Migrating to Cisco UCS 6500 Series Fabric Interconnects

Cisco UCS 6500 Series Fabric Interconnect Hardware Compatibility Matrix

This section provides information on compatible hardware component with Cisco UCS 6500 Series Fabric Interconnect. Before upgrading to Cisco UCS-FI-6536, ensure that you acquire all the compatible components.

Cicso UCS Rack Servers

Table 1: Supported Rack Servers and FEX with Cisco 15000 Series VIC Adapters

FI	Rack Server Compatibility	15428 UCSC-M-V5Q50G	15238 (UCSC-M-V5D200G)
UCS-FI-6536	Direct Attach (40/100G)	Not Supported	C225 M6, C245 M6, C220 M6, C240 M6
	Direct Attach (4x25G or 25G QSA28)	C225 M6, C245 M6, C220 M6, C240 M6	Not Supported
	93180YC-FX3 (25G server ports)	C225 M6, C245 M6, C220 M6, C240 M6	Not Supported
	2348 UPQ (10G server ports)	C225 M6, C245 M6, C220 M6, C240 M6	Not Supported

Table 2: Supported Rack Servers and FEX with Cisco 1400 Series VIC Adapters

FI	Rack Server Compatibilty	1455 - 10G/25G UCSC-PCIE-C25Q-04	1457 - 10G/25G UCSC-MLOM-C25Q-04	1467 - 10G/25G UCSC-M-V25-04	1495 - 40G/100G UCSC-PCIE-C100-04	1497 - 40G/100G UCSC-MLOM-C100-04	1477 - 40G/100G UCSC-M-V100-04
UCS-FI-6536	Direct Attach (40/100G)	Not Supported	Not Supported	Not Supported	C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5, S3260 M5	C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5	C225 M6, C245 M6, C220 M6, C240 M6
	Direct Attach (4x25G or 25G QSA28)	C225 M6, C245 M6, C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5, S3260 M5	C220 M5, C240 M5	C225 M6, C245 M6, C220 M6, C240 M6	Not Supported	Not Supported	Not Supported
	93180YC-FX3 (25G server ports)	C225 M6, C245 M6, C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5, S3260 M5	C220 M5, C240 M5	C225 M6, C245 M6, C220 M6, C240 M6	Not Supported	Not Supported	Not Supported
	2348 UPQ (10G server ports)	C225 M6, C245 M6, C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5, S3260 M5	C220 M5, C240 M5	C225 M6, C245 M6, C220 M6, C240 M6	Not Supported	Not Supported	Not Supported

Table 3: Supported Rack Servers and FEX with Cisco 1300 Series VIC Adapters

FI	FEX	1385 - 40G UCSC-PCIE-C40Q-03	1387 - 40G UCSC-MLOM-C40Q-03
UCS-FI-6536	Direct Attach (40/100G)	C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5, C220 M4, C240 M4, C460 M4	C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5, C220 M4, C240 M4, C460 M4
	Direct Attach (4x25G or 25G QSA28)	Not Supported	Not Supported
	93180YC-FX3 (25G server ports)	Not Supported	Not Supported
	2348 UPQ (10G server ports)	C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5, C220 M4, C240 M4, C460 M4	C220 M5, C240 M5, C480 M5, C480 ML M5, C125 M5, C220 M4, C240 M4, C460 M4 (QSA at the adapter)

Cicso UCS Blade Servers

Table 4: Supported Blade Servers and IOM with Cisco 15000 Series VIC Adapters

FI	IOM	15411 UCSB-ML-V5Q10G	15411 + Port Expander UCSB-ML-V5Q10G + UCSB-MLOM-PT-01
UCS-FI-6536	2304V1/V2 (40G)	B200 M6	B200 M6
	2408 (40G)	B200 M6	B200 M6

Table 5: Supported Blade Servers and IOM with Cisco 1400 Series VIC Adapters

FI	IOM	1440 - 10/40 UCSB-MLOM-40G-04	1440 + Port Expander UCSB-MLOM-40G-04 + UCSB-MLOM-PT-01	1480 - 10/40 UCSB-VIC-M84-4P	1440 + 1480	1440 + 1480 + Port Expander	1440 + 1480 + 1480
UCS-FI-6536	2304V1/V2 (40G)	B200 M6, B200 M5, B480 M5	B200 M6, B200 M5, B480 M5	B200 M6, B200 M5, B480 M5	B200 M6, B200 M5, B480 M5	B480 M5	B480 M5
	2408 (40G)	B200 M6, B200 M5, B480 M5	B200 M6, B200 M5, B480 M5	B200 M6, B200 M5, B480 M5	B200 M6, B200 M5, B480 M5	B480 M5	B480 M5

Table 6: Supported Blade Servers and IOM with Cisco 1300 Series VIC Adapters

FI	IOM	1340 - 10G/40G UCSB-MLOM-40G-03	1380 - 10/40 UCSB-VIC-M83-8P	1340 + 1380	1340 + Port Expander - 10G/40G UCSB-MLOM-40G-03 + UCSB-MLOM-PT-01	1340 + 1380 + Port Expander	1340 + 1380 + 1380
UCS-FI-6536	2304V1/V2 (40G)	B200 M5, B480 M5, B200 M4, B260 M4, B460 M4, B420 M4	B200 M5, B480 M5, B200 M4, B260 M4, B460 M4, B420 M4	B200 M5, B480 M5, B200 M4, B260 M4, B460 M4, B420 M4	B200 M5, B480 M5, B200 M4, B260 M4, B460 M4, B420 M4	B260 M4, B460M4, B420M4, B480M5	B260 M4, B460M4, B420M4, B480M5
	2408 (40G)	B200 M5, B480 M5, B200 M4, B260 M4, B460 M4, B420 M4	B200 M5, B480 M5, B200 M4, B260 M4, B460 M4, B420 M4	B200 M5, B480 M5, B200 M4, B260 M4, B460 M4, B420 M4	B200 M5, B480 M5, B200 M4, B260 M4, B460 M4, B420 M4	B260 M4, B460M4, B420M4, B480M5	B260 M4, B460M4, B420M4, B480M5

Cisco UCS 6300 Series Fabric Interconnect Migration

Software Feature Configuration for Migration from Cisco UCS 6300 Series to UCS 6500 Fabric Interconnects

Cisco UCS 6500 Series Fabric Interconnects do not support a few software features that were supported on UCS 6300 Series Fabric Interconnects in Cisco UCS Manager. Following are the features and how they would be reported on the Migration Warnings page.

