Upgrading Firmware through Auto Install

This chapter includes the following sections:

Firmware Upgrades through Auto Install

Auto Install enables you to upgrade a Cisco UCS domain to the firmware versions contained in a single package in the following two stages:

- Install Infrastructure Firmware—Uses the Cisco UCS Infrastructure Software Bundle to upgrade the infrastructure components, such as the fabric interconnects, the I/O modules, and Cisco UCS Manager.

- Install Server Firmware—Uses the Cisco UCS B-Series Blade Server Software Bundle to upgrade all blade servers in the Cisco UCS domain and/or the Cisco UCS C-Series Rack-Mount UCS-Managed Server Software Bundle to upgrade all rack servers.

These two stages are independent and can be run or scheduled to run at different times.

You can use Auto Install to upgrade the infrastructure components to one version of Cisco UCS and server components to a different version.

Note
You cannot use Auto Install to upgrade either the infrastructure or the servers in a Cisco UCS domain if Cisco UCS Manager in that domain is at a release prior to Cisco UCS 2.1(1). However, after you upgrade Cisco UCS Manager to Release 2.1(1) or greater, you can use Auto Install to upgrade the remaining components in a Cisco UCS domain that is at the minimum required firmware level. For more information, see *Cautions, Guidelines, and Limitations for Upgrading with Auto Install* and the appropriate Cisco UCS upgrade guide.

Direct Upgrade After Auto Install

During Auto Install, the startup version of the default infrastructure pack is configured. To successfully complete a direct upgrade or activation of Cisco UCS Manager, Fabric Interconnects, and IOMs after Auto Install, ensure that the startup version is cleared before starting direct upgrade or activation. If the startup version of the default infrastructure pack is configured, you cannot directly upgrade or activate Cisco UCS Manager, Fabric Interconnects, and IOMs. Clearing the Startup Version of the Default Infrastructure Pack, on page 7 provides detailed steps for clearing the startup version.

Install Infrastructure Firmware

Install Infrastructure Firmware upgrades all infrastructure components in a Cisco UCS domain, including Cisco UCS Manager, and all fabric interconnects and I/O modules. All components are upgraded to the firmware version included in the selected Cisco UCS Infrastructure Software Bundle.

Install Infrastructure Firmware does not support a partial upgrade to only some infrastructure components in a Cisco UCS domain domain.

You can schedule an infrastructure upgrade for a specific time to accommodate a maintenance window. However, if an infrastructure upgrade is already in progress, you cannot schedule another infrastructure upgrade. You must wait until the current upgrade is complete before scheduling the next one.

Note You can cancel an infrastructure firmware upgrade if it is scheduled to occur at a future time. However, you cannot cancel an infrastructure firmware upgrade after the upgrade has begun.

Install Server Firmware

Install Server Firmware uses host firmware packages to upgrade all servers and their components in a Cisco UCS domain. All servers whose service profiles include the selected host firmware packages are upgraded to the firmware versions in the selected software bundles, as follows:

- Cisco UCS B-Series Blade Server Software Bundle for all blade servers in the chassis.

- Cisco UCS C-Series Rack-Mount UCS-Managed Server Software Bundle for all rack-mount servers that are integrated into the Cisco UCS domain.

Note You cannot cancel a server firmware upgrade process after you complete the configuration in the **Install Server Firmware** wizard. Cisco UCS Manager applies the changes immediately. However, the timing of the actual reboot of servers occurs depends upon the maintenance policy in the service profile associated with the server.

Automatic Internal Backup

While the Infrastructure firmware is being upgraded, an automatic full state backup file is created. Cisco UCS Manager Release 2.2(4) introduces two new backup stages that are visible in the FSM status. These are:

1 **InternalBackup**—Backs up the configuration.

2 **PollInternalBackup**—Waits for the backup to complete.

After the backup is successfully completed, the backup file, named as "bkp.*timestamp*.tgz", is stored within the `/workspace/backup` directory of both the Fabric Interconnects. This location contains only the latest backup file.

If the backup fails, a minor fault stating "**internal backup failed**" is logged. This fault is not logged in case of downgrade to a release prior to Cisco UCS Manager Release 2.2(4).

Before restoring the configuration for a Fabric Interconnect from this backup file, copy it from the Fabric Interconnect to a file server by using the **copy** command from local-mgmt.

This example shows how to copy the automatic internal backup file to a file server:

```
UCS-A# connect local-mgmt
UCS-A (local-mgmt) # copy workspace:/backup/bkp.1429690478.tgz
scp://builds@10.190.120.2://home/builds/
```

Cisco UCS Manager CLI Configuration Guide, Release 2.2 provides more details about restoring the configuration for a Fabric Interconnect.

