Hardware Redundancy and Node Administration Commands

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.

clear canbus

To clear the counters used for statistics regarding the CAN bus, use the **clear canbus** command in administration EXEC mode.

clear canbus {**client-stats** | **controller-stats** | **server-stats**} **location** {**all***node-id*}

Syntax Description

client-stats	Clears CAN bus client statistics.
controller-stats	Clears CAN bus controller statistics.
server-stats	Clears CAN bus server statistics.
location {**all** | *node-id*}	Clears the CAN bus statistics for a specific node or all nodes.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operation
sysmgr	read

The following example illustrates how to use the **clear canbus** command:

```
RP/0/RSP0/CPU0:router(admin)# clear canbus server-stats location all
```

clear plugin slot counts

To clear the running counts of the backplane connector slot plugins, use the **clear plugin slot counts** command in administration EXEC mode.

clear plugin slot counts location *node-id*

Syntax Description

location *node-id*	Clears plugin slot counts on the designated node. The *node-id* argument is expressed in the *rack/slot/module* notation.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.9.1	This command was introduced.

Usage Guidelines

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

The **clear plugin slot counts** command can be used only if the revised backplane ID card (BPID-02) is installed. If the BPID-02 card is not installed, the following error message is displayed:

```
0/1/CPU0 slot counts 'current' ...Response error: 'ENVMON' detected the 'warning' condition
'Hardware not available'
```

Task ID

Task ID	Operation
sysmgr	execute

The following example illustrates how to use the **clear plugin slot counts** command:

```
RP/0/RSP0/CPU0:router(admin)# clear plugin slot counts location 0/FT1/SP

Fri Jan 15 10:15:55.388 pst

 0/FT1/SP slot counts 'current' ... cleared
RP/0/RSP0/CPU0:router(admin)# show plugin slot counts location 0/FT1/SP

Fri Jan 15 10:16:15.503 pst

Backplane connector slot plugin counters

                        Current         Cumulative
0/FT1/SP                0               14
```

environment altitude

To specify the chassis altitude, so the system can adjust the fan speed to compensate for lower cooling capability at higher altitudes, use the environment altitude command in administration configuration mode. To remove the altitude setting, use the no form of this command.

environment altitude *altitude* **rack** *rack-no*
no environment altitude *altitude* **rack** *rack-no*

Syntax Description

altitude	Chassis location altitude in meters. Values can range from 0 to 4000.
rack *rack-no*	Specifies the rack number of the chassis.

Command Default

1800 meters

Command Modes

Administration configuration

Command History

Release	Modification
Release 4.2.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operation
root-system	read, write

This example specifies that the chassis is located at sea level:

```
RP/0/RSP0/CPU0:router(admin-config)#environment altitude 0 rack 0
```

fabric enable mode

To change the fabric operation mode on Cisco ASR 9922 Series routers, use the **fabric enable mode** command in the Admin Configuration mode.

fabric enable mode [highbandwidth | a99-highbandwidth]

Syntax Description

highbandwidth	Enables high scale Virtual Queuing Instance (VQI). In this mode, the maximum number of VQI that can be defined on the router is 2048. In the default mode, a maximum of 1024 VQI is supported and only first five switch fabric links can be used in each line card slot.
a99-highbandwidth	Enables the use of all seven switch fabric links in each line card slot. In this mode, the maximum number of VQI that can be defined on the router is 2048. **Note** This keyword is allowed only when all the line cards in the chassis are of A99 type (for example, A99-12X100GE, A99-8X100GE, and so on).

Command Default

In Cisco IOS XR, default operating mode is not configured (None).

In Cisco IOS XR 64 bit, default operating mode is **highbandwidth** .

Command Modes

Admin Configuration mode.

Command History

Release	Modification
Release 6.1.2	a99-highbandwidth keyword support was introduced.
Release 5.3.0	This command was introduced.

Usage Guidelines

In Cisco IOS XR 64 bit, **highbandwidth** mode is enabled by default. Therefore, only **a99-highbandwidth** keyword can be used during command execution on Cisco IOS XR 64 bit routers.

Note Ensure to remove all the line cards that are unsupported for an operating mode before executing this command; the command will otherwise be rejected.

Note Remove all unsupported line cards in the chassis before enabling the **highbandwidth** operating mode. This mode is **NOT** available on the following line cards:

- A9K-2X100GE
- A9K-1X100GE
- A9K-36X10GE
- A9K-24X10GE
- A9K-MOD160
- A9K-MOD80
- A9K-16T
- A9K-8T
- A9K-4T
- A9K-2T20GE
- A9K-40GE
- A9K-SIP-700

Example:

This example shows the available fabric operating modes:

```
RP/0/RSP0/CPU0:router (admin-config) # fabric enable mode ?
A99-highbandwidth  A99 High bandwidth cards only
highbandwidth      High bandwidth cards only
```

fpd auto-upgrade

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

fpd auto-upgrade

Syntax Description

This command has no keywords or arguments.

Command Default

FPD images are not automatically upgraded.

Command Modes

Admin Configuration mode

Command History

Release	Modification
Release 4.0.1	This command was introduced.

Usage Guidelines

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

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

Task ID

Task ID	Operation
system	read, write

The following example shows how to enable automatic FPD upgrades:

```
RP/0/RSP0/CPU0:router(admin-config)# fpd auto-upgrade
```

fpd auto-reload

To enable the automatic reload of a line card after successful FPD software upgrade, use the **fpd auto-reload** command in Admin Configuration mode. To disable automatic LC reload, use the **no** form of this command.

fpd auto-reload

Syntax Description

This command has no keywords or arguments.

Command Default

None.

Command Modes

Admin Configuration mode

Command History

Release	Modification
Release 6.5.1	This command was introduced.

Usage Guidelines

The **fpd auto-reload** command works only if **fpd auto-upgrade** command is configured.

```
(admin-config)#fpd auto-reload
(admin-config)#fpd auto-upgrade
(admin-config)#commit
```

This command is supported on Cisco IOS XR 32-bit OS.

Task ID

Task ID	Operation
system	read, write

The following example shows how to enable automatic LC reload after FPD upgrades:

```
RP/0/RSP0/CPU0:router(admin-config)# fpd auto-reload
```

fpd auto-reload (Cisco IOS XR 64-bit)

To enable or disable automatic reload of a line card after successful FPD upgrade, use the **fpd auto-reload** command in Global Configuration mode.

fpd auto-reload{**enable** | **disable**}

Syntax Description

enable	Enables LC auto reload after FPD auto upgrade.
disable	Disables LC auto reload after FPD auto upgrade.

Command Default

None.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 6.5.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit OS.

Task ID

Task ID	Operation
system	read, write

The following example shows how to enable automatic LC reload after successful FPD upgrades:

```
RP/0/RSP0/CPU0:router(config)# fpd auto-reload enable
```

hw-module cmp disable

To disable the Console Management Port (CMP) on a RSP880/RP2, use the **hw-module cmp disable** command in Admin Configuration mode. Disabling unused CMP ensures a higher level of security.

To enable a CMP, use the **no** form of this command.

hw-module cmp disable
no hw-module cmp disable

Syntax Description

location *loc-name*	RSP880/RP2 location.

Command Default

CMP on a RSP880/RP2 is **enabled**.

Command Modes

Admin configuration

Command History

Release	Modification
Release 6.3.1	This command was introduced.

Usage Guidelines

By default, CMP on a RSP880/RP2 is **enabled** and you can disable the port later by executing the command. If CMP is already disabled using this command, it will automatically be re-enabled when the RSP is re-loaded (at boot-up). However, after the RSP is in a stable state/UP state, the port gets disabled again as the configuration is automatically re-applied.

Note After CMP is disabled using this command, the CMP shell access session will be terminated.

This command can be executed only RSPs; not on Line Cards.

This example shows how to disable CMP on a RSP/RP:

```
RP/0/RSP0/CPU0:router (admin-config) # hw-module cmp disable location 0/RSP0/CPU0
```

This example shows how to enable CMP on a RSP/RP:

```
RP/0/RSP0/CPU0:router (admin-config) # no hw-module cmp disable location 0/RSP0/CPU0
```

hw-module external-usb disable

To disable USB ports on any RSP, use the **hw-module external-usb disable** command in Admin Configuration mode. Disabling unused USB ports ensures a higher level of security.

To enable a USB port, use the **no** form of this command.

On Cisco IOS XR 64 bit, use **external-usb disable** and **no external-usb disable** commands in Admin Configuration mode for the same.

hw-module external-usb disable
no hw-module external-usb disable

Syntax Description

This command has no keywords or arguments.

Command Default

USB port on a RSP is **enabled**.

Command Modes

Admin configuration

Command History

Release	Modification
Release 6.3.1	This command was introduced.

Usage Guidelines

By default, USB port on a RSP is **enabled**. If USB is already inserted into a port and then the USB port is disabled using this command, the existing USB continues to be recognized until it is removed.

Note Inserting a USB will **not** be detected after a USB port is disabled using this command.

This command can be executed only RSPs; not on Line Cards.

This example shows how to disable a USB port on a RSP:

```
RP/0/RSP0/CPU0:router (admin-config) # hw-module external-usb disable
```

This example shows how to enable a USB port on a RSP:

```
RP/0/RSP0/CPU0:router (admin-config) # no hw-module external-usb disable
```

hw-module high-bandwidth

To upgrade the RSP3 Lite card from 80Gig per line card capacity to 220Gig per Line card capacity (for Enhanced ethernet linecards), use the **hw-module high-bandwidth** command in the appropriate mode. To restore the default capacity, use the **no** form of the command.

hw-module high-bandwidth
no hw-module high-bandwidth

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

Admin config

Command History

Release	Modification
Release 5.3.0	This command was introduced.

Usage Guidelines

This command can be used only after applying the appropriate license to RSPLite3. Traditional or smart licensing can be used.

Task ID

Task ID	Operation
sysmgr	execute

Example

This example shows how to use the **hw-module high-bandwidth** command:

```
RP/0/RSP0/CPU0:router (config) # hw-module high-bandwidth
```

hw-module location port breakout

To convert the speed of a interface port from one to another, for example, 100G port to 40G port, use the **hw-module location** *node-id* **port** *port number***breakout** *interface* command in the global configuration mode.

hw-module location *node-id* **port** *number* **breakout** *interface*

Syntax Description

node-id	Node whose hardware attributes you want to configure. The *node-id* argument is expressed in the *rack/slot/module* notation. **Note** Enter the **show platform** command to see the location of all nodes installed in the router.
port *port-number*	Indicates the optics port number. Depending on the line card, the port numbers and its type might vary.
breakout *interface*	Configures the breakout interface.

Command Default

No default behavior or values

Command Modes

Global configuration mode

Command History

Release	Modification
Release 6.4.2	This command was introduced.
Release 7.1.3	This command was updated. The command is supported on two new hardware: • Cisco ASR 9000 12-Port 100GE line card (A99-12x100GE) • Cisco ASR 9000 4-Port 100GE line card (A9K-4x100GE)

Usage Guidelines

This command is supported only on these routers and line cards:

- Cisco ASR 9901 Routers
- Cisco ASR 9000 12-Port 100GE line card (A99-12x100GE)
- Cisco ASR 9000 4-Port 100GE line card (A9K-4x100GE)

Task ID

Task ID	Operations
root-system	read, write

Task ID	Operations
root-lr	read, write

This example shows how to convert 100G port to 40G port:

```
RP/0/RSP0/CPU0:router(config)# hw-module location 0/0/CPU0 port 20 breakout 1xFortyGigE
```

hw-module location breakout

To configure the breakout option for a specified interface, use the **hw-module location breakout** command in the appropriate mode. To disable the breakout option, use the **no** form of the command.

hw-module location *node-id* [**preconfigure**] **bay** *bay-number* **port** *port-number* **breakout** *interface*

Syntax Description

location *node-id*	Interface details.
preconfigure	(Optional) Enables the user to preconfigure breakout on an empty slot.
bay *bay-number*	Bay number of the device (Upper, left, right, lower).
port *port-number*	Specifies the port on which you want to enable breakout.
breakout *interface*	Enables the breakout option. For information on supported port modes, see *System Management Configuration Guide for Cisco ASR 9000 Series Routers*.

Command Default

None

Command Modes

Global config

Command History

Release	Modification
Release 5.3.0	This command was introduced.

Usage Guidelines

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

SR10 CPAK can operate in the 10x10GE mode.

Use the **show ipv4 interfaces brief** command to get the details of the breakout interfaces:

```
show ipv4 interfaces brief | include Ten
TenGigE0/0/0/2/0              unassigned      Shutdown              Down
TenGigE0/0/0/2/1              unassigned      Shutdown              Down
TenGigE0/0/0/2/2              unassigned      Shutdown              Down
TenGigE0/0/0/2/3              unassigned      Shutdown              Down
TenGigE0/0/0/2/4              unassigned      Shutdown              Down
TenGigE0/0/0/2/5              unassigned      Shutdown              Down
TenGigE0/0/0/2/6              unassigned      Shutdown              Down
TenGigE0/0/0/2/7              unassigned      Shutdown              Down
TenGigE0/0/0/2/8              unassigned      Shutdown              Down
TenGigE0/0/0/2/9              unassigned      Shutdown              Down
```

Task ID

Task ID	Operation
sysmgr	read

Example

This example shows how to use the **hw-module location breakout** command:

```
RP/0/RSP0/CPU0:router (config) # hw-module location 0/0/CPU0 bay 0 port 2 breakout 10xTenGigE
```

This example shows how to use the **hw-module location breakout** command to enable 1 GbE optics speed with the 5x1GE-5x10GE option on port 10:

```
RP/0/RSP0/CPU0:router (config) # hw-module location 0/0/CPU0 bay 0 port 10 breakout
5x1GE-5x10GE
```

This example shows how to use the **hw-module location breakout** command to enable 1 GbE optics speed with the 10x1GE option on port 10:

```
RP/0/RSP0/CPU0:router (config) # hw-module location 0/0/CPU0 bay 0 port 10 breakout 10x1GE
```

hw-module location bay port port-mode

To configure an MPA with optics in 200G mode use the `hw-module location bay port port-mode` command in the global configurion mode.

Note Staircase FEC is supported only in 100gig mode.

hw-module location *location* **bay** *bay-number* **port** *port-number* **port-mode** *port-mode*

Syntax Description

location *location*	Indicates the location of the MPA, which is the line card ID.
bay *bay-number*	Indicates the bay number of the line card.
port *port-number*	Indicates the port number of the optical-module or optic. You can configure the port number with only the value, 0.
port-mode *port-mode*	Configures the 200G port mode. Port mode can be: • *2xHundredGigE-16QAM*: Configures 200G 16QAM port mode for EP • *2xHundredGigE-8QAM*: Configures 200G 8QAM port mode for EP A higher QAM value leads to higher data transmission rates, but also increases the risk of errors that necessitates re-sends.

Command Default

If this command is not configured, the MPA and optics work in 100G mode.

Command Modes

Global configuration

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

You can configure this command only at port 0 of a router.

Task ID

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

This example shows how to configure 200G for an optical module of a router.

```
Router(config)# hw-module location 0/2/CPU0 bay 0 port 0 port-mode 2xHundredGigE-16QAM
```

hw-module location reload

To reset the power-cycle or reload the hardware for a specific node, or for all nodes installed in the router, use the **hw-module location reload** command in EXEC or administration EXEC mode.

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

Syntax Description

node-id	Node whose hardware attributes you want to configure. The *node-id* is expressed in the *rack/slot/module* notation. **Note** Enter the **show platform** command to see the location of all nodes installed in the router.
path	TFTP or disk path to the image you want to download onto the specific node or nodes.
warm	Specifies a warm reload of the node.

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

To reset a specific node, use the **hw-module location reload** command in EXEC mode.

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

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

Task ID

Task ID	Operations
root-lr	execute (in EXEC mode)
sysmgr	execute (in EXEC mode and administration EXEC mode)

This example shows how to reset the hardware on a specific node from EXEC mode:

```
RP/0/RSP0/CPU0:router # hw-module location 0/1/CPU0 reload
```

This example shows how to reset the hardware on a specific node from administration EXEC mode:

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# hw-module location 0/3/CPU0 reload
```

This example shows how to reset the hardware on a specific fabric card node:

```
RP/0/RSP0/CPU0: router (admin) # hw module location 0/fc0/SP reload
```

hw-module location slice config-mode

To convert the speed of a interface port from one to another, for example, 10GE port to 1GE port, use the **hw-module location** *node-id* **slice** *number***config-mode** *interface* command in the global configuration mode.

hw-module location *node-id* **slice** *number* **config-mode** *interface*

Syntax Description

node-id	Node whose hardware attributes you want to configure. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.
Note	Enter the **show platform** command to see the location of all nodes installed in the router.

Command Default

No default behavior or values

Command Modes

Global configuration mode

Command History

Usage Guidelines

This command is supported on Cisco ASR 9902 router, Cisco A9903-8HG-PEC port expansion card, and on the following line cards:

- A9K-4HG-FLEX-SE/TR
- A99-4HG-FLEX-SE/TR
- A9K-4HG-FLEX-FC
- A99-4HG-FLEX-FC

The 5x1GE_5x10GE port mode enables 1GbE support in the following ports:

- Slice 0: Ports 1, 3, 5, 7, 13, 15, 17, 19, 21, and 23
- Slice 1: Ports 25, 27, 29, 31, 33, 35, 41, 43, 45, and 47

Task ID

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

This example shows how to enable 5x1GE_5x10GE port mode:

```
RP/0/RP0/CPU0:ios#configure
RP/0/RP0/CPU0:ios(config)#hw-module location 0/0/CPU0 slice 0 config-mode config-mode
1x100GE,1x100GE,5x1GE_5x10GE,5x1GE_5x10GE
RP/0/RP0/CPU0:ios(config)#commit
```

hw-module location slice power-down

To power off a specified slice, use the **hw-module location slice power-down** command in the Global Configuration mode. To power on a slice, use the **no** form of the command.

hw-module location *node-id* **slice** *number* **power-down**

Syntax Description

location *node-id*	Specifies the line card node location.
slice *number*	Specifies the slice number that should be power off.

Command Default

All slices are power on.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This feature is supported on the Cisco ASR 9000 4th Generation Ethernet line cards.

Note It is necessary to reload the line card after executing the **hw-module location slice power-down** command.

Task ID

Task ID	Operation
sysmgr	read, write

Example

This example shows how to power down slice 3, and 7 of the line card at node 0:

```
RP/0/RSP0/CPU0:router (config) # hw-module location 0/0/CPU0 slice 3 power-down
RP/0/RSP0/CPU0:router (config) # hw-module location 0/0/CPU0 slice 7 power-down
RP/0/RSP0/CPU0:router (config) # commit
RP/0/RSP0/CPU0:router (config) # end
RP/0/RSP0/CPU0:router # admin
RP/0/RSP0/CPU0:router (sysadmin) # hw-module location 0/0/CPU0 reload
```

hw-module mac-move police-mode

To avoid impact on network processors (NP) during high MAC moves by limiting the MAC moves, use the **hw-module mac-move police-mode** command in the appropriate mode.

MAC moves are policed to avoid stress and impact on NPs during high mac move situations such as the bridge loop. The negative on this are cases where another device fails-over, and sends a packet to move MAC tables but does not send continuous traffic. In some cases, the MAC move can be dropped and tables not updated until the device sends another packet. The new MAC move police mode (mode `on`) solves these issues.

hw-module mac-movepolice-mode*on* | *off*

Syntax Description

on	Forces NP to utilize the new MAC move control approach. There is no MAC move policing when traffic load on NP is low. Start MAC move policing when NP is in risk of dropping traffic, congestion when the default policing is done at 1000 per second.
off	Forces NP go back to default mode. MAC move policing is done always at 1000 per second. This is the default mode.

Command Default

None

Command Modes

Administration configuration

Command History

Release	Modification
Release 5.1.3	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operation
sysmgr	read

hw-module power location

To power on a specified line card, use the **hw-module power location** command in administration configuration mode.

hw-module power [**override**] **location** *node-id*

Syntax Description

location *node-id*	Identifies the node to power on. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.
override	Allows the card to be powered up even though there is no power consumption value programmed on the manufacturing EEPROM of the card.

Command Default

Power is on for all nodes.

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

The **hw-module power location** command is available for line cards only; it is not available for route switch processor (RSP) cards.

Use the **hw-module power disable location** command to power off a line card.

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

By default, cards that do not have a power consumption value programmed on the manufacturing EEPROM cannot be powered up or booted. To correct an issue with such cards, that possibly is because of an incorrectly programmed EEPROM, you can use the **hw-module power** command with the **override** option.

Task ID

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

The following example shows how to power on a line card:

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# configure
RP/0/RSP0/CPU0:router(admin-config)# hw-module power location 0/1/0
```

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

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# configure
RP/0/RSP0/CPU0:router(admin-config)# hw-module power disable location 0/SM3/SP
```

hw-module power disable

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

hw-module power [**override**] **disable location** *node-id*
no hw-module power [**override**] **disable location** *node-id*

Syntax Description

override	Specifies to power up the card regardless of the available power budget.
location *node-id*	Identifies the node whose power-on feature you want to disable. The *node-id* argument is expressed in the *rack/slot/module* notation.

Command Default

Power is on for all nodes.

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

Use the **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.

Cards that do not have a power consumption value programmed on the manufacturing EEPROM do not power up or boot. Use the **override** option with the **hw-module power disable** command to power up the card to correct any issue about an incorrectly programmed manufacturing EEPROM. In any event, the system is not allowed to go over the maximum power budget for the system.

Task ID

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

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

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# configure
RP/0/RSP0/CPU0:router(admin-config)# hw-module power disable location 0/0/CPU0
```

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

```
RP/0/RSP0/CPU0:router (admin-config) # hw-module power disable location 0/fc0/SP
```

hw-module power saving

To configure the power saving mode for a specified slice, use the **hw-module power saving** command in the appropriate mode. To delete the power saving option, use the **no** form of the command.

hw-module power saving location *location* **slice** *number*
no hw-module power saving location *location* **slice** *number*

Syntax Description

location *location*	The interface details.
slice *number*	The slice number on which power save mode needs to be enabled. Each slice has two physical ports. Slice 1, 2 ,3 can be configured to the power saving mode. Power save option is not applicable for slice 0.

