Perform System Upgrade and Install Feature Packages

You can execute the system upgrade and package installation processes using the **install** commands on NCS 1004. The processes involve adding and activating the ISO images (*.iso*) and feature packages (*.rpm*) on NCS 1004. You can accesss these files from a network server and then activate on NCS 1004. If the installed package or SMU causes any issue, you can uninstall it.

Note   We recommend that you collect the output of **show tech-support ncs1004** command before performing operations such as a reload or CPU OIR on NCS 1004. The command provides information about the state of the system before reload or before the CPU OIR operation is performed. This information is useful in debugging.

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.

The topics covered in this chapter are:

Upgrade the System

Upgrading the system is the process of installing a new version of the Cisco IOS XR operating system on the NCS 1004. NCS 1004 is preinstalled with the Cisco IOS XR image. However, you can install a new version to keep features up to date. You can perform the system upgrade operation from the XR mode. However, during the system upgrade, the operating systems that run both on the XR and the System Admin are upgraded.

System upgrade is done by installing the base package, Cisco IOS XR Core Bundle plus Manageability Package. Install the ISO image using **install** commands. For more information about the install process, see Workflow for Install Process.

For more information on upgrading the system and the RPMs, see *Cisco IOS XR Flexible Packaging Configuration Guide for Cisco NCS 1000 Series*.

Note Software downgrade from R7.2.1 to R7.1.1 affects traffic.

Install Packages

You can install packages and software patches (SMU) on NCS 1004. Installing a package on NCS 1004 installs specific features that are part of that package. Cisco IOS XR Software is divided into various software packages; the availability of the software in individual packages enables you to select the features to run on NCS 1004. Each package contains components that perform a specific set of NCS 1004 functions.

The naming convention of the package is `<platform>-<pkg>-<pkg version>-<release version>.<architecture>.rpm`.

Standard packages are:

Feature Set	Filename	Description
Composite Package		
Cisco IOS XR Core Bundle + Manageability Package	ncs1004-iosxr-px-k9-7.3.1.tar	Contains required core packages, including operating system, Admin, Base, Forwarding, SNMP Agent, FPD, and Alarm Correlation and Netconf-yang, Telemetry, XML Parser, HTTP server packages.
Individually Installable Optional Packages		
Cisco IOS XR Security Package	ncs1004-k9sec-2.1.0.0-r731.x86_64.rpm	Support for Encryption, Decryption, IP Security (IPsec), Secure Shell (SSH), Secure Socket Layer (SSL), and Public-key infrastructure (PKI).
OpenROADM	ncs1004-tp-sw-1.0.0.0-r731.rpm	Install the ncs1004-tp-sw-1.0.0.0-r731.rpm package for OpenROADM configuration.
OTN-XP	ncs1004-sysadmin-otn-xp-dp-*.rpm	Install the ncs1004-sysadmin-otn-xp-dp-*.rpm package on the OTN-XP card to bring up the system with OTN-XP card.

Workflow for Install Process

To install a package, see Install Packages. To uninstall a package, see Uninstall Packages. The workflows for installation and uninstallation processes are depicted in individual flowcharts in their respective subsections.

Install Packages

Complete this task to upgrade the system or install a patch. You can perform the system upgrade using an ISO image file and the patch installation using packages and SMUs. This task also enables you to install *.tar* files. The *.tar* file contains multiple packages and SMUs that are merged into a single file. A single *.tar* file can contain up to 64 individual files. The packaging format defines 1 RPM per component, without dependency on the card type.

Note

To install a System Admin package or an XR package, execute the **install** commands in System Admin EXEC mode or XR EXEC mode respectively. All **install** commands are applicable in both these modes.

