



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.



Note The output of the examples in the procedures is not from the latest software release. The output will change for any explicit references to the current release.

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Verify Status of Hardware Components

To verify the status of all the hardware components installed on the NCS 1002, perform the following procedure.

Before you begin

Ensure that all the required hardware components have been installed on the NCS 1002. For installation details, see *Cisco Network Convergence System 1000 Series Hardware Installation Guide*.

Procedure

Step 1 **show platform**

When you execute this command from the Cisco IOS XR EXEC mode, the status of the Cisco IOS XR is displayed.

Verify that the node state is Operational and admin state is UP.

Example:

```
RP/0/RP0/CPU0:ios# show platform
Wed Feb 28 03:28:40.004 UTC
Node                Type                                State                Config state
-----
0/RP0/CPU0          NCS1K-CNTLR(Active)                IOS XR RUN           NSHUT
```

- a) If the Cisco IOS XR is not operational, no output is shown in the result. In this case, verify the state of service domain router (SDR) on the node using the **show sdr** command in Cisco IOS XR mode.

The following example shows sample output from the **show sdr** command in Cisco IOS XR mode.

```
RP/0/RP0/CPU0:ios# show sdr
Wed Feb 28 03:28:45.845 UTC
Type                NodeName                NodeState                RedState                PartnerName
-----
RP                  0/RP0/CPU0              IOS XR RUN               ACTIVE                  NONE
NCS1K-CNTLR        0/RP0                    OPERATIONAL              N/A                    N/A
```

Step 2 admin

Enters System Admin EXEC mode.

Example:

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

Step 3 show platform

Displays information and status for each node in the system.

Example:

```
sysadmin-vm:0_RP0# show platform
Wed Feb 28 03:31:53.672 UTC
Location  Card Type                                HW State                SW State                Config State
-----
0/0       NCS1002-K9                              OPERATIONAL             N/A                    NSHUT
0/RP0     NCS1K-CNTLR                              OPERATIONAL             OPERATIONAL            NSHUT
0/FT0     NCS1K-FTA                                OPERATIONAL             N/A                    NSHUT
0/FT1     NCS1K-FTA                                OPERATIONAL             N/A                    NSHUT
0/FT2     NCS1K-FTA                                OPERATIONAL             N/A                    NSHUT
```

Verify that all components of the NCS 1002 are displayed in the result. The software state and the hardware state must be in the OPERATIONAL state. The various hardware and software states are:

Hardware states:

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

Step 4 show platform detail

Displays the hardware and software states, and other details of the node.

Example:

```

sysadmin-vm:0_RP0# show platform detail
Wed Feb 28 03:33:14.557 UTC

Platform Information for 0/0
  PID : NCS1002-K9
  Description : "Network Convergence System 1002 20 QSFP28/QSFP+ slots"
  VID/SN : V01
  HW Oper State : OPERATIONAL
  SW Oper State : N/A
  Configuration : "NSHUT RST"
  HW Version : 0.1
  Last Event : HW_EVENT_OK
  Last Event Reason : "HW Event OK"

Platform Information for 0/RP0
  PID : NCS1K-CNTRLR
  Description : "Network Convergence System 1000 Controller"
  VID/SN : V03
  HW Oper State : OPERATIONAL
  SW Oper State : OPERATIONAL
  Configuration : "NSHUT RST"
  HW Version : 0.1
  Last Event : HW_EVENT_OK
  Last Event Reason : "HW Event OK"

Platform Information for 0/FT0
  PID : NCS1K-FTA
  Description : "Network Convergence System 1000 Fan"
  VID/SN : V01
  HW Oper State : OPERATIONAL
  SW Oper State : N/A
  Configuration : "NSHUT RST"
  HW Version : 0.1
  Last Event : HW_EVENT_OK
  Last Event Reason : "HW Operational"

Platform Information for 0/FT1
  PID : NCS1K-FTA
  Description : "Network Convergence System 1000 Fan"
  VID/SN : V01
  HW Oper State : OPERATIONAL
  SW Oper State : N/A
  Configuration : "NSHUT RST"
  HW Version : 0.1
  Last Event : HW_EVENT_OK
  Last Event Reason : "HW Operational"

Platform Information for 0/FT2
  PID : NCS1K-FTA
  Description : "Network Convergence System 1000 Fan"
  VID/SN : V01
  HW Oper State : OPERATIONAL
  SW Oper State : N/A
  Configuration : "NSHUT RST"

```

```

HW Version :      0.1
Last Event :      HW_EVENT_OK
Last Event Reason : "HW Operational"

```

Step 5 show inventory

Displays the details of the physical entities of the NCS 1002 along with the details of QSFPs and CFPs when you execute this command in the Cisco IOS XR EXEC mode.