Ensure that the following feature configurations are appropriate before migration:

- **Chassis Discovery Policy**—UCS 6300 Series Fabric Interconnects support blade server chassis discovery in Port Channel and non-Port Channel modes. Cisco UCS 6500 Series Fabric Interconnects support only Port Channel mode.

  During migration, if a UCS 6300 Series Fabric Interconnect has the chassis discovery policy configured as non-Port Channel mode, the Migration Warnings page will report the incompatibility.

Note You must switch the chassis discovery policy to Port Channel mode before initiating migration and re-acknowledge the chassis after changing the chassis discovery policy.

- **Chassis Connectivity Policy**—UCS 6300 Series Fabric Interconnects support chassis connectivity in Port Channel and non-Port Channel modes. Cisco UCS 6500 Series Fabric Interconnects support only Port Channel mode.

  During migration, if a UCS 6300 Series Fabric Interconnect has the chassis connectivity policy configured as non-Port Channel mode, the Migration Warnings page will report the incompatibility.

Note You must switch the chassis connectivity policy to Port Channel mode before initiating migration and re-acknowledge the chassis after changing the chassis connectivity policy.

- **Port Configuration Mismatch**—On Cisco UCS 6300 Series Fabric Interconnects, the Unified Port capability is restricted to first 16 ports. Only ports 1/1-1/16 can be configured as FC. The FC ports must be contiguous, followed by contiguous Ethernet ports.

  On Cisco UCS 6536 Fabric Interconnect. Port breakout is supported on Ethernet ports (1-32) and Unified ports (33-36).

  - Ethernet breakout is supported on chassis ports 1 through 36 when each port is configured with a breakout cable.The Dynamic Ethernet Breakout feature enables converting a standard Ethernet port to a breakout port on-the-fly so that you do not need to reboot the Fabric Interconnect.
  - Fibre Channel support is only available through configuring Unified Ports (33-36) as FC breakout. FC breakout is supported on chassis ports 33 through 36 when each port is configured with a four-port breakout cable(4xLC), for example 1/33/1, 1/33/2, 1/33/3, and 1/33/4 for four FC breakout ports on chassis physical port 33.FC breakout ports support peer communication at fixed speeds of 8Gbs, 16 Gbps, and 32 Gbps.

  On Cisco UCS 6300 Series Fabric Interconnect, the first 16 ports are configured as Unified Ports (FC Breakout ports) and on Cisco UCS 6536 Fabric Interconnect, the ports 33 to 36 are configured as Unified Ports. During cluster addition, the ports that are mismatched will be un-configured.

- **Multicast Hardware Hash**—When multicast hardware hashing is enabled, all links between the IOM and the fabric interconnect in a port channel can be used for multicast traffic. UCS 6300 Series Fabric Interconnects supports multicast hardware hash, but Cisco UCS 6500 Series Fabric Interconnects do not support it.

- **VLAN Port Count Optimization**—On Cisco UCS 6536 Series Fabric Interconnects, VLAN port count optimization is performed through port VLAN (VP) grouping when the PV count exceeds 16000.

  The following table illustrates the PV Count with VLAN port count optimization enabled and disabled on Cisco UCS 6300 Series Fabric Interconnects and Cisco UCS 6536 Series Fabric Interconnects.

Table 7: VLAN Port Count Optimization with 6300 Series and 6500 Series Fabric Interconnects

	6300 Series Fabric Interconnect	6536 Fabric Interconnect
PV Count with VLAN Port Count Optimization Disabled	16000	16000
PV Count with VLAN Port Count Optimization Enabled	64000	108000

If the PV count exceeds 16000, the Migration Warnings page will report the PV count with the warning that VP Grouping will be enabled if you choose to proceed with installation.

When the Cisco UCS 6536 Fabric Interconnect is in Ethernet switching mode:

- The Fabric Interconnect does not support **VLAN Port Count Optimization Enabled**
- The Fabric Interconnect supports 16000 PVs, similar to EHM mode, when set to **VLAN Port Count Optimization Disabled**

- **Multicast Optimized for QoS**—Cisco UCS 6500 Series Fabric Interconnects do not support Multicast Optimized. If Multicast Optimized is enabled, this configuration will appear on the Migration Warning page.

  Continuing with the installation despite the warning will cause Cisco UCS Manager to reset the **Multicast Optimized** field.

- **NetFlow Configuration**—UCS 6300 Series Fabric Interconnects support NetFlow configuration. However, on Cisco UCS 6500 Series Fabric Interconnects, NetFlow is not supported.

  During migration, if a UCS 6300 Series Fabric Interconnect has NetFlow enabled, the Migration Warnings page will report the NetFlow configuration. Proceeding with the migration will remove the NetFlow configuration.

- **VMM Integration**—Cisco UCS 6500 Series Fabric Interconnects do not support VMM integration. During migration, the Migration Warnings page will report all configurations related to port profiles and distributed virtual switches (DVSes). Proceeding with the migration with this configuration will remove these port profiles and DVSes from the Cisco UCS Manager configuration.

- **Dynamic vNIC Connection Policies**—During migration, if a UCS 6300 Series Fabric Interconnect has dynamic vNIC connection policies configured, the Migration Warnings page will report that such connection policies exist. If you proceed with the migration, these policies and dynamic vNICS are automatically deleted.

- **Reserved VLANs**—Cisco UCS 6500 Series Fabric Interconnects reserve more VLANs for internal use than UCS 6300 Series Fabric Interconnects.