The following flowchart displays workflow for installing a package:

Figure 1: Installing Packages Workflow
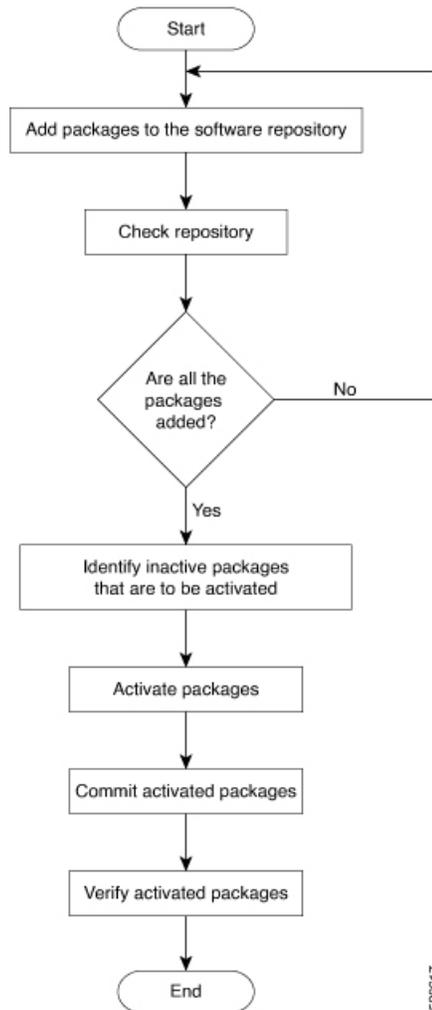
Before you begin

- Configure and connect to the management port. You can access the installable file through the management port. For details about configuring the management port, see Configure Management Interface.

- Copy the package to be installed either on NCS 1004 hard disk or on a network server to which NCS 1004 has access.

- When the ncs1004-k9sec package is not installed, use only FTP or TFTP to copy files or during the **install add** operation.

Procedure

Step 1 Execute one of these commands:

- **install add source** *<tftp transfer protocol>/package_path/ filename1 filename2 ...*

- **install add source** *<ftp or sftp transfer protocol>//user@server:/package_path/ filename1 filename2 ...*

Example:

```
RP/0/RP0/CPU0:ios#install add source harddisk: ncs1004-mini-x-7.2.1
ncs1004-k9sec-2.1.0.0-r721.x86_64.rpm


Thu Feb  7 11:10:51.867 UTC
Feb 07 11:10:53 Install operation 25 started by root:
 install add source harddisk: ncs1004-mini-x-7.2.1 ncs1004-k9sec-2.1.0.0-r721.x86_64.rpm
Feb 07 11:10:55 Install operation will continue in the background
Thu Feb  7 11:10:51 Install operation 25 finished successfully
```

Ensure to add the respective packages as appropriate. Unpack the software files from the package and add to the software repository. This operation may take time depending on the size of the files that are added. The operation takes place in an asynchronous mode. The **install add** command runs in the background, and the EXEC prompt is returned.

Step 2   **show install request**

Example:

```
RP/0/RP0/CPU0:ios#show install request
```

(Optional) Displays the operation ID of the add operation and its status. The operation ID can be used later to execute the **activate** command.

Step 3   **show install repository**

Example:

```
RP/0/RP0/CPU0:ios#show install repository


6 package(s) in XR repository:
    ncs1004-mini-x-7.0.1
    ncs1004-mini-x-7.2.1
    ncs1004-mpls-2.0.0.0-r711
    ncs1004-k9sec-2.1.0.0-r721.x86_64
    ncs1004-xr-7.2.1
    ncs1004-mpls-te-rsvp-2.1.0.0-r711
```

Displays packages that are added to the repository. Packages are displayed only after the install add operation is complete.

Step 4   **show install inactive**

Example:

```
RP/0/RP0/CPU0:ios#show install inactive


6 inactive package(s) found:
    ncs1004-mini-x-7.0.1
    ncs1004-mini-x-7.2.1
    ncs1004-mpls-2.0.0.0-r711
    ncs1004-k9sec-2.1.0.0-r721.x86_64
    ncs1004-xr-7.2.1
    ncs1004-mpls-te-rsvp-2.1.0.0-r711
```

Displays inactive packages that are present in the repository. You can activate only inactive packages.

Step 5   **install activate** *package_name*

Example:

```
RP/0/RP0/CPU0:ios#install activate ncs1004-mini-x-7.2.1 ncs1004-k9sec-2.1.0.0-r721.x86_64


Thu Feb  7 11:25:09.229 UTC
Feb 07 11:25:10 Install operation 26 started by root:
  install activate pkg ncs1004-mini-x-7.2.1 ncs1004-k9sec-2.1.0.0-r721.x86_64
Feb 07 11:25:10 Package list:
Feb 07 11:25:10     ncs1004-mini-x-7.2.1 ncs1004-k9sec-2.1.0.0-r721.x86_64
Feb 07 11:25:17 Install operation will continue in the background


RP/0/RP0/CPU0:ios#
RP/0/RP0/CPU0:ios#Feb 07 11:25:10 Install operation 26 finished successfully
```

The package configurations are set to active on NCS 1004. As a result, new features and software fixes take effect. This operation takes place in the asynchronous mode. The **install activate** command runs in the background, and the EXEC prompt is returned.

