



Cisco UCS C-Series Integration with Cisco UCS Manager

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Overview

This guide contains information and procedures for installing Cisco UCS Rack Mount Servers for integration with Cisco UCS Manager.

Cisco UCS C-Series Rack-Mount Servers are managed by the built-in standalone software, Cisco Integrated Management Controller (CIMC). When a C-Series Rack-Mount Server is integrated with Cisco UCS Manager, the Cisco IMC does not manage the server anymore. Instead it is managed with the Cisco UCS Manager software. You will manage the server using the Cisco UCS Manager GUI or Cisco UCS Manager CLI.



Important If your server is not new, make sure to reset the Cisco IMC to factory default settings before integrating the server with Cisco UCS Manager. See *Server Utilities* chapter in [Cisco UCS C-Series Integrated Management Controller GUI Configuration Guide](#) for your release to reset the server to factory default settings.

You can integrate Cisco UCS C-Series Rack-Mount Servers with Cisco UCS Manager in either one of the following setup:

- **Cluster setup:** Using two Fabric Interconnects (FIs) or two FIs with two Fabric Extenders (FEXes) to connect the C-Series Rack-Mount Server.

- **Non-cluster setup:** Using a single Fabric Interconnect or one FI with one FEX to connect the C-Series Rack-Mount Server. Cisco does not recommend operating UCS domains in Non-Cluster mode because of lack of resiliency. Complete domain outage is expected during routine maintenance upgrades.



Note For Cisco UCS C-Series Rack-Mount Servers integration with Cisco UCS Manager, Cisco VIC adapters can only be connected to Cisco UCS Fabric Interconnects and not to third-party switches.

For Cisco UCS S-Series Rack-Mount Servers integration with Cisco UCS Manager, see the [Cisco UCS S3260 Server Integration with Cisco UCS Manager](#) guide in your specific release.

Integrating C-Series Rack Mount Server with Cisco UCS Manager

Cisco UCS Manager provides three connectivity modes for Cisco UCS C-Series Rack-Mount Server management. The following are the connectivity modes:

- **Direct Connect Mode:** In this mode, a Cisco UCS VIC from a C-Series Rack-Mount Server connects directly to the Fabric Interconnect. Both management and data traffic pass through from the VIC to FI and vice versa.
- **SingleConnect (Sideband):** In this mode, a Cisco UCS VIC from a C-Series Rack-Mount Server connects to FEX and then the Fabric Interconnect. Both management and data traffic pass from VIC to FEX and FI.
- **Dual-wire Management (Shared LOM):** In this mode, shared LAN on the Motherboard (LOM) port from a C-Series Rack-Mount Server connects to FEX for the management traffic. Cisco UCS VIC connects to the FI for the data traffic.



Note Cisco UCS 6536 Fabric Interconnect does not support Dual-wire Management. Dual-Wire Management is supported only with Cisco VIC adapters and not with third-party adapters.

The general prerequisites for Dual-wire integration with Cisco UCS Manager are built into the C-Series Rack-Mount Server CIMC release 1.4(6) or later.

Based on your server model and Cisco IMC version, you can use either one of these three integration options to connect the rack server with Cisco UCS Manager.

Cisco UCS Manager runs within the fabric interconnect (FI). With earlier Cisco UCS Manager releases, you need to use Fabric Extenders to connect the C-series server with the Fabric Interconnect to enable management with Cisco UCS Manager. You can directly connect the server adapter with the Fabric Interconnect without using the Fabric Extender.

You can use any of the interfaces available with this management service to access, configure, administer, and monitor the network and server resources for all chassis connected to the fabric interconnect. For

information about the Cisco UCS 6536 Fabric Interconnect, Cisco UCS 6400 Series Fabric Interconnect, or Cisco UCS 6300 Series Fabric Interconnect, see the documentation at the following links:

- [Cisco UCS 6500 Series Fabric Interconnect documentation](#)
- [Cisco UCS 6400 Series Fabric Interconnect documentation](#)
- [Cisco UCS 6300 Series Fabric Interconnect documentation](#)

If you want to use the SingleConnect or direct connect modes see [Supported Adapter Cards, on page 6](#) and [Supported Cisco UCS C-Series Servers, on page 7](#) for the latest C-Series Rack-Mount Servers support matrix for release 4.3(2b).

The following table lists the supported management options:

Table 1: Supported Management Options

Servers	SingleConnect	Direct Connect Mode	Dual-wire Management
Cisco UCS C240 M7 Server	Yes	Yes	Yes
Cisco UCS C220 M7 Server	Yes	Yes	Yes
Cisco UCS C220 M6 Server	Yes	Yes	Yes
Cisco UCS C240 M6 Server	Yes	Yes	Yes
Cisco UCS C225 M6 Server	Yes	Yes	No
Cisco UCS C245 M6 Server	Yes	Yes	No
Cisco UCS C220 M5 Server	Yes	Yes	Yes
Cisco UCS C240 M5 Server	Yes	Yes	Yes
Cisco UCS C240 SD M5 Server	Yes	Yes	Yes
C480 M5 and C480 M5 ML servers	Yes	Yes	Yes
Cisco UCS C125 M5 Server	Yes	Yes	No

For information about the Cisco Nexus 2232PP, Cisco Nexus 2232TM-E or Cisco Nexus 2348UPQ fabric extenders (FEXes) in the configuration, see the documentation at the following link:

- [Cisco Nexus 2000 Series Fabric Extender documentation](#)

Hardware Maintenance

Replacing servers and certain adapter cards requires that the server be decommissioned and recommissioned. See the decommissioning a Rack-Mount server and recommissioning a Rack-Mount Server sections in the appropriate [Cisco UCS Manager Configuration Guide](#).

