

Hardware Redundancy and Node Administration Commands

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environment altitude

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

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

Syntax Description

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

Command Default

1800 meters

Command Modes

Administration configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
root-system	read, write

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

```
RP/0/RP0/CPU0:router(admin-config)#environment altitude 0 rack 0
```

factory-reset

To perform factory reset of routers or individual nodes on the router, use the **factory-reset** command in XR EXEC mode.

factory-reset { **reload** | **shutdown** } **location** { **all** *location-id* }

Syntax Description

reload	Resets the router, or the card (LC or RP) and reloads it after the factory reset operation
shutdown	Resets the router, or the card (LC or RP) and shuts it down after the factory reset operation
location	Specifies the node (LC or RP) location on which factory reset operation is to be performed.

Command Default

None.

Command Modes

XR EXEC

Command History

Release	Modification
Release 7.5.1	This command was introduced.
Release 7.3.4	

Usage Guidelines

Follow these usage guidelines to perform factory reset operation on Cisco IOS XR routers:

- You cannot initiate factory reset if the entire system is down or if no active RP is booted to IOS XR OS.
- From Cisco IOS XR Software Release 25.1.1, we support the *zero_fill* option from *gNOI factory_reset.proto*.
- From Cisco IOS XR Software Release 25.1.1, the factory reset functionality is enhanced to remove data from the entire SSD of the router, except the disaster recovery partition on the active RP.
- From Cisco IOS XR Software Release 25.2.1, the factory reset functionality is backed by luks disk encryption. All partitions that may contain customer data are cryptographically erased during factory reset.

Task ID

Task ID	Operations
root-lr	execute

Examples

This example shows how to do factory reset of a particular line card on a Cisco IOS XR router with the **reload** option:

```
Router#factory-reset reload location 0/3/CPU0
Tue Mar 11 11:18:43.222 UTC
```

```
Performing factory-reset may affect the stability of the system. Re-imaging maybe required
 to recover. Continue?
[confirm]
```

This example shows how to do factory reset of a particular line card on a Cisco IOS XR router with the **shutdown** option:

```
Router#factory-reset shutdown location 0/3/CPU0
Tue Mar 11 11:18:43.222 UTC
Performing factory-reset may affect the stability of the system. Re-imaging maybe required
 to recover. Continue?
[confirm]
```

fpd auto-upgrade

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

fpd auto-upgrade { **disable** | **enable** | **exclude** | **include** } **pm**

Syntax Description

disable	Disables FPD auto-upgrade for power module.
enable	Enables FPD auto-upgrade for power module.
exclude	Specifies that the FPD auto-upgrade process should exclude the power modules from its scope.
include	Specifies that the FPD auto-upgrade process should include the power modules in its scope.
pm	Specifies that the FPD auto-upgrade process exclusion or inclusion is for power modules.

Command Default

FPD images are not automatically upgraded.

In Cisco IOS XR Releases from 7.5.2 until 24.3.1, PSU upgrade was automatically included in the automatic FPD upgrade unless explicitly excluded using this command option.

Starting with Cisco IOS XR Release 24.3.1, PSU upgrades are excluded by default from the automatic FPD upgrade process.

Command Modes

System Admin Config mode

Command History

Release	Modification
Release 24.3.1	This command was modified to include the **include pm** keyword.
Release 7.5.2	This command was modified to include the **exclude pm** keyword.
Release 7.0.12	This command was introduced.

Usage Guidelines

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

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

Task ID

Task ID	Operation
system	read, write

The following example shows how to enable automatic FPD upgrades:

```
Router(admin-config)# fpd auto-upgrade
```

The following example shows how to exclude the power modules from FPD auto-upgrade process:

```
Router# config
Router(config)# fpd auto-upgrade enable
Router(config)# fpd auto-upgrade exclude pm
Router(config)# commit
```

The following example shows how to include the power modules to FPD auto-upgrade process:

```
Router# config
Router(config)# fpd auto-upgrade enable
Router(config)# fpd auto-upgrade include pm
Router(config)# commit
```

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

To enable or disable the automatic upgrade of FPD images during a software upgrade, use the **fpd auto-upgrade** command in System Admin Config mode or XR Configuration mode.

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

Syntax Description

enable	Enables auto upgrade of FPD images.
disable	Disables auto upgrade of FPD images.

Command Default

FPD images are not automatically upgraded.

Command Modes

- System Admin Config mode
- XR Configuration mode

Command History

Usage Guidelines

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

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

Task ID

Task ID	Operation
system	read, write

The following example shows how to enable or disable automatic FPD upgrades in Admin configuration mode:

```
RP/0/RP0/CPU0:router(admin-config)# fpd auto-upgrade enable
RP/0/RP0/CPU0:router(admin-config)# fpd auto-upgrade disable
```

The following example shows how to enable or disable automatic FPD upgrades in XR configuration mode:

```
RP/0/RP0/CPU0:router(config)# fpd auto-upgrade enable
RP/0/RP0/CPU0:router(config)# fpd auto-upgrade disable
```

hw-module fabric-fec-monitor disable

To disable the fabric FEC monitor, use the **hw-module fabric-fec-monitor disable** command in XR Config mode mode.

hw-module fabric-fec-monitor disable

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values.

Command Modes

XR Config

mode

Command History

Release	Modification
Release 24.2.11	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
sysmgr	read

The following example shows how to disable the fabric FEC monitor:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# hw-module fabric-fec-monitor disable
RP/0/RP0/CPU0:router(config)# commit
```

hw-module npu-power-profile

To configure NPU power mode, use the **hw-module npu-power-profile** command in XR Config mode.

hw-module npu-power-profile { **high** | **medium** | **low** }

Syntax Description

high	The router will use the maximum amount of power, resulting in the best possible performance.
medium	The router power consumption and performance levels are both average.
low	The router operates with optimal energy efficiency while providing a modest level of performance.

Command Default

No default behavior or values

Command Modes

XR Config

Command History

Release	Modification
Release 7.3.15	This command was introduced.

Usage Guidelines

Reload the chassis using the **reload** command for the configuration changes to take effect.

Task ID

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

The following example shows how to configure an NPU power mode on a fixed chassis:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# hw-module npu-power-profile high
RP/0/RP0/CPU0:router(config)# commit

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

Note Note: Reload the chassis for the configurations changes to take effect.

Use the **show controllers npu driver** command to verify the NPU power mode configuration on a fixed chassis:

```
RP/0/RP0/CPU0:router# show controllers npu driver location 0/RP0/CPU0
Mon Aug 24 23:29:34.302 UTC
==========================================
```

```
NPU Driver Information
==========================================
Driver Version: 1
SDK Version: 1.32.0.1
Functional role: Active,     Rack: 8203, Type: lcc, Node: 0
Driver ready      : Yes
NPU first started : Mon Aug 24 23:07:41 2020
Fabric Mode:
NPU Power profile: High
Driver Scope: Node
Respawn count     : 1
Availablity masks :
        card: 0x1,     asic: 0x1,    exp asic: 0x1
...
```

The following example shows how to configure an NPU power mode on a fabric card and a line card:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# hw-module npu-power-profile card-type FC high
RP/0/RP0/CPU0:router(config)# hw-module npu-power-profile card-type LC low location 0/1/cpu0
RP/0/RP0/CPU0:router(config)# commit
```

Note For the configurations to take effect, you must:

- Reload a line card if the configuration is applied on the line card.
- Reload a router if the configuration is applied on a fabric card.

Use the **show controllers npu driver location** command to verify the NPU power mode configuration on a fabric card and a line card:

```
RP/0/RP0/CPU0:router# show controllers npu driver location 0/1/CPU0

Functional role: Active,     Rack: 8808, Type: lcc, Node: 0/RP0/CPU0
Driver ready      : Yes
NPU first started : Mon Apr 12 09:57:27 2021
Fabric Mode: FABRIC/8FC
NPU Power profile: High
Driver Scope: Rack
Respawn count     : 1
Availablity masks :
        card: 0xba,     asic: 0xcfcc,    exp asic: 0xcfcc
Weight distribution:
        Unicast: 80,      Multicast: 20
+-------------------------------------------------------------------+
| Process | Connection | Registration | Connection | DLL            |
| /Lib    | status     | status       | requests   | registration|
+-------------------------------------------------------------------+
| FSDB    | Active     | Active       |           1|  n/a           |
| FGID    | Active     | Active       |           1|  n/a           |
| AEL     | n/a        | n/a          |         n/a|  Yes           |
| SM      | n/a        | n/a          |         n/a|  Yes           |
+-------------------------------------------------------------------+

Asics :
HP - HotPlug event, PON - Power On reset
HR - Hard Reset,    WB  - Warm Boot
+-------------------------------------------------------------------------------+
```

```
| Asic inst. | fap|HP|Slice|Asic|Admin|Oper | Asic state | Last |PON|HR |  FW  |
|  (R/S/A)   | id |  |state|type|state|state|            | init |(#)|(#)|  Rev |
+-------------------------------------------------------------------------------+
| 0/FC1/2    | 202| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC1/3    | 203| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC3/6    | 206| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC3/7    | 207| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC4/8    | 208| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC4/9    | 209| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC5/10   | 210| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC5/11   | 211| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC7/14   | 214| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/FC7/15   | 215| 1| UP  |s123| UP  | UP  |NRML        |PON   |  1|  0|0x0000|
+-------------------------------------------------------------------------------+

SI Info :
+-------------------------------------------------------------------------------------------+
|   Card  | Board      | SI Board | SI Param | Retimer SI    | Retimer SI    | Front Panel
   |
|         | HW Version | Version  | Version  | Board Version | Param Version | PHY
   |
+-------------------------------------------------------------------------------------------+
|  FC1    |  0.22      |     1    |     6    |       NA      |       NA      |       NA
   |
|  FC3    |  0.21      |     1    |     6    |       NA      |       NA      |       NA
   |
|  FC4    |  0.21      |     1    |     6    |       NA      |       NA      |       NA
   |
|  FC5    |  0.21      |     1    |     6    |       NA      |       NA      |       NA
   |
|  FC7    |  0.21      |     1    |     6    |       NA      |       NA      |       NA
   |
+-------------------------------------------------------------------------------------------+
Functional role: Active,     Rack: 8808, Type: lcc, Node: 0/1/CPU0
Driver ready      : Yes
NPU first started : Mon Apr 12 09:58:10 2021
Fabric Mode: FABRIC/8FC
NPU Power profile: Low
Driver Scope: Node
Respawn count     : 1
Availablity masks :
        card: 0x1,     asic: 0x7,    exp asic: 0x7
Weight distribution:
        Unicast: 80,      Multicast: 20
+-----------------------------------------------------------------+
| Process | Connection | Registration | Connection | DLL          |
| /Lib    | status     | status       | requests   | registration|
+-----------------------------------------------------------------+
| FSDB    | Active     | Active       |          1|  n/a         |
| FGID    | Inactive   | Inactive     |          0|  n/a         |
| AEL     | n/a        | n/a          |        n/a|  Yes         |
| SM      | n/a        | n/a          |        n/a|  Yes         |
+-----------------------------------------------------------------+

Asics :
HP - HotPlug event, PON - Power On reset
HR - Hard Reset,    WB  - Warm Boot
+-------------------------------------------------------------------------------+
| Asic inst. | fap|HP|Slice|Asic|Admin|Oper | Asic state | Last |PON|HR |  FW  |
|  (R/S/A)   | id |  |state|type|state|state|            | init |(#)|(#)|  Rev |
+-------------------------------------------------------------------------------+
| 0/2/0      |   8| 1| UP  |npu | UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/2/1      |   9| 1| UP  |npu | UP  | UP  |NRML        |PON   |  1|  0|0x0000|
| 0/2/2      |  10| 1| UP  |npu | UP  | UP  |NRML        |PON   |  1|  0|0x0000|
```

```
+--------------------------------------------------------------------------------+

SI Info :
+-------------------------------------------------------------------------------------------------+
|   Card  | Board      | SI Board | SI Param | Retimer SI    | Retimer SI    | Front Panel
   |
|         | HW Version | Version  | Version  | Board Version | Param Version | PHY
   |
+-------------------------------------------------------------------------------------------------+
|  LC2    |  0.41      |     1    |     9    |       NA      |       NA      |  DEFAULT
   |
+-------------------------------------------------------------------------------------------------+
```

hw-module profile pbr vrfredirect

To redirect policy-based routing to VRF, use the **hw-module profile pbr vrfredirect** command in XR Config mode. To disable the redirect feature, use the **no** form of this command.