Note   After an RPM of a higher version is activated, and if it is required to activate an RPM of a lower version, use the force option. For example:

Using the traditional method, add the RPM with lower version to the repository and then force the activation:

```
install add source repository ncs1004-xr-7.2.1
```

```
install activate ncs1004-xr-7.2.1 force
```

Or

Using the **install update** command:

```
install update source repository ncs1004-xr-7.2.1
```

If you use the operation ID, all packages that are added in the specified operation are activated together. For example, if five packages are added in operation 8, by executing the **install activate id 8** command, all five packages are activated together. You do not have to activate the packages individually.

Step 6   **show install active**

Example:

```
RP/0/RP0/CPU0:ios#show install active


Mon Mar 11 07:31:12.302 UTC
Node 0/RP0/CPU0 [RP]
  Boot Partition: xr_lv19
  Active Packages: 5
    ncs1004-mini-x-7.2.1
    ncs1004-mpls-2.0.0.0-r711
    ncs1004-k9sec-2.1.0.0-r721.x86_64
    ncs1004-xr-7.2.1
    ncs1004-mpls-te-rsvp-2.1.0.0-r711
```

Displays packages that are active.

Step 7   **install commit system**

Example:

```
RP/0/RP0/CPU0:ios#install commit system


Thu Feb  7 11:34:04.207 UTC
```

```
Feb 07 11:34:05 Install operation 27 started by root:
  install commit system
Feb 07 11:34:06 Install operation will continue in the background
RP/0/RP0/CPU0:ios#Feb 07 11:34:19 Install operation 27 finished successfully
```

Commits the newly active software.

Installing Packages: Related Commands

Related Commands	Purpose
show install log	Displays the log information for the install process. This information is used for troubleshooting in case of installation failure.
show install package	Displays the details of the packages that are added to the repository. Use this command to identify individual components of a package.
install prepare	Makes preactivation checks on an inactive package to prepare it for activation.
show install prepare	Displays the list of package that has been prepared and are ready for activation.

What to do next

- After performing system upgrade, upgrade FPD by using the **upgrade hw-module location all fpd all** command from the Cisco IOS XR mode. The progress of FPD upgrade process can be monitored using the **show hw-module fpd** command.

- Reload NCS 1004 if BIOS is in RLOAD REQ state. Use the **hw-module location 0/RP0 reload** command.

- Verify the installation using the **install verify packages** command.

- Uninstall the packages or SMUs if their installation causes any issues on NCS 1004. See Uninstall Packages.

Note   ISO images cannot be uninstalled. However, you can perform a system downgrade by installing an older ISO version.

(Optional) Install Prepared Packages

You can perform a system upgrade or feature upgrade by activating the ISO image file, packages, and SMUs. It is possible to prepare these installable files before activation. During the preparation phase, preactivation checks are made, and the components of the installable files are loaded on to the NCS 1004 setup. The preparation process runs in the background, and NCS 1004 is fully usable during this time. When the prepare phase completes, the prepared files are activated instantaneously.

The advantages of preparing before activation are:

- If the installable file is corrupted, then the preparation process fails. This process provides an early warning of the problem. If the corrupted file were to be activated directly, it may cause the NCS 1004 to malfunction.

- Directly activating an ISO image for the system upgrade takes considerable time during which the NCS 1004 is not usable. However, if the image is prepared before activation, the prepare process runs asynchronously. When the prepared image is activated, the activation process takes less time. As a result, the downtime is considerably reduced.

Complete this task to upgrade the system and install packages by using the prepare operation.

Procedure

Step 1 Add the required ISO image and packages to the repository.

For details, see Install Packages.

