

Perform Preliminary Checks

After successfully logging into the XR VM 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 Active VMs, on page 1
- Verify Status of Hardware Modules, on page 4
- Verify Software Version, on page 5
- Verify Firmware Version, on page 5
- Verify Interface Status, on page 7
- Verify Fabric Plane, on page 7
- Verify SDR Information, on page 8

Verify Active VMs

On the router both the XR VM and the System Admin VM must be operational. Instances of both VMs should be running on every RP. Complete this task to verify the VMs are active.

SUMMARY STEPS

1. **admin**
2. **show redundancy summary**
3. **show vm**

DETAILED STEPS

Procedure

Step 1 **admin**

Example:

```
RP/0/RP0:hostname# admin
```

Enters System Admin EXEC mode.

Step 2 **show redundancy summary**

Example:

```
RP/0/RP0:hostname#show redundancy summary
Mon Mar 9 16:32:19.276 IST
Active Node Standby Node
----------- ------------
0/RP0 0/RP1 (Node Ready, NSR: Not Configured)
0/LC0 0/LC1 (Node Ready, NSR: Not Configured)
RP/0/RP0:hostname#
```

Displays the readiness of the VMs.

Step 3 **show vm**

Example:

```
sysadmin-vm:0_RP0#show vm
sysadmin-vm:0_RP1# sh vm

Location: 0/0
Id                Status        IP Address       HB Sent/Recv
--------------------------------------------------------------
sysadmin          running       192.0.64.1       NA/NA
default-sdr       running       192.0.64.3       1528/1528

Location: 0/1
Id                Status        IP Address       HB Sent/Recv
--------------------------------------------------------------
sysadmin          running       192.0.68.1       NA/NA
default-sdr       running       192.0.68.3       1528/1528

Location: 0/2
Id                Status        IP Address       HB Sent/Recv
--------------------------------------------------------------
sysadmin          running       192.0.72.1       NA/NA
default-sdr       running       192.0.72.3       1528/1528

Location: 0/3
Id                Status        IP Address       HB Sent/Recv
--------------------------------------------------------------
sysadmin          running       192.0.76.1       NA/NA
default-sdr       running       192.0.76.3       1528/1528

Location: 0/4
Id                Status        IP Address       HB Sent/Recv
--------------------------------------------------------------
sysadmin          running       192.0.80.1       NA/NA
default-sdr       running       192.0.80.3       1528/1528

Location: 0/5
Id                Status        IP Address       HB Sent/Recv
--------------------------------------------------------------
sysadmin          running       192.0.84.1       NA/NA
default-sdr       running       192.0.84.3       1529/1529

Location: 0/6
Id                Status        IP Address       HB Sent/Recv
--------------------------------------------------------------
sysadmin          running       192.0.88.1       NA/NA
default-sdr       running       192.0.88.3       1531/1531

Location: 0/7
Id                Status        IP Address       HB Sent/Recv
```

```
-------------------------------------------------------------
sysadmin          running       192.0.92.1       NA/NA
default-sdr       running       192.0.92.3       1531/1531

Location: 0/RP0
Id                Status        IP Address       HB Sent/Recv
-------------------------------------------------------------
sysadmin          running       192.0.0.1        NA/NA
default-sdr       running       192.0.0.4        29736/29736

Location: 0/RP1
Id                Status        IP Address       HB Sent/Recv
-------------------------------------------------------------
sysadmin          running       192.0.4.1        NA/NA
default-sdr       running       192.0.4.4        30534/30534
```

Displays the status of the VMs running on various nodes.

```
sysadmin-vm:0_RP0# sh vm
Mon Mar 9 07:52:06.173 UTC
------ VMs found at location 0/RP0 ------
Id : sysadmin
Status : running
IP Addr: 192.0.44.1
HB Interval : NA
Last HB Sent: NA
Last HB Rec : NA
-------
Id : default-sdr
Status : running
IP Addr: 192.0.44.4
HB Interval : 0 s 500000000 ns
Last HB Sent: 663743
Last HB Rec : 663743
-------
Id : default-sdr
Status : running
IP Addr: 192.0.44.6
HB Interval : 10 s 0 ns
Last HB Sent: 33183
Last HB Rec : 33183
-------
------ VMs found at location 0/RP1 ------
Id : sysadmin
Status : running
IP Addr: 192.0.88.1
HB Interval : NA
Last HB Sent: NA
Last HB Rec : NA
-------
Id : default-sdr
Status : running
IP Addr: 192.0.88.4
HB Interval : 0 s 500000000 ns
Last HB Sent: 663749
Last HB Rec : 663749
-------
Id : default-sdr
Status : running
IP Addr: 192.0.88.6
HB Interval : 10 s 0 ns
Last HB Sent: 33183
Last HB Rec : 33183
```

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

In the above result:

- Id—Name of the VM. "sysadmin" represents System Admin VM; "default-sdr" represents XR VM or LC VM
- Status—Status of the VM
- IP Addr—Internal IP address of the VM

If a VM is not running on a node, in the output of the **show vm** command, no output is shown for that node.

