Upgrade Cisco NFVIS

The Cisco NFVIS enabled hardware comes preinstalled with NFVIS version . Follow the steps below to upgrade it to the latest version of the release.

The Cisco Enterprise NFVIS upgrade image is available as a `.iso` and `.nfvispkg` file. Currently, downgrade is not supported. All RPM packages in the Cisco Enterprise NFVIS upgrade image are signed to ensure cryptographic integrity and authenticity. In addition, all RPM packages are verified during Cisco Enterprise NFVIS upgrade.

Ensure that you copy the image to the Cisco Enterprise NFVIS server before starting the upgrade process. Always specify the exact path of the image when registering the image. Use the **scp** command to copy the upgrade image from a remote server to your Cisco Enterprise NFVIS server. When using the **scp** command, you must copy the image to the "`/data/intdatastore/uploads`" folder on the Cisco Enterprise NFVIS server.

Restrictions for Cisco NFVIS ISO File Upgrade

- Cisco NFVIS supports .iso upgrade only from version N to versions N+1 and N+2. NFVIS does not support .iso upgrade from version N to version N+3 and above.
- Image downgrade using .iso file is not supported.

Note In case of an error while upgrading from version N to N+1 or N+2, Cisco NFVIS rolls back to the image version N.

Upgrade Cisco NFVIS 4.8.1 and Later Using a .iso File

The following example shows how to use the **scp** command to copy the upgrade image:

- To copy the upgrade image using the **scp** command from NFVIS CLI:

```
nfvis# scp
admin@192.0.2.9:/NFS/2022-01-23/13/nfvis/iso/Cisco_NFVIS-4.8.0-13-20220123_020232.iso
intdatastore:Cisco_NFVIS-4.8.0-13-20220123_020232.iso
```

- To copy the upgrade image using the **scp** command from remote linux:

```
config terminal
system settings ip-receive-acl 0.0.0.0/0
service scpd action accept
commit

scp -P22222 Cisco_NFVIS-4.8.0-13-20220123_020232.iso
admin@172.27.250.128:/data/intdatastore/uploads/Cisco_NFVIS-4.8.0-13-20220123_020232.iso
```

Alternatively, you can upload the image to the Cisco Enterprise NFVIS server using the **System Upgrade** option from the Cisco Enterprise NFVIS portal.

Note When the NFVIS upgrade is in progress, ensure that the system is not powered off. If the system is powered off during the NFVIS upgrade process, the system may become inoperable and you may need to reinstall the system.

The upgrade process comprises of two tasks:

1. Register the image using the **system upgrade image-name** command.
2. Upgrade the image using the **system upgrade apply-image** command.

Register an Image

To register an image, use the following command:

```
configure terminal
system upgrade image-name Cisco_NFVIS-4.8.0-13-20220123_020232.iso location
/data/intdatastore/uploads/Cisco_NFVIS-4.8.0-13-20220123_020232.iso
commit
```

Note You must verify the image registration status before upgrading the image using the **system upgrade apply-image** command. The package status must be valid for the registered image.

To verify the image registration status, use the following command:

```
nfvis# show system upgrade
```

```
                 PACKAGE
NAME                                     LOCATION
                 VERSION    STATUS  UPLOAD DATE
-------------------------------------------------------------------------------
Cisco_NFVIS-4.8.0-13-20220123_020232.iso
/data/upgrade/register/Cisco_NFVIS-4.8.0-13-20220123_020232.iso  4.8.0-13  Valid
2022-01-24T02:40:29.236057-00:00


nfvis# show system upgrade reg-info

                 PACKAGE
NAME                                     LOCATION
                 VERSION    STATUS  UPLOAD DATE
-------------------------------------------------------------------------------
Cisco_NFVIS-4.8.0-13-20220123_020232.iso
/data/upgrade/register/Cisco_NFVIS-4.8.0-13-20220123_020232.iso  4.8.0-13  Valid
2022-01-24T02:40:29.236057-00:00
```

Upgrade the Registered Image

To upgrade the registered image, use the following command:

```
configure terminal
system upgrade apply-image Cisco_NFVIS-4.8.0-13-20220123_020232.iso scheduled-time 5
commit
```

To verify the upgrade status, use the **show system upgrade apply-image** command in the privileged EXEC mode.

```
nfvis# show system upgrade
                                                        UPGRADE  UPGRADE
NAME                                     STATUS     FROM     TO
-------------------------------------------------------------------------------
Cisco_NFVIS-4.8.0-13-20220123_020232.iso  SCHEDULED  -        -


                 PACKAGE
NAME                                     LOCATION
                 VERSION    STATUS  UPLOAD DATE
-------------------------------------------------------------------------------
Cisco_NFVIS-4.8.0-13-20220123_020232.iso
/data/upgrade/register/Cisco_NFVIS-4.8.0-13-20220123_020232.iso  4.8.0-13  Valid
2022-01-24T02:40:29.236057-00:00
```