FEX Connection Mode and Discovery

You can connect the FEX to the FI in two ways. Cisco UCS Manager FI discovers the FEX based on the FEX/Chassis discovery mode. The FEX connection modes are:

- **Hard-Pinning mode:** The server facing FEX ports are pinned to the connected uplink ports when the FEX is discovered. Cisco UCS Manager pins the server-facing ports to the uplink ports based on the number of acknowledged uplink ports. After the pinning, if you add a new uplink or delete an existing uplink, you must manually acknowledge the FEX to apply the changes.
- **Port-Channel mode:** Port-Channel mode does not have pinning. A single port channel works as the uplink to all server-facing ports. And all uplink ports are members of this single port channel. If one of the uplink ports goes down, the traffic is automatically distributed to another available uplink port.

In port-channel mode, when you cable between FEX and the FI, the available virtual interface (VIF) namespace varies, depending on where the uplinks are connected to the FI ports:

- When port-channel uplinks from the FEX are connected only within a set of eight ports managed by a single chip, Cisco UCS Manager maximizes the number of VIFs used in service profiles deployed on the servers.
- If uplink connections are distributed across ports managed by separate chips, the VIF count is decreased. For example, if you connect seven members of the port channel to ports 1–7, but the eighth member to port 9, this port channel can only support VIFs as though it had one member.



Note

- Beginning with Cisco UCS Manager release 4.2, Cisco Nexus N9K-C93180YC-FX3 Fabric Extender supports Cisco UCS VIC 15428, VIC 1455, VIC1457, and VIC 1467 adapters in 25G connection. Supported adapters can be used in mixed configurations.
- The maximum number of connections supported from the N9K-C93180YC-FX3 FEX to the Fabric Interconnect is 16.

For more information on FEX discovery policies and port-channel allocation, see the appropriate [Cisco UCS Manager Configuration Guide](#).

Maximum Configurable vNICs/vHBAs Based on Number of FEX Uplinks

The following table describes maximum configurable vNICs/vHBAs on a VIC adapter based on the number of FEX uplinks:

Table 2: Cisco UCS 6536 Fabric Interconnect

Acknowledged link between FEX and FI	Maximum configurable vNICs/vHBA on a VIC
1	116
2	116
4	116
8	116
16	116

Table 3: Cisco UCS 6454 Fabric Interconnect and Cisco UCS 6400 Series Fabric Interconnect

Acknowledged link between FEX and FI	Maximum configurable vNICs/vHBA on a VIC adapter
1	116
2	116
4	116
8	116
16	116

Table 4: Cisco UCS 6300 Fabric Interconnect

Acknowledged link between FEX and FI	Maximum configurable vNICs/vHBA on a VIC adapter
1	116
2	116
4	116
8	116

Supported Adapter Cards

Adapter Cards

The following table shows the supported adapter cards for C-Series Rack-Mount Servers integration with Cisco UCS Manager:

Table 5: Adapter Cards for Rack Server Integration

Adapter Model	Dual-Wire Connection	SingleWire Connection	Direct Connection
Cisco UCS VIC 15235 (UCSC-P-V5D200G)	No	Yes	Yes
Cisco UCS VIC 15425 (UCSC-P-V5Q50G)	No	Yes	Yes
Cisco UCS VIC 15238(UCSC-M-V5D200G)	No	No	Yes
CISCO UCS VIC 15428 (UCSC-M-V5Q50G)	Yes, but only on C220 M6 and C240 M6	Yes	Yes
Cisco UCS VIC 1495 (UCSC-PCIE-C100-04)	No	No	Yes
Cisco UCS VIC 1497 (UCSC-MLOM-C100-04)	No	No	Yes
Cisco UCS VIC 1467 (UCSC-M-V25-04)	Yes	Yes	Yes
Cisco UCS VIC 1477 (UCSC-M-V100-04)	No	No	Yes
Cisco UCS VIC 1455 (UCSC-PCIE-C25Q-04)	Yes	Yes	Yes
Cisco UCS VIC 1457 (UCSC-MLOM-C25Q-04)	Yes	Yes	Yes
Cisco UCS VIC 1387 (UCSC-MLOM-C40Q-03)	Yes	Yes	Yes
Cisco UCS VIC 1385 (UCSC-PCIE-C40Q-03)	Yes	Yes	Yes

Adapter Model	Dual-Wire Connection	SingleWire Connection	Direct Connection
QLogic QL45412H 40GbE ¹ (UCSC-PCIE-QD40GF)	Yes	No	No

¹ Supported only for Azure-stack solution with FI 6332/6332-16UP and the Qlogic ports should be connected to FI directly and additionally LOM ports needs to be connected to FEX for management.



Note Different generation VIC adapters are not supported in a single server. For example, if a server has two VIC cards, both these VIC adapters should be either 1400 series or 1300 series.

Cisco UCS 15000 Series VIC adapters can be mixed with 1400 series VIC adapters in M6 rack servers. For example, the VIC 15428 MLOM could be used along with 1455/1495 VIC adapter in an M6 rack-server.



Note For rack server and adapter compatibility, see the respective rack server spec sheet. For connectivity options with Cisco UCS Manager, see [Configuration Guides](#).

Supported Cisco UCS C-Series Servers

Table 6: Cisco UCS 6536 FI - Cisco UCS Rack Servers

Cisco VIC	FEX				
	Direct Attach (40/100G)	Direct Attach (4x25G or 25G QSA28)	93180YC-FX3 (25G server ports)	93180YC-FX3 (10G server ports)	2348 UPQ (10G server ports)
15235 (UCSC-P-V5D200G)	All Cisco UCS C-Series M6 and M7 servers	Not Supported	Not Supported	Not Supported	Not Supported
15238 (UCSC-M-V5D200G)	All Cisco UCS C-Series M6 and M7 servers	Not Supported	Not Supported	Not Supported	Not Supported
15425 (UCSC-P-V5Q50G)	Not Supported	All Cisco UCS C-Series M6 and M7 servers Note No reverse breakout supported	All Cisco UCS C-Series M6 and M7 servers	SFP-10G-SR/SR-S only	All Cisco UCS C-Series M6 and M7 servers
15428 (UCSC-M-V5Q50G)	Not Supported	All Cisco UCS C-Series M6 and M7 servers Note No reverse breakout supported	All Cisco UCS C-Series M6 and M7 servers	SFP-10G-SR/SR-S only	All Cisco UCS C-Series M6 and M7 servers
1497-40G/100G (UCSC-MLOMC100-04)	All Cisco UCS C-series M5 servers	Not Supported	Not Supported	Not Supported	Not Supported

