

# Perform Preliminary Checks

After successfully logging into the console, you must perform some preliminary checks to verify the default setup. If any setup issue is detected when these checks are performed, take corrective action before making further configurations. These preliminary checks are:


- Verify Software Version, on page 1
- Verify Status of Hardware Modules, on page 2
- Verify Firmware Version, on page 3
- Verify SDR Information, on page 5
- Verify Interface Status, on page 7


# Verify Software Version

The router is shipped with the Cisco IOS XR software pre-installed. Verify that the latest version of the software is installed. If a newer version is available, perform a system upgrade. This will install the newer version of the software and provide the latest feature set on the router.

Perform this task to verify the version of Cisco IOS XR software running on the router.

### Procedure

Execute the **show version** command to display the version of Cisco IOS XR software and various software components installed on the router.

**Example:**

```
RP/0/RP0/CPU0:router# show version
Cisco IOS XR Software, Version <release-version>
Copyright (c) 2013-2015 by Cisco Systems, Inc.

Build Information:
Built By : <user>
Built On : <date and time stamp>
Build Host :
Version : <release-version>
Location : /opt/cisco/XR/packages/
```

```
cisco NCS-5500 () processor
System uptime is 3 hours, 42 minutes
```

### What to do next

Verify the result to ascertain whether a system upgrade or additional package installation is required. If that is required, refer to the tasks in the chapter Perform System Upgrade and Install Feature Packages.

# Verify Status of Hardware Modules

Hardware modules include RPs, LCs, fan trays, and so on. On the router, multiple hardware modules are installed. Perform this task to verify that all hardware modules are installed correctly and are operational.

### Before you begin

Ensure that all required hardware modules have been installed on the router.

## SUMMARY STEPS

1. **admin**
2. **show platform**

## DETAILED STEPS

### Procedure

**Step 1** **admin**

**Example:**

```
RP/0/RP0/CPU0:router# admin
```

Enters System Admin EXEC mode.

**Step 2** **show platform**

**Example:**

```
sysadmin-vm:0_RP0#show platform
```

Displays the list of hardware modules detected on the router.

```
Location  Card Type                HW State      SW State      Config State
------------------------------------------------------------------------------

0/0       NC55-36X100G             OPERATIONAL   OPERATIONAL   NSHUT
0/1       NC55-36X100G             OPERATIONAL   OPERATIONAL   NSHUT
0/2       NC55-36X100G             OPERATIONAL   OPERATIONAL   NSHUT
0/3       NC55-36X100G             OPERATIONAL   OPERATIONAL   NSHUT
0/4       NC55-36X100G             OPERATIONAL   OPERATIONAL   NSHUT
0/5       NC55-36X100G             OPERATIONAL   OPERATIONAL   NSHUT
0/6       NC55-36X100G             OPERATIONAL   OPERATIONAL   NSHUT
0/7       NC55-36X100G             OPERATIONAL   OPERATIONAL   NSHUT
```

```
0/RP0     NC55-RP               OPERATIONAL   OPERATIONAL   NSHUT
0/RP1     NC55-RP               OPERATIONAL   OPERATIONAL   NSHUT
0/FC0     NC55-5508-FC          OPERATIONAL   OPERATIONAL   NSHUT
0/FC1     NC55-5508-FC          OPERATIONAL   OPERATIONAL   NSHUT
0/FC2     NC55-5508-FC          OPERATIONAL   OPERATIONAL   NSHUT
0/FC3     NC55-5508-FC          OPERATIONAL   OPERATIONAL   NSHUT
0/FC4     NC55-5508-FC          OPERATIONAL   OPERATIONAL   NSHUT
0/FC5     NC55-5508-FC          OPERATIONAL   OPERATIONAL   NSHUT
0/FT0     NC55-5508-FAN         OPERATIONAL   N/A           NSHUT
0/FT1     NC55-5508-FAN         OPERATIONAL   N/A           NSHUT
0/FT2     NC55-5508-FAN         OPERATIONAL   N/A           NSHUT
0/SC0     NC55-SC               OPERATIONAL   OPERATIONAL   NSHUT
0/SC1     NC55-SC               OPERATIONAL   OPERATIONAL   NSHUT
```

From the result, verify that all the hardware modules installed on the chassis are listed. If a module is not listed, it indicates either that module is malfunctioning, or it is not properly installed. Remove and reinstall the hardware module.

