



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.

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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 {allnode-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 <i>node-id</i> }	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 <i>node-id</i> Clears plugin slot counts on the designated node. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.				
Command Default	None				
Command Modes	Administration EXEC				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.9.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.9.1	This command was introduced.
Release	Modification				
Release 3.9.1	This command was introduced.				
Usage Guidelines	<p>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.</p> <p>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:</p> <pre>0/1/CPU0 slot counts 'current' ...Response error: 'ENVMON' detected the 'warning' condition 'Hardware not available'</pre>				
Task ID	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td>sysmgr</td> <td>execute</td> </tr> </tbody> </table>	Task ID	Operation	sysmgr	execute
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

0/FT1/SP                Current      Cumulative
                        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	<i>altitude</i>	Chassis location altitude in meters. Values can range from 0 to 4000.
	rack <i>rack-no</i>	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.pie disk0:/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	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 6.5.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 6.5.1	This command was introduced.
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	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operation</th> </tr> </thead> <tbody> <tr> <td>system</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operation	system	read, write
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 <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.	Note Enter the show platform command to see the location of all nodes installed in the router.
port <i>port-number</i>	Indicates the optics port number. Depending on the line card, the port numbers and its type might vary.	
breakout <i>interface</i>	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: <ul style="list-style-type: none"> • 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 <i>node-id</i>	Interface details.
	preconfigure	(Optional) Enables the user to preconfigure breakout on an empty slot.
	bay <i>bay-number</i>	Bay number of the device (Upper, left, right, lower).
	port <i>port-number</i>	Specifies the port on which you want to enable breakout.
	breakout <i>interface</i>	Enables the breakout option. For information on supported port modes, see <i>System Management Configuration Guide for Cisco ASR 9000 Series Routers</i> .

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 configuration 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 <i>location</i>	Indicates the location of the MPA, which is the line card ID.
	bay <i>bay-number</i>	Indicates the bay number of the line card.
	port <i>port-number</i>	Indicates the port number of the optical-module or optic. You can configure the port number with only the value, 0.
	port-mode <i>port-mode</i>	Configures the 200G port mode. Port mode can be: <ul style="list-style-type: none"> • <i>2xHundredGigE-16QAM</i>: Configures 200G 16QAM port mode for EP • <i>2xHundredGigE-8QAM</i>: Configures 200G 8QAM port mode for EP <p>A higher QAM value leads to higher data transmission rates, but also increases the risk of errors that necessitates re-sends.</p>

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 Operations ID

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

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 <i>node-id</i>	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-move police-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 <i>node-id</i> Identifies the node to power on. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.7.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.7.2	This command was introduced.
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 reenble 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 <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.
Command Default	Power is on for all nodes.	
Command Modes	Administration configuration	
Command History	Release	Modification
	Release 3.7.2	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 <i>node-id</i>	Specifies the node whose hardware attributes you want to configure. (The <i>node-id</i> 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 for line cards on a Global Configuration level, use the **hw-module profile itcam** command in the Admin Configuration mode.

hw-module profile itcam {**to-profile-se1** | **to-default**} **location** *location*

Table 1: Syntax Description

to-profile-se1	Sets the internal tcam partitions for service edge, that is, L2 limit is increased to 4K entries in the L2 table and V6 limit is increased to 3.5K entries in the V6 table by adjusting 24K V4 entries in the V4 table.
to-default	Sets the default internal tcam partitions where L2 limit is 1K in the L2 table, V4 limit is 24K in the V4 table, and V6 limit is 1.75K entries in the V6 table).
location <i>location</i>	Sets the location.

Command Mode

Admin Configuration mode on 32-bit IOS-XR

Global Configuration mode on 64-bit IOS-XR

Command History

Release	Modification
Release 6.6.2	This command was introduced.

Usage Guidelines

This profile configuration can be applied only on A99-12X100GE or A99-4X100GE line cards. To enable this profile configuration, you have to reload the linecards 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# config
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 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 entries with increased limits for L2 and V6 entries.