Step 2 **show install repository**

Example:

```
RP/0/RP0/CPU0:ios#show install repository


6 package(s) in XR repository:
    ncs1004-mini-x-7.0.1
    ncs1004-mini-x-7.2.1
    ncs1004-mpls-2.0.0.0-r711
    ncs1004-k9sec-2.1.0.0-r721.x86_64
    ncs1004-xr-7.2.1
    ncs1004-mpls-te-rsvp-2.1.0.0-r711
```

Perform this step to verify that the required installable files are available in the repository. Packages are displayed only after the "install add" operation is complete.

Step 3 Execute one of these commands:

- **install prepare** *package_name*
- **install prepare id** *operation_id*

Example:

```
RP/0/RP0/CPU0:ios#install prepare ncs1004-mini-x-7.2.1 ncs1004-k9sec-2.1.0.0-r721.x86_64
```

Or

```
RP/0/RP0/CPU0:ios#install prepare id 8
```

The preparation process takes place in an asynchronous mode. The **install prepare** command runs in the background, and the EXEC prompt is returned.

If you use the operation ID, all packages that were added in the specified operation are prepared together. For example, if five packages are added in operation 8, by executing the **install prepare id 8** command, all five packages are prepared together. You do not have to prepare the packages individually.

Step 4 **show install prepare**

Example:

```
RP/0/RP0/CPU0:ios#show install prepare
```

Displays the packages that are prepared. From the output, verify that all required packages have been prepared.

Step 5   **install activate** *package_name*

Example:

```
RP/0/RP0/CPU0:ios#install activate ncs1004-mini-x-7.2.1 ncs1004-k9sec-2.1.0.0-r721.x86_64
```

All the packages that have been prepared are activated together to activate the package configurations on NCS 1004.

Step 6   **show install active**

Displays packages that are active.

Step 7   **install commit system**

Example:

```
RP/0/RP0/CPU0:ios#install commit system
```

Commits the recently activated software.

Installing Packages: Related Commands

Related Commands	Purpose
show install log	Displays the log information for the install process. You can use this information for troubleshooting in case of install failure.
show install package	Displays the details of the packages that you have added to the repository. Use this command to identify individual components of a package.
install prepare clean	Clears the prepare operation and removes the packages from the prepared state.

What to do next

- After performing a system upgrade, upgrade FPD by using the **upgrade hw-module location all fpd all** command from the Cisco IOS XR mode. The progress of FPD upgrade process can be monitored using the **show hw-module fpd** command.

- Reload NCS 1004 if BIOS is in RLOAD REQ state. Use the **hw-module location 0/RP0 reload** command.

- Verify the installation using the **install verify packages** command.

- Uninstall the packages or SMUs if their installation causes any issues on NCS 1004. See Uninstall Packages.

Note   ISO images cannot be uninstalled. However, you can perform a system downgrade by installing an older ISO version.

Uninstall Packages

Complete this task to uninstall a package. All the NCS 1004 functionalities that are part of the uninstalled package are deactivated. Packages that are added in the XR mode cannot be uninstalled from the System Admin mode, and the other way round.

✎

Note   Installed ISO images cannot be uninstalled. Also, kernel SMUs that install a third-party SMU on host, XR mode, and System Admin mode cannot be uninstalled. However, subsequent installation of ISO image or kernel SMU overwrites the existing installation.

The following flowchart shows a workflow for uninstalling a package:

Figure 2: Uninstalling Packages Workflow
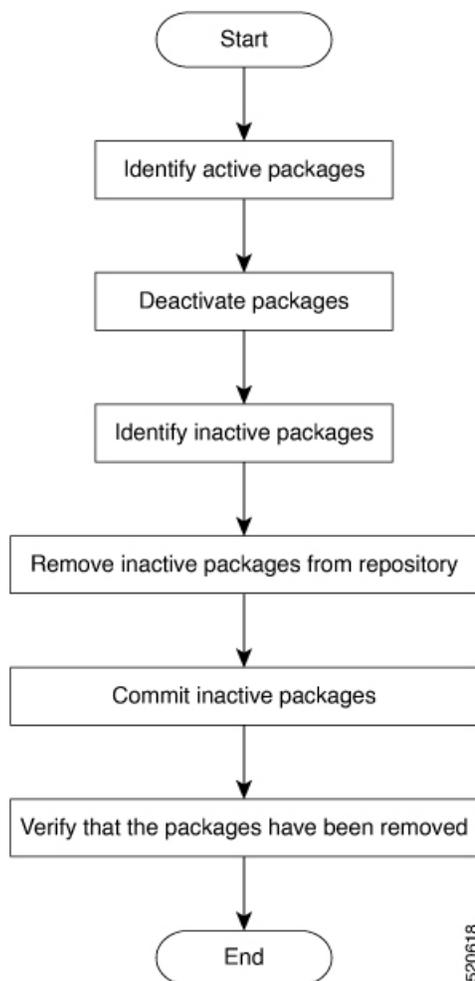
Procedure