# Verify Firmware Version

The firmware on various hardware components of the router must be compatible with the Cisco IOS XR image installed. Incompatibility might cause the router to malfunction. Complete this task to verify the firmware version.

## SUMMARY STEPS

1. **show hw-module fpd**

## DETAILED STEPS

### Procedure

**show hw-module fpd**

**Example:**

```
RP/0/RP0/CPU0:router# show hw-module fpd

                                                                    FPD Versions
                                                                   ==============
Location  Card type         HWver FPD device       ATR Status   Run    Programd
-------------------------------------------------------------------------------
0/0       NC55-36X100G      0.108 Bootloader           CURRENT    1.15    1.15
0/0       NC55-36X100G      0.108 IOFPGA               CURRENT    0.08    0.08
0/1       NC55-36X100G      0.203 Bootloader           CURRENT    1.15    1.15
0/1       NC55-36X100G      0.203 IOFPGA               CURRENT    0.08    0.08
0/2       NC55-36X100G      0.203 Bootloader           CURRENT    1.15    1.15
0/2       NC55-36X100G      0.203 IOFPGA               CURRENT    0.08    0.08
0/3       NC55-36X100G      0.203 Bootloader           CURRENT    1.15    1.15
0/3       NC55-36X100G      0.203 IOFPGA               CURRENT    0.08    0.08
0/4       NC55-36X100G      0.203 Bootloader           CURRENT    1.15    1.15
0/4       NC55-36X100G      0.203 IOFPGA               CURRENT    0.08    0.08
0/5       NC55-36X100G      0.203 Bootloader           CURRENT    1.15    1.15
0/5       NC55-36X100G      0.203 IOFPGA               CURRENT    0.08    0.08
0/6       NC55-36X100G      0.203 Bootloader           CURRENT    1.15    1.15
```

```
0/6       NC55-36X100G      0.203 IOFPGA              CURRENT    0.08    0.08
0/7       NC55-36X100G      0.203 Bootloader          CURRENT    1.15    1.15
0/7       NC55-36X100G      0.203 IOFPGA              CURRENT    0.08    0.08
0/RP0     NC55-RP           1.1   Bootloader          CURRENT    9.19    9.19
0/RP0     NC55-RP           1.1   IOFPGA              CURRENT    0.06    0.06
0/RP1     NC55-RP           1.1   Bootloader          CURRENT    9.19    9.19
0/RP1     NC55-RP           1.1   IOFPGA              CURRENT    0.06    0.06
0/FC0     NC55-5508-FC      0.109 Bootloader          CURRENT    1.64    1.64
0/FC0     NC55-5508-FC      0.109 IOFPGA              CURRENT    0.11    0.11
0/FC1     NC55-5508-FC      0.109 Bootloader          CURRENT    1.64    1.64
0/FC1     NC55-5508-FC      0.109 IOFPGA              CURRENT    0.11    0.11
0/FC2     NC55-5508-FC      0.109 Bootloader          CURRENT    1.64    1.64
0/FC2     NC55-5508-FC      0.109 IOFPGA              CURRENT    0.11    0.11
0/FC3     NC55-5508-FC      0.109 Bootloader          CURRENT    1.64    1.64
0/FC3     NC55-5508-FC      0.109 IOFPGA              CURRENT    0.11    0.11
0/FC4     NC55-5508-FC      0.109 Bootloader          CURRENT    1.64    1.64
0/FC4     NC55-5508-FC      0.109 IOFPGA              CURRENT    0.11    0.11
0/FC5     NC55-5508-FC      0.109 Bootloader          CURRENT    1.64    1.64
0/FC5     NC55-5508-FC      0.109 IOFPGA              CURRENT    0.11    0.11
0/SC0     NC55-SC           1.4   Bootloader          CURRENT    1.64    1.64
0/SC0     NC55-SC           1.4   IOFPGA              CURRENT    0.06    0.06
0/SC1     NC55-SC           1.4   Bootloader          CURRENT    1.64    1.64
0/SC1     NC55-SC           1.4   IOFPGA              CURRENT    0.06    0.06
```

Displays the list of hardware modules detected on the router.