hw-module profile pbr vrfredirect
no hw-module profile pbr vrfredirect

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

XR Config

Command History

Release	Modification
Release 7.8.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

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

The following example shows how to redirect a policy-based routing to VRF:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# hw-module profile pbr vrfredirect

  Tue Mar 21 18:07:18.338 UTC
  In order to activate/deactivate this stats profile, you must manually reload the chassis/all
 line cards
```

hw-module profile npu-compatibility

To configure a router for handling line cards of different ASIC families, use the **hw-module npu-compatibility** command in XR Config mode. To go back to the default mode, use the **no** form of this command.

hw-module profile npu-compatibility *mode-name*

Syntax Description

npu-compatibility	Allows you to make a router compatible with an ASIC family.
mode-name	Allows you to set the mode, such as Q100, Q200, P100, or P200.

Command Default

No default behavior or values

Command Modes

XR Config

Command History

Release	Modification
Release 7.7.1	This command was introduced.
Release 25.4.1	The option P200 was added.

Usage Guidelines

Reload the chassis using the **reload** command for the configuration changes to take effect.

Task ID

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

The following example shows how to configure the NPU compatibility mode on a chassis:

```
Router# configure
Router(config)# hw-module profile npu-compatibility q200
Router(config)# commit
Router(config)# exit
Router# reload location all
```

Note The **reload** command restarts the device, applying configuration changes.

Use the **show hw-module profile npu-compatibility matrix** command to verify the NPU compatibility mode configuration on a chassis:

```
RP/0/RP0/CPU0:router# show hw-module profile npu-compatibility matrix
Mon Aug 24 23:29:34.302 UTC
Node          Card Type                NPU Type
------------------------------------------------------------
```

```
0/0/CPU0      8800-LC-48H              Q100

              Compatibility       Compatibility
NPU Type     Mode Q100            Mode Q200
-------------------------------------------------------
Q100          Compatible             Not Compatible
Q200          Compatible             Compatible
Default mode: Q100
RP/0/RP0/CPU0:ios# show hw-module profile npu-compatibility
Mon Jun 27 19:41:59.318 UTC
-----------------------------------------------------------------
Knob                Status             Applied      Action
-----------------------------------------------------------------
npu_compatibility   Unconfigured       N/A           None


RP/0/RP0/CPU0:ios#
```

hw-module profile route scale host-route

To support maximum scale values of host routes, use the **hw-module profile route scale host-route** command in configuration mode.

hw-module profile route scale host-route

Syntax Description

host-route	Enables host-route scale mode to increase the scale values.

Command Default

No default behavior or values

Command Modes

Configuration

Command History

Release	Modification
Release 25.4.1	This command was introduced.

Usage Guidelines

To support maximum scaling for connected host routes, an alternative programming method is used which ensures the next hop scaling does not impact the connected host route scaling.

This configuration enables maximum scaling values and applicable only to connected host routes.

Task ID

Task ID	Operation
hardware	read, write

The following example shows how to support maximum scale values of host routes.

```
Router# configure
Router(config)# hw-module profile route scale host-route
Router(config)# commit
Fri Nov 28 12:03:40.428 UTC
In order to activate/deactivate host-route scale mode, you must manually reload the
chassis/all line cards
Router#:
Nov 28 12:16:43.330 UTC
npu_drvr[240]: %FABRIC-NPU_DRVR-3-HW_MODULE_PROFILE_CHASSIS_CFG_CHANGED :
Hw-module profile config changed for "route scale host-route", do chassis reload to get the
 most recent config updated
```

The following example shows how to verify the host routes is configured and applied.

```
Router# show hw-module profile route-scale
Router# commit
Fri Nov 28 12:34:47.909 UTC
-------------------------------------------------------------
Knob                          Status          Applied   Action
-------------------------------------------------------------
IPv6-Pfx-Expansion            Unconfigured    N/A       None
```

```
LPM-Tcam-Scale               Unconfigured    N/A       None
Wide-Entries-Shortened       Unconfigured    N/A       None
LPM-CEM-Scale                Unconfigured    N/A       None
LPM-Full-Scale               Unconfigured    N/A       None
Host-Route-Scale             Configured      Yes       None
```

hw-module reset auto

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

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

Syntax Description

disable	Disables the node reset feature on the specified node.
location *node-id*	Identifies the node you want to reload. The *node-id* argument is entered in the *rack/slot* notation.

Command Default

The node reset feature is enabled for all nodes.

Command Modes

Administration configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

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/RP0/CPU0:router# admin
RP/0/RP0/CPU0:router(admin)# configure
RP/0/RP0/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 shutdown

To administratively shut down a specific node, use the **hw-module shutdown** command in XR Config mode.

hw-module shutdown location *node-id*

Syntax Description

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

Command Default

Nodes are in the up state when the system is powered on and when the software boots on the cards.

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.0.12	The command was introduced.

Usage Guidelines

Nodes that are shut down do not have power.

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

Task ID

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

This example displays how to shutdown the node 0/3/CPU0:

```
Router# configure
Router(config)# hw-module shutdown location 0/3/CPU0
Router(config)# commit
```

Verify the result using the **show platform** command:

```
Router# show platform
Fri Sep 20 05:22:12.596 UTC
Node              Type                       State                     Config state
--------------------------------------------------------------------------------
0/RP0/CPU0        8800-RP(Active)            IOS XR RUN                NSHUT
0/RP1/CPU0        8800-RP(Standby)           IOS XR RUN                NSHUT
0/3/CPU0          8800-LC-48H                SHUT DOWN                 SHUT
0/5/CPU0          88-LC0-36FH-M              IOS XR RUN                NSHUT
0/8/CPU0          88-LC0-36FH-M              IOS XR RUN                NSHUT
0/FC0             8812-FC                    OPERATIONAL               NSHUT
0/FC3             8812-FC                    OPERATIONAL               NSHUT
0/FT0             SF-D-12-FAN                OPERATIONAL               NSHUT
0/FT1             SF-D-12-FAN                OPERATIONAL               NSHUT
0/FT2             SF-D-12-FAN                OPERATIONAL               NSHUT
0/FT3             SF-D-12-FAN                OPERATIONAL               NSHUT
0/PT0             FAM7000-ACHV-TRAY          OPERATIONAL               NSHUT
```