Step 1   **show install active**

Example:

```
RP/0/RP0/CPU0:ios#show install active
```

```
Mon Mar 11 07:31:12.302 UTC
Node 0/RP0/CPU0 [RP]
  Boot Partition: xr_lv19
  Active Packages: 5
    ncs1004-mini-x-7.2.1
    ncs1004-mpls-2.0.0.0-r711
    ncs1004-k9sec-2.1.0.0-r721.x86_64
    ncs1004-xr-7.1.1
    ncs1004-mpls-te-rsvp-2.1.0.0-r711
```

Displays active packages. You can deactivate only active packages.

Step 2   Execute one of these commands:

- **install deactivate** *package_name*
- **install deactivate id** *operation_id*

Example:

```
RP/0/RP0/CPU0:ios#install deactivate ncs1004-k9sec-2.1.0.0-r721.x86_64
```

Or

```
RP/0/RP0/CPU0:ios#install deactivate id 8
```

All features and software patches that are associated with the package are deactivated. You can specify multiple package names and deactivate them simultaneously.

If you use the operation ID, all packages that are added in the specified operation are deactivated together. You do not have to deactivate the packages individually.

Step 3   **show install inactive**

Example:

```
RP/0/RP0/CPU0:ios#show install inactive
```

```
Mon Mar 11 08:07:46.504 UTC
1 inactive package(s) found:
    ncs1004-k9sec-2.1.0.0-r721.x86_64
```

The deactivated packages are now listed as inactive packages. You can remove only inactive packages from the repository.

Step 4   **install remove** *package_name*

Example:

```
RP/0/RP0/CPU0:ios#install remove ncs1004-k9sec-2.1.0.0-r721.x86_64
```

The inactive packages are removed from the repository.

Use the **install remove** command with the **id** *operation-id* keyword and argument to remove all packages that are added for the specified operation ID.

Step 5   **install commit system**

Example:

```
RP/0/RP0/CPU0:ios#install commit system
```

Commits the newly active software.

Step 6 **show install repository**

Example:

```
RP/0/RP0/CPU0:ios#show install repository

Mon Mar 11 08:11:55.780 UTC
4 package(s) in XR repository:
    ncs1004-xr-7.2.1 version=7.2.1 [Boot image]
    ncs1004-mini-x-7.2.1
    ncs1004-mpls-2.0.0.0-r711
    ncs1004-mpls-te-rsvp-2.1.0.0-r711
```

Displays packages available in the repository. The package that is removed is not displayed in the output.

What to do next

Install required packages. See Install Packages.

FPD Automatic Upgrade

The FPD automatic upgrade feature upgrades the FPD firmware version of all components to the latest version along with software activation. After the software upgrade, all FPD components are in the CURRENT status. You can check the FPD components status with details using the **show hw-module fpd** command.

After the FPD is upgraded, the FPD version is not downgraded to the previous version even if the image is rolled back to the original version.

✎

Note FPD automatic upgrade is not supported when OTN-XP card is present, as there is an impact on traffic while upgrading LC_DP_MOD_FW FPD.

You can enable the FPD automatic upgrade feature using the following commands.

```
RP/0/RP0/CPU0:ios# configure
RP/0/RP0/CPU0:ios(config)# fpd auto-upgrade enable
RP/0/RP0/CPU0:ios(config)# commit
RP/0/RP0/CPU0:ios(config)#end
```

To verify whether the FPD automatic upgrade feature is enabled, examine the output of the **show running-config** command.

```
RP/0/RP0/CPU0:ios#
RP/0/RP0/CPU0:ios#show running-config | inc fpd
Thu Feb  7 10:43:44.822 UTC
Building configuration...
fpd auto-upgrade enable
```