**Note**
This command can be run from both XR VM and System Admin VM modes.

In the above output, some of the significant fields are:

- FPD Device- Name of the hardware component such as FPD, CFP, and so on.
- ATR-Attribute of the hardware component. Some of the attributes are:
  - B- Backup Image
  - S-Secure Image
  - P-Protected Image
- Status- Upgrade status of the firmware. The different states are:
  - CURRENT-The firmware version is the latest version.
  - READY-The firmware of the FPD is ready for an upgrade.
  - NOT READY-The firmware of the FPD is not ready for an upgrade.
  - NEED UPGD-A newer firmware version is available in the installed image. It is recommended that an upgrade be performed.
  - RLOAD REQ-The upgrade has been completed, and the ISO image requires a reload.
  - UPGD DONE-The firmware upgrade is successful.
  - UPGD FAIL- The firmware upgrade has failed.
  - BACK IMG-The firmware is corrupted. Reinstall the firmware.
  - UPGD SKIP-The upgrade has been skipped because the installed firmware version is higher than the one available in the image.

- Running- Current version of the firmware running on the FPD.

### What to do next

If it is required to replace a line card or route processor, use one of the two methods:

- Manual FPD upgrade:
  1. Insert the new line card or route processor.
  2. If `auto fpd upgrade` option is enabled in running configuration, use the **show hw-module fpd** command to check the status of the FPDs that are not activated. If the status is `RELOAD_REQ`, reload the line card or route processor.
  3. If `auto fpd upgrade` option is not enabled, use the **show hw-module fpd** command to check the FPDs that need to be upgraded. It is recommended to upgrade all the FPDs at once.
  4. Use manual FPD upgrade to upgrade all FPDs for line cards and route processors. Reload the line cards or route processors once the FPD upgrade is successful.
- Automatic FPD upgrade:
  1. If automatic FPD upgrade is not configured, use **fpd auto-upgrade enable** command to configure.
  2. Insert the line card or route processor.
  3. After the line card or route processor comes up, use the **show hw-module fpd** command to check the status of the FPDs that are not activated. If the status is `RELOAD_REQ`, reload the line card or route processor.
  4. Verify that all the other FPDs in the same node are either in `CURRENT` or `RELOAD_REQ` state before starting a manual reload of the router.

# Verify SDR Information

Secure domain routers (SDRs) divide a single physical system into multiple logically-separated routers. SDRs are also known as logical routers (LRs). On the router, only one SDR is supported. This SDR is termed the default-sdr. Every router is shipped with the default-sdr, which owns all RPs installed in the routing system. An instance of this SDR runs on line cards and route processors. Complete this task to verify the details of the SDR instances.

### Procedure

**Step 1** **admin**

**Example:**

```
RP/0/RP0/CPU0:router# admin
```

Enters mode.

