Upgrading Cisco UCS from Release 1.4 to Release 2.0

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Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

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CONTENTS

Preface

This preface includes the following sections:

Audience

This guide is intended primarily for those who need to upgrade an existing Cisco Unified Computing System (Cisco UCS) domain.

Organization

This document includes the following chapters:

Chapter	Title	Description
Part 1	Firmware Upgrades	Contains the information, prerequisites, required order of steps, and procedures that you must follow to successfully upgrade a Cisco UCS domain to the specified release with Cisco UCS Manager.
Part 2	Hardware Upgrades	Contains the information, prerequisites, and procedures that you must follow to successfully upgrade hardware in a Cisco UCS domain.

Conventions

Text Type	Indication
GUI elements	GUI elements such as tab titles, area names, and field labels appear in **this font**. Main titles such as window, dialog box, and wizard titles appear in **this font**.
Document titles	Document titles appear in *this font*.
TUI elements	In a Text-based User Interface, text the system displays appears in `this font`.
System output	Terminal sessions and information that the system displays appear in `this font`.
CLI commands	CLI command keywords appear in **this font**. Variables in a CLI command appear in *this font*.
[ ]	Elements in square brackets are optional.
{x | y | z}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

Tip Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

Caution Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

Timesaver Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Warning IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

Related Documentation

A roadmap that lists all documentation for Cisco Unified Computing System (Cisco UCS) B-Series hardware and software is available at the following URL:

http://www.cisco.com/go/unifiedcomputing/b-series-doc

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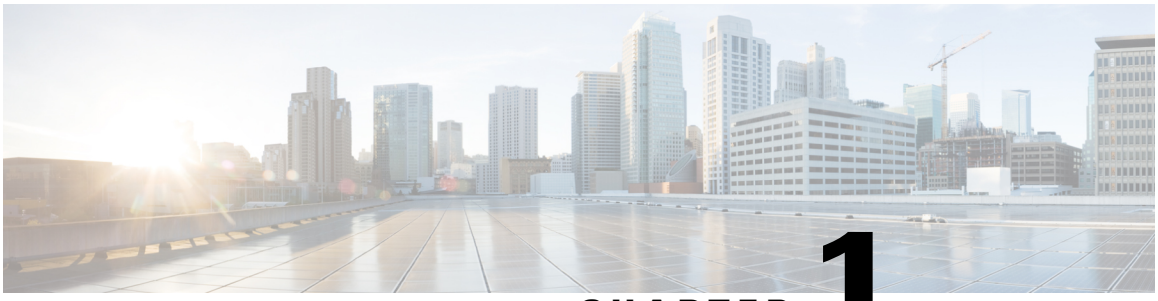
PART I

Firmware Upgrades



CHAPTER 1

Overview of Upgrading to Release 2.0

This chapter includes the following sections:

Overview of Firmware

Cisco UCS uses firmware obtained from and certified by Cisco to support the endpoints in a Cisco UCS domain. Each endpoint is a component in the Cisco UCS domain that requires firmware to function. The upgrade order for the endpoints in a Cisco UCS domain depends upon the upgrade path, but includes the following:

- Cisco UCS Manager
- I/O modules
- Fabric interconnects
- Endpoints physically located on adapters, including NIC and HBA firmware, and Option ROM (where applicable) that can be upgraded through firmware packages included in a service profile
- Endpoints physically located on servers, such as the BIOS, storage controller (RAID controller), and Cisco Integrated Management Controller (CIMC) that can be upgraded through firmware packages included in a service profile

See the required order of steps for your upgrade path to determine the appropriate order in which to upgrade the endpoints in your Cisco UCS domain.

Note Beginning with Cisco UCS, Release 1.4(1), Cisco is releasing firmware upgrades in multiple bundles, rather than one large firmware package. For more information see Firmware Image Management, on page 4.

Cisco maintains a set of best practices for managing firmware images and updates in this document and in the following technical note: Unified Computing System Firmware Management Best Practices.

This document uses the following definitions for managing firmware:

Upgrade

Changes the firmware running on an endpoint to another image, such as a release or patch. Upgrade includes both update and activation.

Update

Copies the firmware image to the backup partition on an endpoint.

Activate

Sets the firmware in the backup partition as the active firmware version on the endpoint. Activation can require or cause the reboot of an endpoint.

For Management Extensions and Capability Catalog upgrades, update and activate occur simultaneously. You only need to update or activate those upgrades. You do not need to perform both steps.

Firmware Image Management

Cisco delivers all firmware updates to Cisco UCS components in bundles of images. Cisco UCS firmware updates are available to be downloaded to fabric interconnects in a Cisco UCS domain in the following bundles:

Cisco UCS Infrastructure Software Bundle

This bundle includes the following firmware images that are required to update the following components:

- Cisco UCS Manager software
- Kernel and system firmware for the fabric interconnects
- I/O module firmware

Cisco UCS B-Series Blade Server Software Bundle

This bundle includes the following firmware images that are required to update the firmware for the blade servers in a Cisco UCS domain. In addition to the bundles created for a release, these bundles can also be released between infrastructure bundles to enable Cisco UCS Manager to support a blade server that is not included in the most recent infrastructure bundle.

- CIMC firmware
- BIOS firmware
- Adapter firmware
- Board controller firmware
- Third-party firmware images required by the new server

Cisco UCS C-Series Rack-Mount UCS-Managed Server Software Bundle

This bundle includes the following firmware images that are required to update components on rack-mount servers that have been integrated with and are managed by Cisco UCS Manager:

- CIMC firmware
- BIOS firmware
- Adapter firmware
- Storage controller firmware

Note You cannot use this bundle for standalone C-series servers. The firmware management system in those servers cannot interpret the header required by Cisco UCS Manager. For information on how to upgrade standalone C-series servers, see the C-series configuration guides.

Cisco also provides release notes, which you can obtain on the same website from which you obtained the bundles.

Firmware Versions

The firmware version terminology used depends upon the type of endpoint, as follows:

Firmware Versions in CIMC, I/O Modules, and Adapters

Each CIMC, I/O module, and adapter has two slots for firmware in flash. Each slot holds a version of firmware. One slot is active and the other is the backup slot. A component boots from whichever slot is designated as active.

The following firmware version terminology is used in Cisco UCS Manager:

Running Version

The running version is the firmware that is active and in use by the endpoint.

Startup Version

The startup version is the firmware that will be used when the endpoint next boots up. Cisco UCS Manager uses the activate operation to change the startup version.

Backup Version

The backup version is the firmware in the other slot and is not in use by the endpoint. This version can be firmware that you have updated to the endpoint but have not yet activated, or it can be an older firmware version that was replaced by a recently activated version. Cisco UCS Manager uses the update operation to replace the image in the backup slot.

If the endpoint cannot boot from the startup version, it boots from the backup version.

Firmware Versions in the Fabric Interconnect and Cisco UCS Manager

You can only activate the fabric interconnect firmware and Cisco UCS Manager on the fabric interconnect. The fabric interconnect and Cisco UCS Manager firmware do not have backup versions, because all the images are stored on the fabric interconnect. As a result, the number of bootable fabric interconnect images is not limited to two, like the server CIMC and adapters. Instead, the number of bootable fabric interconnect images is limited by the available space in the memory of the fabric interconnect and the number of images stored there.

The fabric interconnect and Cisco UCS Manager firmware have running and startup versions of the kernel and system firmware. The kernel and system firmware must run the same versions of firmware.

Firmware Upgrade to Cisco UCS, Release 2.0

The firmware upgrade to Cisco UCS, Release 2.0 needs to be planned with scheduled maintenance windows for standalone fabric interconnects. With this firmware upgrade, you should expect the following data traffic interruptions:

- With a cluster configuration, no data traffic disruption if the correct sequence of steps is followed. Failover between the fabric interconnects prevents the longer disruption required for the fabric interconnects and I/O modules to reboot.
- With a standalone fabric interconnect, data traffic disruption of up to one minute for the servers to reboot and approximately ten minutes for the fabric interconnect and I/O module to reboot.

This firmware upgrade requires a combination of the following methods:

- Direct upgrade at the endpoints. For a cluster configuration with two fabric interconnects, a direct upgrade can be minimally disruptive to data traffic. However, it requires that the Cisco UCS domain does not include firmware policies for those endpoints that you upgrade directly. You cannot avoid disruption to traffic in a Cisco UCS domain with only one fabric interconnect.

  Note Direct upgrade is not available for all endpoints, including the server BIOS, storage controller, HBA firmware, and HBA option ROM. You must upgrade those endpoints through the host firmware package included in the service profile associated with the server.

- Upgrades to server endpoints through service profiles that include a host firmware package, a management firmware package, or both. This method can be disruptive to data traffic and should be performed during a maintenance window.

Cautions, Guidelines, and Limitations for Firmware Upgrades

Before you upgrade the firmware for any endpoint in a Cisco UCS domain, consider the following cautions, guidelines, and limitations:

Note The Cisco UCS Manager GUI does not allow you to choose options that a release does not support. If a Cisco UCS domain includes hardware that is not supported in the release to which you are upgrading, Cisco UCS Manager GUI does not display the firmware as an option for that hardware or allow you to upgrade to it.

- Only upgrades from Cisco UCS Release 1.4 and above are supported.
- Clear any faults before you upgrade the firmware.

Clear any faults before you upgrade the firmware.

Configuration Changes and Settings that Can Impact Upgrades

Depending upon the configuration of your Cisco UCS domain, the following changes may require you to make configuration changes after you upgrade. To avoid faults and other issues, we recommend that you make any required changes before you upgrade.

Impact of Upgrade to Cisco UCS, Release 2.1(2) and Higher on Initiator IQNs Defined at the Service Profile Level

If there are two iSCSI vNICs and both use the same initiator IQN (which is supported in Cisco UCS Release 2.0(1)), upgrading creates a single service profile level initiator IQN and resets the initiator IQNs on the iSCSI vNICs to have no value.

If the same initiator IQNs are used in iSCSI vNICs across service profiles in Cisco UCS Release 2.0(1), the upgrade creates duplicate initiator IQNs at the service profile level. This configuration generates faults for each iSCSI vNIC that has a duplicate initiator IQN defined at the service profile level. Changing the duplicate initiator IQNs at the service profile level clears these faults. You must clear these faults before you perform any service profile related operations, such as updating a host firmware package.

Default Maintenance Policy Should be Configured for User Acknowledgment

The default maintenance policy is configured to immediately reboot the server when disruptive changes are made to the service profile, such as server firmware upgrades through a host maintenance policy. We recommend that you change the reboot policy setting in the default maintenance policy to user acknowledgment to avoid unexpected disruption of server traffic.

When you configure the reboot policy in the default maintenance policy to User Ack, the list of disruptive changes are listed with the pending activities. You can then control when the servers are rebooted.

Overlapping FCoE VLAN IDs and Ethernet VLAN IDs Are No Longer Allowed with Cisco UCS Release 2.0 and Higher

Caution In Cisco UCS 1.4 and earlier releases, Ethernet VLANs and FCoE VLANs could have overlapping VLAN IDs. However, starting with Cisco UCS release 2.0, overlapping VLAN IDs are not allowed. If Cisco UCS Manager detects overlapping VLAN IDs during an upgrade, it raises a critical fault. If you do not reconfigure your VLAN IDs, Cisco UCS Manager raises a critical fault and drops Ethernet traffic on the overlapped VLANs. Therefore, we recommend that you ensure there are no overlapping Ethernet and FCoE VLAN IDs before you upgrade to Cisco UCS Release 2.2.

Be aware that when an uplink trunk is configured with VLAN ID 1 defined and set as the native VLAN, changing the Ethernet VLAN 1 ID to another value can cause network disruption and flapping on the fabric interconnects, resulting in an HA event that introduces a large amount of traffic and makes services temporarily unavailable.

If you did not explicitly configure the FCoE VLAN ID for a VSAN in Cisco UCS 1.4 and earlier releases, Cisco UCS Manager assigned VLAN 1 as the default FCoE VLAN for the default VSAN (with default VSAN ID 1). In those releases, VLAN 1 was also used as the default VLAN for Ethernet traffic. Therefore, if you accepted the default VLAN ID for the FCoE VLAN and one or more Ethernet VLANs, you must reconfigure the VLAN IDs for either the FCoE VLAN(s) on the VSAN(s) or the Ethernet VLAN(s).

For a new installation of Cisco UCS Release 2.2, the default VLAN IDs are as follows:

- The default Ethernet VLAN ID is 1.
- The default FCoE VLAN ID is 4048.

After an upgrade from Cisco UCS Release 1.4, where VLAN ID 4048 was used for FCoE storage port native VLAN, to release 2.0, the default VLAN IDs are as follows:

- The default Ethernet VLAN ID is 1.
- The current default FCoE VLAN ID is preserved. Cisco UCS Manager raises a critical fault on the conflicting Ethernet VLAN, if any. You must change one of the VLAN IDs to a VLAN ID that is not used or reserved.

Note If a Cisco UCS domain uses one of the default VLAN IDs, which results in overlapping VLANs, you can change one or more of the default VLAN IDs to any VLAN ID that is not used or reserved. From release 2.0 and higher, VLANs with IDs from 3968 to 4047 are reserved.

VSANs with IDs in the Reserved Range are not Operational

A VSAN with an ID in the reserved range is not operational after an upgrade. Make sure that none of the VSANs configured in Cisco UCS Manager are in these reserved ranges:

- If you plan to use FC switch mode in a Cisco UCS domain, do not configure VSANs with an ID in the range from 3040 to 4078.
- If you plan to use FC end-host mode in a Cisco UCS domain, do not configure VSANs with an ID in the range from 3840 to 4079.