  During migration, the Migration Warnings page will contain the list of VLANs that could potentially conflict with the default reserved VLAN range. If you proceed with migration, the Reserved VLAN range will be configured but VLANs found in the conflicting range will not be configured.

Cisco UCS 6300 Series Fabric Interconnect Migration Considerations

Beginning with Cisco UCS Manager, Release 4.2(3b), Cisco UCS Manager provides support for Cisco UCS 6536 Fabric Interconnect. You can migrate Cisco UCS 6300 Series Fabric Interconnects to Cisco UCS 6536 Fabric Interconnect with B-Series servers, C-Series, or S-Series servers.

To migrate from Cisco UCS 6300 Series Fabric Interconnects to Cisco UCS 6536 Fabric Interconnect:

- Cisco UCS 6300 Series Fabric Interconnects must be on Cisco UCS Manager 4.2(3b) or a later release.
- Cisco UCS 6536 Fabric Interconnect must be loaded with the same Infrastructure Firmware version that is on the Cisco UCS 6300 Series Fabric Interconnect that it will replace.

Prerequisites

Before performing the migration from Cisco UCS 6300 Series Fabric Interconnects to Cisco UCS 6536 Fabric Interconnect, ensure that the following prerequisites are met:

- Ensure to enable the cluster failover.
- Licenses from Cisco UCS 6300 Series Fabric Interconnects are not transferable to Cisco UCS 6536 Series Fabric Interconnects.
- Cisco UCS 6536 Fabric Interconnect use the IDLE fill pattern for FC uplink ports and FC storage ports when using 8 Gbps speed.

  When migrating to Cisco UCS 6536 Fabric Interconnect and configuring FC Uplink Ports or FC Storage Ports at 8Gbps speed, ensure that the fill pattern is set as IDLE on the corresponding FC switch ports and the direct-attached FC storage array ports. If the fill pattern is not set as IDLE, FC uplink ports and FC storage ports operating at 8 Gbps might go to an errDisabled state, lose SYNC intermittently, or receive errors or bad packets.

  Cisco UCS 6536 Fabric Interconnects supports 8 Gbps only with fill-pattern set to IDLE for direct-attached FC connectivity (FC uplink ports or FC storage ports). This limitation is not applicable for Cisco UCS 6536 Fabric Interconnects with Fibre Channel (FC) ports at 16 Gbps and 32 Gbps. When migrating to Cisco UCS 6536 Fabric Interconnect for direct-attached storage arrays that don't support IDLE fill-pattern at 8 Gbps do one of the following:

  - Use a SAN switch between the Cisco UCS 6536 Fabric Interconnect and the storage array with 8 GB FC connectivity.
  - Upgrade the storage array to 16 GB or 32 GB FC connectivity.

- For minimal disruption during migration, ensure that there is redundancy for Ethernet and FC traffic from the servers in the UCS domain across both 6300 series fabric interconnects before migration.
- Ensure the latest firmware bundle is downloaded and upgraded through GUI or CLI. Incase of attempting to upgrade the firmware bundle using other methods (loader prompt/erase configuration) can result in missing package version.
- Perform a full configuration and software backup before performing the hardware upgrade.
- Upgrading the Fabric Interconnect must be performed before upgrading to a different model of Fabric Extender (FEX), I/O Module (IOM), or virtual interface card. For more information on the supported IOMs or FEXs for migration, see Ports on the Cisco UCS Fabric Interconnects.
- Migrating to different IOM models can result in peer communication issue between IOMs of the Primary and Secondary Fabric Interconnects.
- Do not attempt to implement new software features from the new Cisco UCS software version until all required hardware is installed.
- Validate the software features and configurations between Cisco UCS 6300 series and UCS 6536 Fabric Interconnects. Before migration, ensure that 6300 series Fabric Interconnect is reconfigured to only have features that are supported with 6536 Fabric Interconnects.

Note This is one of the most common reasons for migration failures.

- Changes to the topology, such as the number of servers or uplink connections, should be performed after the fabric interconnect migration is complete.

- Make a detailed record of the cabling between FEXes and fabric interconnects. You must 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 FEXes.
- When connecting to the Fabric Interconnects, use the same speed cables on all the adapter ports that are connected to same Fabric Interconnect. Cisco UCS VIC adapter ports connected to Cisco UCS 6536 fabric interconnect through a mix of 10G and 25G cables can result in UCS rack-mount server discovery failure and ports moving to suspended state.
- Cisco UCS 6536 Fabric Interconnect only supports 25/40/100G direct connectivity for C-series rack servers and 10G direct-connect is not supported on C-series rack servers. The Cisco UCS 6536 Fabric Interconnect supports 10G server connectivity only with 2348-UPQ FEX.
- Standalone installations should expect down time. Migrating the Fabric Interconnect can result in a small traffic disruption when traffic fails over from one Fabric Interconnect to another. To avoid that there is no permanent traffic loss during migration, ensure that there is redundancy in the UCS domain on both Fabric Interconnects before migration and test the redundancy before starting the migration.
- A WWN pool can include only WWNNs or WWPNs in the ranges from 20:00:00:00:00:00:00:00 to 20:FF:00:FF:FF:FF:FF:FF or from 50:00:00:00:00:00:00:00 to 5F:FF:00:FF:FF:FF:FF:FF. All other WWN ranges are reserved. When fibre channel traffic is sent through the UCS infrastructure the source WWPN is converted to a MAC address. You cannot use WWPN pool which can translate to source multicast MAC addresses. To ensure the uniqueness of the Cisco UCS WWNNs and WWPNs in the SAN fabric, Cisco recommends using the following WWN prefix for all blocks in a pool: 20:00:00:25:B5:XX:XX:XX
- For the supported list of Servers, FEX, IOM, or VICs on Cisco UCS 6536 Fabric Interconnect, see Cisco UCS 6500 Series Fabric Interconnect Hardware Compatibility Matrix, on page 1

Recommendations

Following are the best practices for a successful migration:

- During the migration of Fabric Interconnects, ensure the Cluster ID is not changed.
- During the migration, image synchronization between fabric interconnects is not allowed. This is done to prevent incompatible images from getting synchronized. We recommend that you download B-Series, C-Series, and S-Series server software bundles again after migration is complete.
- During the migration, ensure that VLAN is not created in the range of 3915 to 4042 which are the reserved VLAN range for Cisco UCS 6536 Fabric Interconnects.
- The Cisco UCS 6536 Fabric Interconnect supports only port-channel mode for chassis-discovery. Hence change the Chassis/FEX discovery policy on the Cisco UCS 6300 series Fabric Interconnect to port-channel and immediately re-acknowledge the Cisco UCS 5108 chassis.

