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 Status of Hardware Modules, on page 1
- Verify Node Status, on page 3
- Verify Software Version, on page 4
- Verify Firmware Version, on page 5
- Verify Interface Status, on page 6
- Verify SDR Information, on page 7

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.

Procedure

Step 1 **admin**

Example:

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

Enters System Admin EXEC mode.

Note
Only the following Cisco NCS 540 router variants support this mode:

- N540-ACC-SYS
- N540X-ACC-SYS
- N540-24Z8Q2C-SYS

Step 2 **show platform**

Example:

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

Note
Only the following Cisco NCS 540 router variants support this mode:

- N540-ACC-SYS
- N540X-ACC-SYS
- N540-24Z8Q2C-SYS

Displays the list of hardware modules detected on the router.

```
Location  Card Type                HW State      SW State      Config State
------------------------------------------------------------------------------
0/RP0     N540-24Z8Q2C-M   OPERATIONAL    OPERATIONAL   NSHUT
0/FT0     N540-FAN   OPERATIONAL    N/A     NSHUT
0/FT1     N540-FAN   OPERATIONAL    N/A     NSHUT
0/FT2     N540-FAN   OPERATIONAL    N/A     NSHUT
0/FT3     N540-FAN   OPERATIONAL    N/A     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.

Step 3 **show hw-module fpd**

Example:

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

Displays the list of hardware modules detected on the router.

```
RP/0/RP0/CPU0:Router#show hw-module fpd
FPD Versions
=================
Location Card type      HWver FPD device ATR Status Running Programd
------------------------------------------------------------------------------
0/RP0    N540-24Z8Q2C-M 0.5   MB-MIFPGA      CURRENT 0.04    0.04
0/RP0    N540-24Z8Q2C-M 0.5   Bootloader     CURRENT 1.07    1.07
0/RP0    N540-24Z8Q2C-M 0.5   CPU-IOFPGA     CURRENT 0.03    0.03
0/RP0    N540-24Z8Q2C-M 0.5   MB-IOFPGA      CURRENT 0.16    0.16
RP/0/RP0/CPU0:ios#
```

```
RP/0/RP0/CPU0:Router#show hw-module fpd
Fri May 28 13:53:23.325 UTC
Auto-upgrade:Disabled
Attribute codes: B golden, P protect, S secure
FPD Versions
=================
Location Card type HWver FPD device ATR Status Running Programd Reload Loc
------------------------------------------------------------------------------------------------------

0/RP0/CPU0 N540X-6Z18G-SYS-A 0.2 IoFpga CURRENT 0.13 0.13 0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A 0.2 IoFpgaGolden B NEED UPGD 0.00 0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A 0.2 Prim-BootLoader CURRENT 10.07 10.07 0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A 0.2 StdbyFpga S CURRENT 0.28 0.28 0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A 0.2 StdbyFpgaGolden BS NEED UPGD 0.25 0/RP0
```

```
0/RP0/CPU0 N540X-6Z18G-SYS-A 0.2 TamFw S CURRENT 6.05 6.05 0/RP0
0/RP0/CPU0 N540X-6Z18G-SYS-A 0.2 TamFwGolden BS CURRENT 6.05 0/RP0
```

Verify Node Status

Each card on the router represents a node. The operational status of the node is verified using the **show platform** command. This command is to be executed independently from both XR and System Admin mode CLIs.

Note Only the following Cisco NCS 540 router variants support the System Admin mode:

- N540-ACC-SYS
- N540X-ACC-SYS
- N540-24Z8Q2C-SYS

Procedure

Step 1 **show platform**

Example:

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

The **show platform** command when executed from the XR EXEC mode displays the status of XR console running on various RPs and LCs.