Command Default

None

Command Modes

Admin config

Command History

Release	Modification
Release 5.3.0	This command was introduced.

Usage Guidelines

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

Once a slice is configured in the power saving mode, the interfaces will be deleted and hence all traffic passing through the interfaces will be dropped.

Task ID

Task ID	Operation
sysmgr	read, write

Example

This example shows how to use the **hw-module power saving** command:

```
RP/0/RSP0/CPU0:router (admin-config) # hw-module power saving location 0/1/cpu0 slice 3
```

hw-module processor location mode

To configure processor array clusters setting for an ASR 9900 Series 16-Port 100 Gigabit Ethernet Service Edge Line Card, use the **hw-module processor location mode** command in global configuration mode.

hw-module processor location *node-id* **mode** {**mode-default** | **mode-full**}

The **no** format of the above command is not available. To move back to default mode, use the **hw-module processor location** *node-id* **mode mode-default** command form.

Syntax Description

location *node-id*	Specifies the node whose hardware attributes you want to configure. (The *node-id* is expressed in the rack/slot/module notation, such as **0/8/CPU0**).
mode-default	Specifies that processor array clusters are used as defined in the (default) line card profile setting.
mode-full	Specifies that all processor array clusters are fully utilized.

Command Default

The processor array clusters are used as per the line card profile setting (the mode is set to **mode-default**).

Command Modes

Global configuration

Command History

Release	Modification
Release 6.6.2	This command was introduced.

Usage Guidelines

- The **hw-module processor location mode** command is only supported on the Cisco ASR 9900 Series 16-Port 100 Gigabit Ethernet Service Edge Line Card (whose part number is A99-16X100GE-X-SE).
- The command is only applicable for IOS XR 64 Bit version on ASR 9000 Enhanced XR (eXR).
- To change the cluster setting to **mode-full**, use the **hw-module processor location** *node-id* **modemode-full** command form.
- To change the cluster setting from **mode-full** to **mode-default**, use the **hw-module processor location** *node-id* **mode mode-default** command form, and not the **no** form of the command.
- You must reload the line card XR VM after setting the new mode. You cannot enable it when the line card is in use. Any traffic on the line card is impacted until the line card becomes operational with the new mode.

Example

This example shows how to set the clusters' usage setting on the A99-16X100GE-X-SE line card to **mode-full**:

```
RP/0/RP1/CPU0:ios(config)# hw-module processor location 0/8/CPU0 mode mode-full
RP/0/RP1/CPU0:ios(config)# commit
RP/0/RP1/CPU0:ios(config)# exit
RP/0/RP1/CPU0:ios# reload location 0/8/CPU0
```

```
Proceed with reload? [confirm]
Reloading node 0/8/CPU0
```

This example shows how to set the clusters' usage setting on the A99-16X100GE-X-SE line card from **mode-full** to **mode-default**:

```
RP/0/RP1/CPU0:ios(config)# hw-module processor location 0/8/CPU0 mode mode-default
RP/0/RP1/CPU0:ios(config)# commit
RP/0/RP1/CPU0:ios(config)# exit
RP/0/RP1/CPU0:ios# reload location 0/8/CPU0
Proceed with reload? [confirm]
Reloading node 0/8/CPU0
```

Related Commands

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

hw-module profile feature

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

hw-module profile feature {**default**}
no hw-module profile feature {**default**}

Syntax Description

default	Feature profile that supports all features .

Command Default

The default feature profile is **default**.

Command Modes

Administration configuration

Command History

Usage Guidelines

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

Task ID

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

hw-module profile itcam

To configure internal TCAM profile partition allocation for line cards, use the **hw-module profile itcam** command in the Global Configuration mode.

hw-module profile itcam **location** *location*

Table 1: Syntax Description

to-profile-se1	Recarves the internal tcam partitions and modifies the scale to: • 4K entries in the L2 table • 15K entries in the V4 table • 3.25K entries in the V6 table
to-default	Sets the default scale limit for internal tcam partitions to: • 1K entries in the L2 table • 24K entries in the V4 table • 1.75K entries in the V6 table
location *location*	Sets the location.

Command Mode

Global Configuration mode

Command History

Release	Modification
Release 6.6.2	This command was introduced.

Usage Guidelines

The **to-profile-se1**, **to-profile-se2**, and .

To enable the specified profile configuration, you must reload the line cards after the configuration.

To return to the default profile mode, use the **to-default** option.

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

Example

This example shows how to configure **hw-module profile itcam to-profile-se1** command:

```
Router# configure
Router(config)#hw-module profile itcam to-profile-se1 location 0/0/CPU0
Sun Mar  3 07:44:23.066 UTC
In order to activate this new internal tcam partition profile, you must manually reload the
 line card.
Router(config)#
```

This example verifies the modified scale in the L2, V4, and V6 tables for line cards on an interface, using the **show prm server tcam summary all all detail all location** *location* command.

```
Router# show prm server tcam summary all all detail np3 location 0/0/CPU0


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

TCAM summary for NP3:

  TCAM Logical Table: TCAM_LT_L2 (1)
    Partition ID: 0, valid entries: 2, free entries: 22
    Partition ID: 1, valid entries: 0, free entries: 24
    Partition ID: 2, valid entries: 0, free entries: 24
    Partition ID: 3, valid entries: 0, free entries: 2012
    Partition ID: 4, valid entries: 2, free entries: 2010
  TCAM Logical Table: TCAM_LT_ODS2 (2), max entries: 15360, num free: 15237
    Application ID: NP_APP_ID_IFIB (0).
      VMR ID:    1, used entries:   45, allocated entries:  123
     Total vmr_ids per app id: 1, Total used entries per app id: 45 Total allocated entries:
123
    Application ID: NP_APP_ID_QOS (1)
     Total vmr_ids per app id: 0, Total used entries per app id: 0 Total allocated entries:
0
    Application ID: NP_APP_ID_ACL (2)
     Total vmr_ids per app id: 0, Total used entries per app id: 0 Total allocated entries:
0
    Application ID: NP_APP_ID_AFMON (3)
     Total vmr_ids per app id: 0, Total used entries per app id: 0 Total allocated entries:
0
    Application ID: NP_APP_ID_LI (4)
      VMR ID:    2, used entries:    0, allocated entries:    0
     Total vmr_ids per app id: 1, Total used entries per app id: 0 Total allocated entries:
0
    Application ID: NP_APP_ID_PBR (5)
     Total vmr_ids per app id: 0, Total used entries per app id: 0 Total allocated entries:
0
  TCAM Logical Table: TCAM_LT_ODS8 (3), max entries: 3328, num free: 3295
    Application ID: NP_APP_ID_IFIB (0).
      VMR ID:    1, used entries:   33, allocated entries:   33
     Total vmr_ids per app id: 1, Total used entries per app id: 33 Total allocated entries:
33
    Application ID: NP_APP_ID_QOS (1)
     Total vmr_ids per app id: 0, Total used entries per app id: 0 Total allocated entries:
0
    Application ID: NP_APP_ID_ACL (2)
     Total vmr_ids per app id: 0, Total used entries per app id: 0 Total allocated entries:
0
    Application ID: NP_APP_ID_PBR (5)
     Total vmr_ids per app id: 0, Total used entries per app id: 0 Total allocated entries:
0
```

```
    Application ID: NP_APP_ID_EDPL (6)
      Total vmr_ids per app id: 0, Total used entries per app id: 0 Total allocated entries:
 0
```

This example shows how to configure **hw-module profile itcam to-default** command:

```
Router# config
Router(config)#hw-module profile itcam to-default location 0/0/CPU0
Sun Mar  3 07:45:22.198 UTC
In order to activate this new internal tcam partition profile, you must manually reload the
 line card.
Router(config)#
```

Related Commands

Command	Description
show prm server tcam summary all all detail all location 0/0/CPU0	This command output shows modified TCAM values with increased limits for L2 and V6 entries.

hw-module profile itcam lightspeed

You can now configure the internal Ternary Content-Addressable Memory (TCAM) block allocation to increase the MAP-T instances, using the **hw-module profile itcam lightspeed** command in Global Configuration mode.

hw-module profile itcam lightspeed v4-ing *number of blocks* **v4-egr** *number of blocks* **v6-ing** *number of blocks* **v6-egr** *number of blocks* **location** *location*

Syntax Description

v4-ing	The number of TCAM blocks allocated for the IPv4 ingress region. Specify the number of blocks 1–13. The default value is 8.
v4-egr	The number of TCAM blocks allocated for the IPv4 egress region. Specify the number of blocks 1–13. The default value is 4.
v6-ing	The number of TCAM blocks allocated for the IPv6 ingress region. Specify the number of blocks 1–13. The default value is 3.
v6-egr	The number of TCAM blocks allocated for the IPv6 egress region. Specify the number of blocks 1–13. The default value is 1.
location	The router for which few partition blocks are provided for its internal TCAM. A router for which a certain number of partition blocks have been provided for its internal TCAM.

Command Default

None

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

The total allocation for TCAM blocks, encompassing IPv4 ingress, IPv4 egress, IPv6 ingress, and IPv6 egress, must not exceed 16.

After configuring this command, you must reload the line card for this configuration to take effect. This command applies to Cisco ASR 9000 Series 5th Generation High-Density Multi-Rate Line Cards.

Task ID

Task ID	Operation
system	read, write
cisco-support	read, write

The following example shows how to configure IPv4 ingress, IPv4 egress, IPv6 ingress, and IPV6 egress TCAM blocks in Cisco ASR 9000 Series Fifth Generation Light Speed Ethernet line cards.

```
Router# configure
Router(config)# hw-module profile itcam lightspeed v4-ing 1 v4-eng 1 v6-ing 13 v6-egr 1
location 0/2/CPU0

In order to activate this internal TCAM partition configuration, you must manually reload
the line card. This command must be used with caution and only when recommended by Cisco.

Router(config)# commit
```

hw-module profile itcam lightspeed l2tcam

To change the default configuration supporting 40,000 double-tagged Layer 2 VLAN sub-interfaces to a configuration that supports 40,000 single-tagged Layer2 VLAN sub-interfaces on fifth-generation Ethernet line cards, use the **hw-module profile itcam lightspeed l2tcam** command in Global Configuration mode. To revert to the configuration that supports 40,000 double-tagged VLANs, use the **no** form of the command.

hw-module profile itcam lightspeed l2tcam profile1-dot1q location *location*

Table 2: Syntax Description

profile1-dot1q	Enables the configuration that supports 40,000 single-tagged Layer2 VLAN sub-interfaces in the specified location. **Important** The **profile-dot1q** profile supports 40,000 single-tagged Layer 2 VLAN sub-interfaces and 16,000 double-tagged Layer 2 VLAN sub-interfaces.
location*location*	Sets the specified location.

Command Default

None.

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 24.2.1	This command was introduced.

Usage Guidelines

After configuring this command, you must reload the line card for this configuration to take effect. This command applies to fifth generation Ethernet line cards only.

Task ID

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

The following example shows how to switch from the default 40K double tag L2 scale to the 40K single tag L2 scale on fifth generation Ethernet line cards.

```
RP/0/RSP0/CPU0:router(config)# hw-module profile itcam lightspeed l2tcam profile1-dot1q
```

```
location 0/2/CPU0

In order to activate this internal tcam partition configuration, you must manually reload
the line card. This command must be used with caution and only when recommended by Cisco.
RP/0/RSP0/CPU0:router(config)# commit
```

hw-module profile scale

To specify a scale profile for the router, use the **hw-module profile scale** command in administration configuration mode.

Note This command is applicable only to Cisco IOS XR 32-bit operating system on Cisco ASR 9000 Series Routers.

hw-module profile scale { **default** | **l3** | **l3xl** }

Syntax Description

bng-max	This is an unused scale profile and will be deprecated in a future Cisco IOS XR software release.
default	Scale profile applicable for deployments that require large Layer 2 MAC tables (up to 512,000 entries) and a relatively small number of Layer 3 routes (less than 512,000).
l3	Scale profile applicable for deployments that require more Layer 3 routes (up to 1 million) and smaller Layer 2 MAC tables (less than 128,000 entries).
l3xl	Scale profile applicable for deployments that require a very large number of Layer 3 routes (up to 1.3 million) and minimal Layer 2 functionality.

Command Default

default is the default scale profile

Command Modes

Administration configuration

Command History

Release	Modification
Release 5.1.2	**lsr** and **sat** keywords were introduced.
Release 5.1.1	The default scale profile for ASR 9000 Ethernet Line Cards was changed from **l2** to **l3**.
Release 4.0.1	The **l3xl** keyword was introduced. This command was moved to administration configuration mode.
Release 3.9.1	This command was introduced.

Usage Guidelines

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

Use the **hw-module profile scale** command to configure the router to perform more efficiently depending on the use of the router.

- Specify the scale profile to be **default** in situations where the router is used as a Layer 2 transport device that requires the router to support high Layer 2 scale numbers.
- Specify the scale profile to be **l3xl** in situations where the router is used primarily as a Layer 3 box to provide Layer 3 VPN services. In this case, the router needs to support a high number of Layer 3 routes.

Note When you upgrade to a release that supports the **hw-module profile scale** command in administration configuration mode, the non-administration configured settings are retained and used. Once you configure the scale profile in the administration plane, it has higher priority than the non-administration plane, and it replaces the non-administration scale profile configuration.

Task ID

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

Example

The following example shows how to set the scale profile to Layer 3:

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# configure
RP/0/RSP0/CPU0:router(admin-config)# hw-module profile scale l3

Tue Aug 24 23:52:51.828 UTC
In order to activate this new memory resource profile,
you must manually reboot the system.
RP/0/RSP0/CPU0:router(admin-config)# commit
```

hw-module port-control license

To request (and apply) license for (A9K-4T16GE-TR and A9K-4T16GE-SE) combo card , use the **hw-module port-control license** command in the appropriate mode. To remove the applied license, use the **no** form of the command.

hw-module port-control license location *node-id*
no hw-module port-control license location *node-id*

Syntax Description

location *node-id*	Interface details.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Release 5.3.0	This command was introduced.

Usage Guidelines

The **hw-module port-control license** command is used to apply the requested license on the combo card. The granted license is permanent , unless the user wants to remove license on this card and use it on some other card. LC reload is mandatory for the license to take effect. When the LC comes up after the reload, the licenses are installed and can be verified using the **show license entitlement** command.

If the user wants to use the combo license on some other line-card instead of the current one, then the license has to be removed. The **no hw-module port-control license** command removes the applied license.

Task ID

Task ID	Operation
sysmgr	execute

Example

This example shows how to use the **hw-module port-control license** command:

```
RP/0/RSP0/CPU0:router (config) # hw-module port-control license location 0/1/CPU0
```

hw-module port-control non-combo-mode

To use all the four Tengig ports, instead of the Gigabit ethernet ports, use the **hw-module port-control non-combo-mode** command in the appropriate mode. To remove the non-combo configuration, use the **no** form of the command.

hw-module port-control non-combo-mode location *linecard-slot*
no hw-module port-control non-combo-mode location *linecard-slot*

Syntax Description

location *linecard-slot*	The interface and slot details.

Command Default

None

Command Modes

Global configuration

Command History

Release	Modification
Release 5.3.0	This command was introduced.

Usage Guidelines

On the (A9K-4T16GE-TR and A9K-4T16GE-SE) combo card, the customer can either use 16Gigabit Ethernet + 2Tengig or 4Tengig ports. This option is when the customer does not have the Wildchild combo license. If the License is installed, all the ports will be enabled. In case, the license is not available and the customer wants to use all the 4 Tengig ports instead of the Gigabit ethernet ports, then , this command needs to be used. This is the non-combo mode.

Note LC reload is mandatory for the mode to take effect.

If the **hw-module port-control non-combo-mode** command is not configured, the line card will operate in the default mode. In the default mode, the two Tengig ports which are enabled are - 0/*/0/16 and 0/*/0/17.

Task ID

Task ID	Operation
sysmgr	execute

Example

This example shows how to use the **hw-module port-control non-combo-mode** command:

```
RP/0/RSP0/CPU0:router (config) # hw-module port-control non-combo-mode location 0/1/CPU0
```

hw-module reset auto

To reset a specific node, use the **hw-module reset auto** command in administration configuration mode. To disable 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 *node-id*	Identifies the node you want to reload. The *node-id* argument is entered in the *rack/slot/module* notation.

Command Default

The node reset feature is enabled for all nodes.

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

The **hw-module reset auto** command is used to reload Cisco IOS XR software on a specific node. The node reloads with the current running configuration and active software set for that node.

Task ID

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

The following example shows how to reload a node:

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# configure
RP/0/RSP0/CPU0:router(admin-config)# hw-module reset auto location 0/2/CPU0

RP/0/RP0/CPU0:router# RP/0/RP0/CPU0:Apr  2 22:04:43.659 : shelfmgr[294]:
%S HELFMGR-3-USER_RESET : Node 0/2/CPU0 is reset due to user reload request
```

hw-module subslot reload

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

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

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

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

```
RP/0/RSP0/CPU0:router# hw-module subslot 0/2/1 reload
```

isolation enable

To configure the route processor to collect debug information like a process coredump from a failed route processor, when NSR triggers failover, use the **isolation enable** command in global configuration mode. To disable RP isolation during failover, use the **no** form of this command.