Required Order of Steps for Auto Install

If you want to upgrade all components in a Cisco UCS domain to the same package version, you must run the stages of Auto Install in the following order:

1 Install Infrastructure Firmware

2 Install Server Firmware

This order enables you to schedule the server firmware upgrades during a different maintenance window than the infrastructure firmware upgrade.

Upgrading the Infrastructure Firmware

The **auto-install** scope is not available if the Cisco UCS Manager CLI is at a release lower than 2.1(1).

Note
You cannot use Auto Install to upgrade either the infrastructure or the servers in a Cisco UCS domain if Cisco UCS Manager in that domain is at a release prior to Cisco UCS 2.1(1). However, after you upgrade Cisco UCS Manager to Release 2.1(1) or greater, you can use Auto Install to upgrade the remaining components in a Cisco UCS domain that is at the minimum required firmware level. For more information, see *Cautions, Guidelines, and Limitations for Upgrading with Auto Install* and the appropriate Cisco UCS upgrade guide.

Before You Begin

Complete all prerequisites listed in Prerequisites for Upgrading and Downgrading Firmware.

If your Cisco UCS domain does not use an NTP server to set the time, make sure that the clocks on the primary and secondary fabric interconnects are in sync. You can do this by configuring an NTP server in Cisco UCS Manager or by syncing the time manually.

Procedure

	Command or Action	**Purpose**
Step 1	UCS-A# **scope firmware**	Enters firmware mode.
Step 2	UCS-A /firmware # **scope auto-install**	Enters auto-install mode for infrastructure firmware upgrades.
Step 3	UCS-A /firmware/auto-install # **install infra infra-vers** *infrastructure-bundle-version* [**starttime** *mon dd yyyy hh min sec*] [**force**]	Updates and activates the infrastructure firmware. You must use **starttime** to schedule the infrastructure firmware upgrade, if you do not want the upgrade to start immediately. If you use **starttime**, enter the following information to specify when you want to schedule the upgrade: • *mon*—The first three letters of the desired month, such as jan or feb. • *dd*—The number of the desired day of the month, from 1 to 31. • *yyyy*—The four numbers of the desired year, such as 2012. • *hh*—The hour when you want the upgrade to start, from 0 to 23. • *min*—The minute when you want the upgrade to start, from 0 to 60. • *sec*—The second when you want the upgrade to start, from 0 to 60. Use the **force** keyword to activate the firmware regardless of any possible incompatibilities or currently executing tasks. **Caution** Review the checklist that displays and ensure you have met all the requirements before you continue with the upgrade. If there is not enough space under bootflash, a warning will display and the upgrade process will stop.

This example shows how to upgrade the infrastructure to the firmware in the Cisco UCS Infrastructure Software Bundle:

```
UCS-A# scope firmware
UCS-A /firmware # scope auto-install
UCS-A /firmware/auto-install # install infra infra-vers 3.0(1e)a
This operation upgrades firmware on UCS Infrastructure Components
```

```
(UCS manager, Fabric Interconnects and IOMs).
Here is the checklist of things that are recommended before starting Auto-Install
(1) Review current critical/major faults
(2) Initiate a configuration backup
(3) Check if Management Interface Monitoring Policy is enabled
(4) Check if there is a pending Fabric Interconnect Reboot activitiy
(5) Ensure NTP is configured
Do you want to proceed? (yes/no): yes

Triggering Install-Infra with:
   Infrastructure Pack Version: 3.0(1e)A
UCS-A /firmware/auto-install #
```

What to Do Next

Acknowledge the reboot of the primary fabric interconnect. If you do not acknowledge that reboot, Cisco UCS Manager cannot complete the infrastructure upgrade and the upgrade remains pending indefinitely.

Acknowledging the Reboot of the Primary Fabric Interconnect

Before You Begin

⚠️

Caution   To upgrade with minimal disruption, you must confirm the following:

- Ensure that all the IOMs that are attached to the Fabric Interconnect are up before you acknowledge the reboot of the Fabric Interconnect. If all IOMs are not up, all the servers connected to the Fabric Interconnect will immediately be re-discovered and cause a major disruption.

- Ensure that both of the Fabric Interconnects and the service profiles are configured for failover.

- Verify that the data path has been successfully restored from the secondary Fabric Interconnect before you acknowledge the reboot of the primary Fabric Interconnect. For more information, see Verifying that the Data Path is Ready.

After you upgrade the infrastructure firmware, Install Infrastructure Firmware automatically reboots the secondary fabric interconnect in a cluster configuration. However, you must acknowledge the reboot of the primary fabric interconnect. If you do not acknowledge the reboot, Install Infrastructure Firmware waits indefinitely for that acknowledgment rather than completing the upgrade.