Supported Cisco UCS C-Series Servers

Cisco VIC	FEX				
	Direct Attach (40/100G)	Direct Attach (4x25G or 25G QSA28)	93180YC-FX3 (25G server ports)	93180YC-FX3 (10G server ports)	2348 UPO (10G server ports)
1495-40G/100G (UCSC-PCIEC100-04)	All Cisco UCS C-Series M5 and S-series M5 servers	Not Supported	Not Supported	Not Supported	Not Supported
1477-40G/100G (UCSC-MV100-04)	All Cisco UCS C-series M6 servers	Not Supported	Not Supported	Not Supported	Not Supported
1467-10G/25G (UCSC-MV25-04)	Not Supported	Cisco UCS C220 M5 and C240 M5	Cisco UCS C220 M5 and C240 M5	SFP-10G-SR/SR-S only	Cisco UCS C220 M5 and C240 M5
1457-10G/25G (UCSC-MLOMC25Q-04)	Not Supported	Cisco UCS C220 M5 and C240 M5	Cisco UCS C220 M5 and C240 M5	SFP-10G-SR/SR-S only	Cisco UCS C220 M5 and C240 M5
1455-10G/25G (UCSC-PCIEC25Q-04)	Not Supported	All Cisco UCS C-Series M5 and M6 servers and S-series M5 servers	All Cisco UCS C-Series M5 and M6 servers and S-series M5 servers	SFP-10G-SR/SR-S only	All Cisco UCS C-Series M5 and M6 servers and S-series M5 servers
1387 - 40G (UCSC-MLOM-C40Q-03)	All Cisco UCS C-Series M5 Servers (40G)	Not Supported	Not Supported	With QSA and SFP-10G-SR only	All Cisco UCS C-Series M5 servers (QSA at adapter)
1385 - 40G (UCSC-PCIE-C40Q-03)	All Cisco UCS C-Series M5 Servers (40G)	Not Supported	Not Supported	With QSA and SFP-10G-SR only	All Cisco UCS C-Series M5 servers (QSA at adapter)

Table 7: Cisco UCS 6400 and 64108 FIs - Cisco UCS Rack Servers

Cisco VIC	FEX					
	Direct Attach (10G/25G)	Direct Attach (4x10G/4x25)	Direct Attach (40G/100G)	2232 PP (10G)	93180YC-FX3 (25G server ports)	93180YC-FX3 (10G server ports)
15235 (UCSC-P-V5D200G)	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
15238 (UCSC-M-V5D200G)	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
15425 (UCSC-P-V5Q50G)	All Cisco UCS C-Series M6 and M7 servers	All Cisco UCS C-Series M6 and M7 servers	Not Supported	Not Supported	All Cisco UCS C-Series M6 and M7 servers	SFP-10G-SR/SR-S only
15428 (UCSC-M-V5Q50G)	All Cisco UCS C-Series M6 and M7 servers	All Cisco UCS C-Series M6 and M7 servers	Not Supported	Not Supported	All Cisco UCS C-Series M6 and M7 servers	SFP-10G-SR/SR-S only
Note	Break-out is supported (6400 side QSFP, on adapter side two ports can be connected to 1 VIC (like ports 1 and 2) Reverse-breakout : Not supported					

Cisco VIC	FEX					
	Direct Attach (10G/25G)	Direct Attach (4x10G/4x25)	Direct Attach (40G/100G)	2232 PP (10G)	93180YC-FX3 (25G server ports)	93180YC-FX3 (10G server ports)
1495-40G/100G (UCSC -PCIEC100 -04)	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
1497-40G/100G (UCSC -MLOMC100 -04)	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
1477-40G/100G (UCSC-MV100 -04)	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
1467-10G/25G (UCSC -MV25-04)	All Cisco UCS C-Series M6 servers	All Cisco UCS C-Series M6 servers	Not Supported	All Cisco UCS C-Series M6 servers	All Cisco UCS C-Series M6 servers	SFP-10G-SR/SR-S only
1457-10G/25G (UCSC-MLOM C25Q-04)	Cisco UCS C220 M5, C240 M5	Cisco UCS C220 M5, C240 M5	Not Supported	Cisco UCS C220 M5, C240 M5	Cisco UCS C220 M5, C240 M5	SFP-10G-SR/SR-S only
1455-10G/25G (UCSC-PCIEC 25Q-04)	All Cisco UCS C-Series M5 and M6 servers, and S-Series M5 servers	All Cisco UCS C-Series M5 and M6 servers, and S-Series M5 servers	Not Supported	All Cisco UCS C-Series M5 and M6 servers, and S-Series M5 servers	All Cisco UCS C-Series M5 and M6 servers, and S-Series M5 servers	SFP-10G-SR/SR-S only
1387 - 40G (UCSC-MLOM -C40Q-03)	All Cisco UCS C-Series M5 servers QSA at adapter)	Not Supported	Not Supported	All Cisco UCS C-Series M5 servers QSA at adapter)	Not Supported	With QSA and SFP-10G-SR only
1385 - 40G (UCSC-PCIE -C40Q-03)	All Cisco UCS C-Series M5 and S-Series M5 servers (Except C125 M5) QSA at adapter)	Not Supported	Not Supported	All Cisco UCS C-Series M5 and S-Series M5 servers (Except C125 M5) QSA at adapter)	Not Supported	With QSA and SFP-10G-SR only