Note This command is applicable only to Cisco IOS XR 32-bit operating system on Cisco ASR 9000 Series Routers.

isolation enable
no isolation enable

Syntax Description

This command has no keywords or arguments.

Command Default

If the **isolation enable** is not configured, the **nsr process-failures switchover** command immediately restarts the active RP during NSR failover and hence the active RP cannot collect the required debug information to identify the cause of the failure.

Command Modes

Global configuration

Command History

Release	Modification
Release 4.1.0	This command was introduced.

Usage Guidelines

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

During RP failover, the standby RP takes over as the active RP immediately without a protocol flap and NSR restarts the active RP. This switchover time is less than the timeout for the protocol to flap. Because the active RP is restarted immediately, it is not possible to get debug details to identify the cause of the failure.

The **isolation enable** command enables NSR to trigger RP switchover without protocol flap and collect the required debug information to identify the cause of the failure. The RP isolation feature keeps the active RP in an isolated state wherein it continues to operate even after the switchover. Using the **isolation enable** command you can enable RP isolation, thereby providing sufficient time for the failed RP to collect the necessary debug information like a process coredump before restarting a failed route processor.

Task ID

Task ID	Operation
transport	read, write

This example shows how to configure the route processor to collect debug information when NSR triggers failover:

```
RP/0/RSP0/CPU0:router# config
RP/0/RSP0/CPU0:router(config)# isolation enable
RP/0/RSP0/CPU0:router(config)#
```

isolation multiple

To configure the route processor to collect debug information of multiple protocols from a failed route processor when multiple protocols trigger NSR, which in turn triggers failover, use the **isolation multiple** command in the global configuration mode. To disable RP isolation during failover, caused by multiple protocols, use the **no** form of this command.

isolation multiple
no isolation multiple

Syntax Description

This command has no keywords or arguments.

Command Default

If the **isolation multiple** command is not configured and the failover is triggered by multiple protocols, the **isolation enable** command enables a failed RP to collect the required debug information of only the first failed protocol.

Command Modes

Global configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

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

During RP failover, the standby RP takes over as the active RP immediately and restarts the active RP to support NSR without a protocol flap. This switchover time is less than the timeout for the protocol to flap. Because the active RP is restarted immediately, it is not possible to get debug details to identify the cause of the failure.

The **isolation enable** command enables NSR to trigger RP switchover without protocol flap and collect the required debug information to identify the cause of the failure.

If multiple protocols trigger NSR, the **isolation enable** command does not enable the RP to collect the required debug information. Use the **isolation multiple** command to enable the active RP to collect debug information even if the failure is caused by multiple protocols.

Task ID

Task ID	Operation
transport	read, write

This example shows how to configure the route processor to collect debug information when multiple protocols trigger NSR, which in turn triggers failover:

```
RP/0/RSP0/CPU0:router#config
RP/0/RSP0/CPU0:router(config)#isolation multiple
RP/0/RSP0/CPU0:router(config)#
```

led mode

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

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

Syntax Description

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

Command Default

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

Command Modes

Administration configuration

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

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

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

Task ID

Task ID	Operation
system	read, write

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

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# configure
RP/0/RSP0/CPU0:router(admin-config)# led mode default unlock STBY_RP location 0/rp0/cpu0
RP/0/RSP0/CPU0:router(admin-config)# end

Uncommitted changes found, commit them? [yes]:
RP/0/RSP0/CPU0:router(admin)# show led location all | i 0/RP0/CPU0

     LOCATION        MESSAGE        MODE      STATUS
    ================================================
```

```
    0/0/SP       IOX-RUN       DEFAULT   UNLOCKED
    0/1/SP       IOX-RUN       DEFAULT   UNLOCKED
0/RP0/CPU0        STBY_RP       DEFAULT   UNLOCKED
0/RP1/CPU0       ACTV RP       DEFAULT   UNLOCKED
```

power budget enforcement disable

To disable the power budget calculation and allow line cards to boot in an over-budget condition, use the **power budget enforcement disable** command in administration configuration mode. To enable the power budget calculation once again, use the **no** form of this command.

power budget enforcement disable
no power budget enforcement disable

Syntax Description

This command has no keywords or arguments.

Command Default

Power budget is enforced.

Command Modes

Administration configuration

Command History

Release	Modification
Release 4.0.0	This command was introduced.

Usage Guidelines

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

The power manager automatically reads the required power supply values from the EEPROM on all cards and calculates the required power budget. The system can power up line cards only if there is sufficient power. Use the **power budget enforcement disable** command to disable the power budget calculation and to allow the system to boot cards in an over-budget condition.

Use the **show environment** command with the **power** option to display the current power current and draw.

If the system is running with a power budget deficiency and the **power budget enforcement disable** command is not configured, a reset of a line card powers down the line card. Beginning with Cisco IOS XR Release 4.3.1, if you configure the **power budget enforcement disable** command, behavior is normal even if the system has a power budget deficiency.

Task ID

Task ID	Operation
root-system	read, write

The following example shows how to disable the power management calcuations:

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# config
RP/0/RSP0/CPU0:router(admin-config)# power budget enforcement disable
```

Related Commands

Command	Description
show environment, on page 69	Displays environmental monitor parameters for the system.

power budget reservation

To release the standby route switch processor (RSP) power budget reservation, use the **power budget reservation** command in administration configuration mode. To re-reserve the standby RSP power budget reservation, use the **no** form of this command.

power budget reservation standby-rsp disable
no power budget reservation standby-rsp disable

Syntax Description

standby-rsp disable	Disables the power budget reservation for the standby RSP.

Command Default

Power is reserved for the standby RSP.

Command Modes

Administration configuration

Command History

Release	Modification
Release 4.0.0	This command was introduced.

Usage Guidelines

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

Use the power budget reservation command to disable the **power budget reservation** for the standby RSP if you only have one RSP installed in the router and you need additional power for other cards. Use the **show environment** command with the **power-supply** keyword to view the available power budget on the system.

Task ID

Task ID	Operation
root-system	read, write

Example

The following example shows how to disable the power budget for the standby RSP:

```
RP/0/RSP1/CPU0:router(admin-config)# power budget reservation standby-rsp disable
```

Related Commands

Command	Description
show environment, on page 69	Displays environmental monitor parameters for the system.

power budget enforcement n-plus-1 redundancy

To configure N+1 power redundancy protection mode on Cisco ASR 9910 Routers and Cisco ASR 9010 Routers (AC), use **power budget enforcement n-plus-1-redundancy** command in administration configuration mode. To remove configuration, use the **no** form of this command.

power budget enforcement n-plus-1-redundancy

Syntax Description

This command has no keywords or arguments.

Command Default

NA

Command Modes

Administration configuration

Command History

Release	Modification
Release 6.3.3	This command was introduced.

Usage Guidelines

Power on Cisco ASR 9000 Series Routers (ASR-9010-AC and ASR-9910-AC) was previously conserved based on the N+N power redundancy protection mode. The chassis had to be powered up in advance and for longer time than desired. The system will recalculate the power requirements based on the N+1 mode after this command is configured.

Note By default, the power requirements are calculated based on the N+N power redundancy mode when the router is powered on.

Note When the system is in N+1 power redundancy mode and a there is a switchover, the new Active RSP powers up with power calculations based on N+N power redundancy mode. After parsing this configuration, system recalculates the power requirements based on the N+1 power redundancy mode.

Note This configuration is only supported on AC power module varients of Cisco ASR 9910 Routers and Cisco ASR 9010 Routers.

The following example shows how to enable N+1 power redundancy protection mode:

```
RP/0/RSP0/CPU0:router#admin
RP/0/RSP0/CPU0:router(admin)#config
RP/0/RSP0/CPU0:router(admin-config)#power budget enforcement n-plus-1-redundancy
```

power single-feed location

To configure single-feed mode, where the system supports the operating of one or all power modules (V1 DC, V2 DC, V3 AC and V3 DC) with only one feed, without raising an error message or an alarm for any missing feeds, use the **power single-feed location** command in administration configuration mode. To disable the single-feed mode, use the **no** form of this command.

power single-feed location {**all***name*}
no power single-feed location {**all***name*}

Syntax Description

all	Enables single-feed mode for all the power modules.
name	Specifies the power module node name in the *Rack*/PS*x*/M*y*/SP format. Explanation of each component of the naming notation is as follows: • *Rack*- Chassis number of the rack. In a single-shelf system, the rack number is 0. In a multi-shelf system, the LCC rack number range is 0 to 255 and the FCC rack number range is F0 to F7. • PS*x*- Power Slot. • M*y*- Power Module. • SP- Service Processor node type. This is used for fan trays, power modules and any other node that is not an RSP/RP or an LC.

Command Default

Both the power feeds are enabled.

Command Modes

Administration Configuration

Command History

Release	Modification
Release 5.3.0	This command was introduced.

Usage Guidelines

- The power feed configuration is verified by the software at the boot-up time prior to generating any warning messages.
- For a V2 AC power module, configuring the single-feed mode is not possible and an error message is displayed.
- A syslog message is displayed at the boot-up time when the single-feed mode configuration is enabled. The syslog message indicates that notifications are disabled for loss of one feed of each power module.

Task ID

Task ID	Operation
root-system	read, write

The following example enables the single power feed mode for the 0/PS2/M0/SP power module:

```
RP/0/RSP0/CPU0:router#admin
RP/0/RSP0/CPU0:router(admin)#config
RP/0/RSP0/CPU0:router(admin-config)#power single-feed location 0/PS2/M0/SP
```

power-mgmt action

To disable the power budget control, use the **power-mgmt action disable** command in the System Admin Config mode.

power-mgmt action disable

Syntax Description

disable	Disables the power budget control.

Command Default

Power budget control is set to (N+1) and enabled by default.

Command Modes

Command History

Release	Modification
Release 6.5.1	This command was introduced.

Usage Guidelines

This command is available in Cisco IOS XR 64 bit OS.

Power-management action is done at the chassis level.

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

The power manager automatically calculates power required for each card. The system will only power up line cards if there is sufficient power. Use the **power-mgmt action disable** command to disable enforcement of power budgeting line card boot requests. This is not recommended, allowing for situations where chassis can overdraw current, causing instability or immediate chassis reset.

Use the **show environment** command with the **power** option to display power related information.

Use show power budge profile to view power requirements for each card type.

Before a card powers up its basic or upper layers, it must request budget. If that budget is not available, the boot request is denied.

If **power-mgmt action** command is enabled, it only prevents previously unpowered line cards from coming up in the event of low power budget scenarios. Reloading an operational line card cannot release its reserved budget. Therefore, a line card can be reloaded, even in low power budget scenarios, and allowed to return to operational. If configured with **power-mgmt action disable** command, line cards can always be given an allocated power budget and allowed to boot, regardless of available power.

This example shows you how to disable the chassis power management control:

```
sysadmin-vm:0_RP0# config
sysadmin-vm:0_RP0(config)# power-mgmt action disable
```

power-mgmt redundancy

To control the power budget so as to not exceed the power capacity, use the **power-mgmt redundancy**-num-pms command. To restore default (N+1) power module redundancy, use the **no** form of this command.

By default, power module redundancy is set to (N+1). There is no power tray level redundancy.

power-mgmt redundancy-num-pms [*integer*]
no power-mgmt redundancy-num-pms [*integer*]

Syntax Description

integer	Number of redundant power modules that the user wants to configure. The total number of functioning power modules in the system is at least *integer* number more than the number of power modules needed to support the power required for all the cards in the system. Range of *integer* is from 0 to 8. 0 means no power redundancy is required.

Command Default

The Cisco ASR9000 router family has one logical power shelf consisting of one or more power trays, where each power tray contains three or four power modules.

Command Modes

Command History

Release	Modification
Release 6.5.1	This command was introduced.

Usage Guidelines

This command is available in Cisco IOS XR 64 bit OS.

If the system is planned to have power module redundancy (N+x), then this command can be used to set the number of power modules required for power redundancy.

This example shows how to configure power module level redundancy:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)#power-mgmt redundancy-num-pms 2
sysadmin-vm:0_RP0(config)#commit
Tue Sep  3  12:17:53.891 UTC
Commit complete.
```

redundancy switchover

To cause the primary (active) route processor (RP) to fail over to the redundant standby RP, use the **redundancy switchover** command in

EXEC or administration EXEC

mode. To disable the forced switchover, use the **no** form of this command.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

Use the **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

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

```
RP/0/RSP0/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/RSP0/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/RSP0/CPU0:router# show redundancy

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

RP/0/RSP0/CPU0:router# redundancy switchover

  Standby card not running; failover disallowed.
```

show apm psa status

To display the PSA status for APM, use the **show apm psa status** command in EXEC mode.

show apm psa status location *node-id*

Syntax Description

location *node-id*	The interface details.

Command Default

None

Command Modes

Admin EXEC

Command History

Release	Modification
Release 5.3.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operation
sysmgr	read

Example

This example shows how to use the **show apm psa status** command:

```
RP/0/RSP0/CPU0:router (admin) # show apm psa status location 0/0/CPU0

0/0/CPU0

PSA Client Status
DIAG            ENVMON          INVMGR          FIA             PCIE            LDA  \
            PRM
Registered      Registered      Registered      Registered      Registered           \
Registered      Registered

PSA Slice Status
Slice   0: Power On     Completed     1: Power On     Completed     2: Power On      \
Completed     3: Power Saving Completed
DIAG       Completed                     Completed                     Completed     \
               Completed
ENVMON     Completed                     Completed                     Completed     \
               Completed
INVMGR     Completed                     Completed                     Completed     \
               Completed
FIA        Completed                     Completed                     Completed     \
               Completed
PCIE       Completed                     Completed                     Completed     \
               Completed
```

```
LDA         Completed                   Completed                   Completed     \
                  Completed
PRM         Completed                   Completed                   Completed     \
                  Completed
```

show apm psm status

To display the PSM status for APM, use the **show apm psm status** command in EXEC mode.

show apm psa status location *node-id*

Syntax Description

location *node-id*	The interface details.

Command Default

None

Command Modes

Admin EXEC

Command History

Release	Modification
Release 5.3.0	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operation
sysmgr	read

Example

This example shows how to use the **show apm psa status** command:

```
RP/0/RSP0/CPU0:router (admin) #  show apm psm status location 0/0/CPU0
PSM Status
----------
PSM Client Status
        ENVMON:         Registered
        DIAG0:          Registered
        DIAG1:          Registered
        INVMGR:         Registered
        0/0/CPU0 PSA:   Registered

LC Status
---------
Line Card       Slice   Config  Status          ENVMON          DIAG0               \
DIAG1           INVMGR          PSA
0/0/CPU0        0       On      Completed       Completed       Completed           \
Completed       Completed       Completed
                1       On      Completed       Completed       Completed           \
Completed       Completed       Completed
                2       On      Completed       Completed       Completed           \
Completed       Completed       Completed
                3       Saving  Completed       Completed       Completed           \
Completed       Completed       Completed
```

show canbus

To display statistics regarding the CAN bus, use the **show canbus** command in administration EXEC mode.

show canbus {**client-stats** | **controller-stats** | **server-stats**} **location** {**all***node-id*}

Syntax Description

client-stats	Displays CAN bus client statistics.
controller-stats	Displays CAN bus controller statistics.
server-stats	Displays CAN bus server statistics.
location {**all** | *node-id*}	Displays the status of the CAN bus for a specific node or all nodes.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

Use the **show canbus** command with the **server-stats** keyword to determine if the revised backplane ID board (BPID-02) is installed in the router.

Task ID

Task ID	Operation
sysmgr	read

Example

The following example illustrates sample output from the **show canbus** command with the **server-stats** keyword:

```
RP/0/RSP0/CPU0:router(admin)# show canbus server-stats location all

       Slot   State Partition-A Rev Partition-B Rev Active-Partition
   0/0/CPU0  Online            2.01            2.02      Partition B
   0/1/CPU0  Online            2.01            2.02      Partition B
   0/2/CPU0 Offline --------------- --------------- ----------------
   0/3/CPU0 Offline --------------- --------------- ----------------
0/RSP0/CPU0  Online            1.01            1.02      Partition B
0/RSP1/CPU0  Online            1.01            1.02      Partition B
   … snip …
```

```
  0/FT0/SP  Online          4.00          4.00      Partition A
  0/FT1/SP  Online          4.00          4.00      Partition B
0/BPID0/SP  Online          7.00          7.00      Partition B
```

Related Commands

Command	Description
clear plugin slot counts	Clears the running counts of the backplane connector slot plugins.
show plugin slot counts	Displays cumulative and running counts of card insertions per slot.

show controllers pm ixdb

To display the platform manager output for Cisco ASR 9000 Series line cards, use the **show controllers pm ixdb** command in EXEC mode.

show controllers pm ixdb location [**location** {*node-id* | **all**}]

Syntax Description

ixdb	Displays the platform manager database utilization.
location {*node-id* | **all**}	Specifies the location of the node. The *node-id* argument is entered in the *rack*/*slot*/*module* notation. The **all** keyword specifies all nodes.

Command Default

None

Command Modes

EXEC

Command History

Command History

Release	Modification
Release 6.2.1	This command was introduced.

Usage Guidelines

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

The **show controllers pm ixdb** command displays the platform manager output equivalent to the PM shell command **pkg/bin/show_ixdb -f vkg_pmlib_ixdb -s** for Cisco ASR 9000 Series line cards.

Task ID

Task ID	Operations
sonet-sdh	read
dwdm	read
interface	read
drivers	read

The following example shows sample output from the **show controllers pm ixdb** command for the specified node location:

```
RP/0/RSP0/CPU0:router# show controllers pm ixdb location 0/1/CPU0

Sun Oct  9 12:19:41.245 UTC

ixdb header Information:(0/1/CPU0)
==================================
ixdb version                = 1
ispec version               = 1
```

```
pathname                    = vkg_pmlib_ixdb
Hash collisions possible    = Yes
invalid_key                 = 0x0
hashsize                    = 163840
db_size                     = 81920
rec_size                    = 752
db_keys_offset              = 331776
hashtable_offset            = 987136
pool0_offset                = 1642520
db_offset                   = 3281056
start_alloc_index           = 12
alloc_index_tail            = 81919
serial                      = 1

========= DB Allocation ==========
last db alloc happened = 105 seconds ago

Number of allocated db records = 12,
Number of free db records = 81908,

========= Hash Table Datas =========
Used hash table entries = 12,
Unused hash table entries = 163828,
Collisions = 0,

========== Pools stats ===========
Pool0 linked list pool information
version = 0,    magic = 0xfeef1f00,
pool id/ serial = 0/0,
size in bytes  = 1638536,
Total entries = 81920,
Free entries = 81908,
next pool size = 0
```

The following example shows sample output from the **show controllers pm ixdb** command for all node locations:

```
RP/0/RSP0/CPU0:router# show controllers pm ixdb location all
  Sun Oct  9 12:19:58.154 UTC

ixdb header Information:(0/1/CPU0)
==================================
ixdb version                = 1
ispec version               = 1
pathname                    = vkg_pmlib_ixdb
Hash collisions possible    = Yes
invalid_key                 = 0x0
hashsize                    = 163840
db_size                     = 81920
rec_size                    = 752
db_keys_offset              = 331776
hashtable_offset            = 987136
pool0_offset                = 1642520
db_offset                   = 3281056
start_alloc_index           = 12
alloc_index_tail            = 81919
serial                      = 1