Note The migration can fail when the chassis is not immediately re-acknowledged.

- After successful migration of Fabric Interconnects, reconfigure the Ethernet Ports, Fibre Channel ports, or unified ports as required and reacknowledge the newly configured ports.

Note On Cisco UCS 6536 Fabric Interconnect, the Fibre Channel Port can be configured only on the Unified Ports (33-36 ports).

Validating Feature Configurations for Cisco UCS 6536 before Upgrade

Cisco UCS 6536 Fabric Interconnect does not support some software features that were allowed with Cisco UCS 6300 Fabric Interconnect. Some of these features will become available at a later software release.

Table 8: Features that needs special attention prior to upgrading

Feature	Remediation
License Management	Licensing for Cisco UCS 6536 Fabric Interconnect is not a port-based license like in previous generation Fabric Interconnects. All ports are enabled using a term-based subscription license in Cisco UCS 6536 Fabric Interconnect. This new smart license is applicable only for Cisco UCS 6536 Fabric Interconnect and is available from 4.2(3b) release.
Chassis and fabric extender I/O port channel	Select a port channel to the I/O module (IOM).
Multicast optimization	Verify that multicast optimization is not enabled under the LAN quality-of-service (QoS) system classes
Fabric forwarding mode for Ethernet	Verify that the Ethernet forwarding mode is set to **End Host Mode Only**.
Fabric forwarding mode for Fibre Channel	Verify that Fibre Channel forwarding mode is set to **End Host Mode Only**.
Cisco NetFlow	Unconfigure NetFlow.
MAC Security	Select **Allow** for MAC security.
VM-FEX	Remove port profiles and Cisco UCS Manager ESXi or SCVMM related configurations.
Dynamic vNIC connection policies	Set the dynamic vNIC connection policy in the vNIC profile to **Not set**.
Cisco Switched Port Analyzer (SPAN)	Use receive (RX) direction only. The installer will change SPAN to the RX direction and send an alert indicating that this setting is being changed.

Failure to comply with these remediation steps will result in a migration warning alert during the migration process and prevent the fabric interconnects from synchronizing.

Migrating from UCS 6300 Series Fabric Interconnects to UCS 6536 Fabric Interconnects

Cisco UCS 6300 Series Fabric Interconnects include Cisco UCS 6332 and Cisco UCS 6332-16UP. You can migrate from Cisco UCS 6300 Series Fabric Interconnects to Cisco UCS 6536 Fabric Interconnect. After migrating to Cisco UCS 6536 Fabric Interconnect, you cannot migrate back to UCS 6300 Series Fabric Interconnect.

The Cisco UCS 6536 Fabric Interconnect supports only port-channel mode for chassis-discovery. On changing the chassis or FEX discovery policy to port-channel, the chassis needs to be re-acknowledged before proceeding with the migration.

To acknowledge the chassis in Cisco UCS Manager, do the following:

1. In the Navigation pane of Cisco UCS Manager, click **Equipment**.
2. Click the **Equipment** node.
3. In the Work pane, click the **Policies** tab.
4. Click the **Global Policies** subtab.
5. In the **Chassis/FEX Discovery Policy** area, set the **Link Grouping Preference** field to **Port Channel**.
6. Expand **Equipment** > **Chassis**, and choose the chassis that you want to acknowledge.
7. In the Work pane, click the **General** tab.
8. In the **Actions** area, click **Acknowledge Chassis**.

Note For more information about how to perform configuration procedures in Cisco UCS Manager for a particular step, see the appropriate Cisco UCS Manager configuration guide.

Step 1 Download Cisco UCS Manager, Release 4.2(3b) or later version that supports migration to Cisco UCS 6536 Fabric Interconnects.

Step 2 Enable the port channel and re-acknowledge the chassis after changing to port channel mode.

Step 3 Evacuate the data traffic from the subordinate Fabric Interconnect and configure onto the primary Fabric Interconnect through fabric evacuation or uplink disablement. This step ensures that there is no data traffic impact during migration.

Note

- For direct-attach rack servers, fabric evacuation is supported only through uplink disablement.
- Fabric interconnect traffic evacuation is supported only in a cluster configuration and you can evacuate traffic only from the subordinate fabric interconnect.
- The IOM or FEX backplane ports of the fabric interconnect on which evacuation is configured will go down, and their state will appear as Admin down. During the manual upgrade process, to move these backplane ports back to the Up state and resume traffic flow, you must explicitly configure **Admin Evac Mode** as **Off**.
- For more information, see the *Fabric Interconnect Traffic Evacuation* section in the *Guidelines and Prerequisites* chapter of the Cisco UCS Manager Firmware Management Guide.

Step 4 Unconfigure all the Ethernet ports, Fibre Channel ports, or unified ports on the subordinate Fabric Interconnect.

Note For more information, see the *Configuring Port Modes for a 6536 Fabric Interconnect* section in the *LAN Ports and Port Channels* chapter of the Cisco UCS Manager Network Management Guide.

Step 5 Power down the subordinate fabric interconnect by unplugging it from the power source.

If you are monitoring the migration using a KVM session, you may need to reconnect the KVM session when you power down the fabric interconnect.

Step 6 Mount the replacement Cisco UCS 6536 Fabric Interconnect into either the same rack or an adjacent rack.

