Upgrade Procedures

Recommended Upgrade Method

For both combined upgrade and split upgrade, Cisco recommends upgrading the HyperFlex components in the following order for optimizing the upgrade time:

1. Upgrade Cisco UCS Infrastructure

2. Upgrade Cisco HX Data Platform

3. Upgrade Cisco customized VMware ESXi

4. Upgrade Cisco UCS firmware

Upgrading Cisco HX Data Platform

Before you begin

- Complete pre-upgrade validation checks.

- Download the latest Cisco HX Data Platform Upgrade Bundle for upgrading existing clusters from previous releases from Software Download .

- Complete steps 1 to 6 in the *Online Upgrade Process Work flow*. See Online Upgrade Process Workflow, on page 3 for more details.

    - Upgrade Cisco UCS Infrastructure.

    - Bootstrap to upgrade Cisco HX Data Platform plug-in.

    - Disable snapshot schedule, on the bootstrapped storage controller VM.

    - Log in to the Cisco HX Data Platform plug-in with administrator credentials.

- If DRS is *Enabled*, the VMs are automatically vMotioned to other hosts.

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| Note | If DRS is *Disabled*, vMotion the VMs manually to continue the upgrade process. For more information, see VMware Documentation for Migration with vMotion. |

Procedure

Step 1   From the vSphere Web Client Navigator, select **vCenter Inventory Lists** > **Cisco HyperFlex Systems** > **Cisco HX Data Platform** > *HX-Cluster* > **Summary**.

Step 2   Select **Upgrade Cluster**.

Step 3   Select only **HX Data Platform**.

Step 4   Navigate to the .tgz package file on your local PC.

Upload the Cisco HX Data Platform upgrade bundle. This is the same .tgz package file that was used to upgrade the HX Data Platform Plug-in.

Step 5   Enter administrator level vCenter credentials.

(Optional) Enter the MD5 **Checksum #** information under **Advanced Options**. The file checksum can be found on the Cisco.com download page by clicking on the download title to reveal the md5 checksum.

This is an optional step that helps you verify the integrity of the uploaded upgrade package bundle.

Step 6   Click **Upgrade**.

The Validation screen shows the progress of checks performed. Fix validation errors, if any.

The upgrade process proceeds as follows:

   • HyperFlex cluster readiness for upgrade is checked.

   • One by one, the HX nodes enter maintenance mode.

   • HyperFlex vSphere Installation Bundles on Hypervisor are upgraded.

   • Cisco HX Data Platform is upgraded.

   • HX node exits maintenance mode.

   • Cluster will begin to rebuild back to full health.

   • Once the cluster is healthy, upgrade moves on to the next node in the HyperFlex cluster.

During cluster upgrade, if the orchestration node reboots or power cycles due to power issue, the cluster upgrade will be stuck. Once the node is up, restart the cluster upgrade process after cleaning the cluster system using the following command:

```
stcli cluster upgrade --components hxdp -clean
```

If the clean-up command fails, restart the stMgr service on all control VMs (ctrlVM) by running the following command:

```
#restart stMgr
```

Then, clean the cluster system by rerunning the following command:

```
stcli cluster upgrade --components hxdp -clean
```

Here is a sample code:

```
root@ucs-stctlvm-385-1:~# stcli cluster upgrade --clean --components hxdp
##Forcefully cleaned up upgrade progress
root@ucs-stctlvm-385-1:~# stcli cluster upgrade --status
##No active upgrade found. Upgrade progress available after triggering an upgrade
```

Online Upgrade Process Workflow

When using the online upgrade process workflow, consider the following:

- First upgrade Cisco UCS infrastructure to the latest version and then use the automated upgrade workflow for a combined upgrade of Cisco UCS firmware and Cisco HX Data Platform. Online upgrade uses host firmware packages to upgrade all server endpoints.

- During online upgrade, as one node is being upgraded (placed into maintenance mode), the number of tolerated node failures is reduced based on the **Data Replication Factor** and the **Access Policy settings**.

- If upgrading both HXDP and UCS firmware, either a combined or split upgrade can be selected through the vSphere Web Client plug-in depending on the length of the maintenance window.