========= DB Allocation ==========
last db alloc happened = 122 seconds ago

Number of allocated db records = 12,
```

```
Number of free db records = 81908,

========= Hash Table Datas =========
Used hash table entries = 12,
Unused hash table entries = 163828,
Collisions = 0,

========== Pools stats ===========
Pool0 linked list pool information
version = 0,    magic = 0xfeef1f00,
pool id/ serial = 0/0,
size in bytes  = 1638536,
Total entries = 81920,
Free entries = 81908,
next pool size = 0


ixdb header Information:(0/2/CPU0)
==================================
ixdb version                = 1
ispec version               = 1
pathname                    = vkg_pmlib_ixdb
Hash collisions possible    = Yes
invalid_key                 = 0x0
hashsize                    = 163840
db_size                     = 81920
rec_size                    = 752
db_keys_offset              = 331776
hashtable_offset            = 987136
pool0_offset                = 1642520
db_offset                   = 3281056
start_alloc_index           = 0
alloc_index_tail            = 81919
serial                      = 1

========= DB Allocation ==========
DB alloc never happened
Number of allocated db records = 0,
Number of free db records = 81920,

========= Hash Table Datas =========
Used hash table entries = 0,
Unused hash table entries = 163840,
Collisions = 0,

========== Pools stats ===========
Pool0 linked list pool information
version = 0,    magic = 0xfeef1f00,
pool id/ serial = 0/0,
size in bytes  = 1638536,
Total entries = 81920,
Free entries = 81920,
next pool size = 0
```

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

Command Default This command has no keywords or arguments.

Command Default No default behavior or values

Command Modes Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

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

For more information about identifying and selecting a DSC on your router, see *Cisco ASR 9000 Series Aggregation Services Router Getting Started Guide*.

Task ID

Task ID	Operations
system	read

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

```
RP/0/RSP0/CPU0:PE44_ASR-9010(admin)# show dsc

Thu Jul 30 02:51:59.628 DST
NODE         ROLE
=======================
0/RSP0/CPU0  DSC
```

show environment

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

EXEC Mode:
show environment [{**all** | **last** | **leds** | **table** | **temperatures** | **voltages**}] [*node-id*]
Administration EXEC Mode:
show environment [{**all** | **fans** | **last** | **leds** | **power-supply** | **table** | **temperatures** | **trace** | **voltages**}] [*node-id*]

Syntax Description

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

Command Default

All environmental monitor parameters are displayed.

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.
Release 6.3.3	**power-supply** field descriptions modified to include Power Budget Mode and N+1 mode related details

Usage Guidelines

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

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

```
RP/0/RSP0/CPU0:router# show env temperatures

Sun Aug  8 23:18:15.153 ABC

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

0/RSP0/*
        host               21.2              30.8
0/RSP1/*
        host               20.5              30.3
0/5/*
        host               23.2              30.9
```

Table 3: show environment temperatures Field Descriptions, on page 70 describes the significant fields shown in the display.

Table 3: show environment temperatures Field Descriptions

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

Field	Description
Hotspot Temperature (deg C)	Current temperature of the hotspot, in degrees Celsius.

```
RP/0/RSP0/CPU0:router# show env leds

Sun Aug  8 23:18:19.416 ABC
R/S/I   Modules LED             Status
0/RSP0/*
        host    Critical-Alarm  Off
        host    Major-Alarm     Off
        host    Minor-Alarm     Off
        host    ACO             Off
        host    Fail            Off
0/RSP1/*
        host    Critical-Alarm  On
        host    Major-Alarm     Off
        host    Minor-Alarm     Off
        host    ACO             Off
        host    Fail            Off
```

Table 4: show environment leds Field Descriptions, on page 71describes the significant fields shown in the display.

Table 4: show environment leds Field Descriptions

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

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

```
RP/0/RSP0/CPU0:router(admin)# show environment power-supply

Wed Aug  4 23:38:25.033 DST
R/S/I   Modules         Capacity        Status
                        (W)
0/PM0/*
        host    PM      3000            Ok
0/PM1/*
        host    PM      3000            Ok
0/PM2/*
        host    PM      3000            Ok

R/S/I   Power Draw      Voltage         Current
        (W)             (V)             (A)
0/PM0/* 494.9           53.8            9.2
0/PM1/* 581.0           53.8            10.8
0/PM2/* 0.0             54.1            0.0
--------------
Total:  1075.9

Power Shelves Type: AC

Total Power Capacity:                           9000W
```

```
Usable Power Capacity:                          9000W
Supply Failure Protected Capacity:              6000W
Feed Failure Protected Capacity:                3000W
Worst Case Power Used:                          2720W

 Slot                                                      Max Watts
 ----                                                      ---------
 0/1/CPU0                                                        350
 0/RSP0/CPU0                                                     235
 0/RSP1/CPU0                                                     235  (default)
 0/4/CPU0                                                        350
 0/6/CPU0                                                        350
 0/FT0/SP                                                        600
 0/FT1/SP                                                        600

Worst Case Power Available:             6280W
Supply Protected Capacity Available:    3280W
Feed Protected Capacity Available:       280W
```

This table describes the significant fields shown in the display.

Table 5: 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.

Field	Description
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.
Power Budget Enforcement	This field displays the Power Budget Enforcement status as Enabled or Disabled.
Power Budget Mode	This field displays the power redundancy mode used (for example, N+1).
N+1 Supply Failure Protected Capacity	This field represents the Supply Protected Power capacity of the chassis with power module redundancy in N+1 mode.

show fpd package

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

show fpd package

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

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

Task ID

Task ID	Operations
sysmgr	read

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

```
show fpd package
Tue Jan 22 13:56:00.212 UTC

================================ ============================================
                                        Field Programmable Device Package
                                 ============================================
                                                 Req     SW      Min Req   Min Req
Card Type            FPD Description             Reload  Ver     SW Ver  Board Ver
================== ========================== ====== ======= ======== =========
--------------------------------------------------------------------------------
NC55-1200W-ACFW      LIT-PriMCU-ACFW(A)          NO      2.09    2.09    0.0
--------------------------------------------------------------------------------
NC55-900W-ACFW-I     LIT-PriMCU-ACFW-I(A)        NO      1.04    1.04    0.0
--------------------------------------------------------------------------------
NC55-900W-DCFW-I     LIT-PriMCU-DCFW-I(A)        NO      2.260   2.260   0.0
--------------------------------------------------------------------------------
NC55-930W-DCFW-C     LIT-PriMCU-DCFW-C(A)        NO      2.259   2.259   0.0
--------------------------------------------------------------------------------
NC55-MPA-12T-S       MPAFPGA                     YES     0.27    0.27    0.0
--------------------------------------------------------------------------------
NC55-MPA-1TH2H-S     -WDM-D-1HL_DCO_2            NO     38.518  38.518   0.1
```

```
                    MPAFPGA                   YES      0.53    0.53    0.0
                    WDM-DE-1HL_DCO_2          NO     38.518  38.518   0.1
                    WDM-DS-1HL_DCO_2          NO     38.268  38.268   0.1
--------------------------------------------------------------------------------
NC55-MPA-2TH-HX-S   -WDM-D-1HL_DCO_0          NO     38.518  38.518   0.1
                    -WDM-D-1HL_DCO_1          NO     38.518  38.518   0.1
                    MPAFPGA                   YES      0.53    0.53    0.0
                    WDM-DE-1HL_DCO_0          NO     38.518  38.518   0.1
                    WDM-DE-1HL_DCO_1          NO     38.518  38.518   0.1
                    WDM-DS-1HL_DCO_0          NO     38.268  38.268   0.1
                    WDM-DS-1HL_DCO_1          NO     38.268  38.268   0.1
--------------------------------------------------------------------------------
NC55-MPA-2TH-S      -WDM-D-1HL_DCO_0          NO     38.518  38.518   0.1
                    -WDM-D-1HL_DCO_1          NO     38.518  38.518   0.1
                    MPAFPGA                   YES      0.53    0.53    0.0
                    WDM-DE-1HL_DCO_0          NO     38.518  38.518   0.1
                    WDM-DE-1HL_DCO_1          NO     38.518  38.518   0.1
                    WDM-DS-1HL_DCO_0          NO     38.268  38.268   0.1
                    WDM-DS-1HL_DCO_1          NO     38.268  38.268   0.1
--------------------------------------------------------------------------------
NC55-MPA-4H-HD-S    MPAFPGA                   YES      0.53    0.53    0.0
--------------------------------------------------------------------------------
NC55-MPA-4H-HX-S    MPAFPGA                   YES      0.53    0.53    0.0
--------------------------------------------------------------------------------
NC55-MPA-4H-S       MPAFPGA                   YES      0.53    0.53    0.0
--------------------------------------------------------------------------------
NC55A2-MOD-SE-H-S   Bootloader(A)             YES      1.11    1.11    0.0
                    CPU-IOFPGA(A)             YES      1.18    1.18    0.1
                    MB-IOFPGA(A)              YES      0.18    0.18    0.1
                    MB-MIFPGA                 YES      0.19    0.19    0.0
                    SATA(A)                   NO       5.00    5.00    0.0
--------------------------------------------------------------------------------
NCS-55A2-MOD-HD-S   Bootloader(A)             YES      1.11    1.11    0.0
                    CPU-IOFPGA(A)             YES      1.18    1.18    0.1
                    MB-IOFPGA(A)              YES      0.18    0.18    0.1
                    MB-MIFPGA                 YES      0.19    0.19    0.0
                    SATA(A)                   NO       5.00    5.00    0.0
--------------------------------------------------------------------------------
NCS-55A2-MOD-HX-S   Bootloader(A)             YES      1.11    1.11    0.0
                    CPU-IOFPGA(A)             YES      1.18    1.18    0.1
                    MB-IOFPGA(A)              YES      0.18    0.18    0.1
                    MB-MIFPGA                 YES      0.19    0.19    0.0
                    SATA(A)                   NO       5.00    5.00    0.0
--------------------------------------------------------------------------------
NCS-55A2-MOD-S      Bootloader(A)             YES      1.11    1.11    0.0
                    CPU-IOFPGA(A)             YES      1.18    1.18    0.1
                    MB-IOFPGA(A)              YES      0.18    0.18    0.1
                    MB-MIFPGA                 YES      0.19    0.19    0.0
                    SATA(A)                   NO       5.00    5.00    0.0
--------------------------------------------------------------------------------
NCS-55A2-MOD-SE-S   Bootloader(A)             YES      1.11    1.11    0.0
                    CPU-IOFPGA(A)             YES      1.18    1.18    0.1
                    MB-IOFPGA(A)              YES      0.18    0.18    0.1
                    MB-MIFPGA                 YES      0.19    0.19    0.0
                    SATA(A)                   NO       5.00    5.00    0.0
                    STATSFPGA                 YES      0.01    0.01    0.0
```

This table describes the significant fields shown in the display:

Table 6: show fpd package Field Descriptions

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

Note In the **show fpd package** command output, the "subtype" column shows the FPDs that correspond with each line card 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/RSP0/CPU0:router(admin)# upgrade hw-module fpd fpga2 location 0/3/1 reload
```

show hw-module fpd

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

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.
Release 3.9.0	Support was added for the 2-port channelized OC-12/DS0 SPA.
Release 4.3.2	Support for Back-plane identification (BPID) nodes.

Usage Guidelines

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

Task ID

Task ID	Operations
sysmgr	read
root-lr	read

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

```
RP/0/RSP0/CPU0:router# ios#show hw-module fpd
Tue Jan 22 13:56:55.082 UTC
                                                                    FPD Versions
                                                                    ================
Location   Card type        HWver FPD device       ATR Status   Running Programd
-----------------------------------------------------------------------------
0/RP0      NCS-55A2-MOD-S    0.3   MB-MIFPGA            CURRENT    0.19    0.19
0/RP0      NCS-55A2-MOD-S    0.3   Bootloader           CURRENT    1.10    1.10
0/RP0      NCS-55A2-MOD-S    0.3   CPU-IOFPGA           CURRENT    1.18    1.18
0/RP0      NCS-55A2-MOD-S    0.3   MB-IOFPGA            CURRENT    0.18    0.18
0/PM0      NC55-1200W-ACFW   1.0   LIT-PriMCU-ACFW      NEED UPGD  2.08    2.08
0/PM1      NC55-1200W-ACFW   1.0   LIT-PriMCU-ACFW      NEED UPGD  2.08    2.08
RP/0/RP0/CPU0:ios#.
```

Note After Release 5.3.x, Upg/Dng? will display Yes only for upgrade.

The following example shows the FPD for which upgrage will be skipped.

```
RP/0/RSP1/CPU0:router# show hw-module fpd location all

Mon Jun 29 05:38:50.332 PST

==================================== ========================================
                                     Existing Field Programmable Devices
                                     ========================================
                                       HW                          Current SW Upg/
Location     Card Type               Version Type Subtype Inst      Version   Dng?
============ ======================= ======= ==== ======= ==== =========== ====
0/RSP0/CPU0  A9K-RSP-4G                4.8   lc   fpga3   0        1.13     No
                                             lc   fpga1   0        1.5      No
                                             lc   fpga2   0        1.14     No
                                             lc   cbc     0        1.2      No
                                             lc   fpga4   0        1.6      No
                                             lc   rommon  0        1.0      No
-------------------------------------------------------------------------------
0/RSP0/CPU0  ASR-9010-FAN              1.0   lc   cbc     1        4.0      No
-------------------------------------------------------------------------------
0/RSP0/CPU0  ASR-9010-FAN              1.0   lc   cbc     2        4.0      No
-------------------------------------------------------------------------------
0/1/CPU0     A9K-40GE-B                1.0   lc   fpga1   0        0.38     No
                                             lc   fpga2   0        0.8      No
                                             lc   cbc     0        2.2      No
                                             lc   cpld1   0        0.15     No
                                             lc   rommon  0        1.0      No
-------------------------------------------------------------------------------
0/1/CPU0     A9K-40GE-B                1.0   lc   fpga1   1        0.38     No
-------------------------------------------------------------------------------
0/4/CPU0     A9K-8T/4-B                1.0   lc   fpga1   0        0.38     No
                                             lc   fpga2   0        0.10     No
                                             lc   cbc     0        2.2      No
                                             lc   cpld2   0        0.7      No
                                             lc   cpld1   0        0.15     No
                                             lc   cpld3   0        0.3      No
                                             lc   rommon  0        1.0      No
                                             lc   fpga3   0       14.42     No
-------------------------------------------------------------------------------
0/4/CPU0     A9K-8T/4-B                1.0   lc   fpga1   1        0.38     No
-------------------------------------------------------------------------------
0/6/CPU0     A9K-4T-B                  1.0   lc   fpga1   0        0.38     No
                                             lc   fpga2   0        0.10     No
                                             lc   cbc     0        2.2      No
                                             lc   cpld2   0        0.7      No
                                             lc   cpld1   0        0.15     No
                                             lc   cpld3   0        0.3      No
                                             lc   rommon  0        1.0      No
                                             lc   fpga3   0       14.42     No
-------------------------------------------------------------------------------
0/6/CPU0     A9K-4T-B                  1.0   lc   fpga1   1        0.38     No
-------------------------------------------------------------------------------
```

The following example shows how to display FPD compatibility for a specific module in the router:

Table 7: show hw-module fpd Field Descriptions

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

show hw-module profile

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

Syntax Description

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

Command Modes

EXEC

Command History

Usage Guidelines

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

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

Task ID

Task ID	Operation
root-lr	read

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

Related Commands

Command	Description
hw-module profile feature, on page 32	Enables a feature bundle on the router.

show hw-module subslot brief

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

EXEC

mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

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

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

Task ID

Task ID	Operations
root-lr	read

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

```
RP/0/RSP0/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

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

show hw-module subslot config

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

mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Release 5.0.0

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

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

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

```
RP/0/RSP0/CPU0:router# show hw-module subslot 0/6/cpu0 config

 Thu Feb 19 00:33:02.921 PST

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

Subslot 0/6/1 config info:
------------------------
SPA inserted: YES
SPA cfg admin up: YES
SPA cfg power up: YES

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

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

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

Subslot 0/6/5 config info:
------------------------
SPA inserted: NO
```

```
SPA cfg admin up: YES
SPA cfg power up: NO
```

Table 9: show hw-module subslot config Field Descriptions

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

Related Commands

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

show hw-module subslot counters

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

mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

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

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

```
RP/0/RSP0/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 10: 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.

Field	Description
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/RSP0/CPU0:router# show hw-module subslot counters framer

  SPA device framer index 0 subindex 0 info:

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

show hw-module subslot errors

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

EXEC

mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

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

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

```
RP/0/RSP0/CPU0:router# show hw-module subslot 0/1/0 errors

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

  Subslot 0/1/1 errors info:
  ------------------------
  SPA inserted: YES
  SPA type:     1x10GE XFP SPA
  SPA operational state: READY
  SPA last reset reason:   UNKNOWN
  SPA last failure reason: UNKNOWN

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

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

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

  Subslot 0/1/5 errors info:
  ------------------------
```

```
SPA inserted: YES
SPA type:     8xGE SPA
SPA operational state: READY
SPA last reset reason:   UNKNOWN
SPA last failure reason: UNKNOWN

 --More--
```

Table 11: show hw-module subslot errors Field Descriptions

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

Related Commands

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

show hw-module subslot plim-subblock

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

EXEC

mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

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

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

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

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

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

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

Related Commands

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

show hw-module subslot registers

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

EXEC

mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

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

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

```
RP/0/RSP0/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 12: show hw-module subslot registers Field Descriptions

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

Related Commands

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

show hw-module subslot status

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

mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

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

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

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

```
RP/0/RSP0/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 13: show hw-module subslot status Field Descriptions

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

Related Commands

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

show inventory

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

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

Syntax Description

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

Command Default

All inventory information for the entire chassis is displayed.

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.
Release 3.9.0	Support was added for the 2-port channelized OC-12/DS0 SPA.

Usage Guidelines

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.

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

```
RP/0/RSP0/CPU0:router# show inventory raw

Tue Jul 28 08:49:14.080 DST
NAME: "module 0/RSP0/CPU0", DESCR: "A2K-RSP-4G-HDD="
PID: A2K-RSP-4G-HDD=   , VID: VP4, SN: FOC1230803H

NAME: "module 0/RSP0/CPU0", DESCR: "RSP Card host "
PID:                   , VID: N/A, SN:

NAME: "temperature 0/RSP0/CPU0", DESCR: "Inlet Temperature Sensor"
PID:                   , VID: N/A, SN:

NAME: "temperature 0/RSP0/CPU0", DESCR: "Hot Temperature Sensor"
PID:                   , VID: N/A, SN:

NAME: "voltage 0/RSP0/CPU0", DESCR: "Voltage Sensor - 0.75VTT"
PID:                   , VID: N/A, SN:

NAME: "voltage 0/RSP0/CPU0", DESCR: "Voltage Sensor - 0.9VTT_A"
PID:                   , VID: N/A, SN:

NAME: "voltage 0/RSP0/CPU0", DESCR: "Voltage Sensor - 0.9VTT_B"
PID:                   , VID: N/A, SN:

NAME: "voltage 0/RSP0/CPU0", DESCR: "Voltage Sensor - IBV"
PID:                   , VID: N/A, SN:

NAME: "voltage 0/RSP0/CPU0", DESCR: "Voltage Sensor - 5.0V"
PID:                   , VID: N/A, SN:

NAME: "module 0/1/CPU0", DESCR: "Cisco ASR 9000 Series SPA Interface Processor-700"
PID: A9K-SIP-700       , VID: P3A, SN: FHH132800F6

NAME: "module 0/1/0"   , DESCR: "10-port 1 GbE Shared Port Adapter V2"
PID: SPA-2XOC12C       , VID: V02, SN: JAE1239W2AI
--More--
```

Table 14: show inventory Field Descriptions, on page 100 describes the significant fields shown in the display.