```
RP/0/RP0/CPU0:<router>#show platform
Node   Type  State  Config state
--------------------------------------------------------------------------------
0/RP0/CPU0 N540-X-24Z8Q2C-M(Active) IOS XR RUN NSHUT
0/RP0/NPU0 Slice UP
0/FT0  N540-FAN OPERATIONAL  NSHUT
0/FT1  N540-FAN OPERATIONAL  NSHUT
0/FT2  N540-FAN OPERATIONAL  NSHUT
0/FT3  N540-FAN OPERATIONAL  NSHUT
```

```
RP/0/RP0/CPU0:Router#show platform
Fri May 28 13:52:46.172 UTC
Node         Type                          State         Config state
--------------------------------------------------------------------------------
0/RP0/CPU0   N540X-6Z18G-SYS-A(Active)   IOS XR RUN     NSHUT
0/PM0        N540L-PSU-FIXED-A           OPERATIONAL    NSHUT
0/PM1        N540L-PSU-FIXED-A           OPERATIONAL    NSHUT
0/FT0        N540L-FAN                   OPERATIONAL    NSHUT
```

Verify that all RPs are listed and their state is OPERATIONAL. This indicates that the XR console is operational on the cards.

Step 2 **admin**

Example:

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

Enters mode.

Step 3 **show platform**

Example:

```
#show platform
```

The **show platform** command when executed from the System Admin EXEC mode displays the status of all hardware units like cards (RPs, IMs and FCs,) and hardware modules (fan trays) on the router.

This is an example for single-chassis system:

```
RP/0/RP0/CPU0:<router>#sh platform
Thu Mar 29 06:50:06.788 UTC
Location  Card Type  HW State  SW State  Config State
------------------------------------------------------------------------------
0/RP0  N540-X-24Z8Q2C-M OPERATIONAL  OPERATIONAL  NSHUT
0/FT0  N540-FAN   OPERATIONAL  N/A    NSHUT
0/FT1  N540-FAN   OPERATIONAL  N/A    NSHUT
0/FT2  N540-FAN   OPERATIONAL  N/A    NSHUT
0/FT3  N540-FAN   OPERATIONAL  N/A    NSHUT
```

Verify that all cards installed on the router are displayed in the result. The software state of LCs/IMs and RPs and the hardware state of FC and FTs should be "OPERATIONAL". Various hardware and software states are listed here.

Hardware states:

- OPERATIONAL—Card is operating normally and is fully functional
- POWERED_ON—Power is on and the card is booting up
- FAILED—Card is powered on but has experienced some internal failure
- PRESENT—Card is in the shutdown state
- OFFLINE—User has changed the card state to OFFLINE. The card is accessible for diagnostics

Software states:

- OPERATIONAL—Software is operating normally and is fully functional
- SW_INACTIVE—Software is not completely operational
- FAILED—Software is operational but the card has experienced some internal failure

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:

```
Cisco IOS XR Software, Version <release-version>
Copyright (c) 2013-2017 by Cisco Systems, Inc.

Build Information:
Built By : <user>
Built On : <date and time stamp>
Build Host : iox-lnx-030
Workspace : /x.x.x/ncs540/ws
Version : <release-version>
Location : /opt/cisco/XR/packages/

cisco NCS-540 () processor
System uptime is 1 day, 16 hours, 18 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 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.

Procedure

show hw-module fpd

Example:

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.

Note
Only the following Cisco NCS 540 router variants support the System Admin mode:

- N540-ACC-SYS
- N540X-ACC-SYS
- N540-24Z8Q2C-SYS

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.

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.

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.

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.

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.

Note Only the following Cisco NCS 540 router variants support the System Admin mode:

- N540-ACC-SYS
- N540X-ACC-SYS
- N540-24Z8Q2C-SYS

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.

```
RP/0/RP0/CPU0:router#show  sdr
Type                 NodeName       NodeState      RedState       PartnerName
------------------------------------------------------------------------------
LC                   0/0/CPU0       IOS XR RUN     N/A            N/A
```

```
RP                  0/RP0/CPU0     IOS XR RUN     ACTIVE         NONE
Slice               0/RP0/NPU0     UP             N/A            N/A
N540-X-24Z8Q2C-M    0/RP0          OPERATIONAL                   N/A
N540-FAN            0/FT0          OPERATIONAL                   N/A
N540-FAN            0/FT1          OPERATIONAL                   N/A
N540-FAN            0/FT2          OPERATIONAL                   N/A
N540-FAN            0/FT3          OPERATIONAL                   N/A
```

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.