What to do next

If the XR VM is not running on a node, try reloading the node. To do so, use the **hw-module location** *node-id* **reload** command in the System Admin EXEC mode. Also, use the **show sdr** command in the System Admin EXEC mode to verify that the SDR is running on the node.

Verify Status of Hardware Modules

Hardware modules include RPs, LCs, fan trays, fabric cards, 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. Login to Cisco Transport Controller (CTC). For information on logging into CTC, see Login to CTC.
2. In the node view, click the **Inventory** tab.

DETAILED STEPS

Procedure

Step 1 Login to Cisco Transport Controller (CTC). For information on logging into CTC, see Login to CTC.

Step 2 In the node view, click the **Inventory** tab.
Displays the list of hardware modules detected on the system, their location, hardware type and state.

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 Software Version

The Cisco NCS 4018 system 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.

SUMMARY STEPS

1. Login to Cisco Transport Controller (CTC). For information on logging into CTC, see Login to CTC.
2. In the node view, verify the **Navigation/Summary Pane** in the left panel.

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	Login to Cisco Transport Controller (CTC). For information on logging into CTC, see Login to CTC.	
Step 2	In the node view, verify the **Navigation/Summary Pane** in the left panel.	Displays the information on the CTC software and Cisco IOS XR versions installed on the system.

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.

SUMMARY STEPS

1. **admin**
2. **show hw-module fpd**

DETAILED STEPS

Procedure

Step 1 **admin**

Example:

```
RP/0/RP0:hostname# admin
```

Enters System Admin EXEC mode.

Step 2 **show hw-module fpd**

Example:

```
sysadmin-vm:0_RP0#show hw-module fpd
```

Displays the firmware information for various hardware components of the router.

```
FPD Versions
===============
Location    Card type   HWver    FPD device       ATR Status   Run Programd
--------------------------------------------------------------------------------
0/1      NCS4K-20T-O-S   0.1     CCC-FPGA         CURRENT      3.26  3.26
0/1      NCS4K-20T-O-S   0.1     CCC-Power-On     CURRENT      1.14 1.14
0/1      NCS4K-20T-O-S   0.1     Ethernet-Switch  CURRENT      1.40 1.40
0/1      NCS4K-20T-O-S   0.1     PLX-8618         CURRENT      0.09 0.09
0/3      NCS4K-20T-O-S   0.1     CCC-FPGA         CURRENT      3.26 3.26
0/3      NCS4K-20T-O-S   0.1     CCC-Power-On     CURRENT      1.14 1.14
0/3      NCS4K-20T-O-S   0.1     Ethernet-Switch  CURRENT      1.40 1.40
0/3      NCS4K-20T-O-S   0.1     PLX-8618         CURRENT      0.09 0.09
0/5      NCS4K-2H-O-K    0.1     CCC-FPGA         CURRENT      3.34 3.34
0/5      NCS4K-2H-O-K    0.1     CCC-Power-On     CURRENT      1.14 1.14
0/5      NCS4K-2H-O-K    0.1     Ethernet-Switch  CURRENT      1.40 1.40
0/5      NCS4K-2H-O-K    0.1     PLX-8618         CURRENT      0.09 0.09
0/8      NCS4K-24LR-O-S  0.1     CCC-FPGA         CURRENT      4.32 4.32
0/8      NCS4K-24LR-O-S  0.1     CCC-Power-On     CURRENT      1.14 1.14
0/8      NCS4K-24LR-O-S  0.1     Ethernet-Switch  CURRENT      1.37 1.37
0/8      NCS4K-24LR-O-S  0.1     PLX-8618         CURRENT      0.09 0.09
0/10     NCS4K-20T-O-S   0.1     CCC-FPGA         CURRENT      2.13 2.13
0/10     NCS4K-20T-O-S   0.1     CCC-Power-On     CURRENT      1.09 1.09
0/10     NCS4K-20T-O-S   0.1     Ethernet-Switch  CURRENT      1.40 1.40
0/10     NCS4K-20T-O-S   0.1     PLX-8618         CURRENT      0.09 0.09
0/13     NCS4K-2H-W      0.1     CCC-FPGA         CURRENT      4.29 4.29
0/13     NCS4K-2H-W      0.1     CCC-Power-On     CURRENT      1.14 1.14
0/13     NCS4K-2H-W      0.1     Ethernet-Switch  CURRENT      1.35 1.35
0/13     NCS4K-2H-W      0.1     PLX-8608         CURRENT      0.08 0.08
0/RP0    NCS4K-RP        0.1     Backup-BIOS BSP  CURRENT      14.01
0/RP0    NCS4K-RP        0.1     Backup-CCC-PwrOn BSP NEED UPGD 1.12
0/RP0    NCS4K-RP        0.1     Backup-EthSwitch BSP CURRENT 1.36hu
```

In the result, the "RUN" column displays the current version of the firmware running on the FPD.