Step 7 Disconnect the cables from the chassis FEXes or fabric extenders to the subordinate fabric interconnect ports in slot 1 on the UCS 6300 Series Fabric Interconnect.

Step 8 Connect these cables into the corresponding ports on slot 1 of one of the new Cisco UCS 6536 Fabric Interconnects, using the connection records to preserve the port mapping and the configured server pinning. To change the port mapping, especially while reconfiguring Fibre Channel ports, you must reacknowledge the newly configured ports.

Step 9 Connect the L1 or L2 cables that were disconnected onto the new Cisco UCS 6536 Fabric Interconnect.

L1 connects to L1, L2 connects to L2.

Step 10 Connect the server and uplink cables.

Note For more information, refer the Cisco UCS 6536 Series Fabric Interconnect Hardware Installation Guide.

Step 11 Connect the power to the new Cisco UCS 6536 Fabric Interconnect, it will automatically boot and run POST tests. If the Fabric Interconnects reboots, it 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 quickly restore as a standalone fabric interconnect, then correct the issue before proceeding further.

Step 12 Configure the server and uplink ports on the new Cisco UCS 6536 Fabric Interconnect.

Step 13 The new subordinate Cisco UCS 6536 Fabric Interconnect will automatically synchronize the configuration and database/state information from the primary UCS 6300 Series 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 Fabric Interconnect to the new Fabric Interconnect.

Note Skip to Step 15 incase of replacing with a different IOM or FEX during migration. For more information on the compatibility matrix of supported IOM or FEX on the Fabric Interconnect, see Ports on the Cisco UCS Fabric Interconnects

Step 14 Reconfigure the Ethernet ports, Fibre Channel ports, or unified ports that was unconfigured in Step 4.

a) If you have changed port mappings for direct-attach rack server, reacknowledge the server.
b) It is recommended to reacknowledge the IOM or FEX.
c) Skip to Step 16 to proceed with data path verification.

Step 15 Remove and replace the new IOM or FEX and reconfigure the Ethernet ports, Fibre Channel ports, or unified ports.

a) Reconfigure to the same port to maintain the port mappings and acknowledge the IOM or FEX connected to the subordinate fabric interconnect.
b) It is recommended to reacknowledge the IOM or FEX.

Note For more information, see Migrate to Cisco UCS IOM 2408

Step 16 Verify that the data path is ready.

For more information, see the *Verifying that Dynamic vNICs Are Up and Running* section in the *Guidelines and Prerequisites* chapter of the Cisco UCS Manager Firmware Management Guide.

Ensure that all faults are resolved before proceeding with the next step.

a) Verify and if necessary reconfigure the SAN pin group for Fibre Channel 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 Disable Fabric Evacuation to restart the stopped traffic flows.

Step 18 Promote the subordinate fabric interconnect to primary, and repeat the process on the second new Cisco UCS 6536 Fabric Interconnect.

Cable the second new fabric interconnect identically to the first, and allow the reconfiguration to apply on the second new fabric interconnect.

Cisco UCS 6200 Series Fabric Interconnect Migration

Software Feature Configuration for Migration from Cisco UCS 6200 Series to UCS 6500 Fabric Interconnects

Cisco UCS 6500 Series Fabric Interconnects do not support a few software features that were supported on UCS 6200 Series Fabric Interconnects in Cisco UCS Manager. Following are the features and how they would be reported on the Migration Warnings page.

Ensure that the following feature configurations are appropriate before migration:

- **Chassis Discovery Policy**—UCS 6200 Series Fabric Interconnects support blade server chassis discovery in Port Channel and non-Port Channel modes. Cisco UCS 6500 Series Fabric Interconnects support only Port Channel mode.

  During migration, if a UCS 6200 Series Fabric Interconnect has the chassis discovery policy configured as non-Port Channel mode, the Migration Warnings page will report the incompatibility.

Note You must switch the chassis discovery policy to Port Channel mode before initiating migration and re-acknowledge the chassis after changing the chassis discovery policy.

- **Chassis Connectivity Policy**—UCS 6200 Series Fabric Interconnects support chassis connectivity in Port Channel and non-Port Channel modes. Cisco UCS 6500 Series Fabric Interconnects support only Port Channel mode.

  During migration, if a UCS 6200 Series Fabric Interconnect has the chassis connectivity policy configured as non-Port Channel mode, the Migration Warnings page will report the incompatibility.

Note You must switch the chassis connectivity policy to Port Channel mode before initiating migration and re-acknowledge the chassis after changing the chassis connectivity policy.

- **Port Configuration Mismatch**—On Cisco UCS 6200 Series Fabric Interconnects, the Unified Port capability is restricted to first 16 ports. Only ports 1/1-1/16 can be configured as FC. The FC ports must be contiguous, followed by contiguous Ethernet ports.

  On Cisco UCS 6536 Fabric Interconnect. Port breakout is supported on Ethernet ports (1-32) and Unified ports (33-36).

  - Ethernet breakout is supported on chassis ports 1 through 36 when each port is configured with a breakout cable.The Dynamic Ethernet Breakout feature enables converting a standard Ethernet port to a breakout port on-the-fly so that you do not need to reboot the Fabric Interconnect.
  - Fibre Channel support is only available through configuring Unified Ports (33-36) as FC breakout. FC breakout is supported on chassis ports 33 through 36 when each port is configured with a four-port breakout cable(4xLC), for example 1/33/1, 1/33/2, 1/33/3, and 1/33/4 for four FC breakout ports on chassis physical port 33.FC breakout ports support peer communication at fixed speeds of 8Gbs, 16 Gbps, and 32 Gbps.

  On Cisco UCS 6200 Series Fabric Interconnect, the first 16 ports are configured as Unified Ports (FC Breakout ports) and on Cisco UCS 6536 Fabric Interconnect, the ports 33 to 36 are configured as Unified Ports. During cluster addition, the ports that are mismatched will be un-configured.