```
0/PT1               FAM7000-ACHV-TRAY       OPERATIONAL             NSHUT
0/PT2               FAM7000-ACHV-TRAY       OPERATIONAL             NSHUT
```

redundancy switchover

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

EXEC or administration EXEC

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

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

Syntax Description

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

Command Default

No default behavior or values

Command Modes

EXEC

Administration EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

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/RP0/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/RP0/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/RP0/CPU0:router# show redundancy

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

RP/0/RP0/CPU0:router# redundancy switchover

  Standby card not running; failover disallowed.
```

reload location

To reload a hardware module either from a specified location or from all slots, use the **reload location** command in XR EXEC mode.

reload location { *location-id* | **all** }

Syntax Description

location-id	Specifies the location of the hardware module which is to be reloaded.
all	Use the **all** keyword to indicate all hardware locations to reload them. • 0/RP0/CPU0—Fully qualified location specification. • 0/0/CPU0—Fully qualified location specification. • 0/FC0—Fully qualified location specification. • 0/FC1—Fully qualified location specification. • 0/RP0 —Partially qualified location string for full board operations. • 0/0—Partially qualified location string for full board operations

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
system	read

The following example shows sample output from the **reload location all** command:

```
Router# reload location all
Tue Oct  1 06:57:11.984 UTC
Proceed with reload? [confirm] y
...
...
[Done]
```

secure-erase

To perform secure erase of the solid state drive (SSD) data on a particular card such as a line card (LC) or a route processor (RP), or on the entire router, use the **secure-erase** command in XR EXEC mode.

secure-erase location { **all** *location-id* }

Syntax Description

location	Specifies the node (LC or RP) location on which secure erase operation is to be performed.

Command Default

None.

Command Modes

XR EXEC

Command History

Release	Modification
Release 25.1.1	This command was introduced.

Usage Guidelines

The active RP must be operational to initiate secure erase process.

The router or the card shuts down after a secure erase operation.

Task ID

Task ID	Operations
root-lr	execute

Examples

This example shows how to securely erase the route processor data on a Cisco IOS XR router:

```
Router#secure-erase location 0/RP0/CPU0
Tue Mar 11 11:17:51.294 UTC
Performing secure erase operation will erase the SSD and shut down the card. Proceed?
[confirm]
```

reload location

To reload a hardware module either from a specified location or from all slots, use the **reload location** command in XR EXEC mode.

reload location { *location-id* | **all** }

Syntax Description

location-id	Specifies the location of the hardware module which is to be reloaded.
all	Use the **all** keyword to indicate all hardware locations to reload them. • 0/RP0/CPU0—Fully qualified location specification. • 0/0/CPU0—Fully qualified location specification. • 0/FC0—Fully qualified location specification. • 0/FC1—Fully qualified location specification. • 0/RP0 —Partially qualified location string for full board operations. • 0/0—Partially qualified location string for full board operations

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
system	read

The following example shows sample output from the **reload location all** command:

```
Router# reload location all
Tue Oct  1 06:57:11.984 UTC
Proceed with reload? [confirm] y
...
...
[Done]
```

Show asic-error

To display error messages related to ASIC (Application-Specific Integrated Circuit) components use the **show-asic error** command in EXEC mode. This command provides information on ASIC errors like error type, error code, and affected ASIC component.

show asic-errors all { **Detail | Summary | history | location** } **[all |** <*location*> **]**

Syntax Description

Detail	Displays detailed information about ASIC errors that occurred on the current node.
Summary	Provides a summarized view of ASIC errors that occurred on the current node.
history	Displays the system history of events and errors before the current node reload or shutdown.
location	Displays ASIC errors for all instances at all locations.

Command Default

No default behavior or values.

Command Modes

Admin EXEC mode

Command History

Release	Modification
Release 7.9.1	This command was introduced.

Usage Guidelines

You can use the **show asic-error** command, along with other tools, to find and fix problems with the ASIC components on the routers.

The common error messages in the **show asic-error** command output include interface errors, buffer errors, and packet errors. Depending on the specific error message, administrators can take appropriate action to resolve the issue, such as resetting the affected interface.

Note ASIC error interrupts occur when the ASICs detect errors or critical situations, signaling the need for attention. These interrupts include reset, single-bit, multiple-bit, and parity errors.

Task ID

Task ID	Operations
drivers	read

Examples

The following example displays ASIC errors details for 0/RP0/CPU0.

```
RP/0/RP0/CPU0:ios#show asic-errors all detail location 0/RP0/CPU0
Thu Jun  1 09:46:00.873 UTC
************************************************************
*                        0_RP0_CPU0                        *
************************************************************
************************************************************
*                   NPU ASIC Error Summary                 *
************************************************************
************************************************************
*                       Instance : 0                       *
************************************************************
************************************************************
*                        Reset Errors                      *
************************************************************
************************************************************
*                     Single Bit Errors                    *
************************************************************
************************************************************
*                    Multiple Bit Errors                   *
************************************************************
************************************************************
*                       Parity Errors                      *
************************************************************
************************************************************
*                     Unexpected Errors                    *
************************************************************
************************************************************
*                        Link Errors                       *
************************************************************
8000, 8201, 0/RP0/CPU0, npu[0]
Name            : slice[0].ifg[0].mac_pool8[0].rx_link_status_down.rx_link_status_down0
Block ID        : 0x62
Addr            : 0x100
Leaf ID         : 0xc402000
Error count     : 1
Last clearing   : Thu Jun  1 07:51:26 2023
Last N errors   : 1
------------------------------------------------------------
```

show environment

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

show environment [**all** | **alarm** | **altitude** | **current** | **fan** | **humidity** | **power** | **temperature** | **voltage**] [*node-id*]

Syntax Description

all	Displays information for all environmental monitor parameters.
alarm	Displays information for all alarm port information.
altitude	Displays altitude information.
current	Displays system current information.
fan	Displays information about the fans.
humidity	Displays the system humidity information.
temperature	(Optional) Displays system temperature information.
power	Displays the maximum power limit of a router.
voltage	(Optional) Displays system voltage information.
node-id	(Optional) Node whose information you want to display.