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** | **I3** | **I3xl**}

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).
	I3	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).
	I3xl	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 3.9.1	This command was introduced.
	Release 4.0.1	The I3xl keyword was introduced. This command was moved to administration configuration mode.
	Release 5.1.1	The default scale profile for ASR 9000 Ethernet Line Cards was changed from I2 to I3 .
	Release 5.1.2	lsr and sat keywords were 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 <i>node-id</i> Interface details.				
Command Default	None				
Command Modes	Global configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 5.3.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 5.3.0	This command was introduced.
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 <i>linecard-slot</i> 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 <i>node-id</i>	Identifies the node you want to reload. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
Command Default	The node reset feature is enabled for all nodes.	
Command Modes	Administration configuration	
Command History	Release	Modification
	Release 3.7.2	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	<i>subslot-id</i> Specifies the subslot to be restarted. The <i>subslot-id</i> argument is entered in the <i>rack/slot/subslot</i> notation.
---------------------------	--

Command Default	No default behavior or values
------------------------	-------------------------------

Command Modes	EXEC
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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

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 calculations:

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

power budget enforcement disable

Related Commands	Command	Description
	show environment, on page 64	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 64	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 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 variants 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 {allname}
no power single-feed location {allname}
```

Syntax Description

all Enables single-feed mode for all the power modules.

name Specifies the power module node name in the *Rack/PSx/My/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.
- *PSx*- Power Slot.
- *My*- 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:

power single-feed location

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

Command Default	No default behavior or values
------------------------	-------------------------------

Command Modes	EXEC Administration EXEC
----------------------	-----------------------------

Command History	Release	Modification
	Release 3.7.2	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 <i>node-id</i> 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    \
              Completed
ENVMON    Completed    Completed    Completed    Completed    \
              Completed
INVMGR    Completed    Completed    Completed    Completed    \
              Completed
FIA    Completed    Completed    Completed    Completed    \
              Completed
PCIE    Completed    Completed    Completed    Completed    \
              Completed
```

```
show apm psa status
```

```
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 <i>node-id</i> 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 psm 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 <i>node-id</i> }		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	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 { <i>node-id</i> all }	Specifies the location of the node. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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,

```

show controllers pm ixdb

```

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 Operations ID
	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.
<i>node-id</i>		(Optional) Node whose information you want to display. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.

Command Default All environmental monitor parameters are displayed.

Command Modes EXEC

Administration EXEC

Command History	Release	Modification
	Release 3.7.2	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 2: show environment temperatures Field Descriptions, on page 65](#) describes the significant fields shown in the display.

Table 2: show environment temperatures Field Descriptions

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

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 3: show environment leds Field Descriptions, on page 66](#) describes the significant fields shown in the display.

Table 3: show environment leds Field Descriptions

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

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

```
RP/0/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 4: show environment power-supply Field Descriptions

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

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
                                =====
Card Type          FPD Description          Req   SW   Min Req   Min Req
=====  =====  =====  =====  =====  =====
                   Req   SW   Min Req   Min Req
                   Reload Ver   SW Ver   Board Ver
-----
NC55-1200W-ACFW    LIT-PrimMCU-ACFW (A)    NO     2.09   2.09     0.0
-----
NC55-900W-ACFW-I   LIT-PrimMCU-ACFW-I (A)  NO     1.04   1.04     0.0
-----
NC55-900W-DCFW-I   LIT-PrimMCU-DCFW-I (A)  NO     2.260  2.260    0.0
-----
NC55-930W-DCFW-C   LIT-PrimMCU-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
```

show fpd package

	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 5: 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: <ul style="list-style-type: none"> • 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 Operations ID

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
```

