



Overview of Cisco UCS Fabric Interconnects

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Cisco UCS 6400 Series Fabric Interconnects

Cisco UCS 6400 Series Fabric Interconnect Overview

A Cisco UCS 6400 Series Fabric Interconnect provides 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 Cisco UCS 6400 Series Fabric Interconnect runs Cisco UCS Manager to fully manage all Cisco UCS elements. The fabric interconnect supports 10/25 Gigabit ports in the fabric with 40/100 Gigabit uplink ports. High availability can be achieved when a Cisco UCS 6400 Series Fabric Interconnect is connected to another Cisco UCS 6400 Series Fabric Interconnect through the L1 or L2 port on each device.

Cisco UCS 6400 Series Fabric Interconnect consists of:

- Cisco UCS 6454 Fabric Interconnects
- Cisco UCS 64108 Fabric Interconnects

Cisco UCS 64108 Fabric Interconnect

The Cisco UCS 64108 Fabric Interconnect is a 2 RU top-of-rack (TOR) switch that mounts in a standard 19-inch rack such as the Cisco R Series rack. This high-density FI is an ideal upgrade from the high-density Cisco UCS 6296 Fabric Interconnect.

The high-density Cisco UCS 64108 Fabric Interconnect has 96 10/25 Gb SFP28 ports and 12 40/100 Gb QSFP28 ports. Each 40/100 Gb port can break out into 4 x 10/25 Gb uplink ports. Ports 1 - 16 are unified ports that support 10/25 GbE or 8/16/32G Fibre Channel speeds. Ports 89-96 support 1Gbps Ethernet speeds.

The Cisco UCS 64108 Fabric Interconnect supports either:

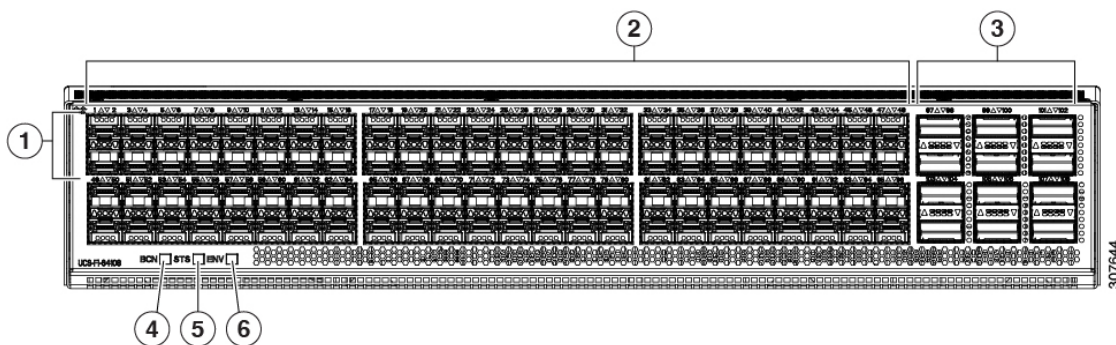
- Eight FCoE port channels
- Or Four SAN port channels
- or Four SAN port channels and four FCoE port channels

The Cisco UCS 64108 Fabric Interconnect also has one network management port, one RS-232 serial 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 in a high-availability configuration.

The Cisco UCS 64108 Fabric Interconnect also contains a CPU board that consists of:

- Intel Xeon Processor, 6 core
- 64 GB of RAM
- 8 MB of NVRAM (4 x NVRAM chips)
- 128 GB SSD (bootflash)

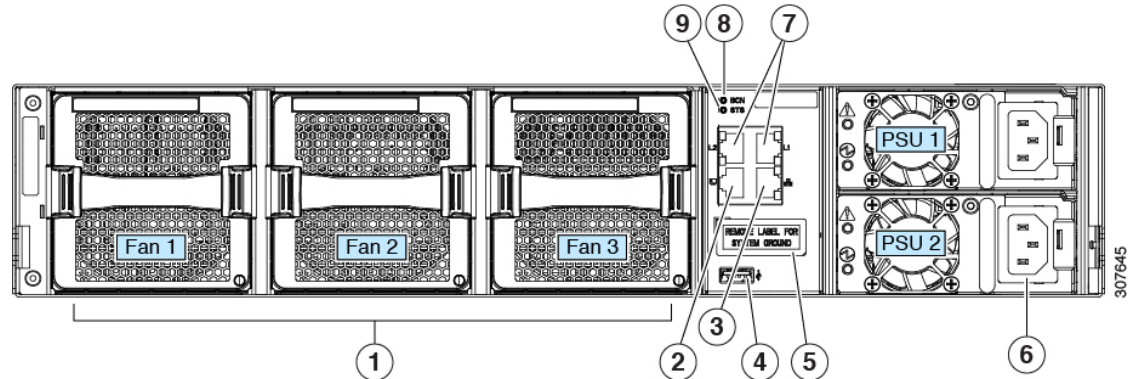
Figure 1: Cisco UCS 64108 Fabric Interconnect Rear View



1	Ports 1-16 Unified ports: <ul style="list-style-type: none"> • 10/25 Gbps Ethernet or FCoE • 8/16/32 Gbps Fibre Channel 	2	Ports 17-88 (10/25 Gbps Ethernet or FCoE)
3	Ports 89-96 <ul style="list-style-type: none"> • 10/25 Gbps Ethernet or FCoE • 1 Gbps Ethernet 	4	Uplink Ports 97-108 (40/100 Gbps Ethernet or FCoE) Each of these ports can be 4 x 10/25 Gbps Ethernet or FCoE uplink ports when using a breakout cable.
5	System environment (fan fault) LED	6	System status LED
7	Beacon LED		

The Cisco UCS 64108 Fabric Interconnect has two power supplies (redundant as 1+1) and three fans (redundant as 2+1).