Command Default

All environmental monitor parameters is displayed.

Command Modes

System Admin EXEC

Command History

Release	Modification
Release 24.1.1	This command was modified to include `Total feed redundancy capacity` field in the command output.
Release 7.11.1	This command was modified to include the **power** keyword.
Release 7.0.12	This command was introduced.

Usage Guidelines

The **show environment** command displays information about the hardware that is installed in the system, including fans, altitude, humidity, current, and temperature information.

Task ID

Task ID	Operations
system	read

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

```
Router:#show environment power
Tue Nov  7 20:38:01.700 PST
================================================================================
CHASSIS LEVEL POWER INFO: 0
================================================================================
   Total output power capacity (N + 1)             :   18900W +     6300W
   Total output power required                     :   16222W
   Total power input                               :    5527W
   Total power output                              :    5033W
   Configured max power capacity                   :   20000W

================================================================================
   Power       Supply         -------Input--------   -----Output---     Status
   Module      Type            Volts A/B   Amps A/B   Volts     Amps
================================================================================
   0/PT0-PM0   PSU6.3KW-HV     212.6/212.6 3.3/3.3    55.0      23.4     OK
   0/PT0-PM1   PSU6.3KW-HV     212.6/212.6 3.2/3.2    54.9      22.2     OK
   0/PT0-PM2   PSU6.3KW-HV     212.9/212.9 3.2/3.2    55.1      22.6     OK
   0/PT1-PM1   PSU6.3KW-HV     212.3/212.3 3.3/3.3    54.8      23.4     OK

Total of Power Modules:       5527W/26.0A              5033W/91.6A

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

The following example shows sample output for **show environment** command including the `Total feed redundancy capacity` field:

```
Router:#show environment power
================================================================================
CHASSIS LEVEL POWER INFO: 0
================================================================================
   Total output power capacity (N + 1)             :   28800W +     4800W
   Total output power required                     :    6679W
   Total power input                               :    2394W
   Total power output                              :    2066W
   Total feed redundancy capacity (Single Fault)   :   16800W

================================================================================
   Power       Supply         -------Input--------   -----Output---     Status
   Module      Type            Volts A/B   Amps A/B   Volts     Amps
================================================================================
   0/PT0-PM0   PSU4.8KW-DC100  62.8/62.7   2.6/2.5    55.2      5.3      OK
   0/PT0-PM1   PSU4.8KW-DC100  62.7/62.7   2.7/2.6    55.3      5.3      OK
   0/PT0-PM3   PSU4.8KW-DC100  61.0/62.7   2.6/2.5    55.2      4.8      OK
   0/PT1-PM0   PSU4.8KW-DC100  67.3/67.3   2.7/2.5    55.3      5.2      OK
   0/PT1-PM1   PSU4.8KW-DC100  67.3/67.2   2.8/2.7    55.3      5.7      OK
   0/PT1-PM2   PSU4.8KW-DC100  67.3/67.4   2.7/2.7    55.2      5.6      OK
```

```
   0/PT1-PM3    PSU4.8KW-DC100  67.3/67.3   2.6/2.5    55.3       5.5       OK

Total of Power Modules:       2394W/36.7A              2066W/37.4A

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

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

System Admin EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

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:

```
================================= ==============================================
                                        Field Programmable Device Package
                                  ==============================================
                                                Req     SW      Min Req   Min Req
Card Type            FPD Description            Reload  Ver     SW Ver  Board Ver
================== ========================== ====== ======= ======== =========
--------------------------------------------------------------------------------
8800-LC-36H Bios YES 1.15 1.15 0.0
BiosGolden YES 1.15 1.15 0.0
EthSwitch YES 0.07 0.07 0.0
EthSwitchGolden YES 0.07 0.07 0.0
IoFpga YES 0.08 0.08 0.0
IoFpgaGolden YES 0.08 0.08 0.0
x86Fpga YES 0.33 0.33 0.0
x86FpgaGolden YES 0.33 0.33 0.0
x86TamFw YES 5.05 5.05 0.0
x86TamFwGolden YES 5.05 5.05 0.0
--------------------------------------------------------------------------------
8800-LC-48H Bios YES 1.15 1.15 0.0
BiosGolden YES 1.15 1.15 0.0
EthSwitch YES 0.07 0.07 0.0
EthSwitchGolden YES 0.07 0.07 0.0
IoFpga YES 0.08 0.08 0.0
```

```
IoFpgaGolden YES 0.08 0.08 0.0
x86Fpga YES 0.33 0.33 0.0
x86FpgaGolden YES 0.33 0.33 0.0
x86TamFw YES 5.05 5.05 0.0
x86TamFwGolden YES 5.05 5.05 0.0
--------------------------------------------------------------------------------
8800-RP Bios YES 1.15 1.15 0.0
BiosGolden YES 1.15 1.15 0.0
BmcFitPrimary YES 0.300 0.300 0.0
BmcFpga YES 0.19 0.19 0.0
BmcFpgaGolden YES 0.19 0.19 0.0
BmcTamFw YES 5.05 5.05 0.0
BmcTamFwGolden YES 5.05 5.05 0.0
BmcUbootPrimary YES 0.15 0.15 0.0
EthSwitch YES 0.07 0.07 0.0
EthSwitchGolden YES 0.07 0.07 0.0
TimingFpga YES 0.11 0.11 0.0
TimingFpgaGolden YES 0.11 0.11 0.0
x86Fpga YES 0.24 0.24 0.0
x86FpgaGolden YES 0.24 0.24 0.0
x86TamFw YES 5.05 5.05 0.0
x86TamFwGolden YES 5.04 5.04 0.0
--------------------------------------------------------------------------------
8808-FC IoFpga YES 0.05 0.05 0.0
IoFpgaGolden YES 0.05 0.05 0.0
--------------------------------------------------------------------------------
8812-FC IoFpga YES 0.05 0.05 0.0
IoFpgaGolden YES 0.05 0.05 0.0
--------------------------------------------------------------------------------
8818-FC IoFpga YES 0.05 0.05 0.0
IoFpgaGolden YES 0.05 0.05 0.0
--------------------------------------------------------------------------------
FAM7008-FAN FTFPGAGolden YES 0.16 0.16 0.0
FTFPGAUpgrade NO 0.16 0.16 0.0
--------------------------------------------------------------------------------
FAM7012-FAN FTFPGAGolden YES 0.16 0.16 0.0
FTFPGAUpgrade NO 0.16 0.16 0.0
--------------------------------------------------------------------------------
FAM7018-FAN FTFPGAGolden YES 0.16 0.16 0.0
FTFPGAUpgrade NO 0.16 0.16 0.0
--------------------------------------------------------------------------------
PSU6.3KW-HV LogicMCU NO 4.11 4.11 0.0
PrimMCU NO 4.01 4.01 0.0
SecMCU NO 4.00 4.00 0.0
--------------------------------------------------------------------------------
PWR-4.4KW-DC-V3 LogicMCU NO 3.00 3.00 0.0
Prim1MCU NO 3.00 3.00 0.0
Prim2MCU NO 3.00 3.00 0.0
Sec1MCU NO 3.00 3.00 0.0
Sec2MCU NO 3.00 3.00 0.0
```