Example:

```

RP/0/RP0/CPU0:ios# show inventory
Fri May 18 10:46:51.323 UTC
NAME: "0/0", DESCR: "Network Convergence System 1002 20 QSFP28/QSFP+ slots"
PID: NCS1002-K9      , VID: V03, SN: CAT2116B170

NAME: "0/0-Optics0/0/0/1", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: SPQCELRCDFB    , VID: 01 , SN: G9I2011804

NAME: "0/0-Optics0/0/0/4", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: TR-FC13L-N00   , VID: 01 , SN: INGAJ0930306

NAME: "0/0-Optics0/0/0/6", DESCR: "Cisco CFP2 DWDM Pluggable Optics"
PID: ONS-CFP2-WDM   , VID: V01 , SN: OUK1936006S

NAME: "0/0-Optics0/0/0/7", DESCR: "Cisco 4x10GE QSFP+ LR-S Pluggable Optics Module"
PID: QSFP-4X10G-LR-S , VID: V02 , SN: INL20410069

NAME: "0/0-Optics0/0/0/8-LANE1", DESCR: "Cisco 10G SFP LR Pluggable Optics Module"
PID: SFP-10G-LR     , VID: V01 , SN: SPC1907074R

NAME: "0/0-Optics0/0/0/9", DESCR: "Cisco 40GE QSFP+ SR4 Pluggable Optics Module"
PID: QSFP-40G-SR4   , VID: V03 , SN: JFQ20332088

NAME: "0/0-Optics0/0/0/10", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: SPQCELRCDFB    , VID: 01 , SN: GAV2008935

NAME: "0/0-Optics0/0/0/11-LANE1", DESCR: "Cisco 10G SFP LR Pluggable Optics Module"
PID: SFP-10G-LR     , VID: V01 , SN: SPC190707YP

NAME: "0/0-Optics0/0/0/17-LANE1", DESCR: "Cisco 10G SFP SR Pluggable Optics Module"
PID: SFP-10G-SR     , VID: V03 , SN: JUR1904073P

NAME: "0/0-Optics0/0/0/18", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: FTLC1151RDPL   , VID: A0 , SN: UVE1C6C

NAME: "0/0-Optics0/0/0/19", DESCR: "Cisco CFP2 DWDM Pluggable Optics"
PID: ONS-CFP2-WDM   , VID: V05 , SN: OVE204404PA

NAME: "0/0-Optics0/0/0/21", DESCR: "Cisco 4x10GE QSFP+ LR-S Pluggable Optics Module"
PID: QSFP-4x10G-LR-S , VID: V01 , SN: INL20200012

NAME: "0/0-Optics0/0/0/22-LANE1", DESCR: "Cisco 10G SFP LR Pluggable Optics Module"
PID: SFP-10G-LR     , VID: V01 , SN: SPC190707YS

NAME: "0/0-Optics0/0/0/23", DESCR: "Cisco 40GE QSFP+ SR4 Pluggable Optics Module"
PID: QSFP-40G-SR4   , VID: V03 , SN: JFQ2033201H

NAME: "0/0-Optics0/0/0/24", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: FTLC1151RDPL   , VID: A0 , SN: UWD2QMM

NAME: "0/0-Optics0/0/0/25-LANE1", DESCR: "Cisco 10G SFP ER Pluggable Optics Module"
PID: SFP-10G-ER     , VID: V02 , SN: ONT213100BW

NAME: "0/RP0", DESCR: "Network Convergence System 1000 Controller"

```

```

PID: NCS1K-CNTRLR      , VID: V04, SN: CAT2052B0FZ

NAME: "Rack 0", DESCR: "Network Convergence System 1002 20 QSFP28/QSFP+ slots"
PID: NCS1002-K9       , VID: V03, SN: CAT2116B170

NAME: "0/FT0", DESCR: "Network Convergence System 1000 Fan"
PID: NCS1K-FTA       , VID: V01, SN: N/A

NAME: "0/FT1", DESCR: "Network Convergence System 1000 Fan"
PID: NCS1K-FTA       , VID: V01, SN: N/A

NAME: "0/FT2", DESCR: "Network Convergence System 1000 Fan"
PID: NCS1K-FTA       , VID: V01, SN: N/A

NAME: "0/PM0", DESCR: "Network Convergence System 1000 2KW AC PSU"
PID: NCS1K-2KW-AC    , VID: V01, SN: POG2041J0BW

NAME: "0/PM1", DESCR: "Network Convergence System 1000 2KW AC PSU"
PID: NCS1K-2KW-AC    , VID: V01, SN: POG2041J01C

```

You can verify if any QSFP or CFP has been removed from the NCS 1002.

Verify Node Status

You can verify the operational status of all the nodes using the **show platform** command. You can execute this command independently from both the Cisco IOS XR EXEC and System Admin EXEC modes.

To verify the operational status of all the nodes, perform the following procedure.

Procedure

Step 1 **show platform**

When you execute this command from the XR EXEC mode, the status of the Cisco IOS XR is displayed.

Verify that the node state is Operational and admin state is UP.

Example:

```

RP/0/RP0/CPU0:ios# show platform
Wed Feb 28 03:28:40.004 UTC
Node                Type                State                Config state
-----
0/RP0/CPU0          NCS1K-CNTRLR(Active)  IOS XR RUN          NSHUT

```

If the Cisco IOS XR is not operational, no output is shown in the result. In this case, verify the state of SDR on the node using the **show sdr** command in the System Admin EXEC mode.

Step 2 **admin**

Enters System Admin EXEC mode.

