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

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.

SUMMARY STEPS

1. **show version**

DETAILED STEPS

show version

Example:

```
RP/0/RSP0/CPU0:router# show version
```

Displays the version of the various software components installed on the router. The result includes the version of Cisco IOS XR software and its various components.

Example

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 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 route processor (RP). Complete this task to verify the VMs are active.

SUMMARY STEPS

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

DETAILED STEPS

Step 1   **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 2   **admin**

Example:

```
RP/0/RSP0/CPU0:router# admin
```

Enters administration EXEC mode.

Step 3   **show vm**

Example:

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

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.

- 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   mode. Also, use the **show sdr** command in the   mode to verify that the SDR is running on the node.

Verify Status of Hardware Modules

Hardware modules include RPs, 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.

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

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.

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

- Upgrade the required firmware by using the **upgrade hw-module location all fpd** command in the EXEC mode. For the FPD upgrade to take effect, the router needs a power cycle.

- It is recommended to upgrade all FPGAs on a given node using the **upgrade hw-module fpd all location** {**all** | *node-id*} command. Do not upgrade the FPGA on a node using the **upgrade hw-module fpd** <*individual-fpd*> **location** {**all** | *node-id*} as it may cause errors in booting the card.

- If required, turn on the auto fpd upgrade function. To do so, use the **fpd auto-upgrade enable** command in the XR configuration [(**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 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.

Step 1   **admin**

Example:

```
RP/0/RSP0/CPU0:router# admin
```

Enters administration EXEC 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   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

show ipv4 interface summary

Example:

```
RP/0/RSP0/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 mode to verify the interface status.