**Step 2** **show sdr**

**Example:**

```
sysadmin-vm:0_RP0# show sdr
```

Displays the SDR information for every node.

```
sysadmin-vm:0_RP0# show sdr

sdr default-sdr
 location 0/0/VM1
  sdr-id             2
  IP Address of VM   192.0.4.3
  MAC address of VM  A4:6C:2A:2B:AA:A6
  VM State           RUNNING
  start-time         2015-12-03T15:38:38.74514+00:00
  Last Reload Reason "SMU:Reboot triggered by install"
  Reboot Count       2
 location 0/1/VM1
  sdr-id             2
  IP Address of VM   192.0.8.3
  MAC address of VM  B0:AA:77:E7:5E:DA
  VM State           RUNNING
  start-time         2015-12-03T15:38:39.730036+00:00
  Last Reload Reason "SMU:Reboot triggered by install"
  Reboot Count       2
 location 0/2/VM1
  sdr-id             2
  IP Address of VM   192.0.12.3
  MAC address of VM  B0:AA:77:E7:67:34
  VM State           RUNNING
  start-time         2015-12-03T15:38:38.886947+00:00
  Last Reload Reason "SMU:Reboot triggered by install"
  Reboot Count       2
 location 0/3/VM1
  sdr-id             2
  IP Address of VM   192.0.16.3
  MAC address of VM  B0:AA:77:E7:58:86
  VM State           RUNNING
  start-time         2015-12-03T15:38:40.391205+00:00
  Last Reload Reason "SMU:Reboot triggered by install"
  Reboot Count       2
 location 0/4/VM1
  sdr-id             2
  IP Address of VM   192.0.20.3
  MAC address of VM  B0:AA:77:E7:46:C2
  VM State           RUNNING
  start-time         2015-12-03T15:38:39.84469+00:00
  Last Reload Reason "SMU:Reboot triggered by install"
  Reboot Count       2
 location 0/5/VM1
  sdr-id             2
  IP Address of VM   192.0.24.3
  MAC address of VM  B0:AA:77:E7:84:40
  VM State           RUNNING
  start-time         2015-12-04T03:48:24.017443+00:00
  Last Reload Reason "VM_REQUESTED_UNGRACEFUL_RELOAD:Headless SDR"
  Reboot Count       3
 location 0/6/VM1
  sdr-id             2
  IP Address of VM   192.0.28.3
  MAC address of VM  B0:AA:77:E7:55:FE
```

```
 VM State           RUNNING
 start-time         2015-12-03T15:38:38.74753+00:00
 Last Reload Reason "SMU:Reboot triggered by install"
 Reboot Count       2
location 0/7/VM1
 sdr-id             2
 IP Address of VM   192.0.32.3
 MAC address of VM  B0:AA:77:E7:60:C6
 VM State           RUNNING
 start-time         2015-12-03T15:38:38.691481+00:00
 Last Reload Reason "SMU:Reboot triggered by install"
 Reboot Count       2
location 0/RP0/VM1
 sdr-id             2
 IP Address of VM   192.0.108.4
 MAC address of VM  10:05:CA:D7:FE:6F
 VM State           RUNNING
 start-time         2015-12-04T07:03:04.549294+00:00
 Last Reload Reason CARD_SHUTDOWN
 Reboot Count       1
location 0/RP1/VM1
 sdr-id             2
 IP Address of VM   192.0.112.4
 MAC address of VM  10:05:CA:D8:3F:43
 VM State           RUNNING
 start-time         2015-12-04T09:21:42.083046+00:00
 Last Reload Reason CARD_SHUTDOWN
 Reboot Count       1
```

For a functional SDR, the VM State is "RUNNING". If the SDR is not running on a node, no output is shown in the result, for that location.

### What to do next

If you find SDR is not running on a node, try reloading the node. To do that, use the **hw-module location** *node-id* **reload** command in the System Admin EXEC mode.

# Verify Interface Status

After the router has booted, all available interfaces must be discovered by the system. If interfaces are not discovered, it might indicate a malfunction in the unit. Complete this task to view the number of discovered interfaces.

## SUMMARY STEPS

1. **show ipv4 interface summary**

## DETAILED STEPS

### Procedure

**show ipv4 interface summary**

**Example:**

```
RP/0/RP0/CPU0:router#show ipv4 interface summary
```

When a router is turned on for the first time, all interfaces are in the 'unassigned' state. Verify that the total number of interfaces displayed in the result matches with the actual number of interfaces present on the router.

```
IP address      State   State           State           State
config          up,up   up,down         down,down       shutdown,down
--------------------------------------------------------------------------
Assigned        0       0               0               0
Unnumbered      0       0               0               0
Unassigned      0       0               0               4
```

In the above result:

- Assigned— An IP address is assigned to the interface.
- Unnumbered— Interface which has borrowed an IP address already configured on one of the other interfaces of the router.
- Unassigned—No IP address is assigned to the interface.

You can also use the **show interfaces brief** and **show interfaces summary** commands in the XR EXEC mode to verify the interface status.