Example:

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

Step 3 **show platform**

Displays information and status for each node in the system.

Example:

```
sysadmin-vm:0_RP0# show platform
Wed Feb 28 03:31:53.672 UTC
Location  Card Type                HW State    SW State    Config State
-----
0/0       NCS1002-K9                     OPERATIONAL N/A         NSHUT
0/RP0     NCS1K-CNTLR                    OPERATIONAL OPERATIONAL NSHUT
0/FT0     NCS1K-FTA                      OPERATIONAL N/A         NSHUT
0/FT1     NCS1K-FTA                      OPERATIONAL N/A         NSHUT
0/FT2     NCS1K-FTA                      OPERATIONAL N/A         NSHUT
```

Verify that all the modules of the NCS 1002 are displayed in the result. The software state and the hardware state must be in the OPERATIONAL state. The various hardware and software states are:

Hardware states:

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

Software states:

- OPERATIONAL—Software is operating normally and is fully functional.
- DIAG_MODE—User has changed the card state to OFFLINE for diagnosis.
- SW_INACTIVE—Software is not completely operational.
- FAILED—Software is operational but the card has experienced some internal failure.

Step 4 show platform detail

Displays the hardware and software states, and other details of the node.

Example:

```
sysadmin-vm:0_RP0# show platform detail
Wed Feb 28 03:33:14.557 UTC

Platform Information for 0/0
PID : NCS1002-K9
Description : "Network Convergence System 1002 20 QSFP28/QSFP+ slots"
VID/SN : V01
HW Oper State : OPERATIONAL
SW Oper State : N/A
Configuration : "NSHUT RST"
HW Version : 0.1
Last Event : HW_EVENT_OK
Last Event Reason : "HW Event OK"

Platform Information for 0/RP0
PID : NCS1K-CNTLR
Description : "Network Convergence System 1000 Controller"
VID/SN : V03
HW Oper State : OPERATIONAL
```

```
SW Oper State :      OPERATIONAL
Configuration :      "NSHUT_RST"
HW Version :         0.1
Last Event :         HW_EVENT_OK
Last Event Reason :  "HW Event OK"

Platform Information for 0/FT0
PID :                NCS1K-FTA
Description :        "Network Convergence System 1000 Fan"
VID/SN :            V01
HW Oper State :     OPERATIONAL
SW Oper State :     N/A
Configuration :     "NSHUT_RST"
HW Version :        0.1
Last Event :        HW_EVENT_OK
Last Event Reason : "HW Operational"

Platform Information for 0/FT1
PID :                NCS1K-FTA
Description :        "Network Convergence System 1000 Fan"
VID/SN :            V01
HW Oper State :     OPERATIONAL
SW Oper State :     N/A
Configuration :     "NSHUT_RST"
HW Version :        0.1
Last Event :        HW_EVENT_OK
Last Event Reason : "HW Operational"

Platform Information for 0/FT2
PID :                NCS1K-FTA
Description :        "Network Convergence System 1000 Fan"
VID/SN :            V01
HW Oper State :     OPERATIONAL
SW Oper State :     N/A
Configuration :     "NSHUT_RST"
HW Version :        0.1
Last Event :        HW_EVENT_OK
Last Event Reason : "HW Operational"
```

Verify Software Version

The NCS 1002 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 NCS 1002.

To verify the version of Cisco IOS XR software running on the NCS 1002, perform the following procedure.

Procedure

show version

Displays the software version and details such as system uptime.

Example:

```
RP/0/RP0/CPU0:ios# show version
Wed Feb 10 19:35:38.274 IST
```

```
Cisco IOS XR Software, Version 7.3.2
Copyright (c) 2013-2021 by Cisco Systems, Inc.
```

```
Build Information:
  Built By      : ingunawa
  Built On     : Tue Feb  9 11:45:12 PST 2021
  Built Host   : iox-lnx-068
  Workspace    : /auto/iox-lnx-068-san1/prod/7.3.2/ncs1k/ws
  Version     : 7.3.2
  Location    : /opt/cisco/XR/packages/
  Label      : 7.3.2
```

```
cisco NCS-1002 () processor
System uptime is 3 hours 37 minutes
```

What to do next

Verify the result to ascertain whether a system upgrade is required. If the upgrade is required, see the [Perform System Upgrade and Install Feature Packages](#) chapter.

Verify Firmware Version

The firmware on various hardware components of the NCS 1002 must be compatible with the installed Cisco IOS XR image. Incompatibility may cause the NCS 1002 to malfunction.

To verify the firmware version, perform the following procedure.

