Migrating from UCS 6200 to UCS 6454 Fabric Interconnects

Migrating Fabric Interconnects

Fabric Interconnect Migration Considerations

Ensure that the following prerequisites are met before beginning any procedures in this section:

Caution Cisco UCS Manager Release 4.0 is the bare minimum version that provides support for Cisco UCS 6454 Fabric Interconnects. To migrate from Cisco UCS 6200 Series to Cisco UCS 6454 Fabric Interconnects:

- Cisco UCS 6200 Series Fabric Interconnects must be on Cisco UCS Manager Release 4.0(1) or a later release.
- Cisco UCS 6454 Fabric Interconnects must be loaded with the same build version that is on the Cisco UCS 6200 Series Fabric Interconnect that it will replace.

- Licenses from Cisco UCS 6200 Series Fabric Interconnects are not transferable to Cisco UCS 6454 Fabric Interconnects. You must obtain licenses for the Cisco UCS 6454 Fabric Interconnects before you upgrade.
- During migration, the Cisco UCS 6200 Series Fabric Interconnect and the Cisco UCS 6454 Fabric Interconnect must use the same allowed SSL protocol, either default or Only TLSv1.2, to successfully complete compatibility checks.
- Cisco UCS 6454 Fabric Interconnects use the IDLE fill pattern for FC uplink ports and FC storage ports when using 8 Gbps speed.

  When migrating to Cisco UCS 6454 Fabric Interconnects 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 6454 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 6454 Fabric Interconnects with FC ports at 16 Gbps and 32 Gbps. When migrating to Cisco UCS 6454 Fabric Interconnects from Cisco UCS 6200 Series Fabric Interconnects 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 6454 Fabric Interconnect and the storage array with 8 GB FC connectivity.
- Upgrade the storage array to 16 GB or 32 GB FC connectivity.

- Before migrating from Cisco UCS 6200 Series Fabric Interconnects to Cisco UCS 6454 Fabric Interconnects, ensure that you unconfigure the unified ports on the Cisco UCS 6200 Series Fabric Interconnects.

  After migrating to Cisco UCS 6454 Fabric Interconnects, reconfigure the unified ports based on their location on the Cisco UCS 6454 Fabric Interconnects, and reacknowledge the newly configured ports. For example, a unified port on a UCS 6248 Fabric Interconnect should be reconfigured on any port between 1 and 16 on a Cisco UCS 6454 Fabric Interconnect.
- Upgrading the fabric interconnect should be done before upgrading to a new FEX or virtual interface card.
- During fabric interconnect 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 and C-Series server software bundles again after migration is complete.
- 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, 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.
- Cisco UCS VIC 1455 and 1457 adapters support cables of 10G and 25G speed. However, the cables connecting Cisco UCS VIC 1455 or 1457 adapter ports to each 6454 fabric interconnect must be of uniform speed-either all 10G or all 25G cables. If you connect these adapter ports to a 6454 fabric interconnect through a mix of 10G and 25G cables, UCS rack-mount server discovery fails and ports may go to a suspended state.
- Standalone installations should expect down time. Migrating or 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.
- 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

Validating Feature Configurations before Upgrade

Cisco UCS 6454 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 1: Features that needs special attention prior to upgrading

Feature	Remediation
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.

For more information on precheck steps for upgrade and upgrade procedure, refer to Migrate to Cisco UCS 6454 Fabric Interconnect with 10- to 25-Gbps Ports.

Port Mapping for Upgrades

The upgrade described here is primarily for upgrading a Cisco UCS 6248 fabric interconnect to a Cisco UCS 6454. The same considerations will also apply when upgrading a Cisco UCS 6296 fabric interconnect to a Cisco UCS 6454.

Note If you are using appliance ports for direct attached storage, you must add VLANs to the ethernet uplinks. This will ensure that vNICS can properly pin on boot.