- **Multicast Hardware Hash**—When multicast hardware hashing is enabled, all links between the IOM and the fabric interconnect in a port channel can be used for multicast traffic. UCS 6200 Series Fabric Interconnects supports multicast hardware hash, but Cisco UCS 6500 Series Fabric Interconnects do not support it.

- **VLAN Port Count Optimization**—On Cisco UCS 6536 Series Fabric Interconnects, VLAN port count optimization is performed through port VLAN (VP) grouping when the PV count exceeds 16000.

  The following table illustrates the PV Count with VLAN port count optimization enabled and disabled on Cisco UCS 6200 Series Fabric Interconnects and Cisco UCS 6536 Series Fabric Interconnects.

Table 9: VLAN Port Count Optimization with 6200 Series and 6500 Series Fabric Interconnects

	6200 Series Fabric Interconnect	6536 Fabric Interconnect
PV Count with VLAN Port Count Optimization Disabled	32000	16000
PV Count with VLAN Port Count Optimization Enabled	64000	108000

If the PV count exceeds 16000, the Migration Warnings page will report the PV count with the warning that VP Grouping will be enabled if you choose to proceed with installation.

When the Cisco UCS 6536 Fabric Interconnect is in Ethernet switching mode:

- The Fabric Interconnect does not support **VLAN Port Count Optimization Enabled**
- The Fabric Interconnect supports 16000 PVs, similar to EHM mode, when set to **VLAN Port Count Optimization Disabled**

- **Multicast Optimized for QoS**—Cisco UCS 6500 Series Fabric Interconnects do not support Multicast Optimized. If Multicast Optimized is enabled, this configuration will appear on the Migration Warning page.

  Continuing with the installation despite the warning will cause Cisco UCS Manager to reset the **Multicast Optimized** field.

- **NetFlow Configuration**—UCS 6200 Series Fabric Interconnects support NetFlow configuration. However, on Cisco UCS 6500 Series Fabric Interconnects, NetFlow is not supported.

  During migration, if a UCS 6200 Series Fabric Interconnect has NetFlow enabled, the Migration Warnings page will report the NetFlow configuration. Proceeding with the migration will remove the NetFlow configuration.

- **VMM Integration**—Cisco UCS 6500 Series Fabric Interconnects do not support VMM integration. During migration, the Migration Warnings page will report all configurations related to port profiles and distributed virtual switches (DVSes). Proceeding with the migration with this configuration will remove these port profiles and DVSes from the Cisco UCS Manager configuration.

- **Dynamic vNIC Connection Policies**—During migration, if a UCS 6200 Series Fabric Interconnect has dynamic vNIC connection policies configured, the Migration Warnings page will report that such connection policies exist. If you proceed with the migration, these policies and dynamic vNICS are automatically deleted.

- **Reserved VLANs**—Cisco UCS 6500 Series Fabric Interconnects reserve more VLANs for internal use than UCS 6200 Series Fabric Interconnects.

  During migration, the Migration Warnings page will contain the list of VLANs that could potentially conflict with the default reserved VLAN range. If you proceed with migration, the Reserved VLAN range will be configured but VLANs found in the conflicting range will not be configured.

Cisco UCS 6200 Series Fabric Interconnect Migration Considerations

Beginning with Cisco UCS Manager, Release 4.2(3b), Cisco UCS Manager provides support for Cisco UCS 6536 Fabric Interconnect. You can migrate Cisco UCS 6200 Series Fabric Interconnects to Cisco UCS 6536 Fabric Interconnect with B-Series servers, C-Series, or S-Series servers.

To migrate from Cisco UCS 6200 Series Fabric Interconnects to Cisco UCS 6536 Fabric Interconnect:

- Cisco UCS 6200 Series Fabric Interconnects must be on Cisco UCS Manager 4.2(3b) or a later release.
- Cisco UCS 6536 Fabric Interconnect must be loaded with the same Infrastructure Firmware version that is on the Cisco UCS 6200 Series Fabric Interconnect that it will replace.

Prerequisites

Before performing the migration from Cisco UCS 6200 Series Fabric Interconnects to Cisco UCS 6536 Fabric Interconnect, ensure that the following prerequisites are met:

- Ensure to enable the cluster failover.
- Licenses from Cisco UCS 6200 Series Fabric Interconnects are not transferable to Cisco UCS 6536 Series Fabric Interconnects.
- Cisco UCS 6536 Fabric Interconnect use the IDLE fill pattern for FC uplink ports and FC storage ports when using 8 Gbps speed.

  When migrating to Cisco UCS 6536 Fabric Interconnect and configuring FC Uplink Ports or FC Storage Ports at 8Gbps speed, ensure that the fill pattern is set as IDLE on the corresponding FC switch ports and the direct-attached FC storage array ports. If the fill pattern is not set as IDLE, FC uplink ports and FC storage ports operating at 8 Gbps might go to an errDisabled state, lose SYNC intermittently, or receive errors or bad packets.

  Cisco UCS 6536 Fabric Interconnects supports 8 Gbps only with fill-pattern set to IDLE for direct-attached FC connectivity (FC uplink ports or FC storage ports). This limitation is not applicable for Cisco UCS 6536 Fabric Interconnects with Fibre Channel (FC) ports at 16 Gbps and 32 Gbps. When migrating to Cisco UCS 6536 Fabric Interconnect for direct-attached storage arrays that don't support IDLE fill-pattern at 8 Gbps do one of the following:

  - Use a SAN switch between the Cisco UCS 6536 Fabric Interconnect and the storage array with 8 GB FC connectivity.
  - Upgrade the storage array to 16 GB or 32 GB FC connectivity.