Procedure

Step 1 show hw-module fpd

```
Wed Feb 10 19:35:29.371 IST
```

```
Auto-upgrade:Disabled
```

Location	Card type	HWver	FPD device	ATR	Status	FPD Versions	
						Running	Programd
0/0	NCS1002-K9	1.2	CDSP_PORT_05		CURRENT	3.77	3.77
0/0	NCS1002-K9	1.2	CDSP_PORT_06		CURRENT	3.77	3.77
0/0	NCS1002-K9	1.2	CDSP_PORT_12		CURRENT	3.77	3.77
0/0	NCS1002-K9	1.2	CDSP_PORT_13		CURRENT	3.77	3.77
0/0	NCS1002-K9	1.2	CDSP_PORT_19		CURRENT	3.77	3.77
0/0	NCS1002-K9	1.2	CDSP_PORT_20		CURRENT	3.77	3.77
0/0	NCS1002-K9	1.2	CDSP_PORT_26		CURRENT	3.77	3.77
0/0	NCS1002-K9	1.2	CDSP_PORT_27		CURRENT	3.77	3.77
0/0	NCS1002-K9	2.0	CFP2_PORT_05		CURRENT	4.40	4.40
0/0	NCS1002-K9	2.1	CFP2_PORT_06		CURRENT	5.52	5.52
0/0	NCS1002-K9	2.1	CFP2_PORT_12		CURRENT	5.52	5.52
0/0	NCS1002-K9	0.0	CFP2_PORT_13		CURRENT	1.01	1.01
0/0	NCS1002-K9	2.1	CFP2_PORT_19		CURRENT	5.52	5.52
0/0	NCS1002-K9	2.1	CFP2_PORT_20		CURRENT	5.52	5.52
0/0	NCS1002-K9	4.2	CFP2_PORT_26		CURRENT	3.20	3.20
0/0	NCS1002-K9	2.1	CFP2_PORT_27		CURRENT	5.52	5.52
0/0	NCS1002-K9	0.1	CTRL_BKP_LOW	B	CURRENT		2.23

0/0	NCS1002-K9	0.1	CTRL_BKP_UP	B	CURRENT		2.23
0/0	NCS1002-K9	0.1	CTRL_FPGA_LOW		CURRENT	2.23	2.23
0/0	NCS1002-K9	0.1	CTRL_FPGA_UP		CURRENT	2.23	2.23
0/RP0	NCS1K-CNTLR	0.1	BIOS_Backup	BS	CURRENT		15.10
0/RP0	NCS1K-CNTLR	0.1	BIOS_Primary	S	CURRENT	15.10	15.10
0/RP0	NCS1K-CNTLR	0.1	Daisy_Duke_BKP	BS	CURRENT		0.20
0/RP0	NCS1K-CNTLR	0.1	Daisy_Duke_FPGA	S	CURRENT	0.20	0.20
0/PM0	NCS1K-2KW-AC	0.0	PO-PrimCU		CURRENT	4.00	4.00
0/PM1	NCS1K-2KW-AC	0.0	PO-PrimCU		CURRENT	4.00	4.00

Displays the firmware information of various hardware components of the NCS 1002 in the Cisco IOS XR EXEC mode.

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.

Step 2 `show hw-module slice slice_number`

Displays the slice and Datapath FPGA (DP-FPGA) information of the NCS 1002.

Example:

```
RP/0/RP0/CPU0:ios# show hw-module slice 0
Wed Feb 28 04:01:45.828 UTC
Slice ID:                0
Status:                  Provisioned
Client Bitrate:         10
Trunk Bitrate:          100
DP FPGA FW Type:       XMG1
```

```

DP FPGA FW Version:      01.01
HW Status:              CURRENT

Encryption Supported:   FALSE
LLDP Drop Enabled:     FALSE
Client Port - Trunk Port      CoherentDSP0/0/0/5   CoherentDSP0/0/0/6
Traffic Split Percentage

TenGigEctrler0/0/0/0/1      100                0
TenGigEctrler0/0/0/0/2      100                0
TenGigEctrler0/0/0/0/3      100                0
TenGigEctrler0/0/0/0/4      100                0
TenGigEctrler0/0/0/1/1      100                0
TenGigEctrler0/0/0/1/2      100                0
TenGigEctrler0/0/0/1/3      100                0
TenGigEctrler0/0/0/1/4      100                0
TenGigEctrler0/0/0/2/1      0                  100
TenGigEctrler0/0/0/2/2      0                  100
TenGigEctrler0/0/0/2/3      100                0
TenGigEctrler0/0/0/2/4      100                0
TenGigEctrler0/0/0/3/1      0                  100
TenGigEctrler0/0/0/3/2      0                  100
TenGigEctrler0/0/0/3/3      0                  100
TenGigEctrler0/0/0/3/4      0                  100
TenGigEctrler0/0/0/4/1      0                  100
TenGigEctrler0/0/0/4/2      0                  100
TenGigEctrler0/0/0/4/3      0                  100
TenGigEctrler0/0/0/4/4      0                  100

```

In the above output, DP FPGA Version indicates the image of the datapath FPGA. Here, F-203 is the image version of the 40 G image. The CURRENT value of the HW Status parameter indicates that the firmware version is the latest.

When the DP FPGA Version is T, it indicates 10 G. If the DP FPGA Version is H, it indicates 100 G image versions. If Need UPG appears in the output, you must upgrade the slice to get the updated DP FPGA using the **upgrade hw-module slice *slice_number* re-provision** command.