If a VSAN has an ID in the reserved range, change that VSAN ID to any VSAN ID that is not used or reserved.

Port Profile Name Limitations for Upgrade from Release 1.4(4) to Release 2.0 and Higher

In Cisco UCS Release 2.0 and higher, port profile names cannot contain a period (.). If a port profile name contains a period (.), IP connectivity to any DVS which uses that port profile is lost after an upgrade to release 2.2.

If you are upgrading a Cisco UCS domain that is configured for VM-FEX from release 1.4(4) to release 2.2, you must change any port profile names that contain a period (.) and ensure that the DVS is configured to use the new port profile name.

Hardware-Related Guidelines and Limitations for Firmware Upgrades

The hardware in a Cisco UCS domain can impact how you upgrade. Before you upgrade any endpoint, consider the following guidelines and limitations:

No Server or Chassis Maintenance

Caution Do not remove the hardware that contains the endpoint or perform any maintenance on it until the update process has completed. If the hardware is removed or otherwise unavailable due to maintenance, the firmware update fails. This failure may corrupt the backup partition. You cannot update the firmware on an endpoint with a corrupted backup partition.

Avoid Replacing RAID-Configured Hard Disks During or Prior to Upgrade

During or prior to Cisco UCS infrastructure and server firmware upgrades:

- Do not remove, insert or replace any local storage hard disks or SSDs in the servers.
- Ensure that no storage operations are running, including Rebuild, Association, Copyback, BGI, and so on.

Always Upgrade Cisco UCS Gen-2 Adapters through a Host Firmware Package

You cannot upgrade Cisco UCS Gen-2 adapters directly at the endpoints. You must upgrade the firmware on those adapters through a host firmware package.

Cannot Upgrade Cisco UCS 82598KR-CI 10-Gigabit Ethernet Adapter

The firmware on the Cisco UCS 82598KR-CI 10-Gigabit Ethernet Adapter (N20-AI0002), Intel-based adapter card, is burned into the hardware at manufacture. You cannot upgrade the firmware on this adapter.

Number of Fabric Interconnects

For a cluster configuration with two fabric interconnects, you can take advantage of the failover between the fabric interconnects and perform a direct firmware upgrade of the endpoints without disrupting data traffic. However, you cannot avoid disrupting data traffic for those endpoints which must be upgraded through a host or management firmware package.

For a standalone configuration with a single fabric interconnect, you can minimize the disruption to data traffic when you perform a direct firmware upgrade of the endpoints. However, you must reboot the fabric interconnect to complete the upgrade and, therefore, cannot avoid disrupting traffic.

Note If the internal power sequencer firmware for NX-OS is updated as part of the Cisco UCS upgrade process, then the fabric interconnect will boot to the loader prompt. Power-cycle the fabric interconnect in order to continue.

Firmware- and Software-Related Guidelines and Limitations for Upgrades

Before you upgrade any endpoint, consider the following guidelines and limitations:

Determine the Appropriate Type of Firmware Upgrade for Each Endpoint

Some endpoints, such as adapters and the server CIMC, can be upgraded through either a direct firmware upgrade or a firmware package included in a service profile. The configuration of a Cisco UCS domain determines how you upgrade these endpoints. If the service profiles associated with the servers include a host firmware package, upgrade the adapters for those servers through the firmware package. In the same way, if the service profiles associated with the servers include a management firmware package, upgrade the CIMC for those servers through the firmware package.

Upgrades of a CIMC through a management firmware package or an adapter through a firmware package in the service profile associated with the server take precedence over direct firmware upgrades. You cannot directly upgrade an endpoint if the service profile associated with the server includes a firmware package. To perform a direct upgrade, you must remove the firmware package from the service profile.

Do Not Activate All Endpoints Simultaneously in Cisco UCS Manager GUI

If you use Cisco UCS Manager GUI to update the firmware, do not select **ALL** from the **Filter** drop-down list in the **Activate Firmware** dialog box to activate all endpoints simultaneously. Many firmware releases and patches have dependencies that require the endpoints to be activated in a specific order for the firmware update to succeed. This order can change depending upon the contents of the release or patch. Activating all endpoints does not guarantee that the updates occur in the required order and can disrupt communications between the endpoints and the fabric interconnects and Cisco UCS Manager. For information about the dependencies in a specific release or patch, see the release notes provided with that release or patch.

Impact of Activation for Adapters and I/O Modules

During a direct upgrade, you should configure **Set Startup Version Only** for an adapter. With this setting, the activated firmware moves into the pending-next-boot state, and the server is not immediately rebooted. The activated firmware does not become the running version of firmware on the adapter until the server is rebooted. You cannot configure **Set Startup Version Only** for an adapter in the host firmware package.

If a server is not associated with a service profile, the activated firmware remains in the pending-next-boot state. Cisco UCS Manager does not reboot the endpoints or activate the firmware until the server is associated with a service profile. If necessary, you can manually reboot or reset an unassociated server to activate the firmware.

When you configure **Set Startup Version Only** for an I/O module, the I/O module is rebooted when the fabric interconnect in its data path is rebooted. If you do not configure **Set Startup Version Only** for an I/O module, the I/O module reboots and disrupts traffic. In addition, if Cisco UCS Manager detects a protocol

and firmware version mismatch between the fabric interconnect and the I/O module, Cisco UCS Manager automatically updates the I/O module with the firmware version that matches the firmware in the fabric interconnect and then activates the firmware and reboots the I/O module again.

Disable Call Home before Upgrading to Avoid Unnecessary Alerts (Optional)

When you upgrade a Cisco UCS domain, Cisco UCS Manager restarts the components to complete the upgrade process. This restart causes events that are identical to service disruptions and component failures that trigger Call Home alerts to be sent. If you do not disable Call Home before you begin the upgrade, you can ignore the alerts generated by the upgrade-related component restarts.

Outage Impacts of Direct Firmware Upgrades

When you perform a direct firmware upgrade on an endpoint, you can disrupt traffic or cause an outage in one or more of the endpoints in the Cisco UCS domain.

Outage Impact of a Fabric Interconnect Firmware Upgrade

When you upgrade the firmware for a fabric interconnect, you cause the following outage impacts and disruptions:

- The fabric interconnect reboots.
- The corresponding I/O modules reboot.

Outage Impact of a Cisco UCS Manager Firmware Upgrade

A firmware upgrade to Cisco UCS Manager causes the following disruptions:

- Cisco UCS Manager GUI—All users logged in to Cisco UCS Manager GUI are logged out and their sessions ended.

  Any unsaved work in progress is lost.
- Cisco UCS Manager CLI—All users logged in through telnet are logged out and their sessions ended.

Outage Impact of an I/O Module Firmware Upgrade

When you upgrade the firmware for an I/O module, you cause the following outage impacts and disruptions:

- For a standalone configuration with a single fabric interconnect, data traffic is disrupted when the I/O module reboots. For a cluster configuration with two fabric interconnects, data traffic fails over to the other I/O module and the fabric interconnect in its data path.
- If you activate the new firmware as the startup version only, the I/O module reboots when the corresponding fabric interconnect is rebooted.
- If you activate the new firmware as the running and startup version, the I/O module reboots immediately.
- An I/O module can take up to ten minutes to become available after a firmware upgrade.

Outage Impact of a CIMC Firmware Upgrade

When you upgrade the firmware for a CIMC in a server, you impact only the CIMC and internal processes. You do not interrupt server traffic. This firmware upgrade causes the following outage impacts and disruptions to the CIMC:

- Any activities being performed on the server through the KVM console and vMedia are interrupted.
- Any monitoring or IPMI polling is interrupted.

Outage Impact of an Adapter Firmware Upgrade

If you activate the firmware for an adapter and do not configure the **Set Startup Version Only** option, you cause the following outage impacts and disruptions:

- The server reboots.
- Server traffic is disrupted.

Summary of Steps for Upgrading from Release 1.4

Note If you do not follow this order, the firmware upgrade may fail and the servers may experience communication issues with Cisco UCS Manager.

The order of steps in this document and the recommended options minimize the disruption to data traffic. Therefore, when you upgrade from any version of Release 1.4, upgrade the components in the following order.

1. Complete all prerequisite steps, as described in Prerequisites for Upgrading and Downgrading Firmware, on page 15.
2. Obtain the following firmware images from Cisco.com and download them to the fabric interconnect. For more information, see Downloading the Cisco UCS, Release 2.1 Firmware.
   - Cisco UCS Infrastructure Software Bundle—Required for all Cisco UCS domains.
   - Cisco UCS B-Series Blade Server Software Bundle—Required for all Cisco UCS domains that include blade servers.
   - Cisco UCS C-Series Rack-Mount UCS-Managed Server Software Bundle—Only required for Cisco UCS domains that include integrated rack-mount servers. This bundle contains firmware to enable Cisco UCS Manager to manage those servers and is not applicable to standalone C-Series rack-mount servers.
3. (Optional) Disable Call Home—If the Cisco UCS domain includes Call Home or Smart Call Home, disable Call Home to ensure you do not receive unnecessary alerts when Cisco UCS Manager restarts components.
4. Update adapters, CIMC, and IOMs—If you prefer, you can upgrade the CIMC and the adapters in a host firmware package as part of the last upgrade step. Certain adapters must be upgraded in a host firmware package.
5. Activate adapters—Choose **Ignore Compatibility Check** and **Set Startup Version Only** when performing this step.
6. Activate CIMC—Choose **Ignore Compatibility Check** when performing this step.

7 Activate Cisco UCS Manager—Choose **Ignore Compatibility Check** when performing this step.

8 Activate the I/O modules—Choose **Ignore Compatibility Check** and **Set Startup Version Only** when performing this step.

9 Activate the subordinate fabric interconnect—Choose **Ignore Compatibility Check** when performing this step.

10 To avoid control plane disruption, manually failover the primary fabric interconnect to the fabric interconnect that has already been upgraded.

11 Verify that the data path has been restored.

12 Activate the primary fabric interconnect—Choose **Ignore Compatibility Check** when performing this step.

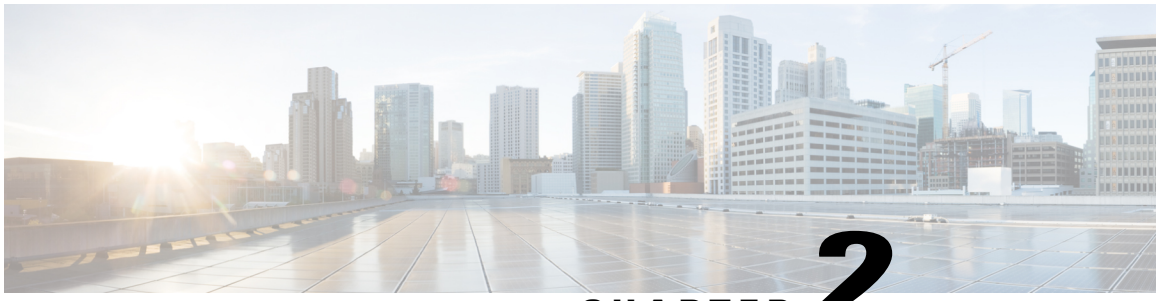
13 Update management firmware package(s) for servers—You do not need to perform this step if you updated and activated the CIMC on the servers directly.

14 Update host firmware package(s) for servers—Must be the last firmware upgraded. We recommend that you upgrade the board controller firmware during this step to avoid an additional reboot of servers with that firmware. While some of these components can be upgraded directly at the endpoint, such as the BIOS on M3 servers, we recommend that you upgrade the following firmware in a host firmware package:

- BIOS
- Storage controller
- Certain adapters

For information on how to upgrade these endpoints directly, see the Cisco UCS B-Series Firmware Management Guides.

15 (Optional) Enable Call Home—If you disabled Call Home before the upgrading the firmware, enable Call Home.



CHAPTER 2

Completing the Prerequisites for Upgrading the Firmware

This chapter includes the following sections:

Prerequisites for Upgrading and Downgrading Firmware

All endpoints in a Cisco UCS domain must be fully functional and all processes must be complete before you begin a firmware upgrade or downgrade on those endpoints. You cannot upgrade or downgrade an endpoint that is not in a functional state. For example, the firmware on a server that has not been discovered cannot be upgraded or downgraded. An incomplete process, such as an FSM that has failed after the maximum number of retries, can cause the upgrade or downgrade on an endpoint to fail. If an FSM is in progress, Cisco UCS Manager queues up the update and activation and runs them when the FSM has completed successfully.

Colored boxes around components on the **Equipment** tab may indicate that an endpoint on that component cannot be upgraded or downgraded. Verify the status of that component before you attempt to upgrade the endpoints.

Note The **Installed Firmware** tab in Cisco UCS Manager GUI does not provide sufficient information to complete these prerequisites.

Before you upgrade or downgrade firmware in a Cisco UCS domain, complete the following prerequisites:

- Review the Release Notes.