Table 8: Cisco UCS 6300 FI - Cisco UCS Rack Servers

Cisco VIC	FEX			
	Direct Attach	Direct Attach (Break-out)	2232 PP	2348
15235 (UCSC-P-V5D200G)	All Cisco UCS C-Series M6 servers	Not Supported	Not Supported	Not Supported
15425 (UCSC-P-V5Q50G)	All Cisco UCS C-Series M6 servers	All Cisco UCS C-Series M6 servers	Not Supported	All Cisco UCS C-Series M6 servers
15428 (UCSC-M-V5Q50G)	All Cisco UCS C-Series M6 servers	All Cisco UCS C-Series M6 servers	Not Supported	All Cisco UCS C-Series M6 servers
15238 (UCSC-M-V5D200G)	All Cisco UCS C-Series M6 servers	Not Supported	Not Supported	Not Supported
1497-40G/100G (UCSC-MLOMC100-04)	Cisco UCS C220 M5, C240 M5 servers	Not Supported	Not Supported	Not Supported
1495-40G/100G (UCSC-PCIEC100-04)	All Cisco UCS C-Series M5 and M6 servers and S-Series M5 servers	Not Supported	Not Supported	Not Supported
1477-40G/100G (UCSC-MV100-04)	All Cisco UCS C-Series M6 servers	Not Supported	Not Supported	Not Supported
1467-10G/25G (UCSC-MV25-04)	All Cisco UCS C-Series M6 servers (10G speed with 6332-16UP)	All Cisco UCS C-Series M6 servers	All Cisco UCS C-Series M6 servers	All Cisco UCS C-Series M6 servers
1457-10G/25G (UCSC-MLOMC25Q-04)	Cisco UCS C220 M5 and C240 M5 (10G speed with 6332-16UP)	Cisco UCS C220 M5 and C240 M5	Cisco UCS C220 M5 and C240 M5	Cisco UCS C220 M5 and C240 M5
1455-10G/25G (UCSC-PCIEC25Q-04)	All Cisco UCS C-Series M5 and M6 servers and S-Series M5 servers (10G speed with 6332-16UP)	All Cisco UCS C-Series M5 and M6 servers and S-Series M5 servers	All Cisco UCS C-Series M5 and M6 servers and S-Series M5 servers	All Cisco UCS C-Series M5 and M6 servers and S-Series M5 servers
1387 - 40G (UCSC-MLOM-C40Q-03)	All Cisco UCS C-Series M5 servers (40G or 10G using QSA)	Not Supported	All Cisco UCS C-Series M5 servers (QSA at adapter)	All Cisco UCS C-Series M5 servers (QSA at adapter)
1385 - 40G (UCSC-PCIE-C40Q-03)	All Cisco UCS C-Series M5 servers (except UCS C125 M5) and S-Series M5 servers (40G or 10G using QSA)	Not Supported	All Cisco UCS C-Series M5 servers (except UCS C125 M5) and S-Series M5 servers (40G or 10G using QSA)	All Cisco UCS C-Series M5 servers (except UCS C125 M5) and S-Series M5 servers (40G or 10G using QSA)

Table 9: Cisco UCS 6324 FI - Cisco UCS Rack Servers

Cisco VIC	FEX	
	Direct Attach (10G)	Direct Attach (Break-out)
15428 (UCSC-M-V5Q50G)	Not Supported	Not Supported
15238 (UCSC-M-V5D200G)	Not Supported	Not Supported
1497-40G/100G (UCSC-MLOMC100-04)	Not Supported	Not Supported
1495-40G/100G (UCSC-PCIEC100-04)	Not Supported	Not Supported
1477-40G/100G (UCSC-MV100-04)	Not Supported	Not Supported
1467-10G/25G (UCSC-MV25-04)	Not Supported	Not Supported
1457-10G/25G (UCSC-MLOMC25Q-04)	Cisco UCS C220 M5 and C240 M5 servers	Cisco UCS C220 M5 and C240 M5 servers
1455-10G/25G (UCSC-PCIEC25Q-04)	All Cisco UCS C-Series and S-Series M5 servers	All Cisco UCS C-Series and S-Series M5 servers
1387 - 40G (UCSC-MLOM-C40Q-03)	All Cisco UCS C-Series M5 servers (QSA at the adapter)	Not Supported
1385 - 40G (UCSC-PCIE-C40Q-03)	All Cisco UCS C-Series M5 servers (QSA at the adapter)	Not Supported

Network Topology and Supported Cables

The following image is a graphical representation of the over-all network topology supported in the C-Series server integration with Cisco UCS Manager.

The images are for example purpose only. For more information on server, Cisco VIC and FEX compatibility, see [Supported Cisco UCS C-Series Servers, on page 7](#).

For complete list of

Figure 1: Network Topology for 6536 Fabric Interconnect with 1300/1400/15000 Series VIC Cards