What to do next

Upgrading the Firmware Version of Hardware Components

Notes for Release 6.0.1

- You can upgrade the firmware version of the power modules, BIOS, CFP2, or Coherent DSP of the NCS 1002. For details on upgrading the firmware version of the power modules, see [Upgrading the Firmware](#)
- You can upgrade both BIOS_Primary and BIOS_Backup.
- You can upgrade the BIOS_Backup only if the Programmed FPD version of the Daisy Duke FPGA is 0.15. If the FPD version of the Daisy Duke FPGA is not 0.15, the state of the BIOS_Backup is NOT READY state.

Use this procedure to upgrade BIOS_Backup.

1. Upgrade Daisy Duke FPGA.
2. Use the reload command to activate Daisy Duke FPGA.
3. Use the upgrade command to upgrade BIOS_Backup separately.

Use the **show fpd package** command to display the FPD image version available with this software release for each hardware component.

```
sysadmin-vm:0_RP0# show fpd package
Wed Feb 28 03:35:19.382 UTC
```

```
=====
                                     Field Programmable Device Package
                                     =====
Card Type          FPD Description          Req   SW   Min Req  Min Req
                                                 Reload Ver   SW Ver  Board Ver
=====
NCS1002            CTRL_BKP_LOW             YES   2.23  2.23     0.1
                   CTRL_FPGA_LOW            YES   2.23  2.23     0.1
-----
NCS1002            CTRL_BKP_UP              YES   2.23  2.23     0.1
                   CTRL_FPGA_UP             YES   2.23  2.23     0.1
NCS1002--RP       BIOS_Backup              YES   14.00 14.00    0.1
                   BIOS_Primary             YES   14.00 14.00    0.1
                   Daisy_Duke_BKP           YES   0.15  0.15     0.1
                   Daisy_Duke_FPGA          YES   0.17  0.17     0.1
-----
```

Upgrade all the FPDs using the **upgrade hw-module location all fpd all** command in the Cisco IOS XR EXEC mode. After an upgrade is completed, the Status column shows RLOAD REQ if the software requires reload.

If Reload is Required

If the FPGA location is 0/RP0, use the **admin hw-module location 0/RP0 reload** command. This command reboots only the CPU. As a result, traffic is not impacted. If the FPGA location is 0/0, use the **admin hw-module location all reload** command. This command reboots the chassis. As a result, traffic is impacted. After the reload is completed, the new FPGA runs the current version.

If Firmware Upgrade Fails

If the firmware upgrade fails, use the **show logging** command to view the details and upgrade the firmware again using the above commands.

Notes for Release 6.1.2

NCS 1002 uses signed images from R6.1.2. Hence, the firmware must be upgraded to identify the signed images. When the user needs to use the MACsec feature and upgrades from R6.0.1 to 6.1.2, the control FPGA (CTRL_BKP_UP, CTRL_BKP_LOW, CTRL_FPGA_UP, and CTRL_FPGA_LOW) must be upgraded to the latest firmware version provided by R6.1.2.

Verify Management Interface Status

To verify the management interface status, perform the following procedure.

Procedure

```
show interfaces mgmtEth instance
```

Displays the management interface configuration.

Example:

```
RP/0/RP0/CPU0:ios# show interfaces MgmtEth 0/RP0/CPU0/0
Wed Feb 28 03:30:35.525 UTC
MgmtEth0/RP0/CPU0/0 is up, line protocol is up
Interface state transitions: 1
Hardware is Management Ethernet, address is 501c.bf10.9fc0 (bia 501c.bf10.9fc0)
Internet address is 10.77.132.68/24
MTU 1514 bytes, BW 100000 Kbit (Max: 100000 Kbit)
    reliability 255/255, txload 0/255, rxload 0/255
Encapsulation ARPA,
Full-duplex, 100Mb/s, CX, link type is autonegotiation
loopback not set,
Last link flapped 1d21h
ARP type ARPA, ARP timeout 04:00:00
Last input 00:00:00, output 00:02:38
Last clearing of "show interface" counters never
5 minute input rate 2000 bits/sec, 4 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
 852455 packets input, 58601651 bytes, 0 total input drops
 0 drops for unrecognized upper-level protocol
 Received 560680 broadcast packets, 290268 multicast packets
    0 runts, 0 giants, 0 throttles, 0 parity
 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
1561 packets output, 93270 bytes, 0 total output drops
Output 0 broadcast packets, 0 multicast packets
0 output errors, 0 underruns, 0 applique, 0 resets
0 output buffer failures, 0 output buffers swapped out
1 carrier transitions
```

In the above result, the management interface is administratively down.

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

- The following example shows sample output from the **show interfaces summary** command.

```
RP/0/RP0/CPU0:ios# show interfaces summary
Wed Feb 28 03:30:41.991 UTC
Interface Type          Total    UP      Down    Admin Down
-----
ALL TYPES                4        2       0        2
-----
IFT_ETHERNET            3        1       0        2
IFT_NULL                 1        1       0        0
```

- The following example shows sample output from the **show interfaces brief** command.

```
RP/0/RP0/CPU0:ios# show interfaces brief
Wed Feb 28 03:30:47.996 UTC

          Intf      Intf      LineP
          Name      State     State
-----
          Nu0       up        up
Mg0/RP0/CPU0/0      up        up
Mg0/RP0/CPU0/1  admin-down  admin-down
Mg0/RP0/CPU0/2  admin-down  admin-down
          Encap  MTU      BW
          Type (byte) (Kbps)
-----
          Null  1500     0
Mg0/RP0/CPU0/0  ARPA  1514    100000
Mg0/RP0/CPU0/1  ARPA  1514    1000000
Mg0/RP0/CPU0/2  ARPA  1514    1000000
```

What to do next

If the management interface is administratively down, perform the following steps:

- Check the Ethernet cable connection.
- Verify the IP configuration of the management interface. For details on configuring the management interface, see the *Bring-up NCS 1002* chapter.
- Verify whether the management interface is in the no shut state using the **show running-config interface mgmtEth** command.