- Review the relevant Hardware and Software Interoperability Matrix to ensure the operating systems on all servers have the right driver levels for the release of Cisco UCS to which you plan to upgrade.
- Back up the configuration into an All Configuration backup file.
- For a cluster configuration, verify that the high availability status of the fabric interconnects shows that both are up and running.
- For a standalone configuration, verify that the Overall Status of the fabric interconnect is Operable.
- Verify that the data path is up and running. For more information, see the Verifying that the Data Path is Ready section in the appropriate Firmware Management Guide.
- Verify that all servers, I/O modules, and adapters are fully functional. An inoperable server cannot be upgraded.
- Verify that the Cisco UCS domain does not include any critical or major faults. If such faults exist, you must resolve them before you upgrade the system. A critical or major fault may cause the upgrade to fail.
- Verify that all servers have been discovered. They do not need to be powered on or associated with a service profile.
- If you want to integrate a rack-mount server into the Cisco UCS domain, follow the instructions in the appropriate C-Series Rack-Mount Server Integration Guide for installing and integrating a rack-mount server in a system managed by Cisco UCS Manager.

Creating an All Configuration Backup File

This procedure assumes that you do not have an existing backup operation for an All Configuration backup file.

For more information on backing up a Cisco UCS domain, see the *Cisco UCS Manager GUI Configuration Guide* and the *Cisco UCS Manager CLI Configuration Guide*.

Before You Begin

Obtain the backup server IPv4 or IPv6 address and authentication credentials.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 Click the **All** node.

Step 3 In the **Work** pane, click the **General** tab.

Step 4 In the **Actions** area, click **Backup Configuration**.

Step 5 In the **Backup Configuration** dialog box, click **Create Backup Operation**.

Step 6 In the **Create Backup Operation** dialog box, do the following:

a) Complete the following fields:

- **Admin State** field—Click the **Enabled** radio button to run the backup operation as soon as you click OK.

- **Type** field—Click the **All Configuration** radio button to create an XML backup file that includes all system and logical configuration information.
- **Preserve Identities** check box—If the Cisco UCS domain includes any identities derived from pools that you need to preserve, check this check box.

  Identities such as MAC addresses, WWNNs, WWPNs, or UUIDS are assigned at runtime. If you do not want these identities to change after you import the backup file, you must check this check box. If you do not, these identities may be changed after the import and operations such as a PXE boot or a SAN boot may no longer function.
- **Protocol** field—Click the one of the following radio buttons to indicate the protocol you want to use to transfer the file to the backup server:
  - **FTP**
  - **TFTP**
  - **SCP**
  - **SFTP**
- **Hostname** field—Enter the IP address or hostname of the location where the backup file is to be stored. This can be a server, storage array, local drive, or any read/write media that the fabric interconnect can access through the network. If you use a hostname, you must configure Cisco UCS Manager to use a DNS server.
- **Remote File** field—Enter the full path to the backup configuration file. This field can contain the filename as well as the path. If you omit the filename, the backup procedure assigns a name to the file.
- **User** field—Enter the username that Cisco UCS Manager should use to log in to the backup location. You do not need to complete this field if you selected TFTP for the protocol.
- **Password** field—Enter the password associated with the username. You do not need to complete this field if you selected TFTP for the protocol.

b) Click **OK**.

Step 7 If Cisco UCS Manager displays a confirmation dialog box, click **OK**.
If you set the **Admin State** field to enabled, Cisco UCS Manager takes a snapshot of the configuration type that you selected and exports the file to the network location. The backup operation displays in the **Backup Operations** table in the **Backup Configuration** dialog box.

Step 8 (Optional) To view the progress of the backup operation, do the following:

a) If the operation does not display in the **Properties** area, click the operation in the **Backup Operations** table.

b) In the **Properties** area, click the down arrows on the **FSM Details** bar.

The **FSM Details** area expands and displays the operation status.

Step 9 Click **OK** to close the **Backup Configuration** dialog box.
The backup operation continues to run until it is completed. To view the progress, re-open the **Backup Configuration** dialog box.

Verifying the Overall Status of the Fabric Interconnects

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, expand **Equipment** > **Fabric Interconnects**.

Step 3 Click the node for the fabric interconnect that you want to verify.

Step 4 In the **Work** pane, click the **General** tab.

Step 5 In the **Status** area, verify that the **Overall Status** is **operable**.
If the status is not **operable**, create and download a Tech Support file, and contact Cisco Technical Support. Do not proceed with the firmware upgrade. For more information about Tech Support files, see the *Cisco UCS Manager B-Series Troubleshooting Guide*.

Verifying the High Availability Status and Roles of a Cluster Configuration

The high availability status is the same for both fabric interconnects in a cluster configuration.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, expand **Equipment** > **Fabric Interconnects**.

Step 3 Click the node for one of the fabric interconnects in the cluster.

Step 4 In the **Work** pane, click the **General** tab.

Step 5 If the fields in the **High Availability Details** area are not displayed, click the **Expand** icon to the right of the heading.

Step 6 Verify that the following fields display the following values:

Field Name	Required Value
Ready field	**Yes**
State field	**Up**

If the values are different, create and download a Tech Support file, and contact Cisco Technical Support. Do not proceed with the firmware upgrade. For more information about Tech Support files, see the *Cisco UCS Manager B-Series Troubleshooting Guide*.

Step 7 Note the value in the **Leadership** field to determine whether the fabric interconnect is the primary or subordinate.
You need to know this information to upgrade the firmware on the fabric interconnects.

Verifying the Status of I/O Modules

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, expand **Equipment** > **Chassis**.

Step 3 Click on the chassis for which you want to verify the status of the I/O modules.

Step 4 In the **Work** pane, click the **IO Modules** tab.

Step 5 For each I/O module, verify that the following columns display the following values:

Field Name	Desired Value
Overall Status column	**ok**
Operability column	**operable**

If the values are different, create and download a Tech Support file, and contact Cisco Technical Support. Do not proceed with the firmware upgrade. For more information about Tech Support files, see the *Cisco UCS Manager B-Series Troubleshooting Guide*.

Step 6 Repeat Steps 3 through 5 to verify the status of the I/O modules in each chassis.

Verifying the Status of Servers

If a server is inoperable, you can proceed with the upgrade for other servers in the Cisco UCS domain. However, you cannot upgrade the inoperable server.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, click **Equipment**.

Step 3 In the **Work** pane, click the **Servers** tab to display a list of all servers in all chassis.

Step 4 For each server, verify that the following columns display the following values:

Field Name	Desired Value
Overall Status column	**ok**, **unassociated**, or any value that does not indicate a failure. If the value indicates a failure, such as **discovery-failed**, the endpoints on that server cannot be upgraded.
Operability column	**operable**

Step 5 If you need to verify that a server has been discovered, do the following:

a) Right-click the server for which you want to verify the discovery status and choose **Show Navigator**.

b) In the **Status Details** area of the **General** tab, verify that the **Discovery State** field displays a value of **complete**.
If the fields in the **Status Details** area are not displayed, click the **Expand** icon to the right of the heading.

Verifying the Status of Adapters on Servers in a Chassis

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, expand **Equipment** > **Chassis** > *Chassis Number* > **Servers**.

Step 3 Click the server for which you want to verify the status of the adapters.

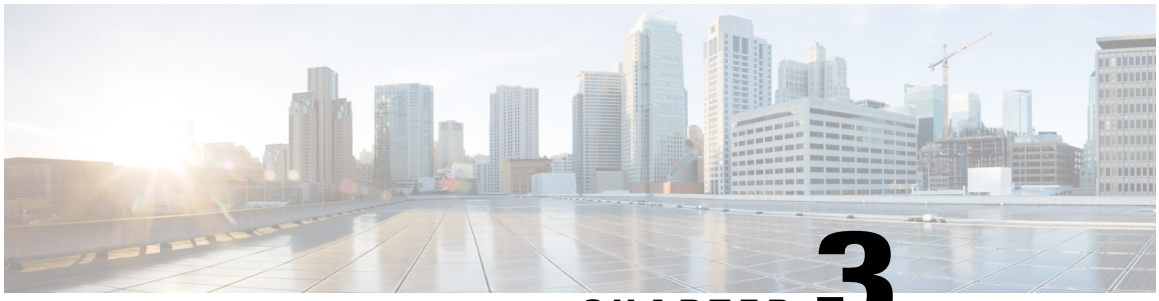
Step 4 In the **Work** pane, click the **Inventory** tab.

Step 5 In the **Inventory** tab, click the **Adapters** subtab.

Step 6 For each adapter, verify that the following columns display the following values:

Field Name	Desired Value
Overall Status column	**ok**
Operability column	**operable**

If the fields show a different value and the adapter is inoperable, you can proceed with the upgrade for other adapters on the servers in the Cisco UCS domain. However, you cannot upgrade the inoperable adapter.



CHAPTER 3

Downloading the Release 2.0 Firmware

This chapter includes the following sections:

Obtaining Software Bundles from Cisco

Before You Begin

Determine which of the following software bundles you need to update the Cisco UCS domain:

- Cisco UCS Infrastructure Software Bundle—Required for all Cisco UCS domains.
- Cisco UCS B-Series Blade Server Software Bundle—Required for all Cisco UCS domains that include blade servers.
- Cisco UCS C-Series Rack-Mount UCS-Managed Server Software Bundle—Only required for Cisco UCS domains that include integrated rack-mount servers. This bundle contains firmware to enable Cisco UCS Manager to manage those servers and is not applicable to standalone C-Series rack-mount servers.

Procedure

Step 1 In a web browser, navigate to Cisco.com.

Step 2 Under **Support**, click **All Downloads**.

Step 3 In the center pane, click **Servers - Unified Computing**.

Step 4 If prompted, enter your Cisco.com username and password to log in.

Step 5 In the right pane, click the link for the software bundles you require, as follows:

Bundle	Navigation Path
Cisco UCS Infrastructure Software Bundle	Click **Cisco UCS Infrastructure and UCS Manager Software** > **Unified Computing System (UCS) Infrastructure Software Bundle**.
Cisco UCS B-Series Blade Server Software Bundle	Click **Cisco UCS B-Series Blade Server Software** > **Unified Computing System (UCS) Server Software Bundle**.
Cisco UCS C-Series Rack-Mount UCS-Managed Server Software Bundle	Click **Cisco UCS C-Series Rack-Mount UCS-Managed Server Software** > **Unified Computing System (UCS) Server Software Bundle**.

Tip The Unified Computing System (UCS) Documentation Roadmap Bundle, which is accessible through these paths, is a downloadable ISO image of all Cisco UCS documentation.

Step 6 On the first page from which you download a software bundle, click the **Release Notes** link to download the latest version of the Release Notes.

Step 7 For each software bundle that you want to download, do the following:

a) Click the link for the latest release 2.2 software bundle.
The release number is followed by a number and a letter in parentheses. The number identifies the maintenance release level, and the letter differentiates between patches of that maintenance release. For more information about what is in each maintenance release and patch, see the latest version of the Release Notes.

b) Click one of the following buttons and follow the instructions provided:

- **Download Now—**Allows you to download the software bundle immediately.
- **Add to Cart—**Adds the software bundle to your cart to be downloaded at a later time.

c) Follow the prompts to complete your download of the software bundle(s).

Step 8 Read the Release Notes before upgrading your Cisco UCS domain.

What to Do Next

Download the software bundles to the fabric interconnect.

Downloading Firmware Images to the Fabric Interconnect from a Remote Location

Note In a cluster setup, the image file for the firmware bundle is downloaded to both fabric interconnects, regardless of which fabric interconnect is used to initiate the download. Cisco UCS Manager maintains all firmware packages and images in both fabric interconnects in sync. If one fabric interconnect is down, the download still finishes successfully. The images are synced to the other fabric interconnect when it comes back online.

Before You Begin

Obtain the required firmware bundles from Cisco.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, click the **Equipment** node.

Step 3 In the **Work** pane, click the **Firmware Management** tab.

Step 4 Click the **Installed Firmware** tab.

Step 5 Click **Download Firmware**.

Step 6 In the **Download Firmware** dialog box, click the **Remote File System** radio button in the **Location of the Image File** field and fill in the required fields.

Step 7 Click **OK**.
Cisco UCS Manager GUI begins downloading the firmware bundle to the fabric interconnect.

Step 8 (Optional) Monitor the status of the download on the **Download Tasks** tab.

Note If Cisco UCS Manager reports that the bootflash is out of space, delete obsolete bundles on the **Packages** tab to free up space. To view the available space in bootflash, navigate to the fabric interconnect on the **Equipment** tab and expand the **Local Storage Information** area on the **General** tab.

Step 9 Repeat this task until all the required firmware bundles have been downloaded to the fabric interconnect.

What to Do Next

After the image file for the firmware bundles have downloaded completely, update the firmware on the endpoints.

Downloading Firmware Images to the Fabric Interconnect from the Local File System

Note In a cluster setup, the image file for the firmware bundle is downloaded to both fabric interconnects, regardless of which fabric interconnect is used to initiate the download. Cisco UCS Manager maintains all firmware packages and images in both fabric interconnects in sync. If one fabric interconnect is down, the download still finishes successfully. The images are synced to the other fabric interconnect when it comes back online.

Before You Begin

Obtain the required firmware bundles from Cisco.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, click the **Equipment** node.

Step 3 In the **Work** pane, click the **Firmware Management** tab.

Step 4 Click the **Installed Firmware** tab.

Step 5 Click **Download Firmware**.

Step 6 In the **Download Firmware** dialog box, click the **Local File System** radio button in the **Location of the Image File** field.

Step 7 In the **Filename** field, type the full path and and name of the image file.
If you do not know the exact path to the folder where the firmware image file is located, click **Browse** and navigate to the file.

Step 8 Click **OK**.
Cisco UCS Manager GUI begins downloading the firmware bundle to the fabric interconnect.