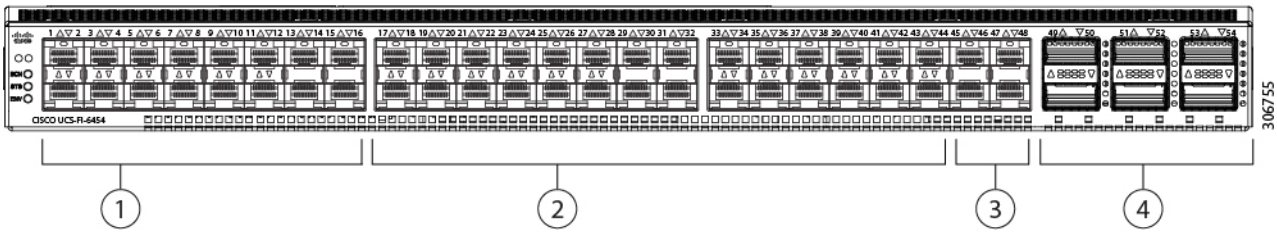
Fixed Ports

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. On the UCS 6454 fabric interconnect, you can configure the first 16 ports as Fibre Channel ports.

Because a UCS 6248 has 32 ports in slot 1 and a UCS 6454 has all ports in slot 1, any ports on GEM slots will be removed during the hardware 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 6454 Port Numbering



1	Ports 1-16 (Unified Ports 10/25 Gbps Ethernet or FCoE or 8/16/32 Gbps Fibre Channel) **Note** When using Cisco UCS Manager releases earlier than 4.0(4), only ports 1-8 are Unified Ports.	2	Ports 17-44 (10/25 Gbps Ethernet or FCoE) **Note** When using Cisco UCS Manager releases earlier than 4.0(4), ports 9-44 are 10/25 Gbps Ethernet or FCoE.
3	Ports 45-48 (1/10/25 Gbps Ethernet or FCoE)	4	Uplink Ports 49-54 (40/100 Gbps Ethernet or FCoE) Each of these ports can be 4 x 10/25 Gbps Ethernet or FCoE uplink ports when using an appropriate breakout cable.

Migrating from UCS 6200 Series Fabric Interconnects to UCS 6454 Fabric Interconnects

You can migrate from a UCS 6200 Series Fabric Interconnect to a UCS 6454 Fabric Interconnect. However, you cannot migrate back to a UCS 6200 Series Fabric Interconnect after you have migrated to a UCS 6454 Fabric Interconnect.

The UCS 6454 Series Fabric Interconnect does not support a few software features that were supported on UCS 6200 Series Fabric Interconnect in Cisco UCS Manager, Release 3.2 and earlier releases. For more information, see Software Feature Configuration.

The UCS 6454 Series 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. If the chassis is not re-acknowledged, the migration will fail.

The UCS 6454 Fabric Interconnect is intended as a replacement for the UCS 6200 Series Fabric Interconnect, but not as a replacement for the higher speed (or 40Gb) UCS 6332/6332-16UP Fabric Interconnect. Therefore, Cisco has not tested or published a plan to migrate from UCS 6332/6332-16UP Fabric Interconnects to UCS 6454 Fabric Interconnects.

Unless otherwise noted, 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 for Cisco UCS Manager.

Procedure

Step 1 Download Cisco UCS Manager, Release 4.0 or later versions to the UCS 6200 Series Fabric Interconnects and upgrade to this version.

Step 2 Evacuate traffic from the subordinate fabric interconnect to ensure there is no data traffic impact during migration.

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 3 When migrating from UCS 6200 Series Fabric Interconnects to UCS 6400 Series Fabric Interconnects with B-Series servers and S-Series servers, ensure that the port channel is enabled before migration.

Step 4 Unconfigure all the unified 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 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 UCS 6454 fabric interconnect into either the same rack or an adjacent rack.

Refer to the Cisco UCS 6454 Installation Guide for details.

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 6454 fabric interconnects, using the connection records to preserve the port mapping and the configured server pinning. To change the port mapping, especially while reconfiguring FC ports, you must reacknowledge the newly configured ports.

Step 9 Connect the L1/L2 cables that were disconnected onto the new Cisco UCS 6454 fabric interconnect.

L1 connects to L1, L2 connects to L2.

Step 10 Connect the server and uplink cables.

Refer to the Cisco UCS 6454 Installation Guide for details.

Step 11 Connect the power to the new Cisco UCS 6454 fabric interconnect, 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 12 Configure the server and uplink ports on the new Cisco UCS 6454 fabric interconnect.

Step 13 The new subordinate Cisco UCS 6454 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 switch to the new hardware.

Step 14 Reconfigure the server ports that had been unconfigured in Step 4.

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

Step 15 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.

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 16 Restart stopped traffic flows by disabling fabric evacuation.

Step 17 Promote the subordinate fabric interconnect to primary, and repeat the process on the second new Cisco UCS 6454 fabric interconnect.

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.