The following example shows sample output from the **show running-config interface mgmtEth** command.

```
RP/0/RP0/CPU0:ios#show running-config interface mgmtEth 0/RP0/CPU0/0
Fri Nov 13 19:42:54.368 UTC
interface MgmtEth0/RP0/CPU0/0
  ipv4 address 10.58.227.183 255.255.255.0
```

!

In the above output, the management interface is in the no shut state.

Verify Alarms

You can view the alarm information using the **show alarms** command.

Procedure

```
show alarms [ brief [ card | rack | system ] [ location location ] [ active | history ] | detail
[ card | rack | system ] [ location location ] [ active | clients | history | stats ] ]
```

Displays alarms in brief or detail.

Example:

```
RP/0/RP0/CPU0:ios# show alarms brief card location 0/RP0/CPU0 active
```

```
Thu Mar 8 17:51:47.237 UTC
```

```
-----
Active Alarms
-----
```

Location	Severity	Group	Set Time	Description
0/0 Is Provisioned Without K9sec	Minor	Slice Package Or K9sec	03/07/2018 07:33:43 UTC	Encrypted Slice Package Incomplete
0/0 Improper Removal	Critical	Controller	03/07/2018 07:37:19 UTC	Optics0/0/0/10 -
0/0 Improper Removal	Critical	Controller	03/07/2018 07:38:17 UTC	Optics0/0/0/2 -
0/0	Critical	Controller	03/07/2018 07:38:17 UTC	Optics0/0/0/3 -

Improper Removal

0/0	Major	Ethernet	03/07/2018 08:36:11 UTC	
HundredGigECtrlr0/0/0/11 - Remote Fault				
0/0	Critical	Controller	03/07/2018 08:39:27 UTC	Optics0/0/0/24 -
Improper Removal				
0/0	Major	Ethernet	03/07/2018 08:39:28 UTC	
HundredGigECtrlr0/0/0/25 - Remote Fault				
0/0	Critical	Controller	03/07/2018 08:40:40 UTC	Optics0/0/0/16 -
Improper Removal				
0/0	Critical	Controller	03/07/2018 08:40:40 UTC	Optics0/0/0/17 -
Improper Removal				
0/0	Major	Ethernet	03/07/2018 08:40:51 UTC	
TenGigECtrlr0/0/0/18/4 - Remote Fault				
0/0	Major	Ethernet	03/07/2018 08:36:14 UTC	TenGigECtrlr0/0/0/4/2
- Remote Fault				
0/0	Major	Ethernet	03/07/2018 20:37:16 UTC	
TenGigECtrlr0/0/0/18/2 - Remote Fault				
0/0	Major	Ethernet	03/07/2018 08:36:12 UTC	TenGigECtrlr0/0/0/4/4
- Remote Fault				
0/0	Major	Ethernet	03/08/2018 17:51:34 UTC	TenGigECtrlr0/0/0/4/3
- Loss of Synchronization The Data Interface				
0/0	Major	Ethernet	03/08/2018 17:51:34 UTC	
TenGigECtrlr0/0/0/18/3 - Loss of Synchronization The Data Interface				
0/0	Major	Ethernet	03/07/2018 08:36:12 UTC	TenGigECtrlr0/0/0/4/1
- Remote Fault				
0/0	Major	Ethernet	03/07/2018 08:40:50 UTC	
TenGigECtrlr0/0/0/18/1 - Remote Fault				

What to do next

For more information about alarms and steps to clear them, see the *Alarm Troubleshooting* chapter of the *Cisco NCS 1000 Series Troubleshooting Guide*.

Verify Environmental Parameters

The **show environment** command displays the environmental parameters of the NCS 1002.

To verify that the environmental parameters are as expected, perform the following procedure.

Procedure

Step 1 admin

Enters System Admin EXEC mode.

Example:

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

Step 2 show environment [all | fan | power | voltages | current | temperatures] [location | location]

Displays the environmental parameters of the NCS 1002.