Step 9 (Optional) Monitor the status of the firmware bundle download on the **Download Tasks** tab.

Note If Cisco UCS Manager reports that the bootflash is out of space, delete obsolete bundles on the **Packages** tab to free up space. To view the available space in bootflash, navigate to the fabric interconnect on the **Equipment** tab and expand the **Local Storage Information** area on the **General** tab.

Step 10 Repeat this task until all the required firmware bundles have been downloaded to the fabric interconnect.

What to Do Next

After the image file for the firmware bundles have downloaded completely, update the firmware on the endpoints.

Determining the Contents of a Firmware Package

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, click the **Equipment** node.

Step 3 In the **Work** pane, click the **Firmware Management** tab.

Step 4 On the **Packages** subtab, click the + icon next to a package to view its contents.

Step 5 To take a snapshot of the package contents, do the following:

a) Highlight the rows that include the image name and its contents.
b) Right-click and choose **Copy**.
c) Paste the contents of your clipboard into a text file or other document.

Canceling an Image Download

You can cancel the download task for an image only while it is in progress. After the image has downloaded, deleting the download task does not delete the image that was downloaded. You cannot cancel the FSM related to the image download task.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 Expand the **Equipment** node.

Step 3 In the **Work** pane, click the **Firmware Management** tab.

Step 4 On the **Download Tasks** tab, right-click the task you want to cancel and select **Delete**.

Verifying Local Storage Space on a Fabric Interconnect

Checking the Available Space on a Fabric Interconnect

If an image download fails, check whether the bootflash on the fabric interconnect or fabric interconnects in the Cisco UCS has sufficient available space.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, expand **Equipment** > **Fabric Interconnects**.

Step 3 Click the fabric interconnect on which you want to check the available space.

Step 4 In the **Work** pane, click the **General** tab.

Step 5 Expand the **Local Storage Information** area.
When you download a firmware image bundle, a fabric interconnect needs at least twice as much available space as the size of the firmware image bundle. If the bootflash does not have sufficient space, delete the obsolete firmware, core files, and other unneeded objects from the fabric interconnect.

Deleting Firmware Images from a Fabric Interconnect

Use this procedure if you want to delete only a single image from a package.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, click the **Equipment** node.

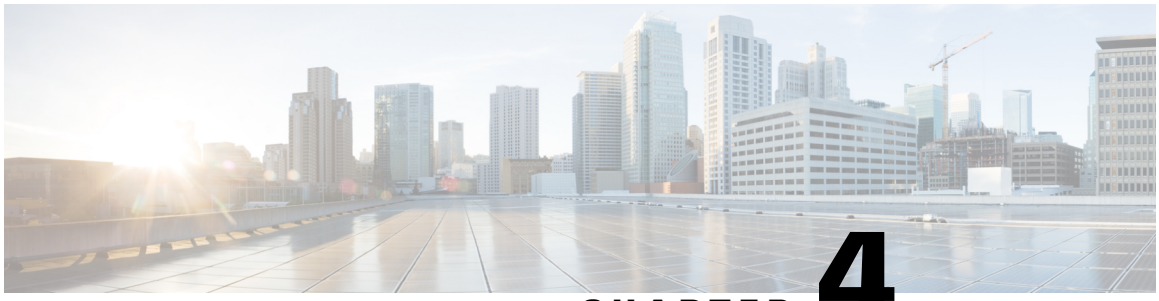
Step 3 In the **Work** pane, click the **Firmware Management** tab.

Step 4 On the **Firmware Management** tab, click the **Images** tab.

Step 5 In the table, click the image that you want to delete.
You can use the Shift key or Ctrl key to select multiple entries.

Step 6 Right-click the highlighted image or images and choose **Delete**.

Step 7 If the Cisco UCS Manager GUI displays a confirmation dialog box, click **Yes**.



CHAPTER 4

Upgrading the Firmware to Release 2.0

This chapter includes the following sections:

Summary of Steps for Upgrading from Release 1.4

Note If you do not follow this order, the firmware upgrade may fail and the servers may experience communication issues with Cisco UCS Manager.

The order of steps in this document and the recommended options minimize the disruption to data traffic. Therefore, when you upgrade from any version of Release 1.4, upgrade the components in the following order.

1. Complete all prerequisite steps, as described in Prerequisites for Upgrading and Downgrading Firmware, on page 15.
2. Obtain the following firmware images from Cisco.com and download them to the fabric interconnect. For more information, see Downloading the Cisco UCS, Release 2.1 Firmware.
   - Cisco UCS Infrastructure Software Bundle—Required for all Cisco UCS domains.

- Cisco UCS B-Series Blade Server Software Bundle—Required for all Cisco UCS domains that include blade servers.
- Cisco UCS C-Series Rack-Mount UCS-Managed Server Software Bundle—Only required for Cisco UCS domains that include integrated rack-mount servers. This bundle contains firmware to enable Cisco UCS Manager to manage those servers and is not applicable to standalone C-Series rack-mount servers.

3. (Optional) Disable Call Home—If the Cisco UCS domain includes Call Home or Smart Call Home, disable Call Home to ensure you do not receive unnecessary alerts when Cisco UCS Manager restarts components.
4. Update adapters, CIMC, and IOMs—If you prefer, you can upgrade the CIMC and the adapters in a host firmware package as part of the last upgrade step. Certain adapters must be upgraded in a host firmware package.
5. Activate adapters—Choose **Ignore Compatibility Check** and **Set Startup Version Only** when performing this step.
6. Activate CIMC—Choose **Ignore Compatibility Check** when performing this step.
7. Activate Cisco UCS Manager—Choose **Ignore Compatibility Check** when performing this step.
8. Activate the I/O modules—Choose **Ignore Compatibility Check** and **Set Startup Version Only** when performing this step.
9. Activate the subordinate fabric interconnect—Choose **Ignore Compatibility Check** when performing this step.
10. To avoid control plane disruption, manually failover the primary fabric interconnect to the fabric interconnect that has already been upgraded.
11. Verify that the data path has been restored.
12. Activate the primary fabric interconnect—Choose **Ignore Compatibility Check** when performing this step.
13. Update management firmware package(s) for servers—You do not need to perform this step if you updated and activated the CIMC on the servers directly.
14. Update host firmware package(s) for servers—Must be the last firmware upgraded. We recommend that you upgrade the board controller firmware during this step to avoid an additional reboot of servers with that firmware. While some of these components can be upgraded directly at the endpoint, such as the BIOS on M3 servers, we recommend that you upgrade the following firmware in a host firmware package:
    - BIOS
    - Storage controller
    - Certain adapters

    For information on how to upgrade these endpoints directly, see the Cisco UCS B-Series Firmware Management Guides.
15. (Optional) Enable Call Home—If you disabled Call Home before the upgrading the firmware, enable Call Home.

Disabling Call Home

This step is optional.

When you upgrade a Cisco UCS domain, Cisco UCS Manager restarts the components to complete the upgrade process. This restart causes events that are identical to service disruptions and component failures that trigger Call Home alerts to be sent. If you do not disable Call Home before you begin the upgrade, you can ignore the alerts generated by the upgrade-related component restarts.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, expand **All** > **Communication Management** > **Call Home**.

Step 3 In the **Work** pane, click the **General** tab.

Step 4 In the **Admin** area, click **off** in the **State** field.

Note If this field is set to **off**, Cisco UCS Manager hides the rest of the fields on this tab.

Step 5 Click **Save Changes**.

Updating the Firmware on the Adapters, BMCs, and IOMs

Caution Do not remove the hardware that contains the endpoint or perform any maintenance on it until the update process has completed. If the hardware is removed or otherwise unavailable due to maintenance, the firmware update fails. This failure may corrupt the backup partition. You cannot update the firmware on an endpoint with a corrupted backup partition.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, click the **Equipment** node.

Step 3 In the **Work** pane, click the **Firmware Management** tab.

Step 4 On the **Installed Firmware** tab, click **Update Firmware**.
Cisco UCS Manager GUI opens the **Update Firmware** dialog box and verifies the firmware versions for all endpoints in the Cisco UCS domain. This step may take a few minutes, depending upon the number of chassis and servers.

Step 5 In the **Update Firmware** dialog box, do the following:

a) From the **Filter** drop-down list on the menu bar, choose **ALL**.
If you would prefer to update one type of endpoint at a time, choose that endpoint from the **Filter** drop-down list.

b) From the **Set Version** drop-down list on the menu bar, choose the version for the current 2.0 release.

c) Click **OK**.
If one or more endpoints cannot be directly updated, Cisco UCS Manager displays a notification message. After you acknowledge the notification message, Cisco UCS Manager updates the firmware for all other endpoints on servers that can be directly updated.

Cisco UCS Manager copies the selected firmware image to the backup memory partition and verifies that the image is not corrupt. The image remains as the backup version until you explicitly activate it. Cisco UCS Manager begins all updates at the same time. However, some updates may complete at different times.

The update is complete when the **Update Firmware** dialog box displays **ready** in the **Update Status** column for all updated endpoints.

Step 6 (Optional) To monitor the progress of the update to a specific endpoint, right-click the endpoint and choose **Show Navigator**.
Cisco UCS Manager displays the progress in the **Update Status** area on the **General** tab. If the navigator has an **FSM** tab, you can also monitor the progress there. An entry in the **Retry #** field may not indicate that the update has failed. The retry count also includes retries that occur when Cisco UCS Manager retrieves the update status.

What to Do Next

Activate the firmware.

Activating the Firmware on the Adapters and BMCs

This procedure ensures that the firmware activation for these endpoints causes minimal disruption to data traffic. If you do not activate the endpoints in the following order with the correct options configured, the endpoints may reboot and cause a temporary disruption in data traffic.

Caution Do not select **ALL** from the **Filter** drop-down list in the **Activate Firmware** dialog box to activate all endpoints simultaneously. Many firmware releases and patches have dependencies that require the endpoints to be activated in a specific order for the firmware update to succeed. This order can change depending upon the contents of the release or patch. Activating all endpoints does not guarantee that the updates occur in the required order and can disrupt communications between the endpoints, the fabric interconnects, and Cisco UCS Manager. For information about the dependencies in a specific release or patch, see the release notes provided with that release or patch.

This procedure continues directly from the previous one and assumes you are on the **Firmware Management** tab.

Procedure

Step 1 In the **Installed Firmware** tab, choose **Activate Firmware**.
If one or more of the selected endpoints are not configured with the desired version as the backup version, Cisco UCS Manager GUI does not display that version in the **Set Version** drop-down list. You must select the version from the **Startup Version** column for each individual endpoint.

Step 2 If the adapter firmware is not updated through a host firmware package in a service profile, do the following in the **Activate Firmware** dialog box to activate the adapter firmware:

a) From the **Filter** drop-down list, choose **Interface Cards**.

b) From the **Set Version** drop-down list, choose the version for the current 2.0 release.

c) Check the **Ignore Compatibility Check** check box.
The firmware for this release is not compatible with previous releases. Therefore, you must check the **Ignore Compatibility Check** check box to ensure that the activation succeeds.

d) Check the **Set Startup Version Only** check box.

Note During a direct upgrade, you should configure **Set Startup Version Only** for an adapter. With this setting, the activated firmware moves into the pending-next-boot state, and the server is not immediately rebooted. The activated firmware does not become the running version of firmware on the adapter until the server is rebooted. You cannot configure **Set Startup Version Only** for an adapter in the host firmware package.

e) Click **Apply**.
When the **Activate Status** column for all adapters displays **pending-next-boot** or **ready**, continue with Step 3.

If a server is not associated with a service profile, the activated firmware remains in the pending-next-boot state. Cisco UCS Manager does not reboot the endpoints or activate the firmware until the server is associated with a service profile. If necessary, you can manually reboot or reset an unassociated server to activate the firmware.

Step 3 If the BMC firmware is not updated through a management firmware package in a service profile, do the following in the **Activate Firmware** dialog box to activate the BMC firmware:

a) From the **Filter** drop-down list, choose **BMC**.

b) From the **Set Version** drop-down list, choose the version for the current 2.0 release.
If one or more of the selected endpoints are not configured with the desired version as the backup version, Cisco UCS Manager GUI does not display that version in the **Set Version** drop-down list. You must select the version from the **Startup Version** column for each individual endpoint.

c) Check the **Ignore Compatibility Check** check box.

d) Click **Apply**.
The activation of firmware for a BMC does not disrupt data traffic. However, it will interrupt all KVM sessions, disconnect any vMedia attached to the server, and interrupt all monitoring and IPMI polling.

When the **Activate Status** column for all BMC components displays **ready** continue with Step 4.

Step 4 Click **OK**.

Activating the Board Controller Firmware on a Server

Only certain servers, such as the Cisco UCS B440 M2 High Performance blade server and the Cisco UCS B230 M2 blade server, have M2 board controller firmware. The board controller firmware controls many of the server functions, including eUSBs, LEDs, and I/O connectors.

This procedure continues from the previous one and assumes that you are on the **Installed Firmware** tab.

Note This activation procedure causes the server to reboot. Depending upon whether or not the service profile associated with the server includes a maintenance policy, the reboot can occur immediately. To reduce the number of times a server needs to be rebooted during the upgrade process, we recommend that you upgrade the board controller firmware through the host firmware package in the service profile as the last step of upgrading a Cisco UCS domain, along with the server BIOS.

