Spec Sheet

Cisco UCS 6300 Series Fabric Interconnect

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OVERVIEW

The Cisco UCS 6300 Series Fabric Interconnects are a core part of the Cisco Unified Computing System, providing both network connectivity and management capabilities for the system. The Cisco UCS 6300 Series offers line-rate, low-latency, lossless 40-Gigabit Ethernet, Fibre Channel over Ethernet (FCoE), and Fibre Channel functions, as well as unified ports capable of either Ethernet or Fibre Channel operation.

The Cisco UCS 6300 Series Fabric Interconnects provide the management and communication backbone for the Cisco UCS B-Series and C-Series servers. All servers attached to the Cisco UCS 6300 Series Fabric Interconnects become part of a single, highly available management domain. In addition, by supporting unified fabric, the Cisco UCS 6300 Series provides both the LAN and SAN connectivity for all blades within its domain.

From a networking perspective, the Cisco UCS 6300 Series uses a cut-through architecture, supporting deterministic, low-latency, line-rate 40-Gigabit Ethernet on all ports, switching capacity of up to 2.56 Tbps, and 320-Gbps bandwidth per chassis, independent of packet size and enabled services. The product family supports Cisco® low-latency, lossless 40-Gigabit Ethernet unified network fabric capabilities, which increase the reliability, efficiency, and scalability of Ethernet networks. The fabric interconnect supports multiple traffic classes over a lossless Ethernet fabric from the blade through the interconnect.

Cisco UCS 6332 32-Port Fabric Interconnect

The Cisco UCS 6332 32-Port Fabric Interconnect is a one-rack-unit (1RU) 40-GbE switch offering up to 2.56 Tbps full-duplex throughput. The switch has 32 40-Gbps QSFP+ ports, which operate as follows:

- Ports 1—4 can operate as 40-Gbps QSFP+ ports, or as 4 x 10 Gbps SFP+ breakout ports, or can be optionally outfitted with Quad to SFP (QSA) adapters to provide 10 Gbps operation.
- Ports 5—12 and 15—26 can operate as 40-Gbps QSFP+ ports, or as 4 x 10 Gbps SFP+ breakout ports, or can be optionally outfitted with Quad to SFP (QSA) adapters to provide 10 Gbps operation.
- Ports 13 and 14 can operate as 40-Gbps QSFP+ ports. They cannot operate as 4 x 10 Gbps SFP+ breakout ports.
- Ports 27—32 are dedicated 40 Gbps QSFP+ operation.

The 32-port chassis is shown in *Figure 1*.

Figure 1 Cisco UCS 6332 Fabric Interconnect (1RU)

Front View

Rear View

Cisco UCS 6332-16UP 40-Port Fabric Interconnect

The Cisco UCS 6332-16UP 40-Port Fabric Interconnect is a 1RU 10-GbE, 40-GbE, and native Fibre Channel switch offering up to 2.43-Tbps full-duplex throughput. The ports operate as follows:

- Ports 1—16 operate as SFP+ Universal Ports capable of operating at 1/10-Gbps fixed Ethernet or 4/8/16 Gbps Fibre Channel ports.
- Ports 17—34 operate as 40 Gbps QSFP+ ports or as 18 4 x 10 Gbps SFP+ breakout ports or can be optionally outfitted with QSA adapters to provide 10 Gbps operation.
- Ports 35—40 operate as fixed 40 Gbps QSFP+ ports.

The 40-port chassis is shown in *Figure 2*.

Figure 2 Cisco UCS 6332-16UP Fabric Interconnect (1RU)