- For minimal disruption during migration, ensure that there is redundancy for Ethernet and FC traffic from the servers in the UCS domain across both 6200 series fabric interconnects before migration.
- Ensure the latest firmware bundle is downloaded and upgraded through GUI or CLI. Incase of attempting to upgrade the firmware bundle using other methods (loader prompt/erase configuration) can result in missing package version.
- Perform a full configuration and software backup before performing the hardware upgrade.
- Upgrading the Fabric Interconnect must be performed before upgrading to a different model of Fabric Extender (FEX), I/O Module (IOM), or virtual interface card. For more information on the supported IOMs or FEXs for migration, see Ports on the Cisco UCS Fabric Interconnects.
- Migrating to different IOM models can result in peer communication issue between IOMs of the Primary and Secondary Fabric Interconnects.
- Do not attempt to implement new software features from the new Cisco UCS software version until all required hardwares are installed.
- Validate the software features and configurations between Cisco UCS 6200 series and UCS 6536 Fabric Interconnects. Before migration, ensure that 6200 series Fabric Interconnect is reconfigured to only have features that are supported with 6536 Fabric Interconnects.

Note This is one of the most common reasons for migration failures.

- Changes to the topology, such as the number of servers or uplink connections, should be performed after the fabric interconnect migration is complete.

- Make a detailed record of the cabling between FEXes and fabric interconnects. You must 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 FEXes.
- When connecting to the Fabric Interconnects, use the same speed cables on all the adapter ports that are connected to same Fabric Interconnect. Cisco UCS VIC adapter ports connected to Cisco UCS 6536 fabric interconnect through a mix of 10G and 25G cables can result in UCS rack-mount server discovery failure and ports moving to suspended state.
- Cisco UCS 6536 Fabric Interconnect only supports 25/40/100G direct connectivity for C-series rack servers and 10G direct-connect is not supported on C-series rack servers. The Cisco UCS 6536 Fabric Interconnect supports 10G server connectivity only with 2348-UPQ FEX.
- Standalone installations should expect down time. Migrating the Fabric Interconnect can result in a small traffic disruption when traffic fails over from one Fabric Interconnect to another. To avoid that there is no permanent traffic loss during migration, ensure that there is redundancy in the UCS domain on both Fabric Interconnects before migration and test the redundancy before starting the migration.
- A WWN pool can include only WWNNs or WWPNs in the ranges from 20:00:00:00:00:00:00:00 to 20:FF:00:FF:FF:FF:FF:FF or from 50:00:00:00:00:00:00:00 to 5F:FF:00:FF:FF:FF:FF:FF. All other WWN ranges are reserved. When fibre channel traffic is sent through the UCS infrastructure the source WWPN is converted to a MAC address. You cannot use WWPN pool which can translate to source multicast MAC addresses. To ensure the uniqueness of the Cisco UCS WWNNs and WWPNs in the SAN fabric, Cisco recommends using the following WWN prefix for all blocks in a pool: 20:00:00:25:B5:XX:XX:XX.
- For the supported list of Servers, FEX, IOM, or VICs on Cisco UCS 6536 Fabric Interconnect, see Cisco UCS 6500 Series Fabric Interconnect Hardware Compatibility Matrix, on page 1.
- **Recommendations**

  Following are the best practices for a successful migration:

  - During the migration of Fabric Interconnects, ensure the Cluster ID is not changed.
  - During the migration, image synchronization between fabric interconnects is not allowed. This is done to prevent incompatible images from getting synchronized. We recommend that you download B-Series, C-Series, and S-Series server software bundles again after migration is complete.
  - During the migration, ensure that VLAN is not created in the range of 3915 to 4042 which are the reserved VLAN range for Cisco UCS 6536 Fabric Interconnects.
  - The Cisco UCS 6536 Fabric Interconnect supports only port-channel mode for chassis-discovery. Hence change the Chassis/FEX discovery policy on the Cisco UCS 6200 series Fabric Interconnect to port-channel and immediately re-acknowledge the Cisco UCS 5108 chassis.

Note The migration can fail when the chassis is not immediately re-acknowledged.

  - After successful migration of Fabric Interconnects, reconfigure the Ethernet Ports, Fibre Channel ports, or unified ports as required and reacknowledge the newly configured ports.

Note On Cisco UCS 6536 Fabric Interconnect, the Fibre Channel Port can be configured only on the Unified Ports (33-36 ports).

Validating Feature Configurations for Cisco UCS 6536 before Upgrade

Cisco UCS 6536 Fabric Interconnect does not support some software features that were allowed with Cisco UCS 6200 Fabric Interconnect. Some of these features will become available at a later software release.

Table 10: Features that needs special attention prior to upgrading

Feature	Remediation
License Management	Licensing for Cisco UCS 6536 Fabric Interconnect is not a port-based license like in previous generation Fabric Interconnects. All ports are enabled using a term-based subscription license in Cisco UCS 6536 Fabric Interconnect. This new smart license is applicable only for Cisco UCS 6536 Fabric Interconnect and is available from 4.2(3b) release.
Chassis and fabric extender I/O port channel	Select a port channel to the I/O module (IOM).
Multicast optimization	Verify that multicast optimization is not enabled under the LAN quality-of-service (QoS) system classes
Fabric forwarding mode for Ethernet	Verify that the Ethernet forwarding mode is set to **End Host Mode Only**.
Fabric forwarding mode for Fibre Channel	Verify that Fibre Channel forwarding mode is set to **End Host Mode Only**.
Cisco NetFlow	Unconfigure NetFlow.
MAC Security	Select **Allow** for MAC security.
VM-FEX	Remove port profiles and Cisco UCS Manager ESXi or SCVMM related configurations.
Dynamic vNIC connection policies	Set the dynamic vNIC connection policy in the vNIC profile to **Not set**.
Cisco Switched Port Analyzer (SPAN)	Use receive (RX) direction only. The installer will change SPAN to the RX direction and send an alert indicating that this setting is being changed.

Failure to comply with these remediation steps will result in a migration warning alert during the migration process and prevent the fabric interconnects from synchronizing.