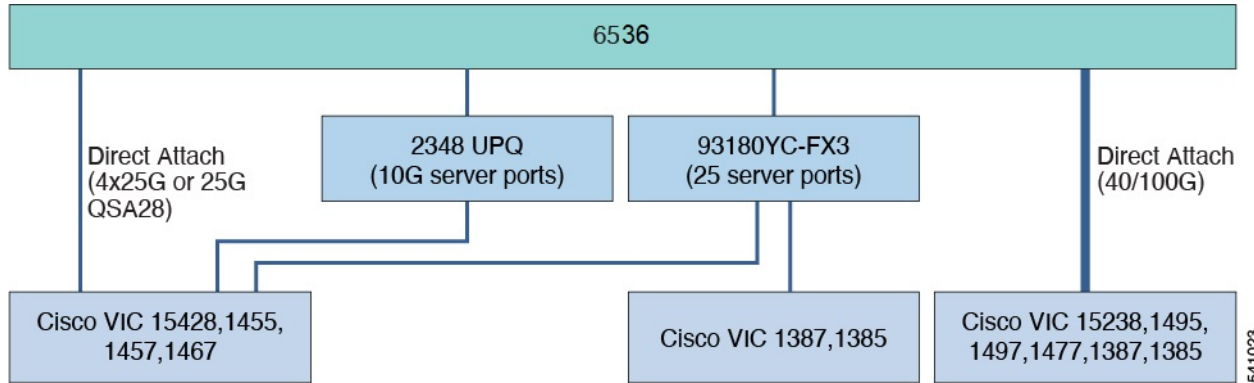
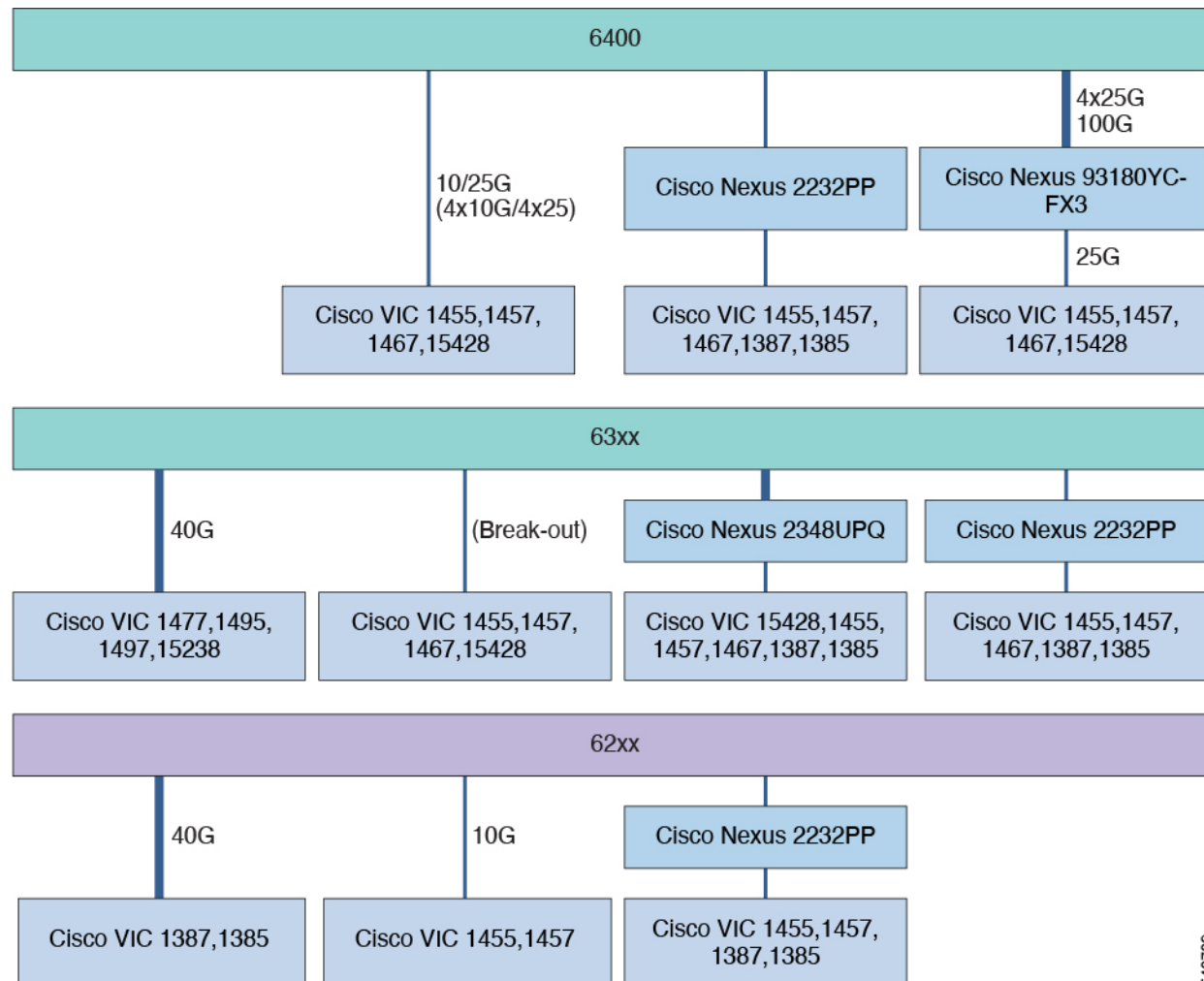


Figure 2: Network Topology for 6200, 6300, and 6400 Series Fabric Interconnect with 1300/1400/15000 Series VIC Cards



For complete list of supported cables, see xxx (release notes link).

Supported RAID/Storage Controller Configurations

Only servers without expanders can have more than one RAID controllers in the Cisco UCS Manager integrated mode. The following servers are allowed to have more than one RAID controllers in the Cisco UCS Manager integrated mode:

- Cisco UCS C240 M7 Server (UCSC-C240-M7SN)
- Cisco UCS C240 M7 Server (UCSC-C240-M7SX)
- Cisco UCS C220 M7 Server (UCSC-C220-M7N)
- Cisco UCS C220 M7 Server (UCSC-C220-M7S)
- Cisco UCS C220 M6 Server (USC-C220-M6S)

- Cisco UCS C220 M6 Server (USC-C220-M6N)
- Cisco UCS C240 M6 Server (USC-C240-M6S)
- Cisco UCS C240 M6 Server (USC-C240-M6SX)
- Cisco UCS C240 M6 Server (USC-C240-M6L)
- Cisco UCS C240 M6 Server (USC-C240-M6N)
- Cisco UCS C240 M6 Server (USC-C240-M6SN)
- Cisco UCS C225 M6 Server (USC-C225-M6S)
- Cisco UCS C245 M6 Server (USC-C245-M6SX)
- Cisco UCS C240 M5 (UCSC-C240-M5L)
- Cisco UCS C240 M5 (UCSC-C240-M5S)
- Cisco UCS C240 M5 (UCSC-C240-M5SX)
- Cisco UCS C240 M5 (UCSC-C240-M5SN)
- Cisco UCS C240 SD M5 (UCSC-C240-M5SD)
- Cisco UCS C220 M5 (UCSC-C220-M5L)
- Cisco UCS C220 M5 (UCSC-C220-M5SX)
- Cisco UCS C220 M5 (UCSC-C220-M5SN)
- Cisco UCS C480 M5 (UCSC-C480-M5)
- Cisco UCS C480 M5 ML Server (USC-C480-M5ML)



Note Cisco UCS C125 M5 Servers do not support multiple PICE RAID controllers. There are only 2 PCIe slots; one for a VIC card and the other for a RAID controller.