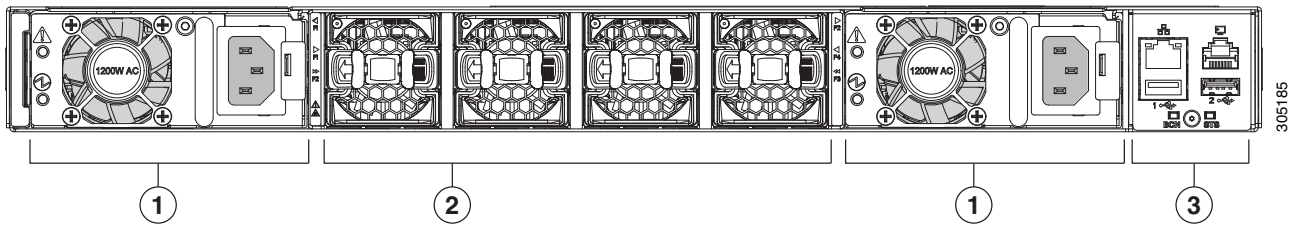
Front View

Rear View

DETAILED FRONT VIEW

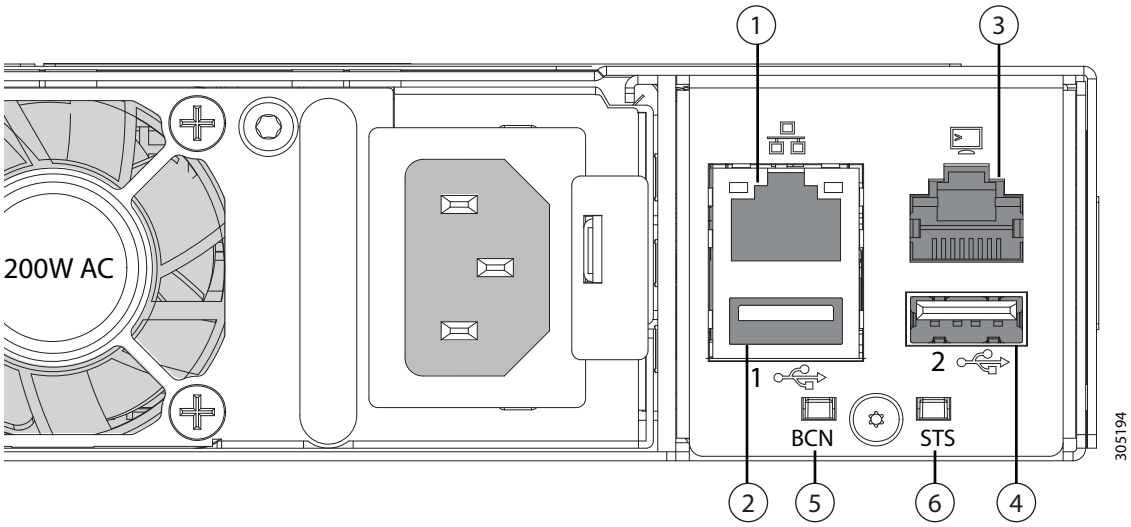
The Cisco UCS 6332 and Cisco UCS 6332-16UP chassis look identical from the front, as shown in *Figure 3*.

Figure 3 Front View of 6332 and 6332-16UP



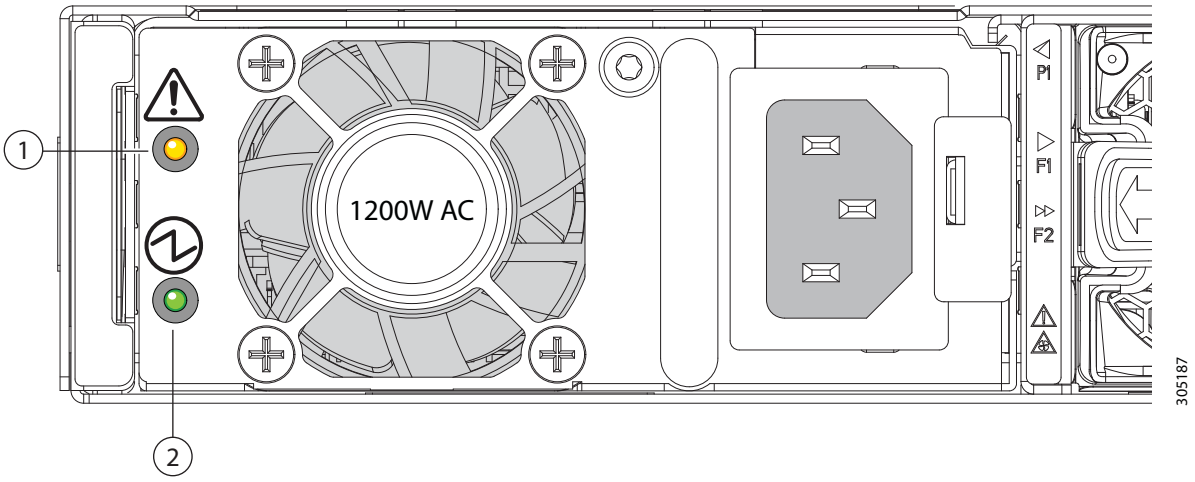
1	Power supplies (two). AC versions shown.	**3**	RJ45 and USB ports (see *Figure 4*)
2	Fan modules (four)	**—**	—

Figure 4 Connector and USB Ports



1	RJ45 network management port (10/100/1000 Mbps)	**4**	USB port 2
2	USB port 1	**5**	Beaconing LED/button
3	RJ45 console port	**6**	System status LED

Figure 5 Power Supply



1	Amber fault/error LED	**2**	Green Power on LED

Power Supply LEDs

The power supply LEDs are located on the left front portion of the power supply. Combinations of states indicated by the Okay ( )and Fault ( )LEDs indicate the status for the module as shown in the *Table 1*

Table 1 power supply LED states

Power on LED	Error LED	Status
Green	Off	Power supply is on and outputting power to the switch.
Flashing green	Off	Power supply is connected to a power source but not outputting power to the switch—power supply might not be installed in the chassis.
Off	Off	Power supply is not receiving power.
Green	Flashing amber	Power supply warning—possibly one of the following conditions: ■ High voltage ■ High power ■ Low voltage ■ Power supply installed in chassis but not connected to a power source ■ Slow power supply fan
Flashing green	Amber	Power supply failure—possibly one of the following conditions: ■ Over voltage ■ Over current ■ Over temperature ■ Power supply fan failure

Management Port LEDs

The management port LED states are shown in *Table 2*.

