



Overview of UCS 6454 Fabric Interconnects

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Cisco UCS 6454 Fabric Interconnect Overview

The Cisco UCS 6454 Fabric Interconnects provide both network connectivity and management capabilities to the Cisco UCS system. The fabric interconnect provides Ethernet and Fibre Channel to the servers in the system. The servers connect to the fabric interconnect, and then to the LAN or SAN.

Each fabric interconnect runs Cisco UCS Manager software to fully manage all Cisco UCS elements. High availability redundancy can be achieved when a fabric interconnect is connected to another fabric interconnect through the L1 or L2 port on each device.

Cisco UCS 6454 Fabric Interconnect

The Cisco UCS 6454 Fabric Interconnect (FI) is a 1-RU top-of-rack switch that mounts in a standard 19-inch rack such as the Cisco R Series rack.

The Cisco UCS 6454 Fabric Interconnect has 48 10/25 Gb SFP28 ports (16 unified ports) and 6 40/100 Gb QSFP28 ports. Each 40/100 Gb port can break out into 4 x 10/25 Gb uplink ports. The sixteen unified ports support 10/25 GbE or 8/16/32G Fibre Channel speeds.



Note The Cisco UCS 6454 Fabric Interconnect supported 8 unified ports (ports 1 - 8) with Cisco UCS Manager 4.0(1) and 4.0(2), but with release 4.0(4) and later it supports 16 unified ports (ports 1 - 16).

The Cisco UCS 6454 Fabric Interconnect supports:

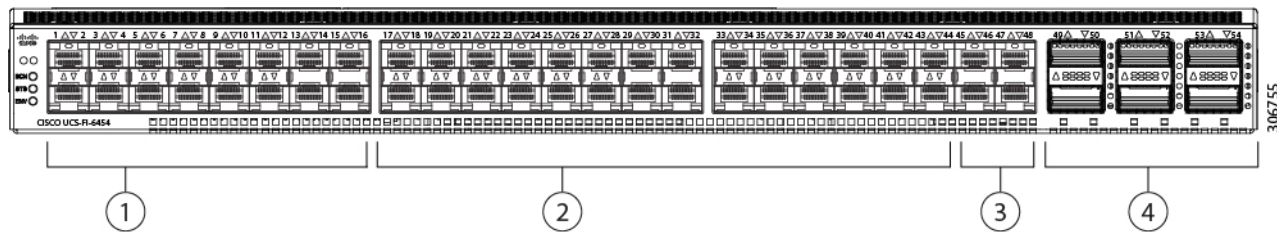
- Maximum of 8 FCoE port channels
- Or 4 SAN port channels
- Or a maximum of 8 SAN port channels and FCoE port channels (4 each)

The Cisco UCS 6454 Fabric Interconnect also has one network management port, one console port for setting the initial configuration, and one USB port for saving or loading configurations. The FI also includes L1/L2 ports for connecting two fabric interconnects for high availability.

The Cisco UCS 6454 Fabric Interconnect also contains a CPU board that consists of:

- Intel Xeon D-1528 v4 Processor, 1.6 GHz
- 64 GB of RAM
- 8 MB of NVRAM (4 x NVRAM chips)
- 128 GB SSD (bootflash)

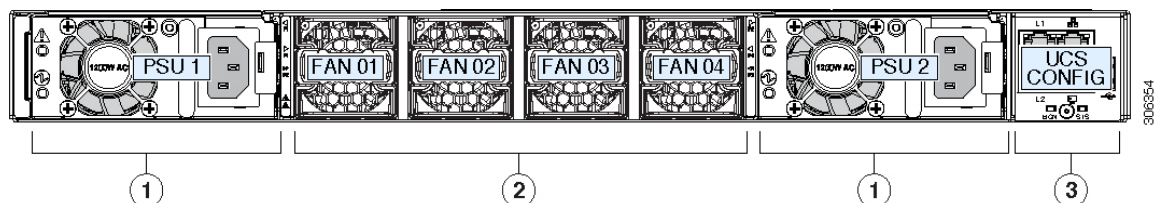
Figure 1: Cisco UCS 6454 Fabric Interconnect Rear View



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.