Procedure

Step 1 On the **Installed Firmware** tab, click **Activate Firmware**.
Cisco UCS Manager GUI opens the **Activate Firmware** dialog box and verifies the firmware versions for all endpoints in the Cisco UCS domain. This step may take a few minutes, depending upon the number of chassis and servers.

Step 2 From the **Filter** drop-down list on the menu bar of the **Activate Firmware** dialog box, select **Board Controller**.
Cisco UCS Manager GUI displays all servers that have board controllers in the **Activate Firmware** dialog box.

Step 3 From the **Set Version** drop-down list on the menu bar of the **Activate Firmware** dialog box, choose the version for the current 2.0 release.

Step 4 Check the **Ignore Compatibility Check** check box.

Step 5 Click **OK**.

Activating the Cisco UCS Manager Software to Release 2.0

This procedure continues directly from the previous one and assumes you are on the **Firmware Management** tab.

Procedure

Step 1 On the **Installed Firmware** tab, click **Activate Firmware**.
Cisco UCS Manager GUI opens the **Activate Firmware** dialog box and verifies the firmware versions for all endpoints in the Cisco UCS domain. This step may take a few minutes, depending upon the number of chassis and servers.

Step 2 From the **Filter** drop-down list, choose **UCS Manager**.

Step 3 On the **UCS Manager** row of the **Activate Firmware** dialog box, do the following:

a) From the drop-down list in the **Startup Version** column, choose the version for the current 2.0 release.

b) Check the **Ignore Compatibility Check** check box.

Step 4 Click **OK**.
Cisco UCS Manager disconnects all active sessions, logs out all users, and activates the software. When the upgrade is complete, you are prompted to log back in. If you are prompted to re-login immediately after being disconnected, the login will fail. You must wait until the activation of Cisco UCS Manager is completed, which takes a few minutes.

Cisco UCS Manager makes the selected version the startup version and schedules the activation to occur when the fabric interconnects are upgraded.

Activating the Firmware on the IOMs

This procedure ensures that the firmware activation for these endpoints causes minimal disruption to data traffic. If you do not activate the endpoints in the following order with the correct options configured, the endpoints may reboot and cause a temporary disruption in data traffic.

Caution Do not select **ALL** from the **Filter** drop-down list in the **Activate Firmware** dialog box to activate all endpoints simultaneously. Many firmware releases and patches have dependencies that require the endpoints to be activated in a specific order for the firmware update to succeed. This order can change depending upon the contents of the release or patch. Activating all endpoints does not guarantee that the updates occur in the required order and can disrupt communications between the endpoints, the fabric interconnects, and Cisco UCS Manager. For information about the dependencies in a specific release or patch, see the release notes provided with that release or patch.

This procedure continues directly from the previous one and assumes you are on the **Firmware Management** tab.

Procedure

Step 1 In the **Installed Firmware** tab, choose **Activate Firmware**.
If one or more of the selected endpoints are not configured with the desired version as the backup version, Cisco UCS Manager GUI does not display that version in the **Set Version** drop-down list. You must select the version from the **Startup Version** column for each individual endpoint.

Step 2 To activate the IOM firmware, do the following in the **Activate Firmware** dialog box:

a) From the **Filter** drop-down list, choose **IO Modules**.
b) From the **Set Version** drop-down list, choose the version for the current 2.0 release.
c) Check the **Ignore Compatibility Check** check box.
d) Check the **Set Startup Version Only** check box.

Important When you configure **Set Startup Version Only** for an I/O module, the I/O module is rebooted when the fabric interconnect in its data path is rebooted. If you do not configure **Set Startup Version Only** for an I/O module, the I/O module reboots and disrupts traffic. In addition, if Cisco UCS Manager detects a protocol and firmware version mismatch between the fabric interconnect and the I/O module, Cisco UCS Manager automatically updates the I/O module with the firmware version that matches the firmware in the fabric interconnect and then activates the firmware and reboots the I/O module again.

e) Click **Apply**.
When the **Activate Status** column for all IOMs displays **pending-next-boot**, continue with Step 3.

Step 3 Click **OK**.

Activating the Fabric Interconnect Firmware for a Cluster Configuration

To minimize the disruption to data traffic, always upgrade the subordinate fabric interconnect and ensure it is up and running before you upgrade the primary fabric interconnect.

Activating the Firmware on a Subordinate Fabric Interconnect

Before You Begin

Determine which fabric interconnect in the cluster is the subordinate fabric interconnect. For more information, see Verifying the High Availability Status and Roles of a Cluster Configuration, on page 18.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, click the **Equipment** node.

Step 3 In the **Work** pane, click the **Firmware Management** tab.

Step 4 On the **Installed Firmware** tab, click **Activate Firmware**.
Cisco UCS Manager GUI opens the **Activate Firmware** dialog box and verifies the firmware versions for all endpoints in the Cisco UCS domain. This step may take a few minutes, depending upon the number of chassis and servers.

Step 5 From the **Filter** drop-down list on the menu bar, choose **Fabric Interconnects**.

Step 6 On the menu bar, check the **Ignore Compatibility Check** check box.

Step 7 On the row of the **Activate Firmware** dialog box for the subordinate fabric interconnect, do the following:

a) In the **Kernel** row, choose the version for the current 2.0 release from the drop-down list in the **Startup Version** column.

b) In the **System** row, choose the version for the current 2.0 release from the drop-down list in the **Startup Version** column.

Step 8 Click **Apply**.
Cisco UCS Manager updates and activates the firmware and reboots the fabric interconnect and any I/O module in the data path to that fabric interconnect, disrupting data traffic to and from that fabric interconnect. However, assuming the Cisco UCS domain is configured to permit traffic and port failover, data traffic fails over to the primary fabric interconnect and is not disrupted.

Step 9 Verify the high availability status of the subordinate fabric interconnect.

Note If the **High Availability Details** area for the fabric interconnect does not show the following values, contact Cisco Technical Support immediately. Do not continue to update the primary fabric interconnect.

Field Name	Required Value
Ready field	**Yes**
State field	**Up**

What to Do Next

Force a fabric interconnect switchover to make this into the primary fabric interconnect. Then log into the new subordinate fabric interconnect (formerly the primary fabric interconnect) and verify that the data path is ready and has returned to normal operation. If the data path is not ready and the servers have not failed back over to the subordinate fabric interconnect, data traffic may be disrupted when you activate the primary fabric interconnect.

If the high availability status of the subordinate fabric interconnect contains the required values and the data path has returned to normal operation, activate the former primary fabric interconnect.

Forcing a Fabric Interconnect Failover

This operation can only be performed in the Cisco UCS Manager CLI.

You must force the failover from the primary fabric interconnect.

Procedure

	Command or Action	Purpose
Step 1	UCS-A# **show cluster state**	Displays the state of fabric interconnects in the cluster and whether the cluser is HA ready.
Step 2	UCS-A# **connect local-mgmt**	Enters local management mode for the cluster.
Step 3	UCS-A (local-mgmt) # **cluster** {**force primary** | **lead** {**a** | **b**}}	Changes the subordinate fabric interconnect to primary using one of the following commands: **force** Forces local fabric interconnect to become the primary. **lead** Makes the specified subordinate fabric interconnect the primary.

The following example changes fabric interconnect b from subordinate to primary:

```
UCS-A# show cluster state
Cluster Id: 0xfc436fa8b88511e0-0xa370000573cb6c04

A: UP, PRIMARY
B: UP, SUBORDINATE

HA READY
UCS-A# connect local-mgmt
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
Copyright (c) 2002-2011, Cisco Systems, Inc. All rights reserved.
The copyrights to certain works contained in this software are
owned by other third parties and used and distributed under
license. Certain components of this software are licensed under
```

```
the GNU General Public License (GPL) version 2.0 or the GNU
Lesser General Public License (LGPL) Version 2.1. A copy of each
such license is available at
http://www.opensource.org/licenses/gpl-2.0.php and
http://www.opensource.org/licenses/lgpl-2.1.php

UCS-A(local-mgmt)# cluster lead b
UCS-A(local-mgmt)#
```

Verifying that the Data Path is Ready

This chapter includes the following sections:

Verifying that Dynamic vNICs Are Up and Running

When you upgrade a Cisco UCS that includes dynamic vNICs and an integration with VMware vCenter, you must verify that all dynamic VNICs are up and running on the new primary fabric interconnect before you activate the new software on the former primary fabric interconnect to avoid data path disruption.

Perform this step in the Cisco UCS Manager GUI.

Procedure

Step 1 In the **Navigation** pane, click the **VM** tab.

Step 2 On the **VM** tab, expand **All** > **VMware** > **Virtual Machines**.

Step 3 Expand the virtual machine for which you want to verify the dynamic vNICs and choose a dynamic vNIC.

Step 4 In the **Work** pane, click the **VIF** tab.

Step 5 On the **VIF** tab, verify that the **Status** column for each VIF is **Online**.

Step 6 Repeat Steps 3 through 5 until you have verified that the VIFs for all dynamic vNICs on all virtual machines have a status of **Online**.

Verifying the Ethernet Data Path

Procedure

	Command or Action	Purpose
Step 1	UCS-A /fabric-interconnect # **connect nxos** {**a** | **b**}	Enters NX-OS mode for the fabric interconnect.
Step 2	UCS-A(nxos)# **show int br | grep -v down | wc –l**	Returns the number of active Ethernet interfaces. Verify that this number matches the number of Ethernet interfaces that were up prior to the upgrade.
Step 3	UCS-A(nxos)# **show platform fwm info hw-stm | grep '1.' | wc –l**	Returns the total number of MAC addresses. Verify that this number matches the number of MAC addresses prior to the upgrade.

The following example returns the number of active Ethernet interfaces and MAC addresses for subordinate fabric interconnect A so that you can verify that the Ethernet data path for that fabric interconnect is up and running:

```
UCS-A /fabric-interconnect # connect nxos a
UCS-A(nxos)# show int br | grep -v down  | wc -l
86
UCS-A(nxos)# show platform fwm info hw-stm | grep '1.' | wc -l
80
```

Verifying the Data Path for Fibre Channel End-Host Mode

For best results when upgrading a Cisco UCS domain, we recommend that you perform this task before you begin the upgrade and after you activate the subordinate fabric interconnect, and then compare the two results.

Procedure

	Command or Action	Purpose
Step 1	UCS-A /fabric-interconnect # **connect nxos** {**a** | **b**}	Enters NX-OS mode for the fabric interconnect.
Step 2	UCS-A(nxos)# **show npv flogi-table**	Displays a table of flogi sessions.
Step 3	UCS-A(nxos)# **show npv flogi-table | grep fc | wc -l**	Returns the number of servers logged into the fabric interconnect. The output should match the output you received when you performed this verification prior to beginning the upgrade.

The following example displays the flogi-table and number of servers logged into subordinate fabric interconnect A so that you can verify that the Fibre Channel data path for that fabric interconnect in Fibre Channel End-Host mode is up and running:

```
UCS-A /fabric-interconnect # connect nxos a
UCS-A(nxos)# show npv flogi-table
--------------------------------------------------------------------------------
SERVER                                                                  EXTERNAL
INTERFACE VSAN FCID            PORT NAME               NODE NAME       INTERFACE
--------------------------------------------------------------------------------
vfc705    700  0x69000a 20:00:00:25:b5:27:03:01 20:00:00:25:b5:27:03:00 fc3/1
vfc713    700  0x690009 20:00:00:25:b5:27:07:01 20:00:00:25:b5:27:07:00 fc3/1
vfc717    700  0x690001 20:00:00:25:b5:27:08:01 20:00:00:25:b5:27:08:00 fc3/1

Total number of flogi = 3.

UCS-A(nxos)# show npv flogi-table | grep fc | wc -l
3
```

Verifying the Data Path for Fibre Channel Switch Mode

For best results when upgrading a Cisco UCS domain, we recommend that you perform this task before you begin the upgrade and after you activate the subordinate fabric interconnect, and then compare the two results.

Procedure

	Command or Action	Purpose
Step 1	UCS-A /fabric-interconnect # **connect nxos** {**a** | **b**}	Enters NX-OS mode for the fabric interconnect.
Step 2	UCS-A(nxos)# **show flogi database**	Displays a table of flogi sessions.
Step 3	UCS-A(nxos)# **show flogi database | grep –I fc | wc –1**	Returns the number of servers logged into the fabric interconnect. The output should match the output you received when you performed this verification prior to beginning the upgrade.

The following example displays the flogi-table and number of servers logged into subordinate fabric interconnect A so that you can verify that the Fibre Channel data path for that fabric interconnect in Fibre Channel End-Host mode is up and running:

```
UCS-A /fabric-interconnect # connect nxos a
UCS-A(nxos)# show flogi database
--------------------------------------------------------------------------------
INTERFACE        VSAN    FCID           PORT NAME               NODE NAME
--------------------------------------------------------------------------------
vfc726           800   0xef0003  20:00:00:25:b5:26:07:02 20:00:00:25:b5:26:07:00
vfc728           800   0xef0007  20:00:00:25:b5:26:07:04 20:00:00:25:b5:26:07:00
vfc744           800   0xef0004  20:00:00:25:b5:26:03:02 20:00:00:25:b5:26:03:00
vfc748           800   0xef0005  20:00:00:25:b5:26:04:02 20:00:00:25:b5:26:04:00
vfc764           800   0xef0006  20:00:00:25:b5:26:05:02 20:00:00:25:b5:26:05:00
vfc768           800   0xef0002  20:00:00:25:b5:26:02:02 20:00:00:25:b5:26:02:00
vfc772           800   0xef0000  20:00:00:25:b5:26:06:02 20:00:00:25:b5:26:06:00
vfc778           800   0xef0001  20:00:00:25:b5:26:01:02 20:00:00:25:b5:26:01:00

Total number of flogi = 8.
UCS-A(nxos)# show flogi database | grep fc | wc -l
8
```

Activating the Firmware on a Primary Fabric Interconnect

This procedure continues directly from the previous one and assumes you are on the **Firmware Management** tab.