Example:

The following example shows sample output from the **show environment** command with the **fan** keyword.

```
sysadmin-vm:0_RP0# show environment fan
Wed Feb 28 03:34:08.625 UTC
=====
                        Fan speed (rpm)
Location      FRU Type      FAN_0
-----
0/FT0        NCS1K-FTA        5400
0/FT1        NCS1K-FTA        5340
0/FT2        NCS1K-FTA        5460
0/PM0        NCS1K-2KW-AC     0
0/PM1        NCS1K-2KW-AC    9664
```

The following example shows sample output from the **show environment** command with the **temperatures** keyword.

```
sysadmin-vm:0_RP0# show environment temperatures location 0/RP0
Wed Feb 28 03:34:16.110 UTC
=====
Location  TEMPERATURE      Value  Crit Major Minor Minor Major  Crit
          Sensor      (deg C) (Lo) (Lo) (Lo) (Hi) (Hi) (Hi)
-----
0/RP0
          Thermistor 1      32    -10   0   0   55   55   85
          Thermistor 2      32    -10   0   0   55   55   85
          Hot Spot Temperature  31    -10   0   0   55   55   85
```

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

```
sysadmin-vm:0_RP0# show environment power
Wed Feb 28 03:34:28.920 UTC
=====
CHASSIS LEVEL POWER INFO: 0
=====
          Total output power capacity (N + 1)      :    2000W +    0W
          Total output power required                :    975W
```

Verify Environmental Parameters

```
Total power input           : 272W
Total power output          : 227W
```

Power Group 0:

```
=====
Power      Supply  -----Input-----  -----Output---  Status
Module    Type    Volts   Amps   Volts   Amps
=====
0/PM0     2kW-AC    0.0     0.0    12.0    0.0    FAILED or NO PWR
```

```
Total of Power Group 0:    0W/    0.0A    0W/    0.0A
```

Power Group 1:

```
=====
Power      Supply  -----Input-----  -----Output---  Status
Module    Type    Volts   Amps   Volts   Amps
=====
0/PM1     2kW-AC    226.5   1.2    12.0    18.9   OK
Total of Power Group 1:    272W/   1.2A    227W/   18.9A
```

```
=====
Location   Card Type           Power      Power      Status
              Allocated    Used
              Watts      Watts
=====
0/0        NCS1002-K9          820        -          ON
0/RP0      NCS1K-CNTLR         35         -          ON
0/FT0      NCS1K-FTA           40         -          ON
0/FT1      NCS1K-FTA           40         -          ON
0/FT2      NCS1K-FTA           40         -          ON
```

The following example shows sample output from the **show environment** command with the **voltages** keyword.

```
sysadmin-vm:0_RP0# show environment voltages location 0/RP0
Wed Feb 28 03:34:34.750 UTC
```

```
=====
Location  VOLTAGE           Value  Crit Minor Minor  Crit
          Sensor              (mV)  (Lo) (Lo) (Hi) (Hi)
-----
0/RP0
          VP1P0_CPU          1001   900   950  1050  1100
          CPU_CORE_VCC    705    400   450  1350  1400
          CPU_CORE_VNN    943    400   450  1350  1400
          VP1P1           1074   990  1050  1160  1210
          VP1P2           1203  1080  1140  1260  1320
          VP1P35_DDR      1347  1220  1280  1420  1490
          VP1P35          1346  1220  1280  1420  1490
          VP1P5           1502  1350  1430  1580  1650
          VP1P8_CPU       1798  1620  1710  1890  1980
          VP3P3_STBY      3318  2970  3140  3470  3630
          VP3P3           3346  2970  3140  3470  3630
          VP5P0           5013  4500  4750  5250  5500
          VP12P0          11992 10800 11400 12600 13200
          VREF            1219  1190  1200  1240  1250
          12V Input Voltage 11154  8000 10000 14000 16000
```


What to do next

Environment parameter anomalies are logged in the syslog. As a result, if an environment parameter displayed in the **show environment** command output is not as expected, check the syslog using the **show logging** command. The syslog provides details on any logged problems.

Verify Inventory

The **show inventory** command displays details of the hardware inventory of the NCS 1002.

To verify the inventory information for all the physical entities, perform the following procedure.

Procedure**Step 1** **show inventory**

Displays the details of the NCS 1002 when you execute this command in the Cisco IOS XR EXEC mode.