Example

The following example shows the output of the **show hw-module fpd** command.

```
RP/0/RP0/CPU0:ios# show hw-module fpd
Fri May 29 11:35:24.492 UTC
                                                           FPD Versions
                                                           =================
Location    Card type             HWver FPD device     ATR Status   Running Programd
```

```
--------------------------------------------------------------------------------
0/0        NCS1K4-1.2T-K9      2.0   LC_CPU_MOD_FW        CURRENT   21.19    21.19
0/0        NCS1K4-1.2T-K9      1.0   LC_OPT_MOD_FW        CURRENT    2.04     2.04
0/1        NCS1K4-OTN-XP       3.0   LC_CPU_MOD_FW        CURRENT   21.19    21.19
0/1        NCS1K4-OTN-XP       3.0   LC_DP_MOD_FW         CURRENT    6.10     6.10
0/2        NCS1K4-OTN-XP       3.0   LC_CPU_MOD_FW        CURRENT   21.19    21.19
0/2        NCS1K4-OTN-XP       3.0   LC_DP_MOD_FW         CURRENT    6.10     6.10
0/3        NCS1K4-OTN-XP       3.0   LC_CPU_MOD_FW        CURRENT   21.19    21.19
0/3        NCS1K4-OTN-XP       3.0   LC_DP_MOD_FW         CURRENT    6.10     6.10
0/RP0      NCS1K4-CNTLR-K9     4.0   CSB_IMG         S    CURRENT    0.200    0.200
0/RP0      NCS1K4-CNTLR-K9     4.0   TAM_FW               CURRENT   36.08    36.08
0/RP0      NCS1K4-CNTLR-K9     1.14  BIOS            S    CURRENT    4.30     4.30
0/RP0      NCS1K4-CNTLR-K9     4.0   CPU_FPGA             CURRENT    1.14     1.14
0/PM0      NCS1K4-DC-PSU       0.1   PO-PriMCU            CURRENT    1.12     1.12
0/PM1      NCS1K4-DC-PSU             PO-PriMCU            NOT READY
0/SC0      NCS1004             2.0   BP_FPGA              CURRENT    1.25     1.25
0/SC0      NCS1004             2.0   XGE_FLASH            CURRENT   18.04    18.04
```

Advantages

The FPD automatic upgrade feature helps to upgrade the firmware automatically without manual intervention.

Firmware Upgrade

After software upgrade to the latest release, it is mandatory to upgrade the FPD of the line cards. Use the following procedure to upgrade the firmware version of the line cards.

Note   The Provisioning In Progress alarm is raised on the slice or the line card during the FPD upgrade and automatically clears after the FPD upgrade. This alarm is non-traffic affecting.

Procedure

Step 1   Use the **show hw-module fpd** command to check the status of the FPD.

Example:

```
RP/0/RP0/CPU0:ios# show hw-module fpd
Fri May 29 11:17:52.980 UTC

                                                    FPD Versions

                                                   =================

Location   Card type           HWver FPD device    ATR Status   Running Programd

--------------------------------------------------------------------------------
0/0        NCS1K4-1.2T-K9      2.0   LC_CPU_MOD_FW        CURRENT    21.19    21.19

0/0        NCS1K4-1.2T-K9      1.0   LC_OPT_MOD_FW        CURRENT     2.04     2.04

0/1        NCS1K4-OTN-XP       3.0   LC_CPU_MOD_FW        NEED UPGD  21.18    21.18

0/1        NCS1K4-OTN-XP       3.0   LC_DP_MOD_FW         CURRENT     6.10     6.10

0/2        NCS1K4-OTN-XP       3.0   LC_CPU_MOD_FW        NEED UPGD  21.18    21.18
```

```
0/2          NCS1K4-OTN-XP        3.0   LC_DP_MOD_FW        CURRENT    6.10    6.10

0/3          NCS1K4-OTN-XP        3.0   LC_CPU_MOD_FW       NEED UPGD 21.18   21.18

0/3          NCS1K4-OTN-XP        3.0   LC_DP_MOD_FW        CURRENT    6.10    6.10

0/RP0        NCS1K4-CNTLR-K9      4.0   CSB_IMG          S  CURRENT    0.200   0.200

0/RP0        NCS1K4-CNTLR-K9      4.0   TAM_FW              CURRENT   36.08   36.08

0/RP0        NCS1K4-CNTLR-K9      1.14  BIOS             S  CURRENT    4.30    4.30

0/RP0        NCS1K4-CNTLR-K9      4.0   CPU_FPGA            CURRENT    1.14    1.14

0/PM0        NCS1K4-DC-PSU        0.1   PO-PriMCU           CURRENT    1.12    1.12

0/PM1        NCS1K4-DC-PSU              PO-PriMCU           NOT READY

0/SC0        NCS1004              2.0   BP_FPGA             CURRENT    1.25    1.25

0/SC0        NCS1004              2.0   XGE_FLASH           CURRENT   18.04   18.04
```