- Do not use Firefox browser. It is not supported due to an outdated version of flash that is bundled with the browser.

Note Do not attempt to upgrade the server firmware directly through Cisco UCS Manager server firmware auto install. Use the UCS server upgrade orchestration framework provided by the HyperFlex Plug-in.

The following table summarizes the online upgrade workflow:

Step	Description	Reference
1.	If UCSM (A-bundle) or UCS Server Firmware (C-bundle) upgrade is required, download Cisco UCS Infrastructure A, blade bundle B, and rack bundle C.	Downloading Software
2.	Ensure that the *hx-storage-data* and *vMotion* upstream switches are configured for full network failover capability before proceeding forward. Otherwise the HyperFlex Cluster becomes offline and all datastores unmount from the ESXi hosts.	Test Upstream Network Connectivity
3.	Upgrade Cisco UCS Infrastructure as required.	

Step	Description	Reference
4.	Bootstrap to upgrade Cisco HX Data Platform Plug-in. **Important** • Be sure to copy the bootstrap file to the controller VM `/tmp` directory. • Ensure that you confirm the version of the HX Data Platform plug-in in the vCenter **Administration** > **Client Plug-Ins** page.	Manual Bootstrap Upgrade Process
5.	Disable snapshot schedule, on the bootstrapped storage controller VM. **Note** It is enough to run this script on one of the controller nodes.	Run the command `stcli snapshot-schedule --disable`.
6.	Log in to the vSphere Web Client Plug-in with administrator credentials.	Combined Upgrade of Cisco HX Data Platform and Cisco UCS Firmware, on page 5
7.	Start combined upgrade of HX Data Platform and Cisco UCS firmware.	Combined Upgrade of Cisco HX Data Platform and Cisco UCS Firmware, on page 5
	You can choose to upgrade HX Data Platform only or Cisco UCS firmware only. **Note** When only Cisco UCS firmware is being upgraded, you may see the upgrade process pause at the validation screen, after the fabric interconnect discovery. Most likely this occurs due to network connectivity failure.	Upgrading Cisco HX Data Platform, on page 1 Upgrading Cisco UCS Firmware
8.	Confirm that the upgrade is complete.	Post Upgrade Tasks
9.	On the same controller VM, enable snapshot schedule.	Run the command `stcli snapshot-schedule --enable`.

Split Upgrade

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Attention The recommended upgrade method is to upgrade Cisco HX Data Platform first and then upgrade Cisco UCS firmware.

If you prefer to upgrade Cisco UCS firmware first, before upgrading the HX Data Platform do the following:

1. Bootstrap CIP-M using the command `~# ./cluster-bootstrap.sh`.

2. Bootstrap all other nodes using `./cluster-bootstrap.sh -n`.

3. Begin Cisco UCS firmware only upgrade.

4. After UCS firmware upgrade is complete, begin Cisco HX Data Platform upgrade.

Upgrade Cisco HX Data Platform Only Using GUI

Start upgrade of HX Data Platform only. See Upgrading Cisco HX Data Platform, on page 1.

Upgrade Cisco UCS Firmware Only Using GUI

Start upgrade of UCS firmware only. See Upgrading Cisco UCS Firmware.

Upgrade Cisco HX Data Platform Only Using CLI

```
stcli cluster upgrade --components hxdp --location
 /tmp/<storfs package name> --vcenter-user <vcuser>
```

Example:

```
stcli cluster upgrade --components hxdp --location
 /tmp/storfs-packages-1.8.1c-19694.tgz --vcenter-user administrator@vsphere.local
```

Upgrade Cisco UCS Firmware Only Using CLI

⚠️

Attention   Do not upgrade UCS firmware using *stcli*. Upgrade UCS firmware, only through the HX Connect UI.