Example:

```
RP/0/RP0/CPU0:ios# show inventory
Fri May 18 10:46:51.323 UTC
NAME: "0/0", DESCR: "Network Convergence System 1002 20 QSFP28/QSFP+ slots"
PID: NCS1002-K9      , VID: V03, SN: CAT2116B170

NAME: "0/0-Optics0/0/0/1", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: SPQCELRCDFB    , VID: 01 , SN: G9I2011804

NAME: "0/0-Optics0/0/0/4", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: TR-FC13L-N00   , VID: 01 , SN: INGAJ0930306

NAME: "0/0-Optics0/0/0/6", DESCR: "Cisco CFP2 DWDM Pluggable Optics"
PID: ONS-CFP2-WDM   , VID: V01 , SN: OUK1936006S

NAME: "0/0-Optics0/0/0/7", DESCR: "Cisco 4x10GE QSFP+ LR-S Pluggable Optics Module"
PID: QSFP-4X10G-LR-S , VID: V02 , SN: INL20410069

NAME: "0/0-Optics0/0/0/8-LANE1", DESCR: "Cisco 10G SFP LR Pluggable Optics Module"
PID: SFP-10G-LR     , VID: V01 , SN: SPC1907074R

NAME: "0/0-Optics0/0/0/9", DESCR: "Cisco 40GE QSFP+ SR4 Pluggable Optics Module"
PID: QSFP-40G-SR4   , VID: V03 , SN: JFQ20332088

NAME: "0/0-Optics0/0/0/10", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: SPQCELRCDFB    , VID: 01 , SN: GAV2008935

NAME: "0/0-Optics0/0/0/11-LANE1", DESCR: "Cisco 10G SFP LR Pluggable Optics Module"
PID: SFP-10G-LR     , VID: V01 , SN: SPC190707YP

NAME: "0/0-Optics0/0/0/17-LANE1", DESCR: "Cisco 10G SFP SR Pluggable Optics Module"
PID: SFP-10G-SR     , VID: V03 , SN: JUR1904073P

NAME: "0/0-Optics0/0/0/18", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: FTLC1151RDPL   , VID: A0 , SN: UVE1C6C

NAME: "0/0-Optics0/0/0/19", DESCR: "Cisco CFP2 DWDM Pluggable Optics"
PID: ONS-CFP2-WDM   , VID: V05 , SN: OVE204404PA
```

```

NAME: "0/0-Optics0/0/0/21", DESCR: "Cisco 4x10GE QSFP+ LR-S Pluggable Optics Module"
PID: QSFP-4x10G-LR-S , VID: V01 , SN: INL20200012

NAME: "0/0-Optics0/0/0/22-LANE1", DESCR: "Cisco 10G SFP LR Pluggable Optics Module"
PID: SFP-10G-LR , VID: V01 , SN: SPC190707YS

NAME: "0/0-Optics0/0/0/23", DESCR: "Cisco 40GE QSFP+ SR4 Pluggable Optics Module"
PID: QSFP-40G-SR4 , VID: V03 , SN: JFQ2033201H

NAME: "0/0-Optics0/0/0/24", DESCR: "Non-Cisco QSFP28 100G LR4 Pluggable Optics Module"
PID: FTLC1151RDPL , VID: A0 , SN: UWD2QMM

NAME: "0/0-Optics0/0/0/25-LANE1", DESCR: "Cisco 10G SFP ER Pluggable Optics Module"
PID: SFP-10G-ER , VID: V02 , SN: ONT213100BW

NAME: "0/RP0", DESCR: "Network Convergence System 1000 Controller"
PID: NCS1K-CNTLR , VID: V04, SN: CAT2052B0FZ

NAME: "Rack 0", DESCR: "Network Convergence System 1002 20 QSFP28/QSFP+ slots"
PID: NCS1002-K9 , VID: V03, SN: CAT2116B170

NAME: "0/FT0", DESCR: "Network Convergence System 1000 Fan"
PID: NCS1K-FTA , VID: V01, SN: N/A

NAME: "0/FT1", DESCR: "Network Convergence System 1000 Fan"
PID: NCS1K-FTA , VID: V01, SN: N/A

NAME: "0/FT2", DESCR: "Network Convergence System 1000 Fan"
PID: NCS1K-FTA , VID: V01, SN: N/A

NAME: "0/PM0", DESCR: "Network Convergence System 1000 2KW AC PSU"
PID: NCS1K-2KW-AC , VID: V01, SN: POG2041J0BW

NAME: "0/PM1", DESCR: "Network Convergence System 1000 2KW AC PSU"
PID: NCS1K-2KW-AC , VID: V01, SN: POG2041J01C

```

You can verify if any QSFP or CFP has been removed from the NCS 1002.

Step 2 admin

Enters System Admin EXEC mode.

Example:

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

Step 3 show inventory

Displays inventory information for all the physical entities of the NCS 1002.

Example:

```
sysadmin-vm:0_RP0# show inventory
Wed Feb 28 03:33:20.186 UTC
```

```

Name: Rack 0          Descr: Network Convergence System 1002 20 QSFP28/QSFP+ slots
PID: NCS1002-K9      VID: V01          SN: CAT2028B013

Name: 0/0            Descr: Network Convergence System 1002 20 QSFP28/QSFP+ slots
PID: NCS1002-K9      VID: V01          SN: CAT2028B013

Name: 0/RP0          Descr: Network Convergence System 1000 Controller
PID: NCS1K-CNTLR     VID: V03          SN: CAT2043B2HJ

Name: 0/FT0          Descr: Network Convergence System 1000 Fan

```

PID: NCS1K-FTA	VID: V01	SN: N/A
Name: 0/FT1	Descr: Network Convergence System 1000 Fan	
PID: NCS1K-FTA	VID: V01	SN: N/A
Name: 0/FT2	Descr: Network Convergence System 1000 Fan	
PID: NCS1K-FTA	VID: V01	SN: N/A
Name: 0/PM0	Descr: Network Convergence System 1000 2KW AC PSU	
PID: NCS1K-2KW-AC	VID: V01	SN: POG2037J05N
Name: 0/PM1	Descr: Network Convergence System 1000 2KW AC PSU	
PID: NCS1K-2KW-AC	VID: V01	SN: POG2041J00A

In the above output, the significant fields are:

- PID—Physical model name of the chassis or node.
 - VID—Physical hardware revision of the chassis or node.
 - SN—Physical serial number for the chassis or node.
-