Upgrade APIs and Commands

The following table lists the upgrade APIs and commands:

Upgrade APIs	Upgrade Commands
• /api/config/system/upgrade • /api/config/system/upgrade/image-name • /api/config/system/upgrade/reg-info • /api/config/system/upgrade/apply-image	• system upgrade image-name • system upgrade apply-image • show system upgrade reg-info • show system upgrade apply-image

Upgrade Cisco NFVIS 4.7.1 and Earlier Using a .nvfispkg File

The following example shows how to use the **scp** command to copy the upgrade image:

scp command from NFVIS CLI:

```
nfvis# scp admin@192.0.2.9:/NFS/Cisco_NFVIS_BRANCH_Upgrade-351.nfvispkg
intdatastore:Cisco_NFVIS_BRANCH_Upgrade-351.nfvispkg
```

scp command from remote linux:

```
config terminal
system settings ip-receive-acl 0.0.0.0/0
service scpd action accept
commit

scp -P 22222 nfvis-351.nfvispkg admin@192.0.2.9:/data/intdatastore/uploads/nfvis-351.nfvispkg
```

Alternatively, you can upload the image to the Cisco Enterprise NFVIS server using the **System Upgrade** option from the Cisco Enterprise NFVIS portal.

Note When the NFVIS upgrade is in progress, ensure that the system is not powered off. If the system is powered off during the NFVIS upgrade process, the system may become inoperable and you may need to reinstall the system.

The upgrade process comprises two tasks:

- Registering the image using the **system upgrade image-name** command.
- Upgrading the image using the **system upgrade apply-image** command.

Register an Image

To register an image:

```
configure terminal
system upgrade image-name nfvis-351.nfvispkg location /data/intdatastore/uploads
commit
```

Note You must verify the image registration status before upgrading the image using the **system upgrade apply-image** command. The package status must be valid for the registered image.

Verify the Image Registration

Use the **show system upgrade reg-info** command in the privileged EXEC mode to verify the image registration.

```
nfvis# show system upgrade reg-info
PACKAGE
NAME             LOCATION                                    VERSION        STATUS UPLOAD DATE
-------------------------------------------------------------------------------------------------------------------
nfvis-351.nfvispkg /data/upgrade/register/nfvis-351.nfvispkg 3.6.1-722 Valid
2017-04-25T10:29:58.052347-00:00
```

Upgrade the Registered Image

To upgrade the registered image:

```
configure terminal
system upgrade apply-image nfvis-351.nfvispkg scheduled-time 5
commit
```

Verify the Upgrade Status

Use the **show system upgrade apply-image** command in the privileged EXEC mode

```
nfvis# show system upgrade apply-image
UPGRADE
NAME   STATUS     FROM     UPGRADE TO
-------------------------------------------------------------------------------------------
nfvis-351.nfvispkg SUCCESS 3.5.0 3.5.1
```

The only upgrade supported when BIOS secured boot (UEFI mode) is enabled on ENCS 5400 platform is:

NFVIS 3.8.1 + BIOS 2.5(legacy) --> NFVIS 3.9.1 + BIOS 2.6(legacy)

The following upgrade requires re-installation of NFVIS in UEFI mode:

NFVIS 3.8.1 + BIOS 2.5(legacy) --> NFVIS 3.9.1 + BIOS 2.6(UEFI)

NFVIS 3.9.1 + BIOS 2.6(legacy) --> NFVIS 3.9.1 + BIOS 2.6(UEFI)

Upgrade APIs and Commands

The following table lists the upgrade APIs and commands:

Upgrade APIs	Upgrade Commands
• /api/config/system/upgrade • /api/config/system/upgrade/image-name • /api/config/system/upgrade/reg-info • /api/config/system/upgrade/apply-image	• system upgrade image-name • system upgrade apply-image • show system upgrade reg-info • show system upgrade apply-image