Table 14: show inventory Field Descriptions

Field	Description
NAME	Hardware for which the inventory information is displayed. If you are displaying the chassis inventory, this field shows “chassis.” If you are displaying raw inventory, or all inventory information for all nodes in the chassis, this field shows the node name in partially qualified format. For a node, the NAME is expressed in *rack/slot/module* notation.

Field	Description
DESCR	Describes the chassis or the node. Chassis descriptions provide the name of the chassis and its Gbps. Node descriptions provide the type of node and its software version.
PID	Physical model name of the chassis or node.
VID	Physical hardware revision of the chassis or node.
SN	Physical serial number for the chassis or node.

show led

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

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

Syntax Description

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

Command Default

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

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

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

```
RP/0/RP0/CPU0:router# show led location all

Thu Jul 30 05:26:24.896 DST
    Location         Message     Mode     Status
  ================================================
     0/RSP0/*            ACTV   DEFAULT  UNLOCKED
```

Table 15: show led location Field Descriptions

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

show operational

To display all operational data provided as XML schema, use the **show operational** command in

EXEC or administration EXEC

mode.

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.
Release 3.9.0	Support was added for the 2-Port Channelized OC-12/DS0 SPA.

Usage Guidelines

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

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

Task ID

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

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

```
RP/0/RSP0/CPU0:router# show operational BGP DefaultVRF GlobalProcessInfo descriptive
[BGP DefaultVRF GlobalProcessInfo]
InStandaloneMode: true[Standalone or Distributed mode]
RouterID: 0.0.0.0[Router ID for the local system]
ConfiguredRouterID: 0.0.0.0[Configured router ID]
LocalAS: 10[Local autonomous system #]
```

```
RestartCount: 1[No of times BGP has started]
ISRedistributeIBGPToIGPsEnabled: false[Redistribute iBGP into IGPs enabled]
IsFastExternalFalloverEnabled: true[Fast external fallover enabled]
IsBestpathMissingMEDIsWorstEnabled: false[Bestpath: Treat missing MED as worst]
.
.
.
DefaultLocalPreference: 100[Default local preference]
KeepAliveTime: 60[Default keepalive timer (seconds)]
HoldTime: 180[Default hold timer (seconds)]
GenericScanPeriod: 60[Period (in seconds) of generic scanner runs]
.
.
.
VrfIsActive: true[VRF state ]
VrfName: "default"[Name of the VRF ]
```

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

```
RP/0/RSP0/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 [*node-id*]
System admin EXEC Mode:
show platform [*location*]

Syntax Description

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

Command Default

Status and information are displayed for all nodes in the system.

Command Modes

Administration EXEC

EXEC

System Admin EXEC mode on 64-bit IOS-XR

Command History

Release	Modification
Release 3.7.2	This command was introduced.
Release 3.9.0	Support was added for the 2-Port Channelized OC-12/DS0 SPA.

Usage Guidelines

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

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

For ASR-9001-S, EP1 will be displayed as, **Not allowed online**, until the required license is bought.

This example shows the sample display output for ASR9912 and ASR9922:

```
RP/0/RSP0/CPU0:router:router(admin) # show platform
Wed Jul  3 11:34:18.487 UTC
Node            Type                        State            Config State
--------------------------------------------------------------------------------
0/RP0/CPU0      ASR-9922-RP-SE(Active)      IOS XR RUN       PWR,NSHUT,MON
0/RP1/CPU0      ASR-9922-RP-TR(Standby)     IOS XR RUN       PWR,NSHUT,MON
0/FT0/SP        FAN TRAY                    READY
0/FT1/SP        FAN TRAY                    READY
0/0/CPU0        A9K-36x10GE-TR              IOS XR RUN       PWR,NSHUT,MON
0/1/CPU0        A9K-36x10GE-SE              IOS XR RUN       PWR,NSHUT,MON
0/2/CPU0        A9K-36x10GE-TR              IOS XR RUN       PWR,NSHUT,MON
0/3/CPU0        A9K-36x10GE-SE              IOS XR RUN       PWR,NSHUT,MON
0/4/CPU0        A9K-36x10GE-SE              IOS XR RUN       PWR,NSHUT,MON
0/5/CPU0        A9K-36x10GE-SE              IOS XR RUN       PWR,NSHUT,MON
0/6/CPU0        A9K-36x10GE-SE              IOS XR RUN       PWR,NSHUT,MON
0/7/CPU0        A9K-36x10GE-TR              IOS XR RUN       PWR,NSHUT,MON
0/8/CPU0        A9K-24x10GE-SE              IOS XR RUN       PWR,NSHUT,MON
0/9/CPU0        A9K-24x10GE-TR              IOS XR RUN       PWR,NSHUT,MON
```

```
0/PM0/SP        PWR-3KW-AC-V2             READY            PWR,NSHUT,MON
0/PM1/SP        PWR-3KW-AC-V2             READY            PWR,NSHUT,MON
0/PM2/SP        PWR-3KW-AC-V2             READY            PWR,NSHUT,MON
0/PM3/SP        PWR-3KW-AC-V2             READY            PWR,NSHUT,MON
0/PM4/SP        PWR-3KW-AC-V2             READY            PWR,NSHUT,MON
0/PM5/SP        PWR-3KW-AC-V2             READY            PWR,NSHUT,MON
0/FC0/SP        ASR-9912-SFC110           OK               PWR,NSHUT,MON
0/FC1/SP        ASR-9912-SFC110           OK               PWR,NSHUT,MON
0/FC2/SP        ASR-9912-SFC110           OK               PWR,NSHUT,MON
0/FC3/SP        ASR-9912-SFC110           OK               PWR,NSHUT,MON
0/FC4/SP        ASR-9912-SFC110           OK               PWR,NSHUT,MON
0/FC5/SP        ASR-9912-SFC110           OK               PWR,NSHUT,MON
0/FC6/SP        ASR-9912-SFC110           OK               PWR,NSHUT,MON
```

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

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

Thu Nov 19 21:44:49.274 UTC
Node            Type                      State            Config State
--------------------------------------------------------------------------------
0/RSP0/CPU0     A9K-RSP-4G(Active)        IOS XR RUN       PWR,NSHUT,MON
0/RSP1/CPU0     A9K-RSP-4G(Standby)       IN-RESET         PWR,NSHUT,MON
0/1/CPU0        A9K-SIP-700               IOS XR RUN       PWR,NSHUT,NMON
0/1/0           SPA-10X1GE-V2             OK               PWR,NSHUT,MON
0/1/1           SPA-1X10GE-L-V2           OK               PWR,NSHUT,MON
0/3/CPU0        A9K-40GE-B                IOS XR RUN       PWR,NSHUT,MON
0/4/CPU0        A9K-SIP-700               IOS XR RUN       PWR,NSHUT,MON
0/4/1           SPA-2XCHOC12/DS0          OK               PWR,NSHUT,MON
```

The following is sample output for the **show platform** command with the *node-id* argument:

```
RP/0/RSP0/CPU0:router# show platform 0/1/cpu0

Mon Jul 27 22:30:04.752 DST
Node            Type                      State            Config State
--------------------------------------------------------------------------------
0/1/CPU0        A9K-40GE-B                IOS XR RUN       PWR,NSHUT,MON
```

This table describes the significant fields shown in the display.

Table 16: show platform Field Descriptions

Field	Description
Node	Identifier of the node in the *rack*/*slot*/*module* notation.
Type	Type of node.
State	Current state of the specified node.
Config State	Current status of the specified node.

The following is sample output for the **show platform** command with the location argument:

Note The location argument is only applicable for IOS XR 64 Bit version on ASR 9000 Enhanced XR (eXR).

```
sysadmin-vm:0_RSP0# show platform

Thu Jun  15 06:14:46.667 UTC+00:00
Location  Card Type               HW State      SW State      Config State
------------------------------------------------------------------------------
0/0       A99-32X100GE-TR         OPERATIONAL   OPERATIONAL   NSHUT
0/RSP0    A9K-RSP5-64G            OPERATIONAL   OPERATIONAL   NSHUT
```

show power allotted

To display the power allotted to the cards in the chassis, use the **show power allotted** command in administration EXEC mode.

show power allotted {**location** *node-id* | **rack** *rack-no* | **summary**}

Syntax Description

location *node-id*	Displays the power consumption for the specified location. The node-id argument is entered in the *rack/slot/module* notation.
rack *rack-no*	Displays the power consumption for the specified rack.
summary	Displays summary information for all racks.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

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

The display for modular power supplies is by card. The display for fixed power supplies is by zone and card.

Task ID

Task ID	Operation
power	read

This example shows sample output from the **show power allocated** command on a modular power supply:

```
RP/0/RSP0/CPU0:router(admin)# show power allotted location 0/0/*

Sun Nov 18 22:00:51.176 UTC
nodeid = 0x2a00000f
Node              Card Type         State             PID               Power Allotted
----------------- ----------------- ----------------- ----------------- ------------------
0/0/*             FP-140G           POWERED UP        CRS-MSC-FP140       450.0W
0/0/PL0           14-10GbE          POWERED UP        14X10GBE-WL-XF      150.0W
```

This example shows sample output from the **show power allotted** command on a fixed power supply:

```
RP/0/RSP0/CPU0:router(admin)# show power allotted rack 0
```

```
Tue Nov 20 18:51:56.404 OST
Zone              Node              Card Type         State             PID
Power Allotted
----------------- ----------------- ----------------- ----------------- -----------------
-----------------
Zone 1:
                  0/FAN-TR0         FAN TRAY          N/A               CRS-8-LCC-FAN-
    75.0W
                  0/FAN-TR1         FAN TRAY          N/A               CRS-8-LCC-FAN-
    75.0W


Zone 2:
                  0/RP0/*           UNKNOWN           N/A
   175.0W
                  0/RP1/*           RP(H)-X86v1       N/A               CRS-8-PRP-6G
   175.0W
                  0/SM0/*           UNKNOWN           N/A
   185.0W
                  0/SM1/*           FC-140G/S(H)      N/A               CRS-8-FC140/S
   185.0W
                  0/SM2/*           UNKNOWN           N/A
   185.0W
                  0/SM3/*           FC-140G/S(H)      N/A               CRS-8-FC140/S
   185.0W


Zone 3:
                  0/6/*             MSC-B             POWERED UP        CRS-MSC-B
   390.0W
                  0/6/PL0           JACKET CARD       POWERED UP
   150.0W
                  0/7/*             MSC-140G          UNPOWERED
     7.0W
                  0/FAN-TR0         FAN TRAY          N/A               CRS-8-LCC-FAN-
    75.0W
                  0/FAN-TR1         FAN TRAY          N/A               CRS-8-LCC-FAN-
    75.0W
```

show power capacity

To display the power capacity of the router, use the **show power capacity** command in administration EXEC mode.

show power capacity {**rack** *rack-no* | **summary**}

Syntax Description

rack *rack-no*	Displays the power capacity for the specified rack.
summary	Displays summary power capacity for the chassis.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

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

The display for modular power supplies is by card. The display for fixed power supplies is by zone and card.

Task ID

Task ID	Operation
power	read

This example shows sample output from the **show power capacity** command on a modular power supply:

```
RP/0/RSP0/CPU0:router(admin)# show power capacity rack 0

Sun Nov 18 22:02:11.394 UTC
-------------------------------------------------------
Rack 0: Cisco CRS Series AC Power System
-------------------------------------------------------
Power Module      State                Power Capacity
----------------- ----------------- --------------------
0                  OK                1900.0W
1                  OK                1900.0W
2                  OK                1900.0W
3                  OK                1900.0W
-------------------------------------------------------
Total Rack Power Capacity:           7600.0W
```

This example shows sample output from the **show power capacity** command on a fixed power supply:

```
RP/0/RSP0/CPU0:router(admin)# show power capacity rack 0

Sun Dec  9 02:40:09.464 PST
------------------------------------------------------------------------------
Rack 0: Cisco CRS Fixed AC Power System
------------------------------------------------------------------------------
Zone              Power Module      State             Zone Power Capacity
----------------- ----------------- ----------------- --------------------
 Zone 1:           A[0]               OK                 1460.0W

                   B[0]               OK
 Zone 2:           A[0]               OK                 1460.0W

                   B[0]               OK
 Zone 3:           A[0]               OK                 1460.0W

                   B[0]               OK
------------------------------------------------------------------------------
Total Rack Power Capacity:                               4380.0W
```

show power summary

To display a summary of the power information for a rack, use the **show power** command in administration EXEC mode.

show power summary rack *rack-no*

Syntax Description

rack *rack-no*	Displays summary output for the specified rack

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

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

The display for modular power supplies is by card. The display for fixed power supplies is by zone and card.

Task ID

Task ID	Operation
power	read

This example shows sample output from the **show power summary** command on a modular power supply.

```
RP/0/RSP0/CPU0:router(admin)# show power summary rack 0

Sun Nov 18 22:02:40.434 UTC
Location          Power Capacity    Power Allotted    Power Available
----------------- ----------------- ----------------- ------------------
Rack :  0            7600.0W           1285.0W            6315.0W
```

This example shows sample output from the **show power summary** command on a fixed power supply.

```
RP/0/RSP0/CPU0:router(admin)# show power summary rack 0

Wed Nov 14 00:29:06.354 PST
Location          Power Capacity    Power Allotted    Power Available
----------------- ----------------- ----------------- ------------------
Rack 0:

Zone 1:             1460.0W             650.0W             810.0W
Zone 2:             1460.0W            1534.0W             -74.0W
```

```
Zone 3:             1460.0W             650.0W              810.0W
```

show platform slices

To display the status of the slices for an interface, use the **show platform slices** command in the EXEC mode.

show platform slices [**location***node-id*]

Syntax Description

location	*node-id*	Interface details.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 5.3.0	

Usage Guidelines

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

Use the **hw-module power saving** to power-off / on any of the slices (Slice 0 cannot be powered-off).

Task ID

Task ID	Operation
sysmgr	read

Example

This example shows how to use the **show platform slices** command:

```
RP/0/RSP0/CPU0:router # sh plat slices
show_slice nodeid 0x0

Line Card       Slice   Config          Status
0/0/CPU0        0       Power on        Completed
                1       Power on        Completed
                2       Power on        Completed
                3       Power saving    Completed
```

show plugin slot counts

To display cumulative and running counts of card inserts per slot, use the **show plugin slot counts** command in administration EXEC mode.

show plugin slot counts location {**all***node-id*}

Syntax Description

location {**all** *node-id*}	Displays plugin slot counts on the designated node or all nodes. The *node-id* argument is expressed in the *rack*/*slot*/*module* notation.

Command Default

None

Command Modes

Administration EXEC

Command History

Release	Modification
Release 3.9.1	This command was introduced.

Usage Guidelines

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

Use the **show plugin slot counts** command to display the number of insertions that have been made to the router backplane for a specific line card or RSP. This command can be used only if the BPID-02 card is installed. If the BPID-02 card is not installed, the following error message is displayed:

```
Response error: 'ENVMON' detected the 'warning' condition 'Hardware not available'
```

Task ID

Task ID	Operation
sysmgr	read

Example

This example illustrates sample output from the **show plugin slot counts** command:

```
RP/0/RSP0/CPU0:router(admin)# show plugin slot counts location all

Tue Oct  6 13:37:15.706 pst

Backplane connector slot plugin counters

             Current         Cumulative
0/0/CPU0         176                176
0/1/CPU0          11                 11
0/2/CPU0           0                  0
0/3/CPU0           0                  0
0/RSP0/CPU0        0                  0
0/RSP1/CPU0        1                  1
```

```
0/4/CPU0             9                    9
0/5/CPU0             0                    0
0/6/CPU0            12                   12
0/7/CPU0             0                    0
0/FT0/SP             4                    4
0/FT1/SP            14                   14
```

Related Commands

Command	Description
clear plugin slot counts	Clears the running counts of the backplane connector slot plugins.
show canbus	

show redundancy

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

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

Syntax Description

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

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

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

Task ID

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

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

```
RP/0/RSP0/CPU0:router# show redundancy location 0/rsp0/cpu0
Thu Jul 30 05:47:12.155 DST
Node 0/RSP0/CPU0 is in ACTIVE role
Node 0/RSP0/CPU0 has no valid partner

Reload and boot info
----------------------
A9K-RSP-4G reloaded Tue Jul 14 15:21:30 2009: 2 weeks, 1 day,
14 hours, 25 minutes ago
Active node booted Tue Jul 14 15:21:30 2009: 2 weeks, 1 day,
```

```
14 hours, 25 minutes ago

Active node reload "Cause: User initiated forced reload all"
```

Table 17: show redundancy Field Descriptions

Field	Description
Node */*/* is in *XXX* role	Current role of the primary route processor, where (*/*/*) is the route processor ID in the format *rack*/*slot*/*module*, and *XXX* is the role of the route processor (active or standby). In the example, this field shows that the node with the ID 0/RP0/CPU0 is in active role.
Partner node (*/*/*) is in *XXX* role	Current role of the secondary (or partner) route processor, where (*/*/*) is the route processor ID in the *rack*/*slot*/*module* format, and *XXX* is the role of the route processor (active or standby). In the example, this field shows that the node with the ID 0/RP1/CPU0 is in standby role.
Standby node in (*/*/*) is ready	Current state of the standby node, where (*/*/*) is the standby route processor ID. In the example, the standby node is ready.
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.

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 appropriate configuration mode.

show version [**brief**]

Syntax Description

brief	It displays detail summary of system information and hardware details.

Command Default

No default behavior or values

Command Modes

EXEC

XR EXEC

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

Note The **brief** keyword can be used during command execution on Cisco IOS XR 32 bit routers.

The command is applicable for IOS XR 64 Bit software on ASR 9000 Enhanced XR (eXR).