Figure 2: Cisco UCS 64108 Fabric Interconnect Front View



1	Cooling fans (hot swappable, 2+1 redundancy)	2	RS-232 serial console port (RJ-45 connector)
3	Network management port (RJ-45 connector)	4	USB port
5	Grounding pad for two-hole grounding lug (under protective label)	6	Power supplies Two identical AC or DC PSUs, hot-swappable, 1+1 redundancy)
7	L1/L2 high-availability ports (RJ-45 connector)	8	Beacon LED
9	System status LED		

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:

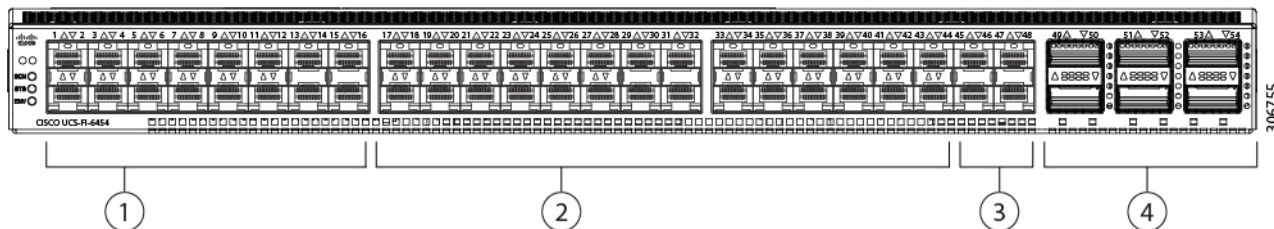
- Maximum of 8 FCoE port channels
- Or 4 SAN port channels
- Or a maximum of 8 SAN port channels and FCoE port channels (4 each)

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)

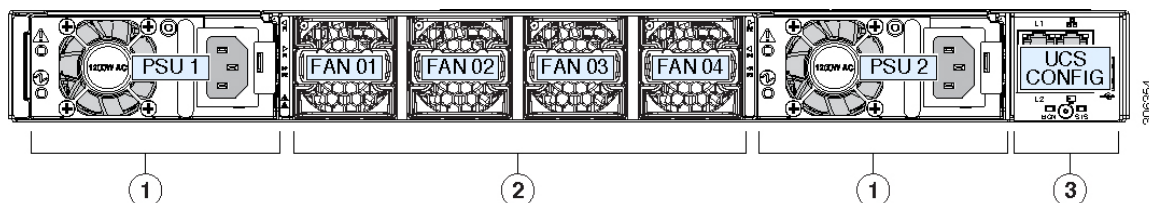
Figure 3: Cisco UCS 6454 Fabric Interconnect Rear View



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 4: 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 Fabric Interconnects

Ports on the Cisco UCS 6400 Series 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**
- 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 releases, it supports 16 unified ports (ports 1 - 16).
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 second, third, fourth, and generation Fabric Interconnect support.

	Second Generation		Third Generation		Fourth Generation	
Item	Cisco UCS 6248 UP	Cisco UCS 6296 UP	Cisco UCS 6332	Cisco UCS 6332-16UP	Cisco UCS 6454	Cisco UCS 64108
Description	48-Port Fabric Interconnect	96-Port Fabric Interconnect	32-Port Fabric Interconnect	40-Port Fabric Interconnect	54-Port Fabric Interconnect	108-Port Fabric Interconnect
Form factor	1 RU	2 RU	1 RU	1 RU	1 RU	2 RU
Number of fixed 10 GB Interfaces	32	48	96 (40G to 4 x 10G breakout cables), QSA, Port 13 and 14 do not support 40G to 10G breakout	88 (40G to 4 x 10G breakout cables)	48 10G/25G interfaces	96 10G/25G interfaces

	Second Generation		Third Generation		Fourth Generation	
Number of Unified Ports	32	48	—	16	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).	16 ports 1-16
Unified Port Speeds	1G/10G or 1G/2G/4G/8G-FC	1G/10G or 1G/2G/4G/8G-FC	—	1G/10G or 4G/8G/16G-FC	10G/25G or 8G/16G/32G-FC	10G/25G or 8G/16G/32G-FC
Number of 40-Gbps ports	—	—	32	24	6 40G/100G ports	12 40G/100G ports
Unified Port Range	Ports 1-32	Ports 1-48	None	Ports 1-16	Ports 1-16	Ports 1-16
Compatibility with the IOM	UCS 2204, UCS 2208	UCS 2204, UCS 2208	UCS 2204, UCS 2208, UCS 2304, UCS 2304V2	UCS 2204, UCS 2208, UCS 2304, UCS 2304V2	UCS 2204, UCS 2208, UCS 2408	UCS 2204, UCS 2208, UCS 2408
Compatibility with the FEX	Cisco Nexus 2232PP Cisco Nexus 2232TM-E	Cisco Nexus 2232PP Cisco Nexus 2232TM-E	Cisco Nexus 2232PP Cisco Nexus 2232TM-E Cisco Nexus 2348UPQ	Cisco Nexus 2232PP Cisco Nexus 2232TM-E Cisco Nexus 2348UPQ	Cisco Nexus 2232PP Cisco Nexus 2232TM-E Cisco Nexus 93180YC-FX3	Cisco Nexus 2232PP Cisco Nexus 2232TM-E Cisco Nexus 93180YC-FX3
Expansion Slots	1 (16 port)	3 (16 port)	None	None	None	None
Fan Modules	2	4	4	4	4	3
Power Supplies	2 (AC/DC available)	2 (AC/DC available)	2 (AC/DC)	2 (AC/DC)	2 (AC/DC)	2 (AC/DC)