Note If you have followed the entire procedure to activate the fabric interconnects in a cluster configuration, the former primary fabric interconnect is now the subordinate fabric interconnect.

Before You Begin

Activate the subordinate fabric interconnect, force a fabric interconnect switchover, and verify that the data path is up and running.

Procedure

Step 1 On the **Installed Firmware** tab, click **Activate Firmware**.
Cisco UCS Manager GUI opens the **Activate Firmware** dialog box and verifies the firmware versions for all endpoints in the Cisco UCS domain. This step may take a few minutes, depending upon the number of chassis and servers.

Step 2 From the **Filter** drop-down list on the menu bar, choose **Fabric Interconnects**.

Step 3 On the menu bar, check the **Ignore Compatibility Check** check box.

Step 4 On the row of the **Activate Firmware** dialog box for the (former) primary fabric interconnect, do the following:

a) In the **Kernel** row, choose the version for the current 2.0 release from the drop-down list in the **Startup Version** column.
b) In the **System** row, choose the version for the current 2.0 release from the drop-down list in the **Startup Version** column.

Step 5 Click **Apply**.
Cisco UCS Manager updates and activates the firmware and reboots the fabric interconnect and any I/O module in the data path to that fabric interconnect, disrupting data traffic to and from that fabric interconnect. However, assuming the Cisco UCS domain is configured to permit traffic and port failover, data traffic fails over to the other fabric interconnect, which becomes the primary. When it comes back up, this fabric interconnect is the subordinate fabric interconnect.

Step 6 Verify the high availability status of the fabric interconnect.

Note If the **High Availability Details** area for the fabric interconnect does not show the following values, contact Cisco Technical Support immediately.

Field Name	Required Value
Ready field	**Yes**
State field	**Up**

Activating the Firmware on a Standalone Fabric Interconnect

For a standalone configuration with a single fabric interconnect, you can minimize the disruption to data traffic when you perform a direct firmware upgrade of the endpoints. However, you must reboot the fabric interconnect to complete the upgrade and, therefore, cannot avoid disrupting traffic.

Procedure

Step 1 In the **Navigation** pane, click the **Equipment** tab.

Step 2 On the **Equipment** tab, click the **Equipment** node.

Step 3 In the **Work** pane, click the **Firmware Management** tab.

Step 4 On the **Installed Firmware** tab, click **Activate Firmware**.
Cisco UCS Manager GUI opens the **Activate Firmware** dialog box and verifies the firmware versions for all endpoints in the Cisco UCS domain. This step may take a few minutes, depending upon the number of chassis and servers.

Step 5 From the **Filter** drop-down list, choose **Fabric Interconnects**.

Step 6 On the menu bar, check the **Ignore Compatibility Check** check box.

Step 7 On the row of the **Activate Firmware** dialog box for the fabric interconnect, do the following:

a) In the **Kernel** row, choose the version for the current 2.0 release from the drop-down list in the **Startup Version** column.

b) In the **System** row, choose the version for the current 2.0 release from the drop-down list in the **Startup Version** column.

Step 8 Click **OK**.

Cisco UCS Manager activates the firmware and reboots the fabric interconnect and any I/O module in the data path to that fabric interconnect. For a standalone fabric interconnect, this disrupts all data traffic in the Cisco UCS domain.

Updating Host and Management Firmware Packages

Effect of Updates to Firmware Packages in Service Profiles

To update firmware through a firmware package in a service profile, you need to update the firmware in the package. What happens after you save the changes to a firmware package depends upon how the Cisco UCS domain is configured.

The following table describes the most common options for upgrading servers with a firmware package in a service profile.

Service Profile	Maintenance Policy	Upgrade Actions
Firmware package is not included in a service profile or an updating service profile template. OR You want to upgrade the firmware without making any changes to the existing service profile or updating service profile template.	No maintenance policy	After you update the firmware package, do one of the following: • To reboot and upgrade some or all servers simultaneously, add the firmware package to one or more service profiles that are associated with servers or to an updating service profile template. • To reboot and upgrade one server at a time, do the following for each server: **1** Create a new service profile and include the firmware package in that service profile. **2** Dissociate the server from its service profile. **3** Associate the server with the new service profile. **4** After the server has been rebooted and the firmware upgraded, disassociate the server from the new service profile and associate it with its original service profile. **Caution** If the original service profile includes a scrub policy, disassociating a service profile may result in data loss when the disk or the BIOS is scrubbed upon association with the new service profile.
The firmware package is included in one or more service profiles, and the service profiles are associated with one or more servers. OR The firmware package is included in an updating service profile template, and the service profiles created from that template are associated with one or more servers.	No maintenance policy OR A maintenance policy configured for immediate updates.	The following occurs when you update the firmware package: **1** The changes to the firmware package take effect as soon as you save them. **2** Cisco UCS verifies the model numbers and vendor against all servers associated with service profiles that include this policy. If the model numbers and vendor match a firmware version in the policy, Cisco UCS reboots the servers and updates the firmware. All servers associated with service profiles that include the firmware package are rebooted at the same time.

Service Profile	Maintenance Policy	Upgrade Actions
The firmware package is included in one or more service profiles, and the service profiles are associated with one or more servers. OR The firmware package is included in an updating service profile template, and the service profiles created from that template are associated with one or more servers.	Configured for user acknowledgment	The following occurs when you update the firmware package: **1** Cisco UCS asks you to confirm your change and advises that a user-acknowledged reboot of the servers is required. **2** Click the flashing **Pending Activities** button to select the servers you want to reboot and apply the new firmware. **3** Cisco UCS verifies the model numbers and vendor against all servers associated with service profiles that include this policy. If the model numbers and vendor match a firmware version in the policy, Cisco UCS reboots the server and updates the firmware. A manual reboot of the servers does not cause Cisco UCS to apply the firmware package, nor does it cancel the pending activities. You must acknowledge or cancel the pending activity through the **Pending Activities** button.
The firmware package is included in one or more service profiles, and the service profiles are associated with one or more servers. OR The firmware package is included in an updating service profile template, and the service profiles created from that template are associated with one or more servers.	Configured for changes to take effect during a specific maintenance window.	The following occurs when you update the firmware package: **1** Cisco UCS asks you to confirm your change and advises that a user-acknowledged reboot of the servers is required. **2** Click the flashing **Pending Activities** button to select the servers you want to reboot and apply the new firmware. **3** Cisco UCS verifies the model numbers and vendor against all servers associated with service profiles that include this policy. If the model numbers and vendor match a firmware version in the policy, Cisco UCS reboots the server and updates the firmware. A manual reboot of the servers does not cause Cisco UCS to apply the firmware package, nor does it cancel the scheduled maintenance activities.

Updating a Management Firmware Package

If the policy is included in one or more service profiles associated with a server and those service profiles do not include maintenance policies, Cisco UCS Manager updates and activates the management firmware in

the server with the new versions and reboots the server as soon as you save the management firmware package policy unless you have configured and scheduled a maintenance window.

Before You Begin

Ensure that the appropriate firmware has been downloaded to the fabric interconnect.

Procedure

Step 1 In the **Navigation** pane, click the **Servers** tab.

Step 2 On the **Servers** tab, expand **Servers** > **Policies**.

Step 3 Expand the node for the organization that includes the policy you want to update.
If the system does not include multitenancy, expand the **root** node.

Step 4 Expand **Management Firmware Packages** and choose the policy you want to update.

Step 5 In the **Work** pane, click the **General** tab.

Step 6 In the firmware table, do the following:

a) In the **Select** column, ensure that the check box for the appropriate lines are checked.

b) In the **Vendor**, **Model**, and **PID** columns, verify that the information matches the servers you want to update with this package.
The model and model number (PID) must match the servers that are associated with this firmware package. If you select the wrong model or model number, Cisco UCS Manager cannot install the firmware update.

c) In the **Version** column, choose the firmware version to which you want to update the firmware.

Step 7 Click **Save Changes**.
Cisco UCS Manager verifies the model numbers and vendor against all servers associated with service profiles that include this policy. If the model numbers and vendor match a firmware version in the policy, Cisco UCS Manager updates the firmware according to the settings in the maintenance policies included in the service profiles.

Updating a Host Firmware Package

You must upgrade the BIOS and storage controller firmware through the host firmware package when you upgrade to Release 2.0. If you do not upgrade those packages, the servers may experience communication issues with Cisco UCS Manager and the CIMC.

Caution If the policy is included in one or more service profiles associated with a server and those service profiles do not include maintenance policies, Cisco UCS Manager updates and activates the firmware in the server and adapter with the new versions and reboots the server as soon as you save the host firmware package policy unless you have configured and scheduled a maintenance window.

This procedure assumes that the host firmware package already exists and that you have upgraded Cisco UCS Manager to the current 2.0 release. For information on how to create a host firmware package or on how to update an existing one in a previous release , see the appropriate *Cisco UCS Manager GUI Configuration Guide* for the release that Cisco UCS Manager is running.

Before You Begin

Before you update a host firmware package, do the following:

- Upgrade Cisco UCS Manager and the fabric interconnects.
- Determine an appropriate maintenance window to reduce the impact of the disruption of data traffic when the server reboots.
- Ensure you know the firmware version and model number (PID) for the servers or servers.

Procedure

Step 1 In the **Navigation** pane, click the **Servers** tab.

Step 2 On the **Servers** tab, expand **Servers** > **Policies**.

Step 3 Expand the node for the organization that includes the policy you want to update.
If the system does not include multitenancy, expand the **root** node.

Step 4 Expand **Host Firmware Packages** and choose the policy you want to update.

Step 5 On each subtab of the **General** tab, do the following for each type of firmware you want to include in the package:

a) In the **Select** column, ensure that the check box for the appropriate lines are checked.

b) In the **Vendor**, **Model**, and **PID** columns, verify that the information matches the servers you want to update with this package.
The model and model number (PID) must match the servers that are associated with this firmware package. If you select the wrong model or model number, Cisco UCS Manager cannot install the firmware update.

The information in the **Present** column lets you know whether that firmware exists in the Cisco UCS domain.

c) In the **Version** column, choose the version for the current 2.0 release.

Step 6 Click **Save Changes**.
Cisco UCS Manager verifies the model numbers and vendor against all servers associated with service profiles that include this policy. If the model numbers and vendor match a firmware version in the policy, Cisco UCS Manager updates the firmware according to the settings in the maintenance policies included in the service profiles.

Enabling Call Home

This step is optional. You only need to enable Call Home if you disabled it before you began the firmware upgrades.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, expand **All** > **Communication Management** > **Call Home**.

Step 3 In the **Work** pane, click the **General** tab.

Step 4 In the **Admin** area, click **on** in the **State** field.

Note If this field is set to **On**, Cisco UCS Manager GUI displays the rest of the fields on this tab.

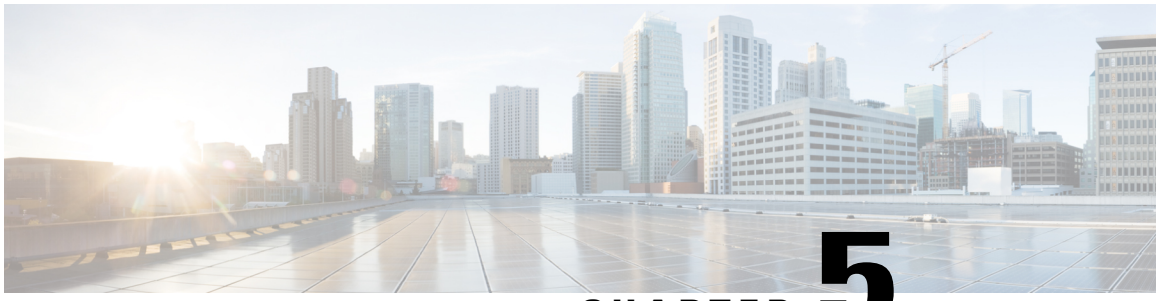
Step 5 Click **Save Changes**.

What to Do Next

Ensure that Call Home is fully configured.

PART II

Hardware Upgrades



CHAPTER 5

Upgrading Cisco UCS Hardware

This chapter includes the following sections:

Upgrading Fabric Interconnects

Fabric Interconnect Upgrade Considerations

Be sure the following prerequisites are met before beginning any procedures in this section:

Caution All software and firmware on all components must be upgraded to the latest software release and build available before attempting an upgrade. Cisco UCS software version 2.0 is the bare minimum version for the Cisco UCS 6248 UP. The new Cisco UCS 6200 series fabric interconnects must be loaded with the same build version that is on the Cisco UCS 6100 series fabric interconnect it will replace.

Caution If you intend to implement the fabric port channel feature available in Cisco UCS software version 2.0 after performing the hardware upgrade, you may need to rearrange the cabling between FEX and Fabric Interconnect before performing the feature configuration. Fabric port channel will require that all physical links from a given FEX physically connect to a contiguous block of ports (1 to 8 or 9 to16, and so on). See http://www.cisco.com/en/US/products/ps10281/products_installation_and_configuration_guides_list.html. This feature requires a UCS 2200 Series FEX connecting to a UCS 6200 Series Fabric Interconnect.