The Cisco UCS 6454 Fabric Interconnect chassis has two power supplies and four fans. Two of the fans provide front to rear airflow.

Figure 2: Cisco UCS 6454 Fabric Interconnect Front View



1	Power supply and power cord connector	2	Fans 1 through 4, numbered left to right, when facing the front of the chassis.
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3	L1 port, L2 port, RJ45, console, USB port, and LEDs		
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Ports on the Cisco UCS 6454 Fabric Interconnects

The ports on the fabric interconnects can be configured to carry either Ethernet or Fibre Channel traffic. You can configure only ports 1-16 to carry Fibre Channel traffic. The ports cannot be used by a Cisco UCS domain until you configure them.



Note When you configure a port on a Fabric Interconnect, the administrative state is automatically set to enabled. If the port is connected to another device, this may cause traffic disruption. The port can be disabled and enabled after it has been configured.

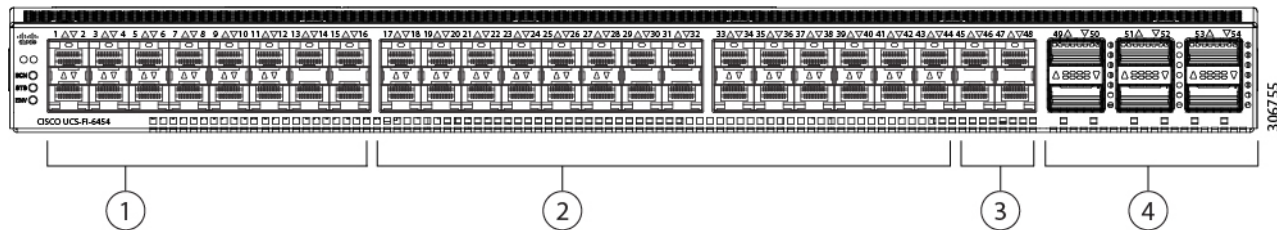
The following table summarizes the Cisco UCS 6454 Fabric Interconnects.

	Cisco UCS 6454 FI
Description	54-Port Fabric Interconnect
Form factor	1-RU
Number of fixed 10 GB Interfaces	48 10/25G interfaces
Number of Unified Ports	16 This FI supported 8 unified ports (ports 1 - 8) with Cisco UCS Manager 4.0(1) and 4.0(2), but with Release 4.0(4) and later it supports 16 unified ports (ports 1 - 16).
Unified Port Range	Ports 1-16
Unified Port Speeds	10/25 Gbps or 8/16/32-Gbps FC
Number of 40-Gbps ports	6 40/100 Gigabit ports
Compatibility with the IOM	UCS 2204, UCS 2208, UCS 2408
Compatibility with the FEX	Cisco Nexus 2232PP Cisco Nexus 2232TM-E
Expansion Slots	None
Fan Modules	4
Power Supplies	2 (AC/DC/HVDC available)

Port Speeds and Types

Ports on the fabric interconnects are numbered and grouped according to their function. The ports are numbered top to bottom and left to right. The following figures show the port numbering and define port speeds and the types of ports that can be configured. For more information on how to configure the port modes, refer to "Configuring Port Modes for a 6454 Fabric Interconnect" in the *Cisco UCS Network Management Guide, Release 4.04.0*.