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

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

Task ID

Task ID	Operations
basic-services	read

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

```
RP/0/RSP0/CPU0:router# show version

Tue Jul 28 05:14:13.670 DST

Cisco IOS XR Software, Version 3.9.0.14I
Copyright (c) 2009 by Cisco Systems, Inc.

ROM: System Bootstrap, Version 1.1(20090521:183759) [ASR9K ROMMON],

PE44_ASR-9010 uptime is 1 week, 6 days, 13 hours, 52 minutes
```

```
System image file is "bootflash:disk0/asr9k-os-mbi-3.9.0.14I/mbiasr9k-rp.vm"

cisco ASR9K Series (MPC8641D) processor with 4194304K bytes of memory.
MPC8641D processor at 1333MHz, Revision 2.2

2 Management Ethernet
12 TenGigE
40 GigabitEthernet
219k bytes of non-volatile configuration memory.
975M bytes of compact flash card.
33994M bytes of hard disk.
1605616k bytes of disk0: (Sector size 512 bytes).
1605616k bytes of disk1: (Sector size 512 bytes).

Configuration register on node 0/RSP0/CPU0 is 0x102
Boot device on node 0/RSP0/CPU0 is disk0:
Package active on node 0/RSP0/CPU0:
asr9k-scfclient, V 3.9.0.14I, Cisco Systems, at disk0:asr9k-scfclient-3.9.0.14I
    Built on Mon Jul 13 08:28:45 DST 2009
    By sjc-lds-208 in /auto/ioxbuild7/production/3.9.0.14I/asr9k/workspace for c4.2.1-p0

asr9k-adv-video, V 3.9.0.14I, Cisco Systems, at disk0:asr9k-adv-video-3.9.0.14I
    Built on Mon Jul 13 10:13:23 DST 2009
    By sjc-lds-208 in /auto/ioxbuild7/production/3.9.0.14I/asr9k/workspace for c4.2.1-p0

asr9k-fpd, V 3.9.0.14I, Cisco Systems, at disk0:asr9k-fpd-3.9.0.14I
    Built on Mon Jul 13 08:44:47 DST 2009
    By sjc-lds-208 in /auto/ioxbuild7/production/3.9.0.14I/asr9k/workspace for c4.2.1-p0

asr9k-diags, V 3.9.0.14I, Cisco Systems, at disk0:asr9k-diags-3.9.0.14I
    Built on Mon Jul 13 08:28:48 DST 2009
    By sjc-lds-208 in /auto/ioxbuild7/production/3.9.0.14I/asr9k/workspace for c4.2.1-p0

asr9k-k9sec, V 3.9.0.14I, Cisco Systems, at disk0:asr9k-k9sec-3.9.0.14I
    Built on Mon Jul 13 08:43:40 DST 2009
    By sjc-lds-208 in /auto/ioxbuild7/production/3.9.0.14I/asr9k/workspace for c4.2.1-p0

asr9k-mgbl, V 3.9.0.14I, Cisco Systems, at disk0:asr9k-mgbl-3.9.0.14I
    Built on Mon Jul 13 10:11:41 DST 2009
    By sjc-lds-208 in /auto/ioxbuild7/production/3.9.0.14I/asr9k/workspace for c4.2.1-p0

asr9k-mcast, V 3.9.0.14I, Cisco Systems, at disk0:asr9k-mcast-3.9.0.14I
    Built on Mon Jul 13 08:40:57 DST 2009
    By sjc-lds-208 in /auto/ioxbuild7/production/3.9.0.14I/asr9k/workspace for c4.2.1-p0

 --More--
```

Table 18: show version Field Descriptions

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

Field	Description
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

This example shows partial output from the **show version** command for for IOS XR 64 Bit version:

```
RP/0/RSP0/CPU0:ASR-9906-C-LS#show version

Wed Mar 29 11:45:24.914 UTC
Cisco IOS XR Software, Version 7.5.2
Copyright (c) 2013-2022 by Cisco Systems, Inc.

Build Information:
 Built By     : ingunawa
 Built On     : Tue Apr 26 18:26:36 PDT 2022
 Built Host   : iox-ucs-055
 Workspace    : /auto/srcarchive14/prod/7.5.2/asr9k-x64/ws
 Version      : 7.5.2
 Location     : /opt/cisco/XR/packages/
 Label        : 7.5.2

cisco ASR9K () processor
System uptime is 5 weeks 5 days 16 hours 13 minutes
```

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 Admin EXEC mode.

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

Syntax Description

all	Upgrades all FPD images on the selected module.
fabldr	Upgrades the fabric-downloader FPD image on the module.
fpga-type	Upgrades a specific field-programmable gate array (FPGA) image on the module. Use the **show fpd package** command to view all available FPGA images available for a specific module.
rommon	Upgrades the ROMMON image on the module.
force	(Optional) Forces the update of the indicated FPD image package on a shared port adapter (SPA) that meets the minimum version requirements. Without this option, the manual upgrade upgrades only incompatible FPD images.
location {*node-id* |**all**}	Specifies the node for which to upgrade the FPD image. The *node-id* argument is expressed in the *rack*/*slot*/*subslot* notation. Use the **all** keyword to indicate all nodes.

Command Default

None

Command Modes

Admin EXEC mode

Command History

Release	Modification
Release 3.7.2	This command was introduced.

Usage Guidelines

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

Note It is recommended to upgrade all FPGAs on a given node using the **upgrade hw-module fpd all location** {**all** | *node-id*} command. Do not upgrade the FPGA on a node using the **upgrade hw-module fpd** <*individual-fpd*> **location** {**all** | *node-id*} as it may cause errors in booting the card.

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.
```

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

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# upgrade hw-module fpd fpga location 0/1/4

% 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
```

```
SP/0/1/SP:Dec 22 05:41:17.920 : upgrade_daemon[125]: programming...with file
/net/node0_RP1_CPU0/asr9k-lc-3.3.83/fpd/ucode/fpga_gladiator_sw0.6.xsvf
SP/0/1/SP:Dec 22 05:41:28.900 : upgrade_daemon[125]: ...programming...
SP/0/1/SP:Dec 22 05:41:28.906 : upgrade_daemon[125]: ...it will take a while...
SP/0/1/SP:Dec 22 05:41:29.004 : upgrade_daemon[125]: ...it will take a while...
SP/0/1/SP:Dec 22 05:43:03.432 : upgrade_daemon[125]: ...programming...
SP/0/1/SP:Dec 22 05:43:03.438 : upgrade_daemon[125]: ...it will take a while...
Successfully upgraded spa fpga instance 4 on location 0/1/4.
```

show environment all

To display detailed listing of all environmental monitor parameters such as power supplies, temperature readings, voltage readings, and blower speeds, use the **show environment all** command in the System Admin EXEC mode.

show environment all

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

System Admin EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

The **show environment all** command provides a comprehensive overview of the router's environmental health, enabling users to monitor and troubleshoot potential issues related to the operating conditions of hardware components.

Task ID

Task ID	Operations
system	read

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

```
sysadmin-vm:0_RSP0#show environment all

Wed Mar  29 11:50:19.779 UTC+00:00
================================================================================
Location  TEMPERATURE                Value   Crit Major Minor Minor Major  Crit
          Sensor                   (deg C)   (Lo) (Lo)   (Lo)   (Hi)   (Hi)   (Hi)
--------------------------------------------------------------------------------
0/1
          DIE_NP0                      59    -10    -5     0   105   115   130
          DIE_NP0_HBM0                 48    -10    -5     0    95   105   120
          DIE_NP0_HBM1                 50    -10    -5     0    95   105   120
          DIE_NP1                      56    -10    -5     0   105   115   130
          DIE_NP1_HBM0                 47    -10    -5     0    95   105   120
          DIE_NP1_HBM1                 46    -10    -5     0    95   105   120
          DIE_NP2                      57    -10    -5     0   105   115   130
          MB Power Brick 1             52    -45   -40    -5   110   135   150
================================================================================
```

```
Location  VOLTAGE                    Value   Crit Minor Minor  Crit
          Sensor                     (mV)    (Lo) (Lo)  (Hi)   (Hi)
-------------------------------------------------------------------------------
0/1
          VP1P0_VCCP                  1086    450   480  1280  1300
          VP1P0_VCCRAM                1107    740   760  1240  1260
          VP1P0_VNN                    886    580   600  1280  1300
          VP1P2_DDR_VDDQ              1212    960  1101  1290  1440
          VP1P05_CPU                  1049    945   971  1129  1155
          VP3P3_CPU                   3299   2970  3052  3548  3630
          VP0P9_LSD3_LDO_PLLVDD        900    810   833   968   990
          VP0P6_VTT                    606    540   555   645   660
          Hot Swap VS                55393  48600 51300 58320 59400
===============================================================================
Location  CURRENT                    Value
          Sensor                     (mA)
-------------------------------------------------------------------------------
0/1
        Hot Swap CS                 7655

===============================================================================
   Location     Card Type            Power       Power       Status
                                     Allocated   Used
                                     Watts       Watts
===============================================================================
   0/1          A9K-16X100GE-TR       700          423       ON
===============================================================================
Location  TEMPERATURE                Value   Crit Major Minor Minor Major  Crit
          Sensor                   (deg C)  (Lo) (Lo)  (Lo)  (Hi)  (Hi)   (Hi)
-------------------------------------------------------------------------------
0/2
          DIE_NP0                     48    -10    -5     0   113   122   137
          DIE_NP1                     43    -10    -5     0   113   122   137
          DIE_FabArbiter              49    -10    -5     0   108   122   137
          DIE_FIA0                    48    -10    -5     0   113   122   137
          DIE_FIA1                    44    -10    -5     0   113   122   137
          DIE_FabSwitch               48    -10    -5     0   113   122   137
          mb_air_inlet                32    -10    -5     0    60    65    75
          mb_outlet                   46    -10    -5     0    85    95   105
          mb_hotspot0                 35    -10    -5     0    90    93    95
          mb_hotspot1                 33    -10    -5     0    90    93    95
          mb_hotspot2                 35    -10    -5     0    90    93    95
          DIE_Lewis                   52    -10    -5     0   113   122   137
          DIE_CPU                     37    -10    -5     0    80    89   104
          Inlet                       32    -10    -5     0    60    65    75
          Hotspot                     46    -10    -5     0    90    93    95
===============================================================================
Location  VOLTAGE                    Value   Crit Minor Minor  Crit
          Sensor                     (mV)    (Lo) (Lo)  (Hi)   (Hi)
-------------------------------------------------------------------------------
0/2
          VP0P9_SM15_VDD               876    765   800  1015  1035
          VP1P0_SM15_AVDD             1001    960   970  1030  1040
          VP1P0_SM15_PLVDD            1000    960   970  1030  1040
          VP1P8_SAC_VDDR              1804   1728  1746  1854  1869
          VP1P2_SAC_VDDT              1200   1152  1164  1236  1248
          VP_1_2_V_LF_IPU             1200   1070  1080  1320  1330
          Hot Swap VS_0              55310  48600 51300 58320 59400
===============================================================================
Location  CURRENT                    Value
          Sensor                     (mA)
-------------------------------------------------------------------------------
0/2
        Hot Swap CS_0               6050
```

```
==============================================================================
   Location     Card Type            Power       Power       Status
                                     Allocated   Used
                                     Watts       Watts
==============================================================================
   0/2          A9K-48X10GE-1G-TR      470         335       ON
==============================================================================
Location  TEMPERATURE                Value   Crit Major Minor Minor Major  Crit
          Sensor                    (deg C)   (Lo) (Lo)  (Lo)  (Hi)  (Hi)   (Hi)
------------------------------------------------------------------------------
0/RSP0
          DIE_FabArbiter0              46    -10    -5     0   115   125   140
          DIE_FabSwitch0               60    -10    -5     0   115   125   140
          DIE_CPU                      45    -10    -5     0    90    95   110
          DIE_PCH                      45    -10    -5     0    87   100   115
          DIE_DIMM0                    39    -10    -5     0    80    85   100
          DIE_DIMM2                    39    -10    -5     0    80    85   100
          DIE_DIMM3                    39    -10    -5     0    80    85   100
          DIE_DIMM4                    38    -10    -5     0    80    85   100
          DIE_DIMM5                    38    -10    -5     0    80    85   100
          SKYBLT0_Inlet                44    -10    -5     0    80    85   100
          SKYBLT1_Inlet                42    -10    -5     0    80    85   100
          High_Power                   51    -10    -5     0    80    85   100
          AIR_Outlet                   45    -10    -5     0    80    85   100
          Inlet                        35    -10    -5     0    70    85   100
          Hotspot                      50    -10    -5     0    90    93    95
          DIE_Aldrin                   57    -10    -5     0    95   105   115
==============================================================================
Location  VOLTAGE                    Value   Crit Minor Minor  Crit
          Sensor                      (mV)    (Lo) (Lo)  (Hi)   (Hi)
------------------------------------------------------------------------------
0/RSP0
          VP5P0                       4999   4500  4625  5375  5500
          VP7P0                       7000   6300  6475  7525  7700
          VP3P3_CAN                   3299   2970  3053  3548  3630
          VP1P8                       1799   1620  1665  1935  1980
          VP2P5                       2499   2250  2313  2688  2750

          VP0P6_IPU_DDR4_VTT           598    540   555   645   660
          Hot Swap VS                55225  48600 51300 58320 59400
==============================================================================
Location  CURRENT                    Value
          Sensor                     (mA)
------------------------------------------------------------------------------
0/RSP0
        Hot Swap CS                 4500

==============================================================================
   Location     Card Type            Power       Power       Status
                                     Allocated   Used
                                     Watts       Watts
==============================================================================
   0/RSP0       A9K-RSP5-SE            480         248       ON
==============================================================================
Location  TEMPERATURE                Value   Crit Major Minor Minor Major  Crit
          Sensor                    (deg C)   (Lo) (Lo)  (Lo)  (Hi)  (Hi)   (Hi)
------------------------------------------------------------------------------
0/FC0
          SKB0_HOTSPOT                 47    -10    -5     0    80    83    85
          Inlet                        32    -10    -5     0    60    65    80
          DIE_FabSwitch0               60    -10    -5     0   115   125   140
==============================================================================
Location  VOLTAGE                    Value   Crit Minor Minor  Crit
```

```
          Sensor                       (mV)     (Lo)  (Lo)   (Hi)    (Hi)
--------------------------------------------------------------------------------
0/FC0
          P1_5V                         1499   1350  1388  1613  1650
          P2_5V                         2499   2250  2313  2688  2750
          VP0P6_VTT_DDR                  598    540   555   645   660
          P1V1_AVDDH_SKB0               1100    990  1018  1183  1210
          P0_9V_SKB0_PLL_AVDD            900    810   833   968   990
          P3_3V                         3300   2970  3053  3548  3630
          P7V                           6999   6300  6474  7610  7700
          P5V                           5000   4500  4625  5375  5500
          P1_2V                         1200   1080  1110  1290  1320
          P0_85V                         849    765   786   914   935
          P0_9V                          900    810   833   968   990
          Hot Swap VS                  55811  48600 51300 58320 59400
          P1_5V_SKB                     1500   1350  1388  1613  1650
================================================================================
Location  CURRENT                      Value
          Sensor                       (mA)
--------------------------------------------------------------------------------
0/FC0
        Hot Swap CS                    770

================================================================================
   Location     Card Type            Power       Power       Status
                                     Allocated   Used
                                     Watts       Watts
================================================================================
   0/FC0        A99-SFC3-T            108          43       ON
================================================================================
Location  TEMPERATURE                  Value   Crit Major Minor Minor Major  Crit
          Sensor                     (deg C)   (Lo) (Lo)  (Lo)  (Hi)  (Hi)   (Hi)
--------------------------------------------------------------------------------
0/FC2
          SKB0_HOTSPOT                  47    -10    -5     0    80    83    85
          Inlet                         32    -10    -5     0    60    65    80
          DIE_FabSwitch0                62    -10    -5     0   115   125   140
================================================================================
Location  VOLTAGE                      Value   Crit Minor Minor  Crit
          Sensor                       (mV)    (Lo) (Lo)  (Hi)   (Hi)
--------------------------------------------------------------------------------
0/FC2
          P1_5V                         1500   1350  1388  1613  1650
          P2_5V                         2500   2250  2313  2688  2750
          VP0P6_VTT_DDR                  598    540   555   645   660
          P1V1_AVDDH_SKB0               1099    990  1018  1183  1210
          P0_9V_SKB0_PLL_AVDD            899    810   833   968   990
          P3_3V                         3300   2970  3053  3548  3630
          P7V                           7000   6300  6474  7610  7700
          P0_9V_SKB0_AVDD_PHASE_B        900    810   833   967   990
          P2_5V_SKB                     2500   2250  2313  2688  2750
          Hot Swap VS                  55393  48600 51300 58320 59400
          P1_5V_SKB                     1500   1350  1388  1613  1650
================================================================================
Location  CURRENT                      Value
          Sensor                       (mA)
--------------------------------------------------------------------------------
0/FC2
        Hot Swap CS                    815

================================================================================
   Location     Card Type            Power       Power       Status
                                     Allocated   Used
                                     Watts       Watts
```

```
================================================================================
   0/FC2        A99-SFC3-T             108          45       ON
================================================================================
Location  TEMPERATURE                Value   Crit Major Minor Minor Major  Crit
          Sensor                   (deg C)   (Lo) (Lo)  (Lo)  (Hi)  (Hi)   (Hi)
--------------------------------------------------------------------------------
0/FC4
          SKB0_HOTSPOT                47    -10    -5     0    80    83    85
          Inlet                       33    -10    -5     0    60    65    80
          DIE_FabSwitch0              62    -10    -5     0   115   125   140
================================================================================
Location  VOLTAGE                    Value   Crit Minor Minor  Crit
          Sensor                     (mV)    (Lo) (Lo)  (Hi)   (Hi)
--------------------------------------------------------------------------------
0/FC4
          P1_5V                      1500   1350  1388  1613  1650
          P2_5V                      2500   2250  2313  2688  2750
          VP0P6_VTT_DDR               597    540   555   645   660
          P1V1_AVDDH_SKB0            1099    990  1018  1183  1210
          P0_9V_SKB0_PLL_AVDD         899    810   833   968   990
          P2_5V_SKB                  2500   2250  2313  2688  2750
          Hot Swap VS               55310  48600 51300 58320 59400
          P1_5V_SKB                  1500   1350  1388  1613  1650
================================================================================
Location  CURRENT                    Value
          Sensor                     (mA)
--------------------------------------------------------------------------------
0/FC4
        Hot Swap CS                  780

==============
```

show environment altitude

To display information about the altitude values of the device environment, use the **show environment altitude** command in System Admin EXEC mode.

show environment altitude

Syntax Description

altitude	Chassis location altitude in meters. Values can range from 0 to 4000.

Command Default

None

Command Modes

System Admin EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

The **show environment altitude** command display information about the altitude values of the device environment. It provides details such as the location, altitude value in meters, and the source of the altitude information.

Task ID

Task ID	Operations
system	read

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

```
sysadmin-vm:0_RSP0# show environment altitude

Wed Mar  29 11:49:29.210 UTC+00:00
================================================================================
   Location      Altitude Value (Meters)     Source
--------------------------------------------------------------------------------
   0             82                          sensor
sysadmin-vm:0_RSP0#
```

show environment fans

To display the current fan speed (in RPM) for different fan modules in the system, use the **show environment fans** command in System Admin EXEC mode.

show environment fans

Syntax Description

fans	Displays information about the fans.

Command Default

None

Command Modes

System Admin EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

It provides information about the fan speeds for each fan module installed in the system. The fan speeds are measured in RPM and can help monitor the performance and health of the fans.

Task ID

Task ID	Operations
system	read

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

```
sysadmin-vm:0_RSP0#show environment fan

Wed Mar  29 11:49:00.404 UTC+00:00
================================================================================================
                          Fan speed (rpm)
Location     FRU Type           FAN_0   FAN_1   FAN_2   FAN_3   FAN_4   FAN_5   FAN_6
------------------------------------------------------------------------------------------------
0/FT0        ASR-9906-FAN        9019    8967    9086    8949    9014    8986    9048
0/FT1        ASR-9906-FAN        9062    9002    9044    8963    8973    9053    9049

0/PT0-PM0    PWR-6KW-AC-V3       6172    5828    6237    5871
0/PT0-PM1    PWR-6KW-AC-V3       6237    5849    6323    5935
0/PT0-PM2    PWR-6KW-AC-V3       6301    5849    6301    5828
sysadmin-vm:0_RSP0#
```

Table 19: show environment fans Field Descriptions

Field	Description
Location	It displays the physical location of the fan modules or power modules.
FRU Type	It indicates the Field Replaceable Unit (FRU) type, which in this case represents the fan or power module.
Fan speed (rpm)	It displays the current speed of each fan module in revolutions per minute (rpm). The numbers represent the rotational speed of the individual fans within each module.

show environment power-supply

To display information about the power status and usage of the device's components, use the **show environment power-supply** command in the System Admin EXEC mode.

show environment power-supply

Syntax Description

power-supply	Displays power supply voltage and current information.