Firmware Upgrade

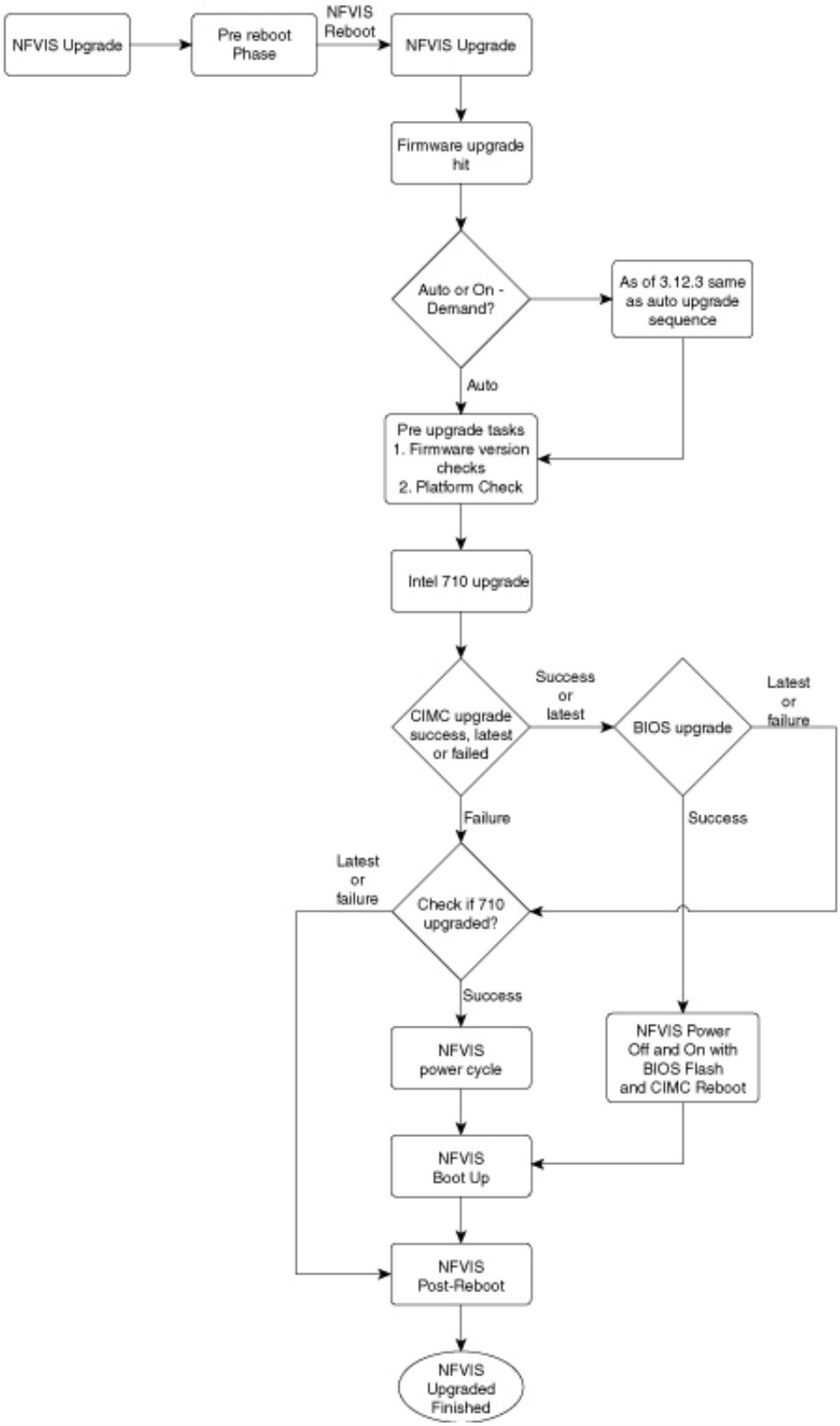
Note Firmware upgrade is supported only on ENCS 5400 series devices.

This feature was introduced in NFVIS 3.8.1 release as part of NFVIS auto-upgrade and it supports upgrade of selected firmwares on ENCS 5400 series devices. Firmware upgrade is triggered during NFVIS upgrade as part of the post reboot phase. To trigger the firmware upgrade refer to the NFVIS upgrade feature.

Starting from NFVIS 3.9.1 release, an on demand upgrade is supported which provides a separate firmware package (.fwpkg extension) to be registered and applied through NFVIS CLI. You can also upgrade to the latest firmware through a fresh installation of NFVIS.