Migrating from UCS 6200 Series Fabric Interconnects to UCS 6536 Fabric Interconnects

Cisco UCS 6200 Series Fabric Interconnects include Cisco UCS 6248UP 48-Port Fabric Interconnect and Cisco UCS 6296UP 96-Port Fabric Interconnect. You can migrate from Cisco UCS 6200 Series Fabric Interconnects to Cisco UCS 6536 Fabric Interconnect. After migrating to Cisco UCS 6536 Fabric Interconnect, you cannot migrate back to UCS 6200 Series Fabric Interconnect.

The Cisco UCS 6536 Fabric Interconnect supports only port-channel mode for chassis-discovery. On changing the chassis or FEX discovery policy to port-channel, the chassis needs to be re-acknowledged before proceeding with the migration.

To acknowledge the chassis in Cisco UCS Manager, do the following:

1. In the Navigation pane of Cisco UCS Manager, click **Equipment**.
2. Click the **Equipment** node.
3. In the Work pane, click the **Policies** tab.
4. Click the **Global Policies** subtab.
5. In the **Chassis/FEX Discovery Policy** area, set the **Link Grouping Preference** field to **Port Channel**.
6. Expand **Equipment** > **Chassis**, and choose the chassis that you want to acknowledge.
7. In the Work pane, click the **General** tab.
8. In the **Actions** area, click **Acknowledge Chassis**.

Note For more information about how to perform configuration procedures in Cisco UCS Manager for a particular step, see the appropriate Cisco UCS Manager configuration guide.

Step 1 Download Cisco UCS Manager, Release 4.2(3b) or later version that supports migration to Cisco UCS 6536 Fabric Interconnects.

Step 2 Enable the port channel and re-acknowledge the chassis after changing to port channel mode.

Step 3 Evacuate the data traffic from the subordinate Fabric Interconnect and configure onto the primary Fabric Interconnect through fabric evacuation or uplink disablement. This step ensures that there is no data traffic impact during migration.

Note

- For direct-attach rack servers, fabric evacuation is supported only through uplink disablement.
- Fabric interconnect traffic evacuation is supported only in a cluster configuration and you can evacuate traffic only from the subordinate fabric interconnect.
- The IOM or FEX backplane ports of the fabric interconnect on which evacuation is configured will go down, and their state will appear as Admin down. During the manual upgrade process, to move these backplane ports back to the Up state and resume traffic flow, you must explicitly configure **Admin Evac Mode** as **Off**.
- For more information, see the *Fabric Interconnect Traffic Evacuation* section in the *Guidelines and Prerequisites* chapter of the Cisco UCS Manager Firmware Management Guide.

Step 4 Unconfigure all the Ethernet ports, Fibre Channel ports, or Unified ports on the subordinate Fabric Interconnect.

Note For more information, see the *Configuring Port Modes for a 6536 Fabric Interconnect* section in the *LAN Ports and Port Channels* chapter of the Cisco UCS Manager Network Management Guide.

Step 5 Power down the subordinate fabric interconnect by unplugging it from the power source.

If you are monitoring the migration using a KVM session, you may need to reconnect the KVM session when you power down the fabric interconnect.

Step 6 Mount the replacement Cisco UCS 6536 Fabric Interconnect into either the same rack or an adjacent rack.

Step 7 Disconnect the cables from the chassis FEXes or fabric extenders to the subordinate fabric interconnect ports in slot 1 on the UCS 6200 Series Fabric Interconnect.

Step 8 Connect these cables into the corresponding ports on slot 1 of one of the new Cisco UCS 6536 Fabric Interconnects, using the connection records to preserve the port mapping and the configured server pinning. To change the port mapping, especially while reconfiguring Fibre Channel ports, you must reacknowledge the newly configured ports.

Step 9 Connect the L1 or L2 cables that were disconnected onto the new Cisco UCS 6536 Fabric Interconnect.

L1 connects to L1, L2 connects to L2.

Step 10 Connect the server and uplink cables.

Note For more information, refer the Cisco UCS 6536 Series Fabric Interconnect Hardware Installation Guide.

Step 11 Connect the power to the new Cisco UCS 6536 Fabric Interconnect, it will automatically boot and run POST tests. If the Fabric Interconnects reboots, it 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 quickly restore as a standalone fabric interconnect, then correct the issue before proceeding further.

Step 12 Configure the server and uplink ports on the new Cisco UCS 6536 Fabric Interconnect.

Step 13 The new subordinate Cisco UCS 6536 Fabric Interconnect will automatically synchronize the configuration and database/state information from the primary UCS 6200 Series 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 Fabric Interconnect to the new Fabric Interconnect.

Note Skip to Step 15 incase of replacing with a different IOM or FEX during migration. For more information on the compatibility matrix of supported IOM or FEX on the Fabric Interconnect, see Ports on the Cisco UCS Fabric Interconnects

Step 14 Reconfigure the Ethernet ports, Fibre Channel ports, or unified ports that was unconfigured in Step 4.

a) If you have changed port mappings for direct-attach rack server, reacknowledge the server.
b) It is recommended to reacknowledge the IOM or FEX.
c) Skip to Step 16 to proceed with data path verification.

Step 15 Remove and replace the new IOM or FEX and reconfigure the Ethernet ports, Fibre Channel ports, or Unified ports.

a) Reconfigure to the same port to maintain the port mappings and reacknowledge the IOM or FEX connected to the subordinate fabric interconnect.
b) It is recommended to reacknowledge the IOM or FEX.

Note For more information, see Migrate to Cisco UCS IOM 2408

Step 16 Verify that the data path is ready.

For more information, see the *Verifying that Dynamic vNICs Are Up and Running* section in the *Guidelines and Prerequisites* chapter of the Cisco UCS Manager Firmware Management Guide.

Ensure that all faults are resolved before proceeding with next step.

a) Verify and if necessary reconfigure the SAN pin group for Fibre Channel 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 Disable Fabric Evacuation to restart the stopped traffic flows.

Step 18 Promote the subordinate fabric interconnect to primary, and repeat the process on the second new Cisco UCS 6536 Fabric Interconnect.

Cable the second new fabric interconnect identically to the first, and allow the reconfiguration to apply on the second new fabric interconnect.