- Upgrading the fabric interconnect should be done before upgrading to a new FEX or virtual interface card.

- Do not attempt to implement new software features from the new Cisco UCS software version until all required hardware is installed.
- Changes to the topology like number of server or uplink connections should be performed after the fabric interconnect upgrade is complete.
- Make a detailed record of the cabling between FEXes and fabric interconnects using the provided table. You will need to preserve the physical port mapping to maintain the server pinning already configured and minimize down time. See Table 1: Fabric Interconnect Port Connection Record, on page 55.
- For a cluster configuration, both fabric interconnects must have symmetrical connection topologies between fabric interconnect and FEXes.
- Standalone installations should expect down time. Upgrading a fabric interconnect is inherently traffic disruptive.
- A best practice would be to perform a full configuration and software backup before performing this hardware upgrade.

Port Mapping for Upgrades

The upgrade described here is primarily for upgrading a Cisco UCS 6120 fabric interconnect to a Cisco UCS 6248. If you have a Cisco UCS 6140 fabric interconnect that has 48 or less physical ports connected, you will also be able to utilize these steps, the same principles will apply though you will have to manually map any ports connected to slot 3 on a UCS 6140 as the UCS 6248 has no slot 3. The same considerations will also apply when upgrading a Cisco UCS 6140 fabric interconnect to a Cisco UCS 6296, though the 6296 has enough slots that no manual remapping will be necessary.

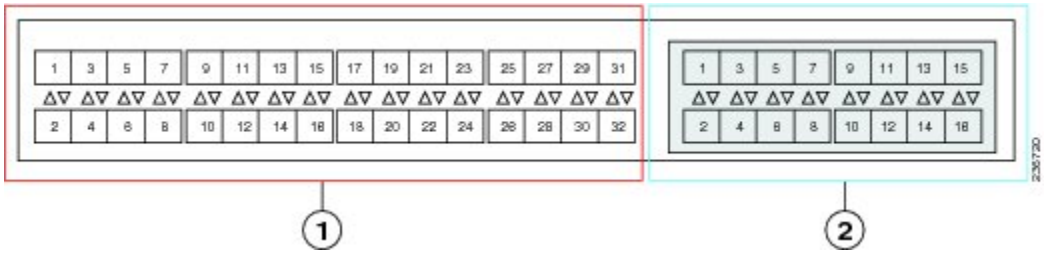
Fixed Ports

On the UCS 6120 fabric interconnect, the fixed ports on slot 1 are all Ethernet ports, which might be further configured as Server ports or uplink Ethernet ports. On the UCS 6248 fabric interconnect, you can separate the 32 physical ports in slot one into two contiguous pools, low numbered ports being Ethernet ports and high numbered ports being Fibre Channel ports. When upgrading to a UCS 6248, the UCS 6120 port mappings can be directly carried over on fixed ports with no reconfiguration required. When upgrading a UCS 6140 to a UCS 6296. the port mappings can be directly carried over on fixed ports with no reconfiguration required.

Note Since a UCS 6140 has 40 ports on slot 1 and a UCS 6248 has 32 ports, any ports currently configured on ports 1/33 to 1/40 of the UCS 6140 will have to be moved during the upgrade process.

Caution If you ever need to change the pool sizes for slot 1, you must reboot the fabric interconnect which can lead to a service disruption. If you ever need to change the pool sizes for slot 2, you must reset the expansion module in slot 2. To minimize disruption, plan to have at least a few Ethernet uplink and Fibre Channel uplink ports configured on slot 1. Implement this fail safe after the upgrade is complete and the system restabilizes.

Figure 1: Cisco UCS 6248 Port Numbering



1	Slot 1, 32 fixed universal ports	2	Slot 2, 16 expansion universal ports

Expansion Ports

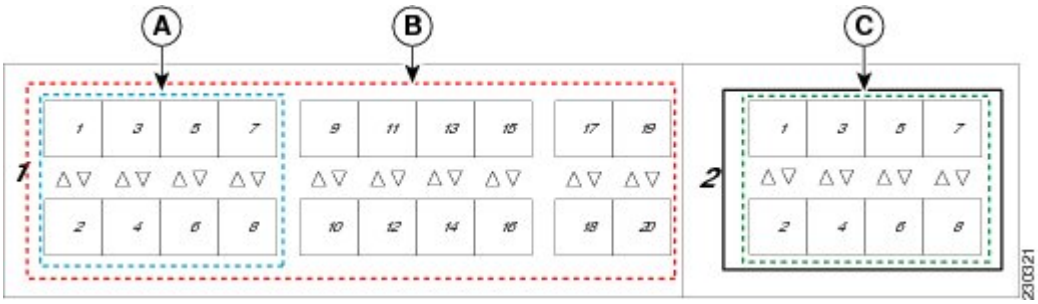
On the UCS 6120 fabric interconnect, the expansion slot port types depend on which of four possible expansion modules are installed. On the UCS 6248 fabric interconnect, you can separate the 16 physical ports in an expansion slot into two pools, low numbered ports being Ethernet ports and high numbered ports being Fibre Channel, see the Cisco UCS Manager configuration guides. When upgrading to a UCS 6248 or UCS 6296, you may need to pre- plan and re-configure expansion module port mappings before powering up the new interconnect.

Note Any expansion ports in slot 3 of a UCS 6140 fabric interconnect will need to have their configuration deleted and their use remapped to ports on slots 1 or 2 of the new UCS 6248. Upgrading a UCS 6140 to a UCS 6296 is the preferred path as this manual remapping will not be necessary.

- If you have an N10-E0080 or N10-E0060 Fibre channel expansion module in your UCS 6120, the existing fibre channel configurations can simply carry over to the new UCS 6248, though this may not

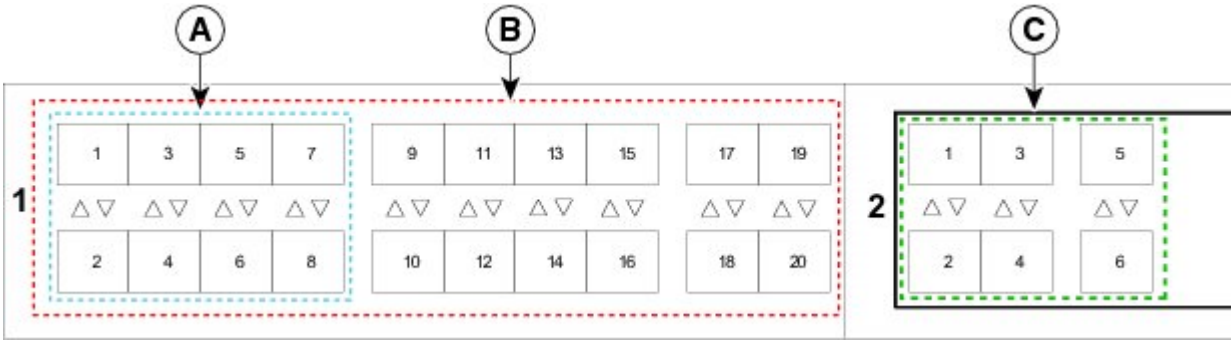
be appropriate for all situations as it will mean that all ports in slot 2 are Fibre Channel. If you want to reconfigure ports 2/1 to 2/8 to use ports 2/9 to 2/16, do so after the upgrade is completed.

Figure 2: Cisco UCS 6120 Port Numbering when Configured with the N10-E0080 Expansion Module



A	Slot 1, ports 1 through 8: 10-Gigabit or 1 Gigabit Ethernet capable ports	C	Slot 2 Fibre Channel ports 1 through 8
B	Slot 1, ports 1 through 20: 10-Gigabit Ethernet ports		

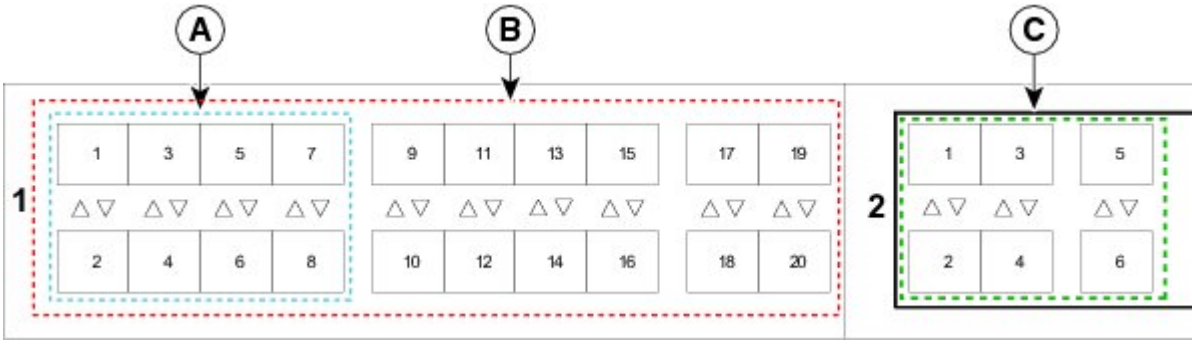
Figure 3: Cisco UCS 6120 Port Numbering when Configured with the N10-E0060 Expansion Module



A	Slot 1, ports 1 through 8: 10-Gigabit or 1 Gigabit Ethernet capable ports	C	Slot 2 Fibre Channel ports 1 through 6
B	Slot 1, ports 1 through 20: 10-Gigabit Ethernet ports		

- If you have an N10-E0600 Fibre Channel expansion module in your UCS 6120, the existing Ethernet configurations can simply carry over to the UCS 6248, with ports 2/7 to 2/16 potentially configurable for either Ethernet or FC.

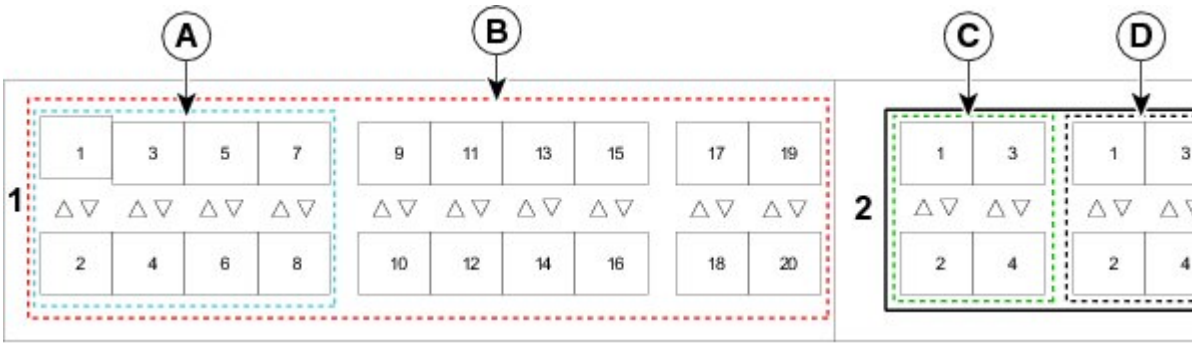
Figure 4: Cisco UCS 6120 Port Numbering when Configured with the N10-E0600 Expansion Module



A	Slot 1, ports 1 through 8: 10-Gigabit or 1 Gigabit Ethernet capable unencrypted ports	C	Slot 2 10-Gigabit Ethernet ports 1 through 6
B	Slot 1, ports 1 through 20: 10-Gigabit Ethernet ports		

- If you have an N10-E0440 expansion module in your UCS 6120, the simplest direct mapping would be to allow Ethernet ports 2/1 to 2/4 on the UCS 6248 to carry over, then remap the fibre channel ports to new port numbers on either slot 1 or slot 2.

Figure 5: Cisco UCS 6120 Port Numbering when Configured with the N10-E0440 Expansion Module



A	Slot 1, ports 1 through 8: 10-Gigabit or 1 Gigabit Ethernet capable ports	C	Slot 2 10-Gigabit Ethernet ports 1 through 4
B	Slot 1, ports 1 through 20: 10-Gigabit Ethernet ports	D	Slot 2 Fibre Channel ports 1 through 4

Fabric Interconnect Port Connection Record

Table 1: Fabric Interconnect Port Connection Record

Fabric Interconnect A/B		Connected to					
Slot	**Port**	**Chassis**	**IOM**	**Port**	**LAN or SAN Pin Group**	**Port Channel Group**	**Connection Notes**
1	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						

Fabric Interconnect A/B		Connected to					
Slot	Port	Chassis	IOM	Port	LAN or SAN Pin Group	Port Channel Group	Connection Notes
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						

Fabric Interconnect A/B		Connected to					
Slot	Port	Chassis	IOM	Port	LAN or SAN Pin Group	Port Channel Group	Connection Notes
2	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						

Upgrading a Fabric Interconnect Cluster

Caution If your Cisco UCS 6120 fabric interconnect uses a N10-E0440 expansion module, or if you are migrating a Cisco UCS 6140 with an expansion module in slot 3 to a Cisco UCS 6248, pre-plan their deletion and remapping following the guidelines in the previous section on port maps.

Unless otherwise noted, for more information about how to perform configuration procedures in Cisco UCS Manager for a particular step, see the Cisco UCS Manager configuration guide for the appropriate release.

Procedure

Step 1 Mount the replacement fabric interconnects into either the same rack or an adjacent rack.
Refer to the Cisco UCS 6200 Series Installation Guide for details.