Any server not on this list that has more than one RAID controller installed, fails discovery.

The following RAID/Storage controllers are supported for C-Series rack-mount servers integration with Cisco UCS Manager.



Note A fully loaded LSI controller supports RAID 0, 1, 5, 50, 6, 10 and 60. If you remove a memory card from an LSI controller, UCS Manager cannot create RAID 6 and 10.

Table 10: Supported RAID/Storage Controllers

Server	Supported Storage Controller
Cisco UCS C240 M7 Server (UCSC-C240-M7SN)	<p>24G Tri-mode RAID controller, 12G RAID controller or 12G SAS HBA. Only one of the raid controller can be used at a time.</p> <ul style="list-style-type: none"> • Cisco 24G Tri-mode RAID controller—RAID support (RAID 0, 1, 5, 6, 10, 50, 60, RAID0, and RAID00). Supports up to 14 internal SAS/SATA/NVMe drives • Cisco 12G RAID controller—RAID support (RAID 0, 1, 5, 6, 10, 50, 60, RAID0, and RAID00). Supports up to 28 internal SAS/SATA drives • Cisco 12G SAS HBA—No RAID support. JBOD/Pass-through Mode support. Supports up to 14 SAS/SATA internal drives • Up to 24 front facing SFF NVMe SSDs (drives are direct-attach to PCIe Gen4 x2) • Optionally, up to 4 rear NVMe drives (only) • Two CPUs are required when choosing NVMe SSDs

Server	Supported Storage Controller
Cisco UCS C240 M7 Server (UCSC-C240-M7SX)	<p>24G Tri-mode RAID controller, 12G RAID controller or 12G SAS HBA. Only one of the raid controller can be used at a time.</p> <ul style="list-style-type: none"> • Cisco 24G Tri-mode RAID controller—RAID support (RAID 0, 1, 5, 6, 10, 50, 60, RAID0, and RAID00). Supports up to 14 internal SAS/SATA/NVMe drives • Cisco 12G RAID controller—RAID support (RAID 0, 1, 5, 6, 10, 50, 60, RAID0, and RAID00). Supports up to 28 internal SAS/SATA drives • Cisco 12G SAS HBA—No RAID support. JBOD/Pass-through Mode support. Supports up to 14 SAS/SATA internal drives <p>Internal storage devices</p> <ul style="list-style-type: none"> • Up to 24 front facing SFF SAS/SATA HDDs or SAS/SATA SSDs or NVMe SSDs (optionally up to 4 of the slots can be direct-attach NVMe) • Optionally, up to four of the slots can be direct-attach NVMe. These drives must be placed in front drive bays 1, 2, 3, and 4 only. The rest of the bays (5 - 24) can be populated with SAS/SATA/NVMe SSDs or HDDs. Two CPUs are required when choosing NVMe SSDs. <p>Optionally, up to four SFF rear-facing SAS/SATA/NVMe drives</p>

Server	Supported Storage Controller
Cisco UCS C220 M7 Server (UCSC-C220-M7N)	<p>24G Tri-mode RAID controller, 12G RAID controller or 12G SAS HBA. Only one of the raid controller can be used at a time.</p> <ul style="list-style-type: none"> • Cisco 24G Tri-mode RAID controller—RAID support (RAID 0, 1, 5, 6, 10, 50, 60, RAID0, and RAID00). Supports up to 14 internal SAS/SATA/NVMe drives • Cisco 12G RAID controller—RAID support (RAID 0, 1, 5, 6, 10, 50, 60, RAID0, and RAID00). Supports up to 28 internal SAS/SATA drives • Cisco 12G SAS HBA—No RAID support. JBOD/Pass-through Mode support. Supports up to 14 SAS/SATA internal drives <p>External Storage Controller—Cisco 12G 9500-8e 12G SAS HBA for external JBOD attach.</p> <p>Internal Storage—</p> <ul style="list-style-type: none"> • Up to 10 2.5-inch direct-attach NVMe SSDs. only • The drives in slots 1, 2, 3, 4, 6, and 7 are connected to CPU 2 and the drives in slots 5, 8, 9, and 10 are connected to CPU1. Up to 4 drives are allowed with single CPU configuration. <p>Other Storage option—</p> <ul style="list-style-type: none"> • A mini-storage module connector on the motherboard supports a boot-optimized RAID controller carrier that holds up to two SATA M.2 SSDs. • 8GB FlexMMC utility storage for staging of firmware and other user data. 8GB FlexMMC storage is built into the motherboard on M7.

