:19:20.802 DST
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 Fri Apr 2 23:08:43 2010: 3 weeks, 2 days,
17 hours, 10 minutes ago

Active node booted Fri Apr 2 23:08:43 2010: 3 weeks,
2 days, 17 hours, 10 minutes ago

Active node reload "Cause: Turboboot completed successfully"
describes the significant fields shown in the display.
```

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 <i>rack/slot/module</i> , 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.
Partner node (*/*/*) is in XXX role	Current role of the secondary (or partner) route processor, where (*/*/*) is the route processor ID in the <i>rack/slot/module</i> format, and XXX is the role of the route processor (active or standby).

Field	Description
	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.
Standby node in (*/*/*) is NSR-ready	Current state of the standby node regarding nonstop routing (NSR), where (*/*/*) is the standby route processor ID. In the example, the standby node is NSR-ready.
Reload and boot info	General overview of the active and standby route processors' reload and boot history.

The following sample output shows the status of the redundant RPs in the system:

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

Active Node      Standby Node
-----
0/4/CPU0         N/A
0/4/CPU1         N/A
0/RP0/CPU0      0/RP1/CPU0 (Ready, NSR: Ready)
```

The status of the standby node is indicated in parentheses next to the node identifier. The nonstop routing (NSR) status is indicated following NSR. Possible values are Ready and Not ready.

Examples

The following example shows sample output from the 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
```

describes the significant fields shown in the display.

Table 19: show redundancy Field Descriptions

Field	Description
Node */*/* is in <i>XXX</i> role	<p>Current role of the primary route processor, where (*/*/*) is the route processor ID in the format <i>rack/slot/module</i>, and <i>XXX</i> is the role of the route processor (active or standby).</p> <p>In the example, this field shows that the node with the ID 0/RP0/CPU0 is in active role.</p>
Partner node (*/*/*) is in <i>XXX</i> role	<p>Current role of the secondary (or partner) route processor, where (*/*/*) is the route processor ID in the <i>rack/slot/module</i> format, and <i>XXX</i> is the role of the route processor (active or standby).</p> <p>In the example, this field shows that the node with the ID 0/RP1/CPU0 is in standby role.</p>
Standby node in (*/*/*) is ready	<p>Current state of the standby node, where (*/*/*) is the standby route processor ID.</p> <p>In the example, the standby node is ready.</p>
Reload and boot info	<p>General overview of the active and standby route processors' reload and boot history.</p>

Related Commands

Command	Description
redundancy switchover, page 31	Causes the primary (active) RP to switch over to the redundant standby RP, if the standby RP is available.

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 <i>service</i>	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 <i>node-id</i>	Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module module</i> 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Examples

The following 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 , page 34	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 <i>node-id</i>	Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Task ID	Operations
sbc	read

Examples

The following example displays sample output from the command:

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

```
Thu Sep 17 10:11:39.122 BST
Node      Configured Role    Enacted Role      Enabled Services
-----
0/0/CPU0  Firewall          <none>
0/1/CPU0  Firewall          Firewall          VASI
```

The following example displays sample output from the command with the **detail** keyword:

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

Thu Sep 17 10:17:27.141 BST
Node 0/0/CPU0
  Configured Role: Firewall    Enacted Role: <none>
  Enabled Services:
  Reason not enacted: Card does not support the configured role.
```

Related Commands

Command	Description
hw-module service firewall location, page 17	Configures the firewall service as a role on a multiservice blade (MSB).
hw-module service offline location, page 21	Configures offline mode as the role on a specific node.
hw-module service sbc, page 23	Configures the SBC service as a role on a service card.

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 arguments or keywords.

Command Default No default behavior or values

Command Modes EXEC

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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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

Task ID	Operations
basic-services	read

Examples

The following example shows partial output from the 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-mpi-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--
```

describes the significant fields shown in the display.

Table 20: show version Field Descriptions

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

Field	Description
ROM	System bootstrap version number currently running on the router.
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 <i>node-id</i> is expressed in the <i>rack/slot/module</i> notation.
Note	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 3.9.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operation
sysmgr	read

Examples

The following 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
              Type          PLIM          Upgrade       Upgrade      Upgrade
              Type          PLIM          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
```

The following 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
              Type          PLIM          Fab Downloader Fab Downloader Required
              Type          PLIM          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
```

The following 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
          Type      PLIM      Mbus Rom    Mbus Rom   Required
          Type      PLIM      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

```

The following 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
          Type      PLIM      Rommon      Rommon     Required
          Type      PLIM      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, page 98	Upgrades the fabric downloader, ROM Monitor, Mbus and FPD image package on a module.
upgrade fabric-downloader, page 101	Upgrades the fabric downloader image package on a module.
upgrade mbus, page 106	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 { <i>node-id</i> all }	Specifies the nodes for which to upgrade the images. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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, page 3	Clears all Mbus interface counters on a specific node.
show mbus, page 74	Displays Mbus CAN errors and interface counters.
show platform, page 80	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 <i>node-id</i>	Upgrades the bootstrap loader on a specific RP. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.

Command Default

No default behavior or values

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 the proper task IDs. If you suspect 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 { <i>node-id</i> all }	Specifies the node for which to upgrade the fabric downloader. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation. Use the all keyword to indicate all nodes.
force	Skips the version check and forces an upgrade.

Note 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 the proper task IDs. If you suspect 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 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, page 80	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.
<i>fpga-type</i>	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 { <i>node-id</i> all }	Specifies the node for which to upgrade the FPD image. The <i>node-id</i> argument is expressed in the <i>rack/slot/subslot</i> 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 the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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 displayed to the screen:

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

Task ID

Task ID	Operations
sysmgr	read, write

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 force 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 hw-module fpd, page 46	Displays the FPD compatibility for all modules or a specific module.
show fpd package, page 43	Displays which FPD image package is needed for the router to properly support the modules for the running Cisco IOS XR software release. Also indicates all available FPD images that are available for 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 { <i>node-id</i> all }	Specifies the node for which to upgrade the Mbus agent ROM. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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 the proper task IDs. If you suspect 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 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, page 3	Clears all Mbus interface counters on a specific node.
show mbus, page 74	Displays Mbus CAN errors and interface counters.
show platform, page 80	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 <i>node-id</i>	Upgrades the ROMMON on a specific line card. The <i>node-id</i> is expressed in the <i>rack/slot/module</i> 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

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 the proper task IDs. If you suspect 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

The following 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: eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Programming image: pppppppppp
Verifying image: vvvvvvvvvv
Upgraded linecard rom-monitor successfully
```

Related Commands

Command	Description
show platform, page 80	

upgrade rommon