You can verify the status of the FPDs of the line cards. In the earlier example, the status of both the FPDs (LC_CPU_MOD_FW and LC_OPT_MOD_FW) of the 1.2T line card displays as NEED UPGD.

Step 2 Use the **upgrade hw-module** command to upgrade both the FPDs of the 1.2T line card.

Example:

The following example shows how to upgrade the FPD image of a line card.

```
sysadmin-vm:0_RP0# upgrade hw-module location all fpd all
```

Upgrades both the FPDs of the line card. The FPD upgrade process for line cards may take three to five minutes.

Note The ADM1266 FPD is not upgraded with this command. `location all` or `RP0 fpd all` is not supported for ADM1266 FPD. To upgrade ADM1266 FPD, after upgrading all the FPDs, use the following command:

```
sysadmin-vm:0_RP0# upgrade hw-module location 0/RP0 fpd <fpd part number>
```

The device gets RP reloaded automatically post upgrading and it comes up with current status for all FPDs including BIOS.

Step 3 Use the **show hw-module fpd** command to verify that the FPD status of the line cards after the upgrade.

Example:

```
RP/0/RP0/CPU0:ios# show hw-module fpd
Fri May 29 11:35:24.492 UTC
                                                           FPD Versions
                                                           =================
Location   Card type          HWver FPD device     ATR Status   Running Programd
--------------------------------------------------------------------------------
0/0        NCS1K4-1.2T-K9     2.0   LC_CPU_MOD_FW       CURRENT   21.19   21.19
0/0        NCS1K4-1.2T-K9     1.0   LC_OPT_MOD_FW       CURRENT    2.04    2.04
0/1        NCS1K4-OTN-XP      3.0   LC_CPU_MOD_FW       CURRENT   21.19   21.19
0/1        NCS1K4-OTN-XP      3.0   LC_DP_MOD_FW        CURRENT    6.10    6.10
0/2        NCS1K4-OTN-XP      3.0   LC_CPU_MOD_FW       CURRENT   21.19   21.19
0/2        NCS1K4-OTN-XP      3.0   LC_DP_MOD_FW        CURRENT    6.10    6.10
0/3        NCS1K4-OTN-XP      3.0   LC_CPU_MOD_FW       CURRENT   21.19   21.19
0/3        NCS1K4-OTN-XP      3.0   LC_DP_MOD_FW        CURRENT    6.10    6.10
```

```
0/RP0        NCS1K4-CNTLR-K9     4.0    CSB_IMG            S   CURRENT    0.200   0.200
0/RP0        NCS1K4-CNTLR-K9     4.0    TAM_FW                 CURRENT    36.08   36.08
0/RP0        NCS1K4-CNTLR-K9     1.14   BIOS               S   CURRENT    4.30    4.30
0/RP0        NCS1K4-CNTLR-K9     4.0    CPU_FPGA               CURRENT    1.14    1.14
0/PM0        NCS1K4-DC-PSU       0.1    PO-PriMCU              CURRENT    1.12    1.12
0/PM1        NCS1K4-DC-PSU              PO-PriMCU              NOT READY
0/SC0        NCS1004             2.0    BP_FPGA                CURRENT    1.25    1.25
0/SC0        NCS1004             2.0    XGE_FLASH              CURRENT    18.04   18.04
```

You can verify the status of the FPDs after upgrade. If the upgrade fails, the status displays as UPGD_FAIL. Otherwise, the FPD status displays as CURRENT.

Note   FPD upgrades from R7.0.1 to later releases do not have an impact on traffic. For R7.0.0 to R7.0.1 upgrade, there is an impact on traffic while upgrading LC_OPT_MOD_FW FPD.

Firmware Upgrade