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					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 upgrade 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
=====
Location      Card Type      HW      Current SW Upg/
Version Type Subtype Inst Version Dng?
=====
0/RSP0/CPU0   A9K-RSP-4G     4.8    1c   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    1c   cbc     1     4.0    No
-----
0/RSP0/CPU0   ASR-9010-FAN   1.0    1c   cbc     2     4.0    No
-----
0/1/CPU0      A9K-40GE-B     1.0    1c   fpga1   0     0.38   No
                lc   fpga2   0     0.8    No
                lc   cbc     0     2.2    No
                lc   cp1d1  0     0.15   No
                lc   rommon  0     1.0    No
-----
0/1/CPU0      A9K-40GE-B     1.0    1c   fpga1   1     0.38   No
-----
0/4/CPU0      A9K-8T/4-B     1.0    1c   fpga1   0     0.38   No
                lc   fpga2   0     0.10   No
                lc   cbc     0     2.2    No
                lc   cp1d2  0     0.7    No
                lc   cp1d1  0     0.15   No
                lc   cp1d3  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    1c   fpga1   1     0.38   No
-----
0/6/CPU0      A9K-4T-B       1.0    1c   fpga1   0     0.38   No
                lc   fpga2   0     0.10   No
                lc   cbc     0     2.2    No
                lc   cp1d2  0     0.7    No
                lc   cp1d1  0     0.15   No
                lc   cp1d3  0     0.3    No
                lc   rommon  0     1.0    No
                lc   fpga3   0     14.42  No
-----
0/6/CPU0      A9K-4T-B       1.0    1c   fpga1   1     0.38   No
=====
```

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

Table 6: show hw-module fpd Field Descriptions

Field	Description
Location	Location of the module in the <i>rack/slot/module</i> notation.
Card Type	Module part number.
HW Version	Hardware model version for the module.
Type	Hardware type. Can be one of the following types: <ul style="list-style-type: none"> • spa—Shared port adapter • lc—Line card
Subtype	FPD type. Can be one of the following types: <ul style="list-style-type: none"> • fabldr—Fabric downloader • fpga1—Field-programmable gate array • fpga2—Field-programmable gate array 2 • fpga3—Field-programmable gate array 3 • fpga4—Field-programmable gate array 4 • fpga5—Field-programmable gate array 5 • rommonA—Read-only memory monitor A • rommon—Read-only memory monitor B
Inst	FPD instance. The FPD instance uniquely identifies an FPD and is used by the FPD process to register an FPD.
Current SW Version	Currently running FPD image version.
Upg/Dng?	Specifies whether an FPD upgrade or downgrade is required. A downgrade is required in rare cases when the version of the FPD image has a higher major revision than the version of the FPD image in the current Cisco IOS XR software package.

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 <i>node-id</i>	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

<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack / slot / module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • analog-digital-converter—Displays analog-to-digital converter information. • c2w—Displays Cisco-to-wire bus device information. • fpga—Displays SPA field-programmable gate array information. • framer—Displays SONET framer information. (Not applicable to Ethernet SPAs.) • hdlc—Displays SPA hdlc information, where applicable. • l2-tcam—Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • mac—Displays SPA MAC information. (Not applicable to POS SPAs.) • pluggable-optics—Displays pluggable-optics module information. • power-margining—Displays power-margining device information. • sar—Displays SPA ATM SAR information. • sdcc—Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • serdes—Displays SPA serializer/deserializer information. • spi4—Displays system packet interface level 4.2 bus device information. • temperature-sensor—Displays temperature sensor information.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default

No default behavior or values

Command Modes

EXEC

Command History	Release	Modification
	Release 3.9.0	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 7: show hw-module subslot config Field Descriptions

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

show hw-module subslot config

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

mode.

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

Syntax Description

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

device (Optional) Internal hardware device for which to display the specified information. Valid devices include:

- **analog-digital-converter**—Displays analog-to-digital converter information.
- **c2w**—Displays Cisco-to-wire bus device information.
- **fpga**—Displays SPA field-programmable gate array information.
- **framer**—Displays SONET framer information. (Not applicable to Ethernet SPAs.)
- **hdlc**—Displays SPA hdlc information, where applicable.
- **l2-tcam**—Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.)
- **mac**—Displays SPA MAC information. (Not applicable to POS SPAs.)
- **pluggable-optics**—Displays pluggable-optics module information.
- **power-margining**—Displays power-margining device information.
- **sar**—Displays SPA ATM SAR information.
- **sdcc**—Displays section data communications channel device information. (Not applicable to Ethernet SPAs.)
- **serdes**—Displays SPA serializer/deserializer information.
- **spi4**—Displays system packet interface level 4.2 bus device information.
- **temperature-sensor**—Displays temperature sensor information.

device-index (Optional) Index of the specific device if there are multiple devices of the same type.

device-subindex (Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default No default behavior or values

Command Modes EXEC

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
```

show hw-module subslot config

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

Table 8: show hw-module subslot config Field Descriptions

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

Related Commands

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

show hw-module subslot counters

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

mode.

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

Syntax Description	
<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • analog-digital-converter—Displays analog-to-digital converter information. • c2w—Displays Cisco-to-wire bus device information. • fpga—Displays SPA field-programmable gate array information. • framer—Displays SONET framer information. (Not applicable to Ethernet SPAs.) • hdlc—Displays SPA hdlc information, where applicable. • l2-tcam—Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • mac—Displays SPA MAC information. (Not applicable to POS SPAs.) • pluggable-optics—Displays pluggable-optics module information. • power-margining—Displays power-margining device information. • sar—Displays SPA ATM SAR information. • sdcc—Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • serdes—Displays SPA serializer/deserializer information. • spi4—Displays system packet interface level 4.2 bus device information. • temperature-sensor—Displays temperature sensor information.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(Optional) Subindex of the specific device if there are multiple devices of the same device index.
Command Default	No default behavior or values
Command Modes	EXEC

Command History	Release	Modification
	Release 3.9.0	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 9: show hw-module subslot counters Field Descriptions

Field	Description
SPA inserted	Indicates if a SPA is currently detected in the subslot.
SPA type	Description of SPA including the technology type, number of ports, height of SPA (HHSPA—single height, FHSPA—double height), and optics type.
SPA operational state	Current state of the SPA module.
SPA insertion time	Time the SPA module was last physically inserted or power-cycled.