From the same controller VM, use the following command depending on the server type:

M5 Servers:

```
stcli cluster upgrade --components ucs-fw --ucsm-host eng-fi1
--ucsm-user <UCSM User> --ucsm-pwd <UCSM Password> --ucsm5-fw-version <UCSM Firmware Version>
```

M4 Servers:

```
stcli cluster upgrade --components ucs-fw --ucsm-host eng-fi1
--ucsm-user <UCSM User> --ucsm-pwd <UCSM Password> --ucsfw-version <UCSM Firmware Version>
```

Example for M4 Servers:

```
stcli cluster upgrade --components ucs-fw --ucsm-host eng-fi1
--ucsm-user admin --ucsm-pwd admin --ucsfw-version '3.1(2b)'
```

Combined Upgrade of Cisco HX Data Platform and Cisco UCS Firmware

Combined Upgrade Using GUI

Start combined upgrade of HX Data Platform and Cisco UCS firmware. See Combined Upgrade of Cisco HX Data Platform and Cisco UCS Firmware, on page 6.

Combined Upgrade Using CLI

From the same controller VM, use the following command depending on the server type:

M5 Servers

```
# stcli cluster upgrade --components hxdp,ucs-fw --location/tmp/
<storfs package name> --vcenter-user <vcuser> --ucsm-host <IP/FQDN of UCSM>
--ucsm-user <UCSM User> --ucsm5-fw-version <UCSM Firmware Version>
```

M4 Servers

```
# stcli cluster upgrade --components hxdp,ucs-fw --location/tmp/
<storfs package name> --vcenter-user <vcuser> --ucsm-host <IP/FQDN of UCSM>
--ucsm-user <UCSM User> --ucsfw-version <UCSM Firmware Version>
```

Example for M4 Servers:

```
root@ucs-stctlvm-357-1:~# stcli cluster upgrade --components hxdp,ucs-fw --location
/tmp/storfs-packages-1.8.1c-19712.tgz --vcenter-user administrator@vsphere.local
--ucsm-host eng-fi16.eng.storvisor.com --ucsm-user admin --ucsfw-version '3.1(2b)'
```

Combined Upgrade of Cisco HX Data Platform and Cisco UCS Firmware

Combined upgrade does not cause any disruption to the workloads running on the HyperFlex Cluster.

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Important   Do not acknowledge the pending activities in Cisco UCS Manager.

Before you begin

- Complete pre-upgrade validation checks. See Prerequisites for more details.

- Download the latest Cisco HX Data Platform upgrade bundle for upgrading existing clusters, from Download Software.

- Complete steps 1 to 6 in the *Online Upgrade Process Work flow*.

  - Upgrade Cisco UCS Infrastructure.

  - Bootstrap to upgrade Cisco HX Data Platform plug-in.

  - Disable snapshot schedule, on the bootstrapped storage controller VM.

  - Log in to the Cisco HX Data Platform plug-in with administrator credentials.

- If DRS is *Enabled*, the VMs are automatically vMotioned to other hosts.

  ✎

  Note   If DRS is *Disabled*, vMotion the VMs manually to continue the upgrade process. For more information, see VMware Documentation for Migration with vMotion.

Procedure

Step 1   From the vSphere Web Client Navigator, select **vCenter Inventory Lists** > **Cisco HyperFlex Systems** > **Cisco HX Data Platform** > *HX-Cluster* > **Summary**.

Step 2   Select **Upgrade Cluster**.

Step 3	Select both, **HX Data Platform** and **UCS Firmware**. Click **Next**.
Step 4	Navigate to the `.tgz` package file on your local PC.
	Upload the Cisco HX Data Platform upgrade bundle. This is the same `.tgz` package file that was used to upgrade the HX Data Platform Plug-in.
Step 5	Enter administrator level vCenter credentials.
	(Optional) Enter the MD5 **Checksum #** information under **Advanced Options**. The file checksum can be found on the Cisco.com download page by clicking on the download title to reveal the md5 checksum.
	This is an optional step that helps you verify the integrity of the uploaded upgrade package bundle.
Step 6	Enter administrator level UCS Manager credentials.
Step 7	Click **Discover** to view the *current firmware package* version.
Step 8	Type in the exact, latest version of Cisco UCS firmware in the **Target version** field.
Step 9	Click **Upgrade**.
	The Cisco UCS servers are now upgraded with the desired firmware packages. The pending activities will be automatically acknowledged in a rolling fashion.
	Note You can monitor the progress in the Cisco UCS Manager GUI, under the **FSM** tab for the service profile.
	The Validation screen shows the progress of checks performed. Fix validation errors, if any.
	The upgrade process proceeds as follows:

- HyperFlex cluster readiness for upgrade is checked.