Command Default

None

Command Modes

System Admin EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

The **show environment power-supply** command provides essential information related to power consumption and allocation. It offers details about the power capacity, requirements, and usage at various levels within the router.

Task ID

Task ID	Operations
system	read

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

```
sysadmin-vm:0_RSP0#show environment power

Wed Mar  29 11:49:40.876 UTC+00:00
================================================================================
CHASSIS LEVEL POWER INFO: 0
================================================================================
   Total output power capacity (N + 1)             :   12000W +    6000W
   Total output power required                     :    3160W
   Total power input                               :    2243W
   Total power output                              :    1619W

Power Shelf 0:
================================================================================
   Power       Supply      --------Input-------   ----Output----       Status
   Module      Type        Volts A/B   Amps A/B   Volts     Amps
================================================================================
   0/PT0-PM0   6kW-AC    211.4/215.5   1.7/2.1     55.4     10.7    OK
```

```
   0/PT0-PM1   6kW-AC    212.9/214.7   1.4/1.8     55.6      8.6    OK
   0/PT0-PM2   6kW-AC    213.2/213.2   1.8/1.7     55.4      9.9    OK

Total of Power Shelf 0:      2243W/  ( 4.9/ 5.6)A    1619W/ 29.2A

==============================================================================
   Location     Card Type            Power       Power       Status
                                     Allocated   Used
                                     Watts       Watts
==============================================================================
   0/0                -                10          -       RESERVED
   0/1          A9K-16X100GE-TR       700         423       ON
   0/2          A9K-48X10GE-1G-TR     470         335       ON
   0/3                -                10          -       RESERVED
   0/RSP0       A9K-RSP5-SE           480         249       ON
   0/RSP1             -               350          -       RESERVED
   0/FC0        A99-SFC3-T            108          43       ON
   0/FC1              -               108          -       RESERVED
   0/FC2        A99-SFC3-T            108          45       ON
   0/FC3              -               108          -       RESERVED
   0/FC4        A99-SFC3-T            108          43       ON
   0/FT0        ASR-9906-FAN          300          -       ON
   0/FT1        ASR-9906-FAN          300          -       ON
sysadmin-vm:0_RSP0#
```

show environment temperatures

To display temperature readings for various components and sensors within the device, use the **show environment temperatures** command in System Admin EXEC mode.

show environment temperatures

Syntax Description

temperatures	Displays system temperature information.

Command Default

None

Command Modes

System Admin EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

The **show environment temperatures** command shows the current temperature readings for different modules, cards, and sensors on the router. It provides information such as the location, temperature value, and temperature status (normal, warning, or critical) for each component.

Task ID

Task ID	Operations
system	read

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

```
sysadmin-vm:0_RSP0#show environment temperatures
Wed Mar  29 11:48:42.586 UTC+00:00
================================================================================
Location  TEMPERATURE                Value   Crit Major Minor Minor Major  Crit
          Sensor                   (deg C)   (Lo) (Lo)  (Lo)  (Hi)  (Hi)   (Hi)
--------------------------------------------------------------------------------
0/1
          DIE_NP0                     58    -10    -5     0   105   115   130
          DIE_NP0_HBM0                48    -10    -5     0    95   105   120
          DIE_NP0_HBM1                50    -10    -5     0    95   105   120
          DIE_NP1                     56    -10    -5     0   105   115   130
          DIE_NP1_HBM0                47    -10    -5     0    95   105   120
          DIE_NP1_HBM1                46    -10    -5     0    95   105   120
          DIE_NP2                     56    -10    -5     0   105   115   130
          DIE_NP2_HBM0                46    -10    -5     0    95   105   120
          DIE_NP2_HBM1                45    -10    -5     0    95   105   120
          DIE_NP3                     53    -10    -5     0   105   115   130
```

```
              DIE_NP3_HBM0                  41    -10    -5     0    95   105   120
              DIE_NP3_HBM1                  42    -10    -5     0    95   105   120
              DIE_FabArbiter                48    -10    -5     0   115   125   140
              DIE_FabSwitch0                56    -10    -5     0   115   125   140
              Hotspot                       47    -15   -10    -5    85    90    95
              Hotspot0                      45    -15   -10    -5    85    90    95
              Hotspot1                      48    -15   -10    -5    85    90    95
              MB AIR_Outlet                 34    -15   -10    -5    85    95   110
              DIE_Aldrin                    50    -10    -5     0    95   105   115
              DIE_CPU                       42    -10    -5     0    80    89   104
              Inlet                         37    -15   -10    -5    65    75    90
              DTS_CORE                      39    -10    -5     0    93    98   113
              DIE_DIMM0                     41    -10    -5     0    85    95   110
              DIE_DIMM1                     41    -10    -5     0    85    95   110
              DIE_RT0                       47    -10    -5     0    95   105   120
              DIE_RT1                       48    -10    -5     0    95   105   120
              DIE_RT2                       45    -10    -5     0    95   105   120
              DIE_RT3                       46    -10    -5     0    95   105   120
              DIE_RT4                       45    -10    -5     0    95   105   120
              DIE_RT5                       46    -10    -5     0    95   105   120
              DIE_RT6                       45    -10    -5     0    95   105   120
              DIE_RT7                       45    -10    -5     0    95   105   120
              MB Power Brick 1              52    -45   -40    -5   110   135   150
0/2
              DIE_NP0                       49    -10    -5     0   113   122   137
              DIE_NP1                       43    -10    -5     0   113   122   137
              DIE_FabArbiter                49    -10    -5     0   108   122   137
              DIE_FIA0                      48    -10    -5     0   113   122   137
              DIE_FIA1                      44    -10    -5     0   113   122   137
              DIE_FabSwitch                 48    -10    -5     0   113   122   137
              mb_air_inlet                  32    -10    -5     0    60    65    75
              mb_outlet                     46    -10    -5     0    85    95   105
              mb_hotspot0                   35    -10    -5     0    90    93    95
              mb_hotspot1                   33    -10    -5     0    90    93    95
              mb_hotspot2                   35    -10    -5     0    90    93    95
              DIE_Lewis                     53    -10    -5     0   113   122   137
              DIE_CPU                       37    -10    -5     0    80    89   104
              Inlet                         32    -10    -5     0    60    65    75
              Hotspot                       46    -10    -5     0    90    93    95
0/RSP0
              DIE_FabArbiter0               46    -10    -5     0   115   125   140
              DIE_FabSwitch0                60    -10    -5     0   115   125   140
              DIE_CPU                       45    -10    -5     0    90    95   110
              DIE_PCH                       46    -10    -5     0    87   100   115
              DIE_DIMM0                     39    -10    -5     0    80    85   100
              DIE_DIMM2                     39    -10    -5     0    80    85   100
              DIE_DIMM3                     39    -10    -5     0    80    85   100
              DIE_DIMM4                     38    -10    -5     0    80    85   100
              DIE_DIMM5                     38    -10    -5     0    80    85   100
              SKYBLT0_Inlet                 44    -10    -5     0    80    85   100
              SKYBLT1_Inlet                 42    -10    -5     0    80    85   100
              High_Power                    51    -10    -5     0    80    85   100
              AIR_Outlet                    45    -10    -5     0    80    85   100
              Inlet                         35    -10    -5     0    70    85   100
              Hotspot                       50    -10    -5     0    90    93    95
              DIE_Aldrin                    56    -10    -5     0    95   105   115
0/FC0
              SKB0_HOTSPOT                  47    -10    -5     0    80    83    85
              Inlet                         32    -10    -5     0    60    65    80
              DIE_FabSwitch0                60    -10    -5     0   115   125   140
0/FC2
              SKB0_HOTSPOT                  47    -10    -5     0    80    83    85
              Inlet                         32    -10    -5     0    60    65    80
              DIE_FabSwitch0                62    -10    -5     0   115   125   140
```

```
0/FC4
          SKB0_HOTSPOT                  47    -10     -5      0    80     83     85
          Inlet                         33    -10     -5      0    60     65     80
          DIE_FabSwitch0                62    -10     -5      0   115    125    140
0/FT0
          Inlet                         34    -10     -5      0   105    115    120
          Hotspot                       33    -10     -5      0   105    115    120
0/FT1
          Inlet                         34    -10     -5      0   105    115    120
          Hotspot                       36    -10     -5      0   105    115    120
0/PT0-PM0
          PM0-Inlet Temperature         30    -10     -5      0    61     65     70
          PM0-Outlet Temperature        53    -10     -5      0    80     92    105
          PM0-Heat Sink Temperature     78    -10     -5      0   105    112    120
0/PT0-PM1
          PM1-Inlet Temperature         31    -10     -5      0    61     65     70
          PM1-Outlet Temperature        57    -10     -5      0    80     92    105
          PM1-Heat Sink Temperature     81    -10     -5      0   105    112    120
0/PT0-PM2
          PM2-Inlet Temperature         31    -10     -5      0    61     65     70
          PM2-Outlet Temperature        55    -10     -5      0    80     92    105
          PM2-Heat Sink Temperature     79    -10     -5      0   105    112    120
sysadmin-vm:0_RSP0#
```

Table 20: show environment temperatures Field Descriptions

Field	Description
Location	It displays the location of the component or sensor.
Sensor	It displays the specific sensor or component being measured.
Temperature	It displays the current temperature reading in degrees Celsius (deg C).
Minor Hi/Major Hi/Crit Hi	It specifies the upper temperature thresholds for minor, major, and critical alarms.
Crit Lo/Major Lo/Minor Lo	It specifies the lower temperature thresholds for critical, major, and minor alarms.
Value (Lo/Hi)	It indicates the lower and upper temperature thresholds for normal operation. If the temperature exceeds these thresholds, it may trigger warning or critical alerts.

show environment voltages

To display the voltage readings of various components in the router, such as power supplies, modules, or cards, Use the **show environment voltages** command in the System Admin EXEC mode.

show environment voltages

Syntax Description

voltages	Displays system voltage information.

Command Default

None

Command Modes

System Admin EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

The **show environment voltages** command provides information about the voltage readings of various components in the router, such as power supplies, modules, or cards. It is useful for monitoring the health and stability of the hardware components.

Task ID

Task ID	Operations
system	read

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

```
sysadmin-vm:0_RSP0# show environment voltages

Wed Mar  29 11:49:10.193 UTC+00:00
================================================================================
Location  VOLTAGE                    Value   Crit Minor Minor  Crit
          Sensor                     (mV)    (Lo) (Lo)  (Hi)   (Hi)
--------------------------------------------------------------------------------
0/1
          VP1P0_VCCP                 1062    450   480  1280  1300
          VP1P0_VCCRAM               1107    740   760  1240  1260
          VP1P0_VNN                   886    580   600  1280  1300
          VP1P2_DDR_VDDQ             1212    960  1101  1290  1440
          VP1P05_CPU                 1049    945   971  1129  1155
          VP3P3_CPU                  3299   2970  3052  3548  3630
          VP1P8_CPU                  1799   1620  1665  1935  1980
          VP3P3_RTC                  3300   2970  3052  3548  3630
```

```
VP0P85_IPU_MGT                849    765   786   914   935
VP1P24_VCCREF                1239   1116  1147  1333  1364
VP0P9_PHY07_VDD               900    810   833   968   990
VP1P0_FPGA                   1000    900   925  1075  1100
VP1P0_PHY03_AVDD             1000    900   925  1075  1100
VP7P0                        6998   6300  6475  7525  7700
VP5P0                        5000   4500  4625  5375  5500
VP1P0_PHY47_AVDD             1000    900   925  1075  1100
VP0P8_SKB0_VDD                774    632   648   860   880
VP0P9_SKB0_AVDD               900    810   833   968   990
VP1P5_SKB0_VDDH              1496   1350  1387  1613  1650
VP2P5_SKB0_VDDH              2499   2250  2313  2688  2750
VP0P9_SKB0_PLLAVDD            900    810   833   968   990
VP1P1_SKB0_AVDDH             1100    990  1017  1182  1210
VP0P85_TOR_VDDA               850    765   786   914   935
VP0P9_SKB0_PLLVDD             900    810   833   968   990
VP1P1_TOR                    1100    990  1017  1182  1210
VP3P3_CAN                    3299   2970  3052  3548  3630
VP1P5                        1500   1350  1387  1613  1650
VP0P85_IPU_CORE               849    765   786   914   935
VP1P2                        1199   1080  1110  1290  1320
VP1P2_IPU_DDR4               1199    960  1110  1290  1440
VP1P8_IPU_MGT                1799   1620  1665  1935  1980
VP3P3                        3299   2970  3052  3548  3630
VP1P8                        1800   1620  1665  1935  1980
VP1P8_XGE                    1799   1620  1665  1935  1980
VP3P3_QP_VDD                 3300   3015  3099  3601  3685
VP0P9_PEX                     900    810   833   968   990
VP1P0_XGE                     983    720   750  1250  1280
VP2P5                        2499   2250  2313  2688  2750
VP3P3_SUPR                   3300   2970  3052  3548  3630
VP1P0_XGE_SD_AVDD            1000    900   925  1075  1100
VP0P85_TOR_AVS_VDD            929    697   723   977  1003
VP0P75_LSD0_CORE              745    647   670   862   885
VP0P9_LSD0_AVDD               900    810   833   968   990
VP1P5_LSD0_VDDH              1500   1350  1387  1613  1650
VP2P5_LSD0_VPP               2500   2250  2313  2688  2750
VP1P2_LSD0_VDD               1200   1080  1110  1290  1320
VP1P1_LSD0_AVDDH             1100    990  1017  1182  1210
VP0P9_LSD0_LDO_PLLVDD         900    810   833   968   990
VP0P75_LSD1_CORE              745    647   670   862   885
VP0P9_LSD1_AVDD               900    810   833   968   990
VP1P5_LSD1_VDDH              1500   1350  1387  1613  1650
VP2P5_LSD1_VPP               2500   2250  2313  2688  2750
VP1P2_LSD1_VDD               1199   1080  1110  1290  1320
VP1P1_LSD1_AVDDH             1099    990  1017  1182  1210
VP0P9_LSD1_LDO_PLLVDD         900    810   833   968   990
VP0P6_IPU_DDR4_VTT            599    540   555   645   660
VP0P75_LSD2_CORE              744    647   670   862   885
VP0P9_LSD2_AVDD               899    810   833   968   990
VP1P5_LSD2_VDDH              1500   1350  1387  1613  1650
VP2P5_LSD2_VPP               2500   2250  2313  2688  2750
VP1P2_LSD2_VDD               1199   1080  1110  1290  1320
VP1P1_LSD2_AVDDH             1099    990  1017  1182  1210
VP0P9_LSD2_LDO_PLLVDD         900    810   833   968   990
VP0P75_LSD3_CORE              744    647   670   862   885
VP0P9_LSD3_AVDD               900    810   833   968   990
VP1P5_LSD3_VDDH              1500   1350  1387  1613  1650
VP2P5_LSD3_VPP               2500   2250  2313  2688  2750
VP1P2_LSD3_VDD               1199   1080  1110  1290  1320
VP1P1_LSD3_AVDDH             1100    990  1017  1182  1210
VP0P9_LSD3_LDO_PLLVDD         900    810   833   968   990
VP0P6_VTT                     606    540   555   645   660
Hot Swap VS                 55393  48600 51300 58320 59400
```

show inventory (Cisco IOS XR 64-bit)

To retrieve and display information about all the Cisco products that are installed in the router, use the **showinventory** command in EXEC or System Admin EXEC mode.

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

System Admin EXEC Mode
show inventory [{ **all** | **chassis** | **fan** | **location** { *node-id* } | **power** | **raw** }]

Syntax Description

node-id	(Optional) Location for which to display the specified information. The *node-id* argument is entered in the *rack/slot/module* notation.
all	(Optional) Displays inventory information for all the physical entities in the chassis.
location	(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	(Optional) Displays inventory information for the power supply.

Command Default

All inventory information for the entire chassis is displayed.

Command Modes

EXEC

System Admin EXEC mode

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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.

Task ID

Task ID	Operations
sysmgr	read

The following example shows partial sample output from the **show inventory** command in EXEC mode:

```
RP/0/RSP0/CPU0:ASR-9906-C-LS#show inventory

Wed Mar 29 11:46:26.707 UTC
NAME: "0/RSP0", DESCR: "ASR 9000 Route Switch Processor 5 for Service Edge 40G"
PID: A9K-RSP5-SE       , VID: V01, SN: FOC2246NLGP

NAME: "0/1", DESCR: "ASR 9000 16-port 100GE TR linecard"
PID: A9K-16X100GE-TR   , VID: V01, SN: FOC2249PA5Z

NAME: "HundredGigE0/1/0/14", DESCR: "100GE-SR4-S QSFP Module"
PID: QSFP-100G-SR4-S   , VID: V02, SN: AVF2212S1FV

NAME: "HundredGigE0/1/0/15", DESCR: "100GE-SR4-S QSFP Module"
PID: QSFP-100G-SR4-S   , VID: V03, SN: INL23120234

NAME: "0/2", DESCR: "48X10G/1G Packet Transport Optimized LC"
PID: A9K-48X10GE-1G-TR , VID: V01, SN: FOC2106NT5R

NAME: "TenGigE0/2/0/7", DESCR: "10GBASE-SR SFP Module, Enterprise-Class"
PID: SFP-10G-SR-S      , VID: V01, SN: AVD2206D0YL

NAME: "TenGigE0/2/0/9", DESCR: "10GBASE-SR SFP Module, Enterprise-Class"
PID: SFP-10G-SR-S      , VID: V01, SN: AVD1912DJMD

NAME: "TenGigE0/2/0/10", DESCR: "10GBASE-SR SFP+ Module for MMF"
PID: SFP-10G-SR        , VID: V03, SN: AVD233691HD

NAME: "TenGigE0/2/0/11", DESCR: "10GBASE-LR SFP+ Module for SMF"
PID: SFP-10G-LR        , VID: V02, SN: SPC182007JY

NAME: "TenGigE0/2/0/12", DESCR: "10GBASE-SR SFP Module, Enterprise-Class"
PID: SFP-10G-SR-S      , VID: V01, SN: ACW223506YD

NAME: "TenGigE0/2/0/13", DESCR: "10GBASE-LR SFP Module, Enterprise-Class"
PID: SFP-10G-LR-S      , VID: V01, SN: AVD2002T02B

NAME: "TenGigE0/2/0/14", DESCR: "10GBASE-LR SFP+ Module for SMF"
PID: SFP-10G-LR        , VID: V02, SN: ACW24151C0F

NAME: "TenGigE0/2/0/15", DESCR: "10GBASE-LR SFP+ Module for SMF"
PID: SFP-10G-LR        , VID: V02, SN: AVD1951R1NG

NAME: "TenGigE0/2/0/17", DESCR: "10GBASE-LR SFP Module, Enterprise-Class"
PID: SFP-10G-LR-S      , VID: V01, SN: AVD2303K0FU

NAME: "TenGigE0/2/0/18", DESCR: "10GBASE-LR SFP Module, Enterprise-Class"
PID: SFP-10G-LR-S      , VID: V01, SN: FNS223007XW

NAME: "TenGigE0/2/0/20", DESCR: "10GBASE-SR SFP+ Module for MMF"
PID: SFP-10G-SR        , VID: V03, SN: AVD1905A4SP
```

```
NAME: "TenGigE0/2/0/21", DESCR: "10GBASE-SR SFP+ Module for MMF"
PID: SFP-10G-SR        , VID: V02, SN: AGD14063DAL

NAME: "TenGigE0/2/0/22", DESCR: "10GBASE-SR SFP+ Module for MMF"
PID: SFP-10G-SR        , VID: V03, SN: FNS172421U9

NAME: "TenGigE0/2/0/38", DESCR: "10GBASE-SR SFP+ Module for MMF"
PID: SFP-10G-SR        , VID: V03, SN: OPM22320KUR

NAME: "0/FC0", DESCR: "ASR 9906 Switch Fabric Card 3"
PID: A99-SFC3-T        , VID: V01, SN: FOC2242N2MJ

NAME: "0/FC2", DESCR: "ASR 9906 Switch Fabric Card 3"
PID: A99-SFC3-T        , VID: V01, SN: FOC2245N5W6

NAME: "0/FC4", DESCR: "ASR 9906 Switch Fabric Card 3"
PID: A99-SFC3-T        , VID: V01, SN: FOC2245N5UD

NAME: "Rack 0", DESCR: "ASR 9906 4 Line Card Slot Chassis"
PID: ASR-9906          , VID: V01, SN: FOX2434P3J4

NAME: "0/FT0", DESCR: "ASR 9906 Fan Tray"
PID: ASR-9906-FAN      , VID: V01, SN: FOC2323NBSM

NAME: "0/FT1", DESCR: "ASR 9906 Fan Tray"
PID: ASR-9906-FAN      , VID: V01, SN: FOC2323NBSF

NAME: "0/PT0", DESCR: "Simulated Power Tray IDPROM"
PID: A9K-AC-PEM-V3     , VID: V03, SN: FOT1981P81A

NAME: "0/PT0-PM0", DESCR: "6kW AC Power Module"
PID: PWR-6KW-AC-V3     , VID: V02, SN: DTM2013002M

NAME: "0/PT0-PM1", DESCR: "6kW AC Power Module"
PID: PWR-6KW-AC-V3     , VID: V02, SN: DTM19270369

NAME: "0/PT0-PM2", DESCR: "6kW AC Power Module"
PID: PWR-6KW-AC-V3     , VID: V02, SN: DTM1927035H
```