Figure 3: Rear View of Cisco UCS 6454 FI, Port Numbers



<p>1</p>	<p>Ports 1–16.</p> <p>Unified Ports can operate as 10/25 Gbps Ethernet or FCoE; or 8/16/32 Gbps Fibre Channel.</p> <p>Port type in 8G/16G/32G FC mode: FC uplink port</p> <p>Port types in 10G/25G mode:</p> <ul style="list-style-type: none"> • FCoE uplink port • Server port • Appliance port (the FI must be in Ethernet-End-Host mode) • Monitor port <p>Note When using Cisco UCS Manager releases earlier than 4.0(4), only ports 1-8 are Unified Ports.</p>	<p>2</p> <p>Ports 17–44.</p> <p>Each port can operate as 10G/25G Ethernet.</p> <p>Port types in 10G/25G mode:</p> <ul style="list-style-type: none"> • FCoE uplink port • Server port • Appliance port (the FI must be in Ethernet-End-Host mode) • Monitor port <p>Note When using Cisco UCS Manager releases earlier than 4.0(4), ports 9-44 are 10/25 Gbps Ethernet or FCoE. (Only ports 1-8 were Unified Ports in earlier releases.)</p>
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3	Ports 45–48. Each port can operate as 1G/10G/25G Ethernet or FCoE port.	4	Uplink Ports 49–54. Each port can operate as 40G/100G Ethernet or FCoE. With a breakout cable, each of these ports can operate as 4 x 10G or 4 x 25G Ethernet or FCoE ports. Port types: <ul style="list-style-type: none"> • Uplink port • FCoE uplink port • Monitor port
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Software Feature Configuration

UCS 6454 Fabric Interconnects do not support a few software features that were supported on UCS 6200 Series Fabric Interconnects in Cisco UCS Manager 3.2 and earlier releases. The following sections detail each of these features and how they would be reported on the **Migration Warnings** page.

Ensure that the following features are configured correctly before migration:

- Chassis Discovery Policy
- Chassis Connectivity Policy
- Switching Mode

Chassis Discovery Policy

UCS 6200 Series Fabric Interconnects support blade server chassis discovery in Port Channel and non-Port Channel modes. UCS 6454 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.



Important

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. UCS 6454 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.

**Important**

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.

Switching Mode Mismatch

Cisco UCS Manager Release 4.0(2) and later releases support Ethernet and FC switching modes on Cisco UCS 6454 Fabric Interconnects.

In Cisco UCS Manager, Release 4.0(1), Cisco UCS 6454 Fabric Interconnects did not support Ethernet or FC switching modes.

During migration while using Cisco UCS Manager Release 4.0(1), if the existing UCS 6200 Series Fabric Interconnect had either Ethernet or FC switching mode configured, the Migration Warnings page would report the unsupported modes.

**Important**

You must switch to end-host mode before proceeding with migration in Cisco UCS Manager, Release 4.0(1).

Port Configuration Mismatch

On UCS 6454 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 UCS 6200 Series Fabric Interconnects, all ports have the Unified Port capability. All ports can be configured as Ethernet or FC. The Ethernet ports must be contiguous, followed by contiguous FC ports. FC ports appear towards the end of the module.

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 UCS 6454 Fabric Interconnects do not support it.

VLAN Port Count Optimization

On UCS 6454 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 and UCS 6454 Fabric Interconnects.

	6200 Series FI	6454 FI
PV Count with VLAN Port Count Optimization Disabled	32000	16000

	6200 Series FI	6454 FI
PV Count with VLAN Port Count Optimization Enabled	64000	64000

If the PV count exceeds 16K, 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 6454 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

UCS 6454 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 UCS 6454 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.

MAC Security

UCS 6200 Series Fabric Interconnects support MAC security. Hence, MAC Forge is enabled by default.

Cisco UCS Manager Release 4.0(2) and later releases support MAC security on Cisco UCS 6454 Fabric Interconnects.

UCS 6454 Fabric Interconnects did not support MAC security in Cisco UCS Manager Release 4.0(1).

During migration while using Cisco UCS Manager Release 4.0(1), if MAC security was enabled on the UCS 6200 Series Fabric Interconnect, the Migration Warnings page will report the MAC security configuration. Proceeding with the migration will cause MAC Forge to be enabled globally in the system.

VMM Integration

UCS 6454 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

UCS 6454 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.