- One by one, the HX nodes enter maintenance mode.

- HyperFlex vSphere Installation Bundles (VIBs) on Hypervisor are upgraded.

- Cisco HX Data Platform is upgraded followed by a reboot of the host server.

- The HX Data Platform requests Cisco UCS Manager to begin firmware upgrade. This process can take up to 1 hour.

- HX node exits maintenance mode.

- Cluster will begin to rebuild back to full health.

- Once the cluster is healthy, upgrade moves on to the next node in the HyperFlex cluster.

What to do next

Confirm that the upgrade is complete. See *Post Upgrade Tasks* for more details.

Offline Upgrade Process Workflow

The following table summarizes the offline upgrade workflow:

Step	Description	Reference
1.	If UCSM (A-bundle) or UCS Server Firmware (C-bundle) upgrade is required, download Cisco UCS Infrastructure A, blade bundle B, and rack bundle C.	Downloading Software
2.	Ensure that the *hx-storage-data* and *vMotion* upstream switches are configured for full network failover capability before proceeding forward. Otherwise the HyperFlex Cluster becomes offline and all datastores unmount from the ESXi hosts.	Test Upstream Network Connectivity
3.	Upgrade Cisco UCS Infrastructure as required.	
4.	Launch the vSphere Web Client and power down all user VMs residing on HX servers and all user VMs running on HX datastores. This includes VMs running on compute-only nodes. After the VMs have been shut down, verify the health state of the cluster and perform a graceful shutdown. **Important** HyperFlex controller VMs (stCtlVMs) must remain powered on.	Graceful Shutdown of a HX Cluster
5.	Manually stage the correct firmware version before starting the upgrade process.	Modifying Host Firmware Package Using Cisco UCS Manager
6.	Shutdown the HyperFlex Controller VMs (stCtlVMs).	In vCenter, right-click on each HX Controller VM (stCtlVM) and select **Power** > **Shut Down Guest OS**.
7.	Once the Controller VMs are shutdown, place the ESXi hosts into Maintenance Mode.	In vCenter, right-click on each ESXi host select **Maintenance Mode** > **Enter Maintenance Mode**.

Step	Description	Reference
8.	Acknowledge the pending reboot on the servers that comprise your HX cluster nodes, including both converged nodes and compute-only nodes connected to the cluster. Wait until all nodes are upgraded. Confirm that correct firmware packages have been installed before proceeding.	
9.	Once the ESXi hosts have booted, take them out of Maintenance Mode. Now the controller VM should come back online.	In vCenter, right-click on each ESXi host select **Maintenance Mode** > **Exit Maintenance Mode**.
10.	Bootstrap to upgrade the Cisco HX Data Platform Plug-in. **Important** • Be sure to copy the bootstrap file to the controller VM `/tmp` directory. • Ensure that you confirm the version of the plug-in in the vCenter **Administration** > **Client Plug-Ins** page.	Manual Bootstrap Upgrade Process
11.	Disable snapshot schedule, on the bootstrapped storage controller VM. **Note** It is enough to run this script on one of the controller nodes.	Run the command `stcli snapshot-schedule --disable`.
12.	From the same controller VM, begin the upgrade.	Offline Upgrade Using CLI, on page 10
13.	Confirm that upgrade is complete.	Post Upgrade Tasks
14.	After the upgrade is complete, start the cluster and power on VMs.	Start Cluster and Power On VMs , on page 11
15.	On the same controller VM, enable snapshot schedule.	Run the command `stcli snapshot-schedule --enable`.

Offline Upgrade Guidelines

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Important

• --ucsm-host and --ucsm-user parameters are required when you are upgrading from 1.7x to 1.8x. These parameters must not be used when moving up from 1.8(1a)/1.8(1b) to 2.0(1a) as we are not changing the Cisco UCS server firmware version.