This table describes the significant fields shown in the display:

Table 1: show fpd package Field Descriptions

Field	Description
Card Type	Module part number.
FPD Description	Description of all FPD images available for the module.
Req Reload	Displays if the module requires a reload.

Field	Description
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 Board Vers	Minimum required board version for the associated FPD image. A minimum board requirement of version 0.0 indicates that all hardware can support this FPD image version.

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 XR EXEC mode.

show hw-module [**fpd** | **location** *node-id* **fpd** | **location** *node-id* **fpd** *fpd-name* | **location all fpd** *fpd-name*]

Syntax Description

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

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
sysmgr	read
root-lr	read

The following example shows the output of **show hw-module fpd** command:

```
Router#show hw-module fpd
Wed Apr 5 17:46:55.067 UTC

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
FPD Versions
==============
Location   Card type       HWver FPD device       ATR Status   Running Programd  Reload Loc
-----------------------------------------------------------------------------------------
0/RP0/CPU0 8201            0.2   Bios             S   CURRENT    1.27    1.27    0/RP0/CPU0
0/RP0/CPU0 8201            0.2   BiosGolden       BS  CURRENT            1.20    0/RP0/CPU0
0/RP0/CPU0 8201             0.2   IoFpga               CURRENT    1.11    1.11    0/RP0
0/RP0/CPU0 8201             0.2   IoFpgaGolden     B   CURRENT            1.01    0/RP0
0/RP0/CPU0 8201             0.2   x86Fpga          S   CURRENT    1.06    1.06    0/RP0
0/RP0/CPU0 8201             0.2   x86FpgaGolden    BS  CURRENT            1.01    0/RP0
0/RP0/CPU0 8201             0.2   x86TamFw         S   CURRENT    5.13    5.13    0/RP0
0/RP0/CPU0 8201             0.2   x86TamFwGolden   BS  CURRENT            5.06    0/RP0
0/PM0      PSU1.4KW-ACPE    0.0   DT-PrimMCU           CURRENT    3.01    3.01    NOT REQ
0/PM0      PSU1.4KW-ACPE    0.0   DT-SecMCU            CURRENT    2.02    2.02    NOT REQ
0/PM1      PSU1.4KW-ACPE    0.0   DT-PrimMCU           CURRENT    3.01    3.01    NOT REQ
0/PM1      PSU1.4KW-ACPE    0.0   DT-SecMCU            CURRENT    2.02    2.02    NOT REQ
```

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

```
Router#show hw-module location 0/RP0/CPU0 fpd
Wed Apr 5 17:47:01.104 UTC

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
FPD Versions
==============
Location   Card type       HWver FPD device       ATR Status   Running Programd  Reload Loc
----------------------------------------------------------------------------------------
0/RP0/CPU0 8201            0.2   Bios             S   CURRENT    1.27    1.27    0/RP0/CPU0
0/RP0/CPU0 8201            0.2   BiosGolden       BS  CURRENT            1.20    0/RP0/CPU0
0/RP0/CPU0 8201            0.2   IoFpga               CURRENT    1.11    1.11    0/RP0
0/RP0/CPU0 8201            0.2   IoFpgaGolden     B   CURRENT            1.01    0/RP0
0/RP0/CPU0 8201            0.2   x86Fpga          S   CURRENT    1.06    1.06    0/RP0
0/RP0/CPU0 8201            0.2   x86FpgaGolden    BS  CURRENT            1.01    0/RP0
0/RP0/CPU0 8201            0.2   x86TamFw         S   CURRENT    5.13    5.13    0/RP0
0/RP0/CPU0 8201            0.2   x86TamFwGolden   BS  CURRENT            5.06    0/RP0
```

The following example shows the output of **show hw-module location 0/RP0/CPU0 fpd Bios** command:

```
Router#show hw-module location 0/RP0/CPU0 fpd Bios
Wed Apr 5 17:47:04.255 UTC

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
FPD Versions
==============
Location   Card type       HWver FPD device       ATR Status   Running Programd  Reload Loc
----------------------------------------------------------------------------------------
0/RP0/CPU0 8201            0.2   Bios             S CURRENT      1.27    1.27    0/RP0/CPU0
```

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

```
Router#show hw-module fpd all
Tue Apr  4 08:55:32.545 UTC

Auto-upgrade:Disabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
                                                                          FPD Versions
                                                                          ==============
Location   Card type       HWver FPD device       ATR Status   Running Programd  Reload Loc
----------------------------------------------------------------------------------------
0/RP0/CPU0 8201            0.30  Bios                 NEED UPGD  7.01    7.01    0/RP0/CPU0
0/RP0/CPU0 8201            0.30  BiosGolden       B   NEED UPGD          7.01    0/RP0/CPU0
0/RP0/CPU0 8201            0.30  IoFpga               NEED UPGD  7.01    7.01         0/RP0
0/RP0/CPU0 8201            0.30  IoFpgaGolden     B   NEED UPGD          7.01         0/RP0
0/RP0/CPU0 8201            0.30  SsdIntelS3520        NEED UPGD  7.01    7.01         0/RP0
0/RP0/CPU0 8201            0.30  x86Fpga              NEED UPGD  7.01    7.01         0/RP0
0/RP0/CPU0 8201            0.30  x86FpgaGolden    B   NEED UPGD          7.01         0/RP0
0/RP0/CPU0 8201            0.30  x86TamFw             NEED UPGD  7.01    7.01         0/RP0
0/RP0/CPU0 8201            0.30  x86TamFwGolden   B   NEED UPGD          7.01         0/RP0
0/PM0      PSU2KW-ACPI     0.0   PO-PrimMCU           NEED UPGD  7.01    7.01       NOT REQ
0/PM1      PSU2KW-ACPI     0.0   PO-PrimMCU           NEED UPGD  7.01    7.01       NOT REQ
```