Server	Supported Storage Controller
Cisco UCS C220 M7 Server (UCSC-C220-M7S)	<p>24G Tri-mode RAID controller, 12G RAID controller or 12G SAS HBA. Only one of the raid controller can be used at a time.</p> <ul style="list-style-type: none"> • Cisco 24G Tri-mode RAID controller—RAID support (RAID 0, 1, 5, 6, 10, 50, 60, RAID0, and RAID00). Supports up to 14 internal SAS/SATA/NVMe drives • Cisco 12G RAID controller—RAID support (RAID 0, 1, 5, 6, 10, 50, 60, RAID0, and RAID00). Supports up to 28 internal SAS/SATA drives • Cisco 12G SAS HBA—No RAID support. JBOD/Pass-through Mode support. Supports up to 14 SAS/SATA internal drives <p>External Storage Controller—Cisco 12G 9500-8e 12G SAS HBA for external JBOD attach.</p> <p>Internal Storage—</p> <ul style="list-style-type: none"> • Up to 10 SFF SAS/SATA hard drives (HDDs) or SAS/SATA/NVMe solid state drives (SSDs). • Optionally, up to four direct-attach SFF NVMe PCIe SSDs. These drives must be placed in front drive bays 1, 2, 3, and 4 only, can be mixed with SAS/SATA drives, and are controlled from CPU 2. The rest of the bays (5 - 10) can be populated with SAS/SATA/NVMe SSDs or HDDs. Two CPUs are required when choosing direct-attach NVMe SSDs. • If using a SATA Interposer, up to 8 SATA-only drives can be installed (slots 1-4 and 6-9 only). <p>Other Storage option—</p> <ul style="list-style-type: none"> • A mini-storage module connector on the motherboard supports a boot-optimized RAID controller carrier that holds up to two SATA M.2 SSDs. • 8GB FlexMMC utility storage for staging of firmware and other user data. 8GB FlexMMC storage is built into the motherboard on M7.

Server	Supported Storage Controller
Cisco UCS C220 M6 Server (UCS-C220-M6S)	<ul style="list-style-type: none"> • Cisco 12G Modular SAS HBA (max 16 drives) (UCSC-SAS-M6T) • Cisco 12G Modular Raid controller with 2GB cache(max 16 drives) (UCSC-RAID-M6T) • 12 SFF front-facing SAS/SATA hard drives (HDDs) or SAS/SATA solid state drives (SSDs). <p>Note Drives occupy slots 1-10</p>
Cisco UCS C220 M6 Server (UCS-C220-M6N)	Up to 10 SFF NVMe PCIe SSDs.
Cisco UCS C240 M6 Server (UCS-C240-M6S)	<ul style="list-style-type: none"> • Cisco 12G Modular SAS HBA (max 16 drives) (UCSC-SAS-M6T) • Cisco 12G Modular Raid controller with 2GB cache(max 16 drives) (UCSC-RAID-M6T) • 12 SFF front-facing SAS/SATA hard drives (HDDs) or SAS/SATA solid state drives (SSDs). <p>Note Drives occupy slots 1-12</p>
Cisco UCS C240 M6 Server(UCS-C240-M6L)	<ul style="list-style-type: none"> • Cisco 12G Modular SAS HBA (max 16 drives) (UCSC-SAS-M6HD) • Cisco 12G Modular Raid controller with 2GB cache(max 16 drives) (UCSC-RAID-M6HD)
Cisco UCS C240 M6 Server(UCS-C240-M6SX)	<ul style="list-style-type: none"> • Dual Cisco 12G Modular SAS HBA (max 32 drives) (UCSC-SAS-M6T) • Cisco 12G Modular Raid controller with 2GB cache(max 16 drives) (UCSC-RAID-M6SD)
Cisco UCS C240 M6 Server(UCS-C240-M6N)	Up to 12 SFF NVMe PCIe SSDs.
Cisco UCS C240 M6 Server(UCS-C240-M6SN)	Up to 24 SFF NVMe PCIe SSDs.
Cisco UCS C225 M6 Server(USC-C225-M6S)	Cisco M6 12G SAS RAID controller with 4GB FBWC (UCSC-RAID-M6T) or Cisco M6 12G SAS HBA controller (UCSC-SAS-M6T) in C225-SFF (10 front SAS/SATA drives)
Cisco UCS C225 M6 Server(USC-C225-M6N)	Direct attached NVMe drives (10 NVMe drives in the front)

Server	Supported Storage Controller
Cisco UCS C245 M6 Server(UCS-C245-M6SX)	<ul style="list-style-type: none"> • Dual-Cisco M6 12G SAS HBA controller (UCSC-RAID-M6T) (up to 16 SAS/SATA HDD) • Cisco M6 12G SAS RAID controller with 4GB FBWC (28 Drives) (UCSC-RAID-M6SD) (up to 28 SAS/SATA HDD) • M.2 Boot RAID controller (UCS-M2-HWRAID) (Hardware RAID 0/1, up to two M.2 2280 Drives) • Directly attached NVMe on rear risers (up to four NVMe SSD)
Cisco UCS C220 M5 (UCSC-C220-M5SX)	<ul style="list-style-type: none"> • Cisco 12G Modular Raid controller with 2GB cache(max 16 drives) (UCSC-RAID-M5) • Cisco 12G Modular SAS HBA (max 16 drives) (UCSC-SAS-M5)
Cisco UCS C220 M5 (UCSC-C220-M5L)	<ul style="list-style-type: none"> • Cisco UCS 12G SAS Modular 8-Port RAID Controller (UCSC-MRAID12G)
Cisco UCS C220 M5 (UCSC-C220-M5SN)	<ul style="list-style-type: none"> • Cisco UCS 12G SAS Modular 8-Port RAID Controller (UCSC-MRAID12G) or Cisco 12G Modular SAS HBA (max 16 drives) (UCSC-SAS-M5) • Up to 10 SFF NVMe PCIe SSDs. <p>Note The drives in slots 1 and 2 are connected from Riser 2 and the drives in slots 3 through 10 are connected from the PCIe switch card plugged into the internal HBA slot.</p> <p>UCSC-C220-M5SN does not support embedded RAID.</p>
Cisco UCS C240 M5 (UCSC-C240-M5S)	<ul style="list-style-type: none"> • Cisco 12G Modular Raid controller with 2GB cache(max 16 drives) (UCSC-RAID-M5) • Cisco 12G Modular SAS HBA (max 16 drives) (UCSC-SAS-M5)