Step 2 Using either the Cisco UCS Manager CLI or GUI, verify the state (subordinate or active) of the fabric interconnects.
See http://www.cisco.com/en/us/docs/unified_computing/ucs/sw/upgrading/from1.4/to2.0/b_upgradingciscoucsfrom1.4to2.0_chapter_0101.html.

Step 3 Back up the software configuration information and the Cisco UCS Manager software.

Step 4 Disable the server ports on the subordinate fabric interconnect.

Step 5 Power down the subordinate fabric interconnect by unplugging it from the power source.
If you are monitoring the upgrade using a KVM session, you may need to reconnect the KVM session when you power down the fabric interconnect.

Step 6 Disconnect the cables from the chassis FEXes or fabric extenders to the subordinate fabric interconnect ports in slot 1 on the old fabric interconnect.

Step 7 Connect these cables into the corresponding ports on slot 1 of one of the new Cisco UCS 6248 UP fabric interconnects, using the connection records to preserve the port mapping and the configured server pinning.
See Fabric Interconnect Port Connection Record, on page 55.

See Fabric Interconnect Upgrade Considerations, on page 49.

Step 8 Disconnect the L1/L2, M1 management, and console cables on the old fabric interconnect.
The ports for these connections are on the opposite side of the interconnect, so if your cables are just barely long enough to connect two rack-adjacent Cisco UCS 6120 interconnects you will probably need new cables.

Step 9 Connect the M1 management, and console cables to the new Cisco UCS 6248 UP.

Step 10 Connect the L1/L2 cables that were disconnected onto the new Cisco UCS 6248 UP.
L1 connects to L1, L2 connects to L2.

Step 11 Disconnect the Ethernet or FC cables from slot 2 of the old fabric interconnect.

Step 12 Connect the Ethernet or FC cables to the corresponding ports in slot 2 of the new Cisco UCS 6248 UP.
Some may go to slot 1, depending on the mappings planned out earlier in the process.

Step 13 Connect the power to the new Cisco UCS 6248 UP, it will automatically boot and run POST tests. If it reboots itself, this is a normal behavior.

Important Directly connect the console port to a terminal and observe the boot sequence. You should at some point see the Basic System Configuration Dialog, where you will configure the switch as a subordinate interconnect. If you do not see this dialog, you either have different builds of software on your old primary and new subordinate, or the new subordinate has previously been part of a cluster and will need to have all configuration information wiped before it can be added to a cluster as a subordinate. In either case, immediately disconnect the L1 and L2 connections and complete the bringup as a standalone fabric interconnect, then correct the issue before proceeding further.

Step 14 (Optional) Remap Cisco UCS 6100 fabric interconnect FC ports 2/1 to 2/4 on a N10-E0440 expansion module or any slot 3 ports onto the new fabric interconnect expansion module.

a) Use Cisco UCS Manager to delete the ports on the subordinate fabric interconnect that you will need to move within the configuration.
b) For each port you have just deleted, create new ports on either slot 1 or slot 2. These ports must use the same port type definitions as the old ports, but will use different port numbers.
c) For recently moved Ethernet server ports, reconfigure the associated service profile to use the new port number for the appropriate LAN pin group.
d) For recently moved uplink Ethernet ports, reconfigure the port channel settings to use the new ports.
e) For recently moved uplink FC ports, reconfigure the associated service profile SAN pin group to use the new ports.
f) Reacknowledge chassis for blade servers and fabric extender for rack servers.
This will be disruptive to traffic, but is necessary in this specific scenario.

Step 15 The new subordinate fabric interconnect will automatically synchronize the configuration and database/state information from the primary fabric interconnect.
Synchronization between primary and subordinate fabric interconnects can take several minutes. You may see an error message that will persist until the server ports are enabled.

The port configuration is copied from the subordinate switch to the new hardware.

Step 16 Verify that the data path is ready.
See http://www.cisco.com/en/us/docs/unified_computing/ucs/sw/upgrading/from1.4/to2.0/b_upgradingciscoucsfrom1.4to2.0_chapter_0100.html.

Make sure all faults are resolved before proceeding.

a) Verify and if necessary reconfigure the SAN pin group for FC ports in the associated service profile.
b) Verify and if necessary reconfigure the LAN pin group for Ethernet ports in the associated service profile.
c) Verify and if necessary reconfigure the port channel for uplink Ethernet ports.

Step 17 Enable the server ports that had been disabled in Step 4.

a) If you have changed port mappings, you may need to reacknowledge the chassis or rack server connected to the subordinate fabric interconnect.
b) Verify and if necessary reconfigure Ethernet ports as server ports.

Step 18 Promote the subordinate fabric interconnect to active, and repeat the process on the second Cisco UCS 6248 UP.
Cable the second new fabric interconnect identically to the first, and allow the reconfiguration done to be applied to the second new fabric interconnect as well.

See http://www.cisco.com/en/us/docs/unified_computing/ucs/sw/upgrading/from1.4/to2.0/b_upgradingciscoucsfrom1.4to2.0_chapter_0100.html.

Upgrading I/O Modules

FEX Upgrade Considerations

Be sure the following prerequisites are met before beginning any procedures in this section:

All software and firmware on all components must be upgraded to the same software release available before attempting an upgrade. This release must support the hardware you will be adding. Cisco UCS software

version 2.0(1) is the bare minimum version for the UCS 2208XP FEX. Cisco UCS software version 2.0(2) is the bare minimum version for the Cisco UCS 2204XP FEX.

- Do not attempt to implement new software features from the new Cisco UCS software version until all required hardware is installed.
- Make a detailed record of the cabling between FEXes and fabric interconnects. You will need to preserve the physical port mapping to maintain the server pinning already configured and minimize down time.
- For a cluster configuration, both fabric interconnects must have symmetrical connection topologies between fabric interconnect and FEX.
- Standalone installations should expect down time. Upgrading a FEX will be inherently traffic disruptive.
- When performing hardware upgrades to implement features new to Cisco UCS software version 2.0, upgrade the fabric interconnect, then the FEX, then the adapter in the blade server.
- Cisco FEXes only support one, two, four, and (Cisco UCS 2208 only) eight link topologies between FEX and fabric interconnect. If there is a link failure on one of the links, Cisco UCS falls back to the next largest possible topology with regards to blade to fabric port mapping. If this ever happens, reacknowledge the chassis, and manually remap the fabric ports. It is recommended during the replacement of a fabric interconnect that you have all ports connected to the fabric interconnect before the configuration sync.
- A best practice would be to perform a full configuration and database/state information backup before performing this hardware upgrade.
- If you intend to implement the fabric port channel feature available in Cisco UCS software version 2.0, you may need to rearrange the cabling between FEX and fabric interconnect before performing the feature configuration. Fabric port channel will require that all physical links from a given FEX physically connect to a contiguous block of ports (1to8 or 9 to 16, and so on). This feature requires a Cisco UCS 2200 Series FEX connecting to a Cisco UCS 6200 Series Fabric Interconnect. See the Cisco UCS Manager configuration guides.

FEX Port Connection Record

Table 2: FEX Port Connection Record

FEX		Connected to			
Number	Port	Fabric Interconnect A or B	Slot	Port	Connection Notes
1	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
2	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				

Upgrading a FEX

Procedure

Step 1 Connect to the cluster's fabric interconnect, and verify the state (subordinate or active) of the fabric interconnects.

Step 2 Make a detailed record of the port mapping of the connections between the fabric interconnects and the FEXes.

Step 3 Disconnect the 10 Gigabit Ethernet cables connecting the chassis FEX to the subordinate fabric interconnect on the FEX side.

Step 4 Loosen the captive screws on the old FEX's levers.

Step 5 Pull the levers outward to unseat the old FEX.

Step 6 Make sure that the two levers at the front of the new FEX are pulled open.

Step 7 Slide the new FEX into the FEX slot, ensuring that the new FEX is fully seated.

Step 8 Close the levers and tighten the captive screw on each lever.

Step 9 Connect the 10GbE cables into the appropriate ports on the new Cisco UCS 2208UP FEX or Cisco UCS 2204UP FEX, using the connection records to preserve the port mapping and the configured server pinning.

Step 10 If you have changed port mappings, you may need to reacknowledge the FEX or rack server connected to the subordinate fabric interconnect.
This action will only be necessary if you have changed port mappings, but it will be disruptive if it is needed. See the Cisco UCS Manager configuration guides.

Step 11 Promote the subordinate fabric interconnect to active, and repeat steps 2 to 9 on the second Cisco UCS 2208 UP or Cisco UCS 2204UP FEX.
It may take 5-15 minutes for all error indications to clear on the GUI, and for the service profiles on the servers in the chassis to come up.

Upgrading Adapter Cards

Adapter Card Upgrade Considerations

Be sure the following prerequisites are met before beginning any procedures in this section.

All software and firmware on all components must be upgraded to the latest software release available before attempting an upgrade. Cisco UCS software version 2.0(1) is the bare minimum version for the Cisco UCS 6248 UP, the Cisco UCS 2208 FEX, and the Cisco UCS Virtual Interface Card 1280. Cisco UCS software version 2.0(2) is the bare minimum version for the Cisco UCS 6296 UP and the Cisco UCS 2204 FEX.

- Do not attempt to implement new software features from the new Cisco UCS software version until all required hardware is installed.
- You will be able to physically install a Cisco UCS Virtual Interface Card 1280 without first installing a Cisco UCS 2208 FEX or Cisco UCS 2204 FEX and additional connections to a fabric interconnect, but to do so would not allow you to take full advantage of the additional performance the Cisco UCS

Virtual Interface Card 1280 provides compared to the Cisco UCS M81KR. The preferred order is to upgrade the Fabric interconnect, then the FEX, and finally the Cisco UCS Virtual Interface Card 1280.

- Blade servers allowing more than one Adapter Card may mix the Cisco UCS Virtual Interface Card 1280 with the Cisco UCS M81KR, the M72KR-E, or the M72KR-Q. Dual Cisco UCS Virtual Interface Card 1280 adapters are also supported.
- A best practice would be to perform a full configuration and software backup before performing this hardware upgrade.
- If you intend to implement the fabric port channel feature available in Cisco UCS software version 2.0, you may need to rearrange the cabling between IOM and Fabric Interconnect before performing the feature configuration. Fabric port channel will require that all physical links from a given FEX physically connect to a contiguous block of ports (1-8 or 9-16, and so on). This feature requires a Cisco UCS 2200 Series FEX connecting to a Cisco UCS 6200 Series Fabric Interconnect. See the Fabric Port Channel sections in the configuration guides for more details.

Upgrading an Adapter Card

Procedure

Step 1 Use the locator button in the Cisco UCS Manager GUI to confirm which server you are upgrading.

Step 2 Decommission and remove the blade server using the adapter you wish to upgrade.

a) Decommission the server as described in the Decomissioning the Server section of your software release's configuration guide or by using the power button on the front panel.
b) Completely loosen the captive screws on the front of the blade.
c) Remove the blade from the chassis by pulling the ejector levers on the blade until it unseats the extended memory blade server.
d) Slide the blade part of the way out of the chassis, and place your other hand under the blade to support its weight.
e) Once removed, place the blade on an antistatic mat or antistatic foam if you are not immediately reinstalling it into another slot.

Step 3 Remove the top cover and remove the old adapter card.

a) Press and hold the button down.
b) (Most models) Press and hold the top cover release button down. While holding the back end of the cover, pull the cover back and then up.
c) (B230) Press and hold the top cover release button down. While holding the back end of the cover, pull the cover forward. The face plate is meant to be removed along with the top cover.
d) Loosen the three captive screws attaching the Adapter Card to the motherboard. Remove the adapter connector from the motherboard connector and pull straight up. Be careful not to damage the connectors.
e) Remove the adapter connector from the motherboard connector and pull straight up. Be careful not to damage the connectors. You may need to gently rock the card from side to side to get the connector to unseat.

Step 4 Install the new adapter card.

a) Position the adapter board connector above the mother board connector and align the three adapter captive screws to the posts on the motherboard.

b) Firmly press the adapter connector into the motherboard connector. If the seating is bad, it may cause the network connection LED to stay amber when the server is restarted.
c) Tighten the three captive screws.

Step 5 Replace the top cover and reinsert the blade server in the chassis.

Step 6 Recommission the server by reacknowledging the server slot.

Step 7 When upgrading a virtual interface card, configurations created for the older card will carry over to the new hardware. Additional configuration is now possible, but no reconfiguration is required.

Upgrading Integrated Rack-Mount Servers

Required Order of Steps for Integrating Cisco UCS Rack-Mount Servers

After you upgrade the firmware for the existing components, you can integrate one or more Cisco UCS rack-mount servers. When you integrate rack-mount servers, you must perform the steps in the following order:

1. If you have not already done so, configure the rack server discovery policy in Cisco UCS Manager.
2. Follow the instructions in the appropriate rack-mount server installation guide for installing and integrating a rack-mount server in a system managed by Cisco UCS Manager.
3. Wait for Cisco UCS Manager to discover the new server. If server discovery does not begin within a few minutes, acknowledge the server.

Upgrades of Integrated Rack-Mount Servers

Cisco UCS Release 2.0(2) does not support integration with rack-mount servers through Cisco Nexus 2248 FEXes. If you upgrade a Cisco UCS domain that includes integrated rack-mount servers to Release 2.0(2) or later, you must to upgrade your setup to include Cisco Nexus 2232 FEXes.

For more information, see the appropriate rack-mount server installation guide for migrating a rack-mount server integration to Cisco UCS Release 2.0(2).