The following example shows the output of **show hw-module location all fpd IoFpga** command:

```
Router#show hw-module location all fpd IoFpga
Wed Apr 5 17:47:10.752 UTC

Auto-upgrade:Enabled
Attribute codes: B golden, P protect, S secure, A Anti Theft aware
```

```
FPD Versions
==============
Location   Card type       HWver FPD device       ATR Status   Running Programd  Reload Loc
-----------------------------------------------------------------------------------------
0/RP0/CPU0 8201            0.2   IoFpga           CURRENT        1.11    1.11    0/RP0
```

show inventory

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

show inventory [*node-id* | **all** | **location** { *node-id* | **all** } | **raw** | **chassis** | **details** | **fan** | **power** | **vendor-type**]

Syntax Description

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

Command Default

All inventory information for the entire chassis is displayed.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

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:

```
Router#show inventory raw
Tue Mar  7 07:34:48.602 UTC

NAME: "Rack 0", DESCR: "Cisco 8201 1RU Chassis"
PID: 8201              , VID: V00, SN: FOC2217JIRS

NAME: "Rack 0-Control Card Slot 0", DESCR: "8201 Route Processor Slot 0"
PID: N/A               , VID: N/A, SN: N/A

NAME: "0/RP0/CPU0", DESCR: "Cisco 8201 1RU Chassis"
PID: 8201              , VID: V00, SN: FOC2219JGLB

NAME: "0/RP0/CPU0-Mother Board", DESCR: "Mother Board"
PID: N/A               , VID: N/A, SN: N/A

NAME: "0/RP0/CPU0-Broadwell-DE (D-1530)", DESCR: "Processor Module"
PID: N/A               , VID: N/A, SN: N/A

NAME: "0/RP0/CPU0-Attention", DESCR: "LED Sensor"
PID: N/A               , VID: N/A, SN: N/A

NAME: "0/RP0/CPU0-Status", DESCR: "LED Sensor"
PID: N/A               , VID: N/A, SN: N/A

NAME: "0/RP0/CPU0-Sync", DESCR: "LED Sensor"
PID: N/A               , VID: N/A, SN: N/A

NAME: "0/RP0/CPU0-MB_RT_GB_PIN", DESCR: "Power Sensor - MB-RT_GB_ONLY_0.8VB_PIN"
PID: N/A               , VID: N/A, SN: N/A
 --More--
```

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

```
Router#show inventory chassis
Thu Apr 6 04:56:46.987 UTC

NAME: "Rack 0", DESCR: "Cisco 8808 8-slot Chassis"
PID: 8808 , VID: V00, SN: FOX224PPUDA
```

The following table describes the significant fields shown in the display.

Table 2: show inventory Field Descriptions

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

Field	Description
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 System Admin EXECEXEC or administration EXEC mode.

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

Syntax Description

location {*node-id* | **all**}	(Optional) Specifies the node for which to display LED information. The *node-id* argument is expressed in the *rack/slot* 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 7.0.12	This command was introduced.

Usage Guidelines

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

Task ID

Task ID	Operations
system	read

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 3: show led location Field Descriptions

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

Field	Description
STATUS	Current status of the specified node.

show platform

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

show platform [*node-id*] **reload location** { **all** | **All slots** }

Syntax Description

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

Command Default

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

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

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 EXEC mode to display output for only those nodes that belong to the SDR on which the command is executed.

Task ID

Task ID	Operations
system	read

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

```
Router#show platform
Thu Apr 6 00:56:22.922 UTC
Node              Type                       State                     Config state
--------------------------------------------------------------------------------
0/RP0/CPU0        8800-RP(Active)            IOS XR RUN                NSHUT,NMON
0/0/CPU0          8800-LC-48H                IOS XR RUN                NSHUT
0/1/CPU0          88-LC0-36FH-M              IOS XR RUN                NSHUT
0/FC0             8812-FC                    OPERATIONAL               NSHUT
0/FC1             8812-FC                    OPERATIONAL               NSHUT
0/FT0             8812-FAN                   OPERATIONAL               NSHUT
0/FT1             8812-FAN                   OPERATIONAL               NSHUT
0/FT2             8812-FAN                   OPERATIONAL               NSHUT
0/FT3             8812-FAN                   OPERATIONAL               NSHUT
0/PT0             8800-HV-TRAY               OPERATIONAL               NSHUT
0/PT1             8800-HV-TRAY               OPERATIONAL               NSHUT
0/PT2             8800-HV-TRAY               OPERATIONAL               NSHUT
```

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

```
Router#show platform location 0/RP0/CPU0
Wed Mar  8 04:05:07.106 UTC
Node              Type                       State                     Config state
--------------------------------------------------------------------------------
0/RP0/CPU0        8201(Active)               IOS XR RUN                NSHUT
```

The following example shows sample output from the **show platform** command with the MPA reload information after executing the**reload location** command.

```
Router#show platform
Tue Sep 17 16:39:19.188 IST
Node              Type                       State                 Config state
--------------------------------------------------------------------------------
0/RP0/CPU0        8712-MOD-M(Active)         IOS XR RUN            NSHUT
0/FT0             FAN-PI-V3                  OPERATIONAL           NSHUT
0/FT1             FAN-PI-V3                  OPERATIONAL           NSHUT
0/FT2             FAN-PI-V3                  OPERATIONAL           NSHUT
0/FT3             FAN-PI-V3                  OPERATIONAL           NSHUT
0/PM0             PSU2KW-ACPI                OPERATIONAL           NSHUT
0/PM1             PSU2KW-ACPI                OPERATIONAL           NSHUT
0/0               8K-MPA-16H                 OPERATIONAL           NSHUT
0/1               8K-MPA-16Z2D               OPERATIONAL           NSHUT
0/2               8K-MPA-4D                  OPERATIONAL           NSHUT
0/3               8K-MPA-16Z2D               OPERATIONAL           NSHUT
```

This table describes the significant fields shown in the display.