Server	Supported Storage Controller
Cisco UCS C240 M5 (UCSC-C240-M5L)	<ul style="list-style-type: none"> • Cisco 12G Modular Raid controller with 2GB cache(max 16 drives) (UCSC-RAID-M5) • Cisco 12G Modular SAS HBA (max 16 drives) (UCSC-SAS-M5)
Cisco UCS C240 M5 (UCSC-C240-M5SX)	<ul style="list-style-type: none"> • Cisco 12G Modular Raid controller with 4GB cache(max 26 drives) (UCSC-RAID-M5HD) • Cisco 12G Modular SAS HBA (max 26 drives)(UCSC-SAS-M5HD)
Cisco UCS C240 M5 (UCSC-C240-M5SN)	<ul style="list-style-type: none"> • Up to eight front-facing SFF NVMe PCIe SSDs only (replacing SAS/SATA drives). <ul style="list-style-type: none"> Note These drives must be placed in front drive bays 1 through 8 only and are connected from Riser 2 slot 4 (from a PCIe switch). • 16 SFF front-facing SAS/SATA hard drives (HDDs) or SAS/SATA solid state drives (SSDs). <ul style="list-style-type: none"> Note Drives occupy slots 9-24. • Optionally, up to two SFF, rear-facing SFF NVMe PCIe SSDs (must be NVMe only). Rear facing NVMe drives are connected from Riser 2. <p>UCSC-C240-M5SN does not support embedded RAID.</p>
Cisco UCS C240 SD M5 (UCSC-C240-M5SD)	<ul style="list-style-type: none"> • Cisco 12G Modular SAS HBA (maximum of 16 drives) (UCSC-SAS-M5)
Cisco UCS C480 M5 (UCSC-C480-M5)	<ul style="list-style-type: none"> • Cisco 12G 9460-8i RAID controller with 2GB cache (UCSC-SAS9460-8I) • Cisco 12G Modular RAID (UCSC-RAID-M5HD) controller with a 4GB cache with a supercap cache backup (UCSC-SCAP-M5) • Cisco UCS C480 M5 (UCSC-C480-8AUX) Auxiliary Drive Modules for the Cisco 12G 9460-8i RAID controller

Server	Supported Storage Controller
Cisco UCS C125 M5 Server (UCSC-C125)	<ul style="list-style-type: none"> • Cisco 12G 9460-8i RAID controller with 2GB cache (UCSC-SAS9460-8I) • Onboard SATA storage controller (FCH) in AHCI mode is supported • SWRAID is not supported
Cisco UCS C480 M5 ML Server (USC-C480-M5ML)	<ul style="list-style-type: none"> • Cisco 12G Modular RAID Controller (UCSC-RAID-M5HD) <p>Includes 4-GB cache; controls up to 26 drives</p>

Supported FlexFlash Configuration

Some Cisco UCS C-Series Rack-Mount Servers support an internal Cisco FlexFlash Secure Digital (SD) memory card for storage of server software tools and utilities. FlexFlash is disabled by default. You can enable FlexFlash in a local disk policy used in a service profile.



Note Cisco UCS C-Series standalone servers with Cisco FlexFlash SD memory cards configured in Utility mode are not supported in the Cisco UCS Manager Integrated mode.

After upgrading CIMC if you are unable to install Cisco FlexFlash, apply the scrub policy before configuring the FlexFlash SD cards.

The FlexFlash SD cards can also be scrubbed using the format SD cards option, if the controller supports the same.

Converting Cisco Nexus Switch to 93180YC-FX3 FEX

This section describes how to convert the switch usage from switch mode to FEX mode.

Step 1 Configure the switch in a way that it does not boot from Cisco NX-OS mode using the following command:

```
no boot nxos
```

Step 2 Copy the start-up configuration before booting the FEX image by running the following command:

```
copy running-config startup-config
```

Step 3 Set the FEX as the boot variable by running the following command:

```
boot fex
```

Note Do not run the `copy running-config startup-config` command after running the `boot fex` command.

Step 4 Reload the switch.

Here is a sample switch to FEX conversion commands:

```
switch(config)# no boot nxos
switch(config)# copy running-config startup-config
switch(config)# boot fex
switch(config)# reload
```

Discovering 93180YC-FX3 FEX in Cisco UCS Manager



Note In Cisco UCS Manager release 4.2, only the Cisco Nexus 93180YC-FX3 switch is supported in the FEX mode and Cisco Nexus 93180YC-FX3S switch in the FEX mode is not supported.

Step 1 Log in to Cisco UCS Manager.

Step 2 Configure the server port for the 93180YC-FX3 FEX.

- a. In the Navigation pane, click **Equipment**.
- b. Expand **Equipment** > **Fabric interconnects** > **Fabric Interconnect A/B** > **Fixed Module** > **Ethernet Ports**.
- c. Click a port under the **Ethernet Ports** node.
- d. In the **Work** pane, click the **General** tab.
- e. In the **Actions** area, click **Reconfigure**.
- f. From the drop-down list, choose **Configure as Server Port**.

Step 3 In the **Actions** area, click **Show Interface** and choose **CL74** in the **FEC** field to initiate discovery of 93180YC-FX3 FEX.

Note For connecting Cisco UCS rack servers to the 93180YC-FX3 FEX, you do not require an explicit FEC configuration.

Table 11: Supported Cable and Transceiver Matrix for 93180YC-FX3

Type	Supported Cables
25GbE	<ul style="list-style-type: none"> • SFP-25G-SR-S • SFP-10/25G-LR-S • SFP-10/25G-CSR-S • SFP-H25G-CU1M • SFP-H25G-CU2M • SFP-H25G-CU3M • SFP-H25G-CU4M • SFP-H25G-CU5M • SFP-25G-AOC1M • SFP-25G-AOC2M • SFP-25G-AOC3M • SFP-25G-AOC4M • SFP-25G-AOC5M • SFP-25G-AOC7M • SFP-25G-AOC10M
100GbE	<ul style="list-style-type: none"> • QSFP-4SFP25G-CU1M • QSFP-4SFP25G-CU2M • QSFP-4SFP25G-CU3M • QSFP-4SFP25G-CU5M • QSFP-100G-SR4-S • QSFP-100G-PSM4-S