The following example shows partial sample output from the **show inventory** command in System Admin EXEC mode:

```
sysadmin-vm:0_RSP0#show inventory

Wed Mar  29 11:46:49.238 UTC+00:00

 Name: Rack 0               Descr: ASR 9906 4 Line Card Slot Chassis

 PID: ASR-9906              VID: V01                  SN: FOX2434P3J4

 Name: 0/1                  Descr: ASR 9000 16-port 100GE TR linecard

 PID: A9K-16X100GE-TR       VID: V01                  SN: FOC2249PA5Z

 Name: 0/2                  Descr: 48X10G/1G Packet Transport Optimized LC

 PID: A9K-48X10GE-1G-TR     VID: V01                  SN: FOC2106NT5R

 Name: 0/RSP0               Descr: ASR 9000 Route Switch Processor 5 for Service Edge 40G

 PID: A9K-RSP5-SE           VID: V01                  SN: FOC2246NLGP

 Name: 0/FC0                Descr: ASR 9906 Switch Fabric Card 3
```

```
PID: A99-SFC3-T            VID: V01                  SN: FOC2242N2MJ

Name: 0/FC2                Descr: ASR 9906 Switch Fabric Card 3

PID: A99-SFC3-T            VID: V01                  SN: FOC2245N5W6

Name: 0/FC4                Descr: ASR 9906 Switch Fabric Card 3

PID: A99-SFC3-T            VID: V01                  SN: FOC2245N5UD

Name: 0/FT0                Descr: ASR 9906 Fan Tray

PID: ASR-9906-FAN          VID: V01                  SN: FOC2323NBSM

Name: 0/FT1                Descr: ASR 9906 Fan Tray

PID: ASR-9906-FAN          VID: V01                  SN: FOC2323NBSF

Name: 0/PT0                Descr: Simulated Power Tray IDPROM

PID: A9K-AC-PEM-V3         VID: V03                  SN: FOT1981P81A

Name: 0/PT0-PM0            Descr: 6kW AC Power Module

PID: PWR-6KW-AC-V3         VID: V02                  SN: DTM2013002M

Name: 0/PT0-PM1            Descr: 6kW AC Power Module

PID: PWR-6KW-AC-V3         VID: V02                  SN: DTM19270369

Name: 0/PT0-PM2            Descr: 6kW AC Power Module

PID: PWR-6KW-AC-V3         VID: V02                  SN: DTM1927035H
```

show platform vm

To display information on virtual machines running on each line card, use the **show platform vm** command in EXEC mode.

show platform vm [*node-id*]

Syntax Description

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

Command Default

Status and information are displayed for all nodes in the system.

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

The **show platform vm** command presents information about the virtual machines (VMs) operating on the platform, including their IDs, names, statuses, and resource allocations. To display VM information for a specific node, it is crucial to specify the appropriate node identifier.

Task ID

This example shows XR virtual machines running on each line card:

```
RP/0/RSP0/CPU0:ios#show platform  vm
Mon Jun 19 09:44:17.060 UTC
Node name       Node type       Partner name    SW status       IP address
--------------- --------------- --------------- --------------- ---------------
0/0/CPU0        LC (ACTIVE)     NONE            FINAL Band      192.0.0.3
0/1/CPU0        LC (ACTIVE)     NONE            FINAL Band      192.0.12.3
0/RSP0/CPU0     RP (ACTIVE)     NONE            FINAL Band      192.0.4.4
```

show vm

To display the health status of the virtual machines (VMs) running on the router, use the **show vm** command in the System Admin EXEC mode.

show vm

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

System Admin EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

The **show vm** command displays the health status of the virtual machines (VMs) running on the router. By executing this command, you can assess the overall health and performance of the VM environment on the ASR9000 series router.

Task ID

Task ID	Operations
system	read

This example shows sample output from the **show vm** command in system admin command.

```
sysadmin-vm:0_RSP0# show vm
Wed Jul  19 09:39:59.133 UTC+00:00

Location: 0/0
Id                Status        IP Address       HB Sent/Recv
------------------------------------------------------------
sysadmin          running       192.0.0.1        NA/NA
default-sdr       running       192.0.0.3        423/423

Location: 0/RSP0
Id                Status        IP Address       HB Sent/Recv
------------------------------------------------------------
sysadmin          running       192.0.4.1        NA/NA
default-sdr       running       192.0.4.4        422/422
```

show fpd package (Cisco IOS XR 64-bit)

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 System Admin EXEC mode.

show fpd package

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

System Admin EXEC

EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

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

Task ID

Task ID	Operations
sysmgr	read, write

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

```
sysadmin-vm:0_RSP0#show fpd package
Wed Mar  29 11:47:15.651 UTC+00:00

================================ ================================================
                                          Field Programmable Device Package
                                 ================================================
                                                  Req     SW        Min Req     Min Req
Card Type            FPD Description              Reload  Ver       SW Ver    Board Ver
==================== ============================ ======  =======  ==========  =========
A99-10X400GE-X-CM    Aldrin-FPGA                   YES     1.05        1.05       0.0
                     Beachcomber-0                 YES     0.01        0.01       0.0
                     Beachcomber-1                 YES     0.01        0.01       0.0
                     CBC                           NO     62.05       62.05       0.0
                     IPU-DDR4                      YES     1.06        1.06       0.0
```

```
                    Primary-BIOS               YES    25.30       25.30      0.0
                    Sunstreaker                YES     0.14        0.14      0.0
                    TAMFW-Sunstreaker          YES     2.65        2.65      0.0
                    Trailbreaker-0             YES     0.23        0.23      0.0
                    Trailbreaker-1             YES     0.23        0.23      0.0
--------------------------------------------------------------------------------
A99-10X400GE-X-SE   Aldrin-FPGA                YES     1.05        1.05      0.0
                    Beachcomber-0              YES     0.01        0.01      0.0
                    Beachcomber-1              YES     0.01        0.01      0.0
                    CBC                        NO     62.05       62.05      0.0
                    IPU-DDR4                   YES     1.06        1.06      0.0
                    Primary-BIOS               YES    25.30       25.30      0.0
                    Sunstreaker                YES     0.14        0.14      0.0
                    TAMFW-Sunstreaker          YES     2.65        2.65      0.0
                    Trailbreaker-0             YES     0.23        0.23      0.0
                    Trailbreaker-1             YES     0.23        0.23      0.0
--------------------------------------------------------------------------------
```

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

```
RP/0/RSP0/CPU0:ASR-9906-C-LS#show fpd package
Wed Mar 29 11:47:44.918 UTC

================================ ============================================
                                        Field Programmable Device Package
                                 ============================================
                                           Req     SW      Min Req   Min Req
Card Type           FPD Description        Reload  Ver     SW Ver  Board Ver
================== ========================== ====== ======= ======== =========
--------------------------------------------------------------------------------
A99-10X400GE-X-CM   Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                    Beachcomber-0(A)           YES     0.01      0.01      0.0
                    Beachcomber-1(A)           YES     0.01      0.01      0.0
                    CBC(A)                     NO     62.05     62.05      0.0
                    IPU-DDR4(A)                YES     1.06      1.06      0.0
                    Primary-BIOS(A)            YES    25.30     25.30      0.0
                    QDD_0_3                    NO     61.22     61.22      0.0
                    QDD_0_5                    NO     61.22     61.22      0.0
                    QDD_0_6                    NO     61.22     61.22      0.0
                    QDD_0_7                    NO     61.22     61.22      0.0
                    QDD_0_9                    NO     61.22     61.22      0.0
                    Sunstreaker(A)             YES     0.14      0.14      0.0
                    TAMFW-Sunstreaker(A)       YES     2.65      2.65      0.0
                    TimingIC-A                 YES     7.216     7.216     0.0
                    TimingIC-B-0               YES     7.216     7.216     0.0
                    TimingIC-B-1               YES     7.216     7.216     0.0
                    Trailbreaker-0(A)          YES     0.23      0.23      0.0
                    Trailbreaker-1(A)          YES     0.23      0.23      0.0
--------------------------------------------------------------------------------
A99-10X400GE-X-SE   Aldrin-FPGA(A)            YES     1.05      1.05      0.0
                    Beachcomber-0(A)           YES     0.01      0.01      0.0
                    Beachcomber-1(A)           YES     0.01      0.01      0.0
                    CBC(A)                     NO     62.05     62.05      0.0
                    IPU-DDR4(A)                YES     1.06      1.06      0.0
                    Primary-BIOS(A)            YES    25.30     25.30      0.0
                    QDD_0_3                    NO     61.22     61.22      0.0
                    QDD_0_5                    NO     61.22     61.22      0.0
                    QDD_0_6                    NO     61.22     61.22      0.0
                    QDD_0_7                    NO     61.22     61.22      0.0
                    QDD_0_9                    NO     61.22     61.22      0.0
                    Sunstreaker(A)             YES     0.14      0.14      0.0
                    TAMFW-Sunstreaker(A)       YES     2.65      2.65      0.0
                    TimingIC-A                 YES     7.216     7.216     0.0
                    TimingIC-B-0               YES     7.216     7.216     0.0
                    TimingIC-B-1               YES     7.216     7.216     0.0
```

```
Trailbreaker-0(A)          YES      0.23       0.23       0.0
Trailbreaker-1(A)          YES      0.23       0.23       0.0
```

This table describes the significant fields shown in the display:

Table 21: show fpd package Field Descriptions

Field	Description
Card Type	Module part number.
FPD Description	Description of all FPD images available for the line card.
Type	Hardware type. Possible types can be: • spa—Shared port adapter • lc—Line card
Subtype	FPD subtype. These values are used in the **upgrade hw-module fpd** command to indicate a specific FPD image type to upgrade.
SW Version	FPD software version recommended for the associated module running the current.
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.

show hw-module fpd (Cisco IOS XR 64-bit)

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

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

Task ID

Task ID	Operations
sysmgr	read

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

```
RP/0/RSP0/CPU0:ASR-9906-C-LS#show hw-module fpd

Wed Mar 29 11:43:53.912 UTC

Auto-upgrade:Enabled
                                                                          FPD Versions
                                                                          ==============
Location   Card type              HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/RSP0     A9K-RSP5-SE            1.0   Aldrin-0-FPGA        CURRENT     1.06      1.06
0/RSP0     A9K-RSP5-SE            1.0   Beta-FPGA            CURRENT     0.07      0.07
0/RSP0     A9K-RSP5-SE            1.0   CBC                  CURRENT    53.10     53.10
0/RSP0     A9K-RSP5-SE            1.0   IPU-DDR4             CURRENT     0.20      0.20
0/RSP0     A9K-RSP5-SE            1.0   Orion-FPGA           CURRENT     0.23      0.23
0/RSP0     A9K-RSP5-SE            1.0   Primary-BIOS         CURRENT    31.36     31.36
0/RSP0     A9K-RSP5-SE            1.0   SSDa-MICRON          N/A         7.05      7.05
0/RSP0     A9K-RSP5-SE            1.0   SSDb-MICRON          N/A         7.05      7.05
0/RSP0     A9K-RSP5-SE            1.0   Zenith-FPGA          CURRENT     0.10      0.10
```

```
0/FT0       ASR-9906-FAN          1.0   CBC                 CURRENT     56.01      56.01
0/FT0       ASR-9906-FAN          1.0   PSOC                CURRENT      2.06       2.06
0/FT1       ASR-9906-FAN          1.0   CBC                 CURRENT     56.01      56.01
0/FT1       ASR-9906-FAN          1.0   PSOC                CURRENT      2.06       2.06
0/1         A9K-16X100GE-TR       1.0   Aldrin-FPGA         CURRENT      1.05       1.05
0/1         A9K-16X100GE-TR       1.0   CBC                 CURRENT     48.09      48.09
0/1         A9K-16X100GE-TR       1.0   Grapple-0           CURRENT      0.15       0.15
0/1         A9K-16X100GE-TR       1.0   IPU-DDR4            CURRENT      1.09       1.09
0/1         A9K-16X100GE-TR       1.0   Mixmaster-0         CURRENT      0.13       0.13
0/1         A9K-16X100GE-TR       1.0   Primary-BIOS        CURRENT     21.43      21.43
0/1         A9K-16X100GE-TR       1.0   Scamper             CURRENT      0.23       0.23
0/1         A9K-16X100GE-TR       1.0   Skylynx-0           CURRENT      0.12       0.12
0/1         A9K-16X100GE-TR       1.0   SSDa-MICRON         N/A          7.05       7.05
0/2         A9K-48X10GE-1G-TR     1.0   CBC                 CURRENT     47.03      47.03
0/2         A9K-48X10GE-1G-TR     1.0   IPU-FPGA            RLOAD REQ    1.89       1.90
0/2         A9K-48X10GE-1G-TR     1.0   IPU-FSBL            CURRENT      1.113      1.113
0/2         A9K-48X10GE-1G-TR     1.0   IPU-Linux           CURRENT      1.113      1.113
0/2         A9K-48X10GE-1G-TR     1.0   Leadfoot-0          CURRENT      1.00       1.00
0/2         A9K-48X10GE-1G-TR     1.0   Leadfoot-1          CURRENT      1.00       1.00
0/2         A9K-48X10GE-1G-TR     1.0   Lewis               CURRENT      1.11       1.11
0/2         A9K-48X10GE-1G-TR     1.0   Primary-BIOS        CURRENT     18.33      18.33
0/2         A9K-48X10GE-1G-TR     1.0   SSDa-SMART          N/A          7.05       7.05
0/BPID0     ASR-9906              1.0   CBC                 CURRENT      7.105      7.105
0/FC0       A99-SFC3-T            1.0   CBC                 CURRENT     44.02      44.02
0/FC0       A99-SFC3-T            1.0   IPU-DDR4            CURRENT      0.25       0.25
0/FC2       A99-SFC3-T            1.0   CBC                 CURRENT     44.02      44.02
0/FC2       A99-SFC3-T            1.0   IPU-DDR4            CURRENT      0.25       0.25
0/FC4       A99-SFC3-T            1.0   CBC                 CURRENT     44.02      44.02
0/FC4       A99-SFC3-T            1.0   IPU-DDR4            CURRENT      0.25       0.25
0/PT0       PWR-6KW-AC-V3         2.0   PM0-DT-Pri0MCU      CURRENT      4.02       4.02
0/PT0       PWR-6KW-AC-V3         2.0   PM0-DT-Pri1MCU      CURRENT      4.02       4.02
0/PT0       PWR-6KW-AC-V3         2.0   PM0-DT-Sec054vMCU   CURRENT      4.03       4.03
0/PT0       PWR-6KW-AC-V3         2.0   PM0-DT-Sec154vMCU   CURRENT      4.03       4.03
0/PT0       PWR-6KW-AC-V3         2.0   PM0-DT-Sec5vMCU     CURRENT      4.04       4.04
0/PT0       PWR-6KW-AC-V3         2.0   PM1-DT-Pri0MCU      CURRENT      4.02       4.02
0/PT0       PWR-6KW-AC-V3         2.0   PM1-DT-Pri1MCU      CURRENT      4.02       4.02
0/PT0       PWR-6KW-AC-V3         2.0   PM1-DT-Sec054vMCU   CURRENT      4.03       4.03
0/PT0       PWR-6KW-AC-V3         2.0   PM1-DT-Sec154vMCU   CURRENT      4.03       4.03
0/PT0       PWR-6KW-AC-V3         2.0   PM1-DT-Sec5vMCU     CURRENT      4.04       4.04
0/PT0       PWR-6KW-AC-V3         2.0   PM2-DT-Pri0MCU      CURRENT      4.02       4.02
0/PT0       PWR-6KW-AC-V3         2.0   PM2-DT-Pri1MCU      CURRENT      4.02       4.02
0/PT0       PWR-6KW-AC-V3         2.0   PM2-DT-Sec054vMCU   CURRENT      4.03       4.03
0/PT0       PWR-6KW-AC-V3         2.0   PM2-DT-Sec154vMCU   CURRENT      4.03       4.03
0/PT0       PWR-6KW-AC-V3         2.0   PM2-DT-Sec5vMCU     CURRENT      4.04       4.04
```

The following example shows the output of **show hw-module location 0/2 fpd Primary-BIOS** command:

```
RP/0/RSP0/CPU0:ASR-9906-C-LS#show hw-module location 0/2 fpd Primary-BIOS

Wed Mar 29 11:44:29.780 UTC

Auto-upgrade:Enabled

                                                                    FPD Versions
                                                                    ==============
Location   Card type              HWver FPD device       ATR Status    Running   Programd
-------------------------------------------------------------------------------------------
0/2        A9K-48X10GE-1G-TR     1.0   Primary-BIOS         CURRENT    18.33     18.33
```

upgrade hw-module location

To upgrade the field-programmable devices (FPDs) on all modules in the specified location, use the **upgrade hw-module location** command in the appropriate mode.

upgrade hw-module location { **all** | **fpd** *all* [*force*] }

Syntax Description

all	Upgrades all FPD images on the selected module.
fpd	It specifies the FPDs on the hardware location of the module.
all	It specifies all location.
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.

Command Default

None

Command Modes

EXEC

System admin

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

This command is supported on Cisco IOS XR 64-bit software.

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

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

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

rack —Chassis number of the rack.

slot —Physical slot number of the SPA interface processor (SIP).

subslot —Subslot number of the SPA.

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

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

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

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

Task ID

Task ID	Operations
sysmgr	read, write

The following example shows sample output from the **upgrade hw-module location** command:

```
RP/0/RSP0/CPU0:ios#upgrade hw-module location all fpd all force

Wed Jun 21 07:56:26.767 UTC
RP/0/RSP0/CPU0: Jun 21 07:56:26.966 UTC: fpd-serv[138]: %INFRA-FPD_SERVER-3-UPGRADE_ERROR
: Upgrade command has not be committed yet, please wait ...
upgrade command issued (use "show hw-module fpd" to check upgrade status)
```