Table 4: show platform Field Descriptions

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

show redundancy

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

EXEC

mode.

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

Syntax Description

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

Command Default

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

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

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 . To view the nonstop routing (NSR) status of the standby 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:

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

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

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

Table 5: show redundancy Field Descriptions

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

show version

To display the software version, build information, system hardware type and uptime, use the **show version** command in XR EXEC mode.

show version

Syntax Description

This command has no keywords or arguments.

.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

The **show version** command displays a variety of system information, including hardware and software version, router uptime, and active software.

Task ID

Task ID	Operations
basic-services	read

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

```
Router#show version
Cisco IOS XR Software, Version 7.8.2 LNT
Copyright (c) 2013-2023 by Cisco Systems, Inc.

Build Information:
 Built By     : ingunawa
 Built On     : Wed Mar 15 16:45:19 UTC 2023
 Build Host   : iox-ucs-060
 Workspace    : /auto/srcarchive13/prod/7.8.2/8000/ws
 Version      : 7.8.2
 Label        : 7.8.2

cisco 8000 (Intel(R) Xeon(R) CPU D-1530 @ 2.40GHz)
cisco 8812 (Intel(R) Xeon(R) CPU D-1530 @ 2.40GHz) processor with 32GB of memory
R1 uptime is 7 hours, 19 minutes
Cisco 8812 12-slot Chassis
```

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 .

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

Syntax Description

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

Command Default

None

Command Modes

Command History

Release	Modification
Release 7.0.12	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.

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

Naming notation for the *node-id* argument is *rack/slotsubslot*; 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.
```

Task ID

Task ID	Operations
sysmgr	read, write

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

```
RP/0/RP0/CPU0:router# admin
RP/0/RP0/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/-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 asic non-error

To display non-error messages related to ASIC (Application-Specific Integrated Circuit) components use the **show asic non-error** command in EXEC mode. This command provides status messages, statistics, and performance metrics for regular operation, and details on affected non-ASIC components.

show asic non-error all { **Detail | Summary | history | location** } **[all |** <*location*> **]**

Syntax Description

Detail	Displays detailed information about ASIC non-errors that occurred on the current node.
Summary	Provides a summarized view of ASIC non-errors that occurred on the current node.
history	Displays the system history of events and errors before the current node reload or shutdown.
location	Displays ASIC non-errors for all instances at all locations.

Command Default

No default behavior or values.

Command Modes

Admin EXEC mode

Command History

Release	Modification
Release 7.9.1	This command was introduced.

Usage Guidelines

You can use the **show asic non-error** command, along with other tools, to find nonerror messages related to ASIC components on the routers.

The common nonerror messages in the **show asic non-error** command output include informational or status messages indicating regular operation, statistics, or performance metrics. Administrators can take appropriate action to resolve the issue depending on the specific nonerror message, such as resetting the affected interface.

Note ASICs generate non-error interrupts to provide information or signaling for non-error conditions or events. These interrupts include updates on system operations, status, or specific ASIC events.

Task ID

Task ID	Operations
drivers	read

The following example displays ASIC nonerror details for 0/RP0/CPU0.

```
RP/0/RP0/CPU0:ios#show asic non-errors all detail location
0/RP0/CPU0**************************************************************
*                        0_RP0_CPU0                          *
**************************************************************
**************************************************************
*                        Non Errors                          *
**************************************************************
8000, 8201-32FH, 0/RP0/CPU0, npu[0]
Name            : slice[2].ifg[1].mac_pool8[2].rx_link_status_down.rx_link_status_down0
Block ID        : 0x143
Addr            : 0x100
Leaf ID         : 0x28602000
Error count     : 1
Last clearing   : Mon Feb 13 02:41:39 2023
Last N errors   : 1
--------------------------------------------------------------
```

power-mgmt configured-power-capacity

To configure a maximum power limit for a router, use the **power-mgmt configured-power-capacity** command in Global Configuration mode .

Syntax:

power-mgmt configured-power-capacity
maximum-watts

Syntax Description

maximum-watts	Specifies the maximum power capacity, in watts, to be set for the router.

Command Default

None

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.11.1	This command was introduced.

Usage Guidelines

Make sure the configured max power doesn't cross the max PSUs capacity and not below minimum chassis required power.

A new alarm **PKT_INFRA-FM-3-FAULT_MAJOR : ALARM_MAJOR :Power reservation exceeds configured power** is introduced to be raised when the max power capacity is crossed.



Note This alarm is extremely rare and is raised only when the power reservation exceeds configured power. This can only happen when hardware is inserted, it is granted power without a request, such as a fan tray.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to set the maximum power limit for the router.

```
Router#configure
Router(config)#power-mgmt configured-power-capacity 20000
Router(config)#commit
Router(config)#exit
```

power-mgmt feed-redundancy

To configure feed failure protection in the router, use the **power-mgmt feed-redundancy** command in Global Configuration mode.

power-mgmt feed-redundancy { **dual-fault-protection** | **single-fault-protection** } **capacity** *single feed capacity*

Syntax Description

dual-fault-protection	Provides protection against power supply feed failure and PSU redundancy failure.
single-fault-protection	Provides protection against power supply feed failure or PSU redundancy failure.
single feed capacity	Specifies the PSU single feed capacity for feed redundancy budget calculation in watts.

Command Default

By default, this feature is not enabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 24.1.1	This command was introduced.

Usage Guidelines

The PSU single feed capacity range differs across various models of Cisco 8000 Series Routers. We recommend configuring the PSU single feed capacity value adhering to your network requirements.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to configure feed failure protection in the router:

```
Router# config
Router(config)# power-mgmt feed-redundancy dual-fault-protection capacity 2400
Router(config)# commit
Router(config)#exit
```