Procedure

	Command or Action	**Purpose**
Step 1	UCS-A# **scope firmware**	Enters firmware mode.
Step 2	UCS-A /firmware # **scope auto-install**	Enters auto-install mode for infrastructure firmware upgrades.
Step 3	UCS-A /firmware/auto-install # **acknowledge primary fabric-interconnect reboot**	Acknowledges the pending reboot of the primary fabric interconnect.
Step 4	UCS-A /firmware/auto-install # **commit-buffer**	Commits the transaction to the system configuration.

	Command or Action	Purpose
		Cisco UCS Manager immediately reboots the primary fabric interconnect. You cannot stop this reboot after you commit the transaction.

This example shows how to acknowledge the reboot of the primary fabric interconnect and commit the transaction:

```
UCS-A# scope firmware
UCS-A /firmware # scope auto-install
UCS-A /firmware/auto-install # acknowledge primary fabric-interconnect reboot
UCS-A /firmware/auto-install* # commit-buffer
UCS-A /firmware/auto-install #
```

Canceling an Infrastructure Firmware Upgrade

Note You can cancel an infrastructure firmware upgrade if it is scheduled to occur at a future time. However, you cannot cancel an infrastructure firmware upgrade after the upgrade has begun.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope firmware**	Enters firmware mode.
Step 2	UCS-A /firmware # **scope auto-install**	Enters auto-install mode for infrastructure firmware upgrades.
Step 3	UCS-A /firmware/auto-install # **cancel install infra**	Cancels the scheduled infrastructure firmware upgrade.
Step 4	UCS-A /firmware/auto-install # **commit-buffer**	Commits the transaction to the system configuration.

The following example cancels a scheduled infrastructure firmware upgrade and commits the transaction:

```
UCS-A# scope firmware
UCS-A /firmware # scope auto-install
UCS-A /firmware/auto-install # cancel install infra
UCS-A /firmware/auto-install* # commit-buffer
UCS-A /firmware/auto-install #
```

Clearing the Startup Version of the Default Infrastructure Pack

You must clear the startup version of the default infrastructure pack before directly upgrading or activating Cisco UCS Manager, Fabric Interconnects, and IOMs.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope org** org-name	Enters the organization mode for the specified organization. To enter the root organization mode, enter / as the org-name.
Step 2	UCS-A /org # **scope fw-infra-pack** name	Enters the organization infrastructure firmware policy mode.
Step 3	UCS-A /org/fw-infra-pack # **set infra-bundle-version** "version"	Specifies the infrastructure policy version for the update. To clear the startup version, specify **""** as the startup version.
Step 4	UCS-A /org/fw-infra-pack* # **commit-buffer**	Commits the transaction.

This example shows how to clear the startup version of the default infrastructure pack.

```
UCS-A# scope org
UCS-A /org # scope fw-infra-pack default
UCS-A /org/fw-infra-pack # set infra-bundle-version ""
UCS-A /org/fw-infra-pack* # commit-buffer
```

Viewing the Status of the FSM During An Infrastructure Firmware Upgrade

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **scope firmware**	Enters firmware mode.
Step 2	UCS-A /firmware # **scope auto-install**	Enters auto-install mode for infrastructure firmware upgrades.
Step 3	UCS-A /firmware/auto-install # **show fsm status expand**	Displays the status of the FSM.

The following example displays the status of the FSM:

```
UCS-A /firmware/auto-install # show fsm status expand


    FSM Status:

        Affected Object: sys/fw-system/fsm
        Current FSM: Deploy
        Status: In Progress
        Completion Time:
        Progress (%): 92

        FSM Stage:

        Order  Stage Name                               Status        Try
        ------ ---------------------------------------- ------------  ---
        1      DeployWaitForDeploy                      Success       0
        2      DeployResolveDistributableNames          Skip          0
        3      DeployResolveDistributable               Skip          0
        4      DeployResolveImages                      Skip          0
        5      DeployInternalBackup                     Skip          0
        6      DeployPollInternalBackup                 Success       0
        7      DeployActivateUCSM                       Skip          0
        8      DeployPollActivateOfUCSM                 Success       0
        9      DeployUpdateIOM                          Success       0
        10     DeployPollUpdateOfIOM                    Success       0
        11     DeployActivateIOM                        Success       0
        12     DeployPollActivateOfIOM                  Success       0
        13     DeployActivateRemoteFI                   Success       0
        14     DeployPollActivateOfRemoteFI             In Progress   1
        15     DeployWaitForUserAck                     Pending       0
        16     DeployPollWaitForUserAck                 Pending       0
        17     DeployActivateLocalFI                    Pending       0
        18     DeployPollActivateOfLocalFI              Pending       0
```