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	
<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack / slot / module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • analog-digital-converter—Displays analog-to-digital converter information. • c2w—Displays Cisco-to-wire bus device information. • fpga—Displays SPA field-programmable gate array information. • framer—Displays SONET framer information. (Not applicable to Ethernet SPAs.) • hdlc—Displays SPA hdlc information, where applicable. • l2-tcam—Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • mac—Displays SPA MAC information. (Not applicable to POS SPAs.) • pluggable-optics—Displays pluggable-optics module information. • power-margining—Displays power-margining device information. • sar—Displays SPA ATM SAR information. • sdcc—Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • serdes—Displays SPA serializer/deserializer information. • spi4—Displays system packet interface level 4.2 bus device information. • temperature-sensor—Displays temperature sensor information.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(Optional) Subindex of the specific device if there are multiple devices of the same device index.
Command Default	No default behavior or values
Command Modes	EXEC

Command History	Release	Modification
	Release 3.9.0	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:
-----
```

show hw-module subslot errors

```

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

--More--

```

Table 10: show hw-module subslot errors Field Descriptions

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

Related Commands

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

show hw-module subslot plim-subblock

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

EXEC

mode.

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

Syntax Description	<i>node-id</i> (Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.	
Command Default	No default behavior or values	
Command Modes	EXEC	
Command History	Release	Modification
	Release 3.9.0	This command was introduced.
Usage Guidelines	<p>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.</p> <p>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.</p>	
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
```

show hw-module subslot plim-subblock**Related Commands**

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

show hw-module subslot registers

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

EXEC

mode.

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

Syntax Description	
<i>node-id</i>	(Optional) Location for which to display the specified information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
<i>device</i>	(Optional) Internal hardware device for which to display the specified information. Valid devices include: <ul style="list-style-type: none"> • analog-digital-converter—Displays analog-to-digital converter information. • c2w—Displays Cisco-to-wire bus device information. • fpga—Displays SPA field-programmable gate array information. • framer—Displays SONET framer information. (Not applicable to Ethernet SPAs.) • hdlc—Displays SPA hdlc information, where applicable. • l2-tcam—Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.) • mac—Displays SPA MAC information. (Not applicable to POS SPAs.) • pluggable-optics—Displays pluggable-optics module information. • power-margining—Displays power-margining device information. • sar—Displays SPA ATM SAR information. • sdcc—Displays section data communications channel device information. (Not applicable to Ethernet SPAs.) • serdes—Displays SPA serializer/deserializer information. • spi4—Displays system packet interface level 4.2 bus device information. • temperature-sensor—Displays temperature sensor information.
<i>device-index</i>	(Optional) Index of the specific device if there are multiple devices of the same type.
<i>device-subindex</i>	(Optional) Subindex of the specific device if there are multiple devices of the same device index.
Command Default	No default behavior or values
Command Modes	EXEC

Command History	Release	Modification
	Release 3.9.0	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 11: show hw-module subslot registers Field Descriptions

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

Related Commands

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

show hw-module subslot status

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

mode.

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

Syntax Description

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

device (Optional) Internal hardware device for which to display the specified information. Valid devices include:

- **analog-digital-converter**—Displays analog-to-digital converter information.
- **c2w**—Displays Cisco-to-wire bus device information.
- **fpga**—Displays SPA field-programmable gate array information.
- **framer**—Displays SONET framer information. (Not applicable to Ethernet SPAs.)
- **hdlc**—Displays SPA hdlc information, where applicable.
- **l2-tcam**—Displays SPA Layer 2 ternary content addressable memory information. (Not applicable to POS SPAs.)
- **mac**—Displays SPA MAC information. (Not applicable to POS SPAs.)
- **pluggable-optics**—Displays pluggable-optics module information.
- **power-margining**—Displays power-margining device information.
- **sar**—Displays SPA ATM SAR information.
- **sdcc**—Displays section data communications channel device information. (Not applicable to Ethernet SPAs.)
- **serdes**—Displays SPA serializer/deserializer information.
- **spi4**—Displays system packet interface level 4.2 bus device information.
- **temperature-sensor**—Displays temperature sensor information.

device-index (Optional) Index of the specific device if there are multiple devices of the same type.

device-subindex (Optional) Subindex of the specific device if there are multiple devices of the same device index.