Before you proceed, with either combined or split upgrade consider the following guidelines:

• The package name must match the file that you uploaded to the controller VM.

• Enter passwords when prompted.

• Nodes are upgraded with the new version of the Cisco HX Data Platform software and rebooted one at a time.

• Offline cluster upgrades with nested vCenter is not supported.

Offline Upgrade Using CLI

Combined Upgrade of Cisco HX Data Platform and Cisco UCS Firmware

M5 Servers

```
# stcli cluster upgrade --components hxdp,ucs-fw --location/tmp/
<storfs package name> --vcenter-user <vcuser> --ucsm-host <IP/FQDN of UCSM>
--ucsm-user <UCSM User> --ucsm5-fw-version <UCSM Firmware Version>
```

M4 Servers

```
# stcli cluster upgrade --components hxdp,ucs-fw --location/tmp/
<storfs package name> --vcenter-user <vcuser> --ucsm-host <IP/FQDN of UCSM>
--ucsm-user <UCSM User> --ucsfw-version <UCSM Firmware Version>
```

Example for M4 Servers:

```
~# stcli cluster upgrade --components hxdp,ucs-fw --location
/tmp/storfs-packages-1.8.1c-19712.tgz --vcenter-user administrator@vsphere.local
--ucsm-host eng-fi16.eng.storvisor.com --ucsm-user admin --ucsfw-version '3.1(2b)'
```

Upgrade Cisco UCS Firmware Only

M5 Servers

```
stcli cluster upgrade --components ucs-fw --ucsm-host eng-fi1
--ucsm-user <UCSM User> --ucsm-pwd <UCSM Password> --ucsm5-fw-version <UCSM Firmware Version>
```

M4 Servers

```
stcli cluster upgrade --components ucs-fw --ucsm-host eng-fi1
--ucsm-user <UCSM User> --ucsm-pwd <UCSM Password> --ucsfw-version <UCSM Firmware Version>
```

Example for M4 Servers:

```
stcli cluster upgrade --components ucs-fw --ucsm-host eng-fi1
--ucsm-user admin --ucsm-pwd admin --ucsfw-version '3.1(2b)'
```

Upgrade Cisco HX Data Platform Only

```
stcli cluster upgrade --components hxdp --location
 /tmp/<storfs package name> --vcenter-user <vcuser>
```

Example:

```
stcli cluster upgrade --components hxdp --location
 /tmp/storfs-packages-1.8.1c-19694.tgz --vcenter-user administrator@vsphere.local
```

Start Cluster and Power On VMs

After the upgrade is complete and the cluster has been upgraded, log out and log back in to vCenter to see upgrade changes.

Procedure

Step 1 After the upgrade is complete, start your cluster.

Step 2 Login to any controller VM through SSH.

```
# stcli cluster start
```

Example:

```
HyperFlex StorageController 1.8(1c)
Last login: Wed Sept 21 23:54:23 2016 from pguo-dev.eng.storvisor.com
 root@ucs-stclivm - 384 -1;~# stcli cluster upgrade-status
Cluster upgrade succeeded. Cluster version: 1.8(1c)
root@ucs-stctlvm-384;~# stcli cluster start
waiting for Cluster to start on nodes: [ucs-383, ucs-384, ucs-385, ucs-386]
```

This will start the cluster and mount the HX datastores. Wait for cluster to come online. You will see the prompt:

```
Started cluster on nodes; [ucs-383, ucs-384, ucs-385, ucs-386]
Cluster is online
root@ucs-stctlvm-384-1;~#
```

Step 3 Wait for cluster to become healthy before starting the VMs. Run command:

```
~# stcli clustr info| grep health
```

Example:

```
root@SpringpathControllerZRVF040451;~# stcli cluster info | grep health
healthState: healthy
state: healthy
 storage cluster is healthy
```

Step 4 After the cluster is healthy, launch vSphere Web Client or Thick Client, navigate to **Hosts and Cluster > Datacenter > Cluster >** . Right click, select **Power> Power On** to start the VMs.