The "ATR Status" column displays the upgrade status of the firmware. It can display these states:

- 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.
- 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.

What to do next

- Upgrade the required firmware by using the **upgrade hw-module location all fpd** command in the System Admin EXEC mode. For the FPD upgrade to take effect, the router needs a power cycle.
- If required, turn on the auto fpd upgrade function. To do so, use the **fpd auto-upgrade enable** command in the System Admin Config mode. After it is enabled, if there are new FPD binaries present in the image being installed on the router, FPDs are automatically upgraded during the system upgrade operation.

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. Login to Cisco Transport Controller (CTC). For information on logging into CTC, see Login to CTC.
2. In the card view, click **Provisioning** > **Controllers**.

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	Login to Cisco Transport Controller (CTC). For information on logging into CTC, see Login to CTC.	
Step 2	In the card view, click **Provisioning** > **Controllers**.	Displays the admin and service state for each controller.

Verify Fabric Plane

The packets traverse from the ingress to the egress interfaces over the fabric plane. There can be a maximum of four fabric planes. The Cisco NCS routing system fabric is implemented through multiple redundant fabric cards (FCs) installed in the line card chassis.

Complete this task to verify the status of the fabric planes.

Before you begin

Install all required fabric cards on the router.

SUMMARY STEPS

1. **admin**
2. **show controller fabric plane all**

DETAILED STEPS

Procedure

Step 1 **admin**

Example:

```
RP/0/RP0:hostname# admin
```

Enters System Admin EXEC mode.

Step 2 **show controller fabric plane all**

Example:

```
sysadmin-vm:0_RP0#show controller fabric plane all
```

Displays the status of the switch fabric plane.

```
Plane Admin Plane up->dn up->mcast
Id State State counter counter
--------------------------------------
0 UP UP 0 0
1 UP UP 0 0
2 UP UP 0 0
3 UP UP 0 0
sysadmin-vm:0_RP0#
```

Verify that the Admin State and Plane State for all operational planes is "UP". Each fabric card represents one plane. If the Plane State is "DN", it indicates that traffic is not able to reach any destination using the plane. If the Plane State is "MCAST_DN", it indicates that some destinations are not reachable using the plane. This indicates that one fabric card in the line card chassis (LCC) is not operational. Reinstall the fabric card and verify that its state is "OPERATIONAL" in the result of **show platform** command in the System Admin EXEC mode.

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 Cisco NCS 4000 system, only one SDR is supported. This SDR is termed the default-sdr. Every router is shipped with the default-sdr, which owns all RPs and LCs installed in the routing system. An instance of this SDR runs on all nodes. Complete this task to verify the details of the SDR instances.

SUMMARY STEPS

1. **admin**
2. **sh sdr**

DETAILED STEPS

Procedure

Step 1 **admin**

Example:

```
RP/0/RP0:hostname# admin
```

Enters System Admin EXEC mode.

Step 2 **sh sdr**

Example:

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

Displays the SDR information for every node.

```
sdr default-sdr
location 0/RP0/VM1
sdr-id 2
IP Address of VM 192.0.44.4
MAC address of VM BE:CD:2B:84:5A:06
VM State RUNNING
start-time 2015-03-05T11:37:29.28203+00:00
Last Reload Reason CARD_SHUTDOWN
Reboot Count 1
location 0/RP0/VM2
sdr-id 2
IP Address of VM 192.0.44.6
MAC address of VM BE:CD:2B:84:5A:06
VM State RUNNING
start-time 2015-03-05T11:38:19.966782+00:00
Last Reload Reason CARD_SHUTDOWN
Reboot Count 1
location 0/RP1/VM1
sdr-id 2
IP Address of VM 192.0.88.4
MAC address of VM BE:CD:2B:84:58:06
VM State RUNNING
start-time 2015-03-05T11:37:27.430983+00:00
Last Reload Reason CARD_SHUTDOWN
Reboot Count 1
location 0/RP1/VM2
sdr-id 2
IP Address of VM 192.0.88.6
MAC address of VM BE:CD:2B:84:58:06
VM State RUNNING
start-time 2015-03-05T11:38:19.048927+00:00
Last Reload Reason CARD_SHUTDOWN
Reboot Count 1
sysadmin-vm:0_RP0#
```

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. At times the node performs a core dump. During such times the VM State is "Paused & Core Dump in Progress".

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.