Command Default No default behavior or values

Command Modes EXEC

Command History	Release	Modification
	Release 3.9.0	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 12: show hw-module subslot status Field Descriptions

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

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

show inventory

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

EXEC Mode

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

Administration EXEC Mode

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

Syntax Description

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

Command Default

All inventory information for the entire chassis is displayed.

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 3.7.2	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 13: show inventory Field Descriptions, on page 95](#) describes the significant fields shown in the display.

Table 13: show inventory Field Descriptions

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

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 { <i>node-id</i> all }	(Optional) Specifies the node for which to display LED information. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation. Use the all keyword to indicate all nodes.
Command Default	If no node is specified, information about all LEDs on the router is displayed.	
Command Modes	EXEC Administration EXEC	
Command History	Release	Modification
	Release 3.7.2	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 14: show led location Field Descriptions

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

show 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

```

show operational

```
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	<i>node-id</i>	(Optional) Node for which to display information. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> 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
```

show platform

```

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-2XCHOCL2/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 15: show platform Field Descriptions

Field	Description
Node	Identifier of the node in the <i>rack / slot / module</i> 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 <i>node-id</i>	Displays the power consumption for the specified location. The node-id argument is entered in the <i>rack/slot/module</i> notation.
rack <i>rack-no</i>	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:
  75.0W       0/FAN-TR0      FAN TRAY      N/A           CRS-8-LCC-FAN-
  75.0W       0/FAN-TR1      FAN TRAY      N/A           CRS-8-LCC-FAN-

Zone 2:
  175.0W      0/RP0/*        UNKNOWN       N/A
  175.0W      0/RP1/*        RP (H)-X86v1  N/A           CRS-8-PRP-6G
  185.0W      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

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

```

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 <i>rack-no</i> 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	Displays summary output for the specified rack
	<i>rack-no</i>	

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	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 [ locationnode-id ]
```

Syntax Description	location <i>node-id</i> 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 {allnode-id}

Syntax Description	location {all node-id} Displays plugin slot counts on the designated node or all nodes. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation.				
Command Default	None				
Command Modes	Administration EXEC				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.9.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.9.1	This command was introduced.
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	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

 show plugin slot counts

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 { <i>node-id</i> all }		(Optional) Specifies the node for which to display LED information. The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> notation. Use the all keyword to indicate all nodes.
statistics		(Optional) Displays redundancy statistics information.
summary		(Optional) Displays a summary of all redundant node pairs in the router.

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

Command Modes EXEC 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,
```

show redundancy

14 hours, 25 minutes ago

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

Table 16: show redundancy Field Descriptions

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

show version

```

System image file is "bootflash:disk0/asr9k-os-mpi-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 17: 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.
<i>fpga-type</i>		Upgrades a specific field-programmable gate array (FPGA) image on the module. Use the show fpd package command to view all available FPGA images available for a specific module.
rommon		Upgrades the ROMMON image on the module.
force		(Optional) Forces the update of the indicated FPD image package on a shared port adapter (SPA) that meets the minimum version requirements. Without this option, the manual upgrade upgrades only incompatible FPD images.
location {node-id all}		Specifies the node for which to upgrade the FPD image. The <i>node-id</i> argument is expressed in the <i>rack/slot/subslot</i> notation. Use the all keyword to indicate all nodes.

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
=====

```

show environment all

```

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
          (Watts)                       Allocated  Used
          (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
-----

```

show environment all

```

-----
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
          (A99-SFC3-T)   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
          (A99-SFC3-T)   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	<p>This command is supported on Cisco IOS XR 64-bit software.</p> <p>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.</p> <p>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.</p>	
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 18: 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

```

show environment power-supply

```

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

```

show environment temperatures

	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 19: 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_VFP	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_VFP	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_VFP	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_VFP	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 **show inventory** 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 <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
all	(Optional) Displays inventory information for all the physical entities in the chassis.
location	(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: AVD1951RING

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
```

show inventory (Cisco IOS XR 64-bit)

```

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	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
                                =====
Card Type           FPD Description           Req   SW   Min Req   Min Req
=====  =====  =====  =====  =====  =====
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					
Card Type	FPD Description	Req Reload	SW Ver	Min Req SW Ver	Min Req 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 20: 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: <ul style="list-style-type: none"> • 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.
	<i>node-id</i> The <i>node-id</i> argument is expressed in the <i>rack/slot/module</i> 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
```

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					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

```
show hw-module fpd (Cisco IOS XR 64-bit)
```

```

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
```

Location	Card type	HWver	FPD device	ATR Status	FPD Versions	
					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)
```