The following firmwares can be upgraded:

- Cisco Integrated Management Controller (CIMC)
- BIOS
- Intel 710
- FPGA


NFVIS Upgrade
Pre reboot Phase
NFVIS Reboot
NFVIS Upgrade
Firmware upgrade hit
Auto or On - Demand?
As of 3.12.3 same as auto upgrade sequence
Auto
Pre upgrade tasks
1. Firmware version checks
2. Platform Check
Intel 710 upgrade
CIMC upgrade success, latest or failed
Success or latest
BIOS upgrade
Latest or failure
Failure
Success
Latest or failure
Check if 710 upgraded?
Success
NFVIS power cycle
NFVIS Power Off and On with BIOS Flash and CIMC Reboot
NFVIS Boot Up
NFVIS Post-Reboot
NFVIS Upgraded Finished

Starting from NFVIS 3.12.3 release, the firmware upgrade script is changed from executable to module format. The code is modularized and each firmware can be individually upgraded. The shell commands are called with subprocess instead of os.system() calls. Each firmware upgrade call is monitored with a time limit. If the call is stuck, the process is killed and execution control will return back to the code flow with appropriate message.

The following table shows the sequence of firmware upgrade:

NFVIS Upgrade	Fresh Install	On Demand Upgrade
Intel 710		
1. NFVIS upgrade **2.** Reboot **3.** Login **4.** Firmware upgrade 710 **5.** NFVIS power cycle **6.** Login	**1.** Install **2.** Reboot **3.** Login **4.** Firmware upgrade 710 **5.** NFVIS power cycle **6.** Login	**1.** Firmware upgrade 710 **2.** NFVIS power cycle **3.** Login
Intel 710 and BIOS		
1. NFVIS upgrade **2.** Reboot **3.** Login **4.** Firmware upgrade 710 and BIOS **5.** NFVIS power off/on due to BIOS **6.** Login	**1.** Install **2.** Reboot **3.** Login **4.** Firmware upgrade 710 and BIOS **5.** NFVIS power off/on due to BIOS **6.** Login	**1.** Firmware upgrade 710 and BIOS **2.** NFVIS power off/on due to BIOS **3.** Login
Intel 710 and CIMC		
1. NFVIS upgrade **2.** Reboot **3.** Login **4.** Firmware upgrade 710 and CIMC **5.** CIMC reboot **6.** NFVIS power cycle due to 710 **7.** Login	**1.** Install **2.** Reboot **3.** Login **4.** Firmware upgrade 710 and CIMC **5.** CIMC reboot **6.** NFVIS power cycle due to 710 **7.** Login	**1.** Firmware upgrade 710 and CIMC **2.** CIMC reboot **3.** NFVIS power cycle due to 710 **4.** Login
CIMC		

NFVIS Upgrade	Fresh Install	On Demand Upgrade
1. NFVIS upgrade **2.** Reboot **3.** Login **4.** Firmware upgrade CIMC **5.** CIMC reboot **6.** Login	**1.** Install **2.** Reboot **3.** Login **4.** Firmware upgrade CIMC **5.** CIMC reboot **6.** Login	**1.** Firmware upgrade CIMC **2.** CIMC reboot **3.** Login
CIMC and BIOS		
1. NFVIS upgrade **2.** Reboot **3.** Login **4.** Firmware upgrade CIMC and BIOS **5.** NFVIS power off **6.** CIMC reboot **7.** BIOS flash **8.** NFVIS power on **9.** Login	**1.** Install **2.** Reboot **3.** Login **4.** Firmware upgrade CIMC and BIOS **5.** NFVIS power off **6.** CIMC reboot **7.** BIOS flash **8.** NFVIS power on **9.** Login	**1.** Firmware upgrade CIMC and BIOS **2.** NFVIS power off **3.** CIMC reboot **4.** BIOS flash **5.** NFVIS power on **6.** Login
BIOS		
1. NFVIS upgrade **2.** Reboot **3.** Login **4.** Firmware upgrade BIOS **5.** NFVIS power off **6.** BIOS flash **7.** NFVIS power on **8.** Login	**1.** Install **2.** Reboot **3.** Login **4.** Firmware upgrade BIOS **5.** NFVIS power off **6.** BIOS flash **7.** NFVIS power on **8.** Login	**1.** Firmware upgrade BIOS **2.** NFVIS power off **3.** BIOS flash **4.** NFVIS power on **5.** Login
Intel 710, CIMC and BIOS		

NFVIS Upgrade	Fresh Install	On Demand Upgrade
1. NFVIS upgrade **2.** Reboot **3.** Login **4.** Firmware upgrade 710, CIMC and BIOS **5.** NFVIS power off **6.** CIMC reboot **7.** BIOS flash **8.** NFVIS power on **9.** Login	**1.** Install **2.** Reboot **3.** Login **4.** Firmware upgrade 710, CIMC and BIOS **5.** NFVIS power off **6.** CIMC reboot **7.** BIOS flash **8.** NFVIS power on **9.** Login	**1.** Firmware upgrade 710, CIMC and BIOS **2.** NFVIS power off **3.** CIMC reboot **4.** BIOS flash **5.** NFVIS power on **6.** Login