Table 2 Management Port LED States

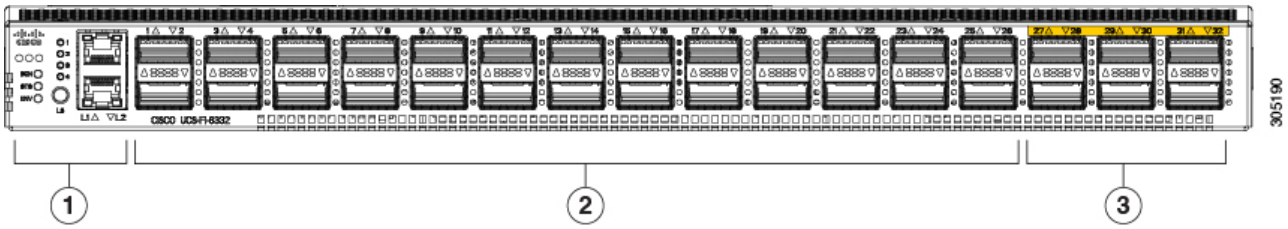
LED Position	LED State	Description
Left	Off	No link
	Solid green	Physical link
Right	Off	No activity
	Blinking green	Activity

DETAILED REAR VIEWS

Cisco UCS 6332 32-Port Fabric Interconnect Rear View

Figure 6 is an overall rear view of the Cisco UCS 6332 Fabric Interconnect.

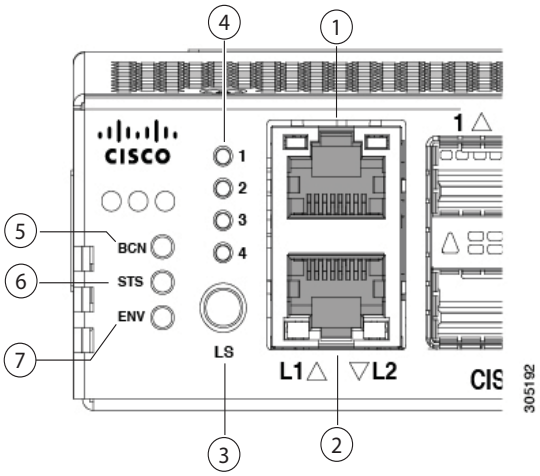
Figure 6 6332 32-port Fabric Interconnect Chassis Overall Rear View



1	Control buttons, LEDs, and L1/L2 ports (see *Figure 7*)	**2**	Ports 1—26
3	Ports 27—32	**—**	—

Figure 7 is an detailed rear view of the Cisco UCS 6332 Fabric Interconnect.

Figure 7 6332 32-port Fabric Interconnect Chassis Detailed Rear View



1	L1 highly available port	**5**	Beacon pushbutton/LED
2	L2 highly available port	**6**	System status LED
3	Lane switch	**7**	System environment LED
4	QSFP+ lane LEDs	**—**	—

Beacon and System Status LEDs

The beacon and system status LED states are shown in *Table 3*.

Table 3 Beacon and System Status LED States

LED	Location	Function	Color	State	Description
Beacon LED	Front and rear	Identify selected chassis	Blue	Solid on	Chassis is selected
				Off	Chassis is not selected
System status LED	Front and rear	System power/health during boot up and run time	Green	Solid on	Normal operation
				Off	System is powered off
			Amber	On	System fault
			Red	Solid on	Power shut down by software
				Blinking	Secure boot validation has failed

Lane Switch Button and Lane LEDs

The lane switch button and lane LED states operate as follows:

- When none of the four vertical lane LEDs (apart from the button) are illuminated, 40 Gbps mode is in effect. This is the default mode after bootup. In this mode, the LED on each individual QSFP+ port reflects 40 Gbps link status.
- When you first push the lane switch button, lane LED #1 is lit, and the LED on each individual QSFP+ port represents the lane 1 status of the port.
- When you push the button again, the lane LED #2 is lit, and the LED on each individual QSFP+ port represents the lane 2 status of the port.
- When you push the button again, the lane LED #3 is lit, and the LED on each individual QSFP+ port represents the lane 3 status of the port.
- When you push the button again, the lane LED #4 is lit, and the LED on each individual QSFP+ port represents the lane 4 status of the port.
- When you push the button the fourth time, 40 Gbps mode is back in effect (as in the first bullet in this list).

If a 40 Gbps is not in breakout mode, if the link up, the LED on an individual QSFP+ port is green when all the lane LEDs are off and It is extinguished when you push the lane button to lane 1, 2, 3, or 4.

For a port configured in breakout mode, the LED for an individual QSFP+ port is off when the lane LEDs are off (40 Gbps mode). When you cycle the lane switch button, the LED for an individual QSFP+ port shows the status of the different lanes.

Ports 13 and 14 cannot operate as breakout ports, therefore, the QSFP+ port LEDs for those ports are always the same as the 40 Gbps mode status.

System Environment LEDs

The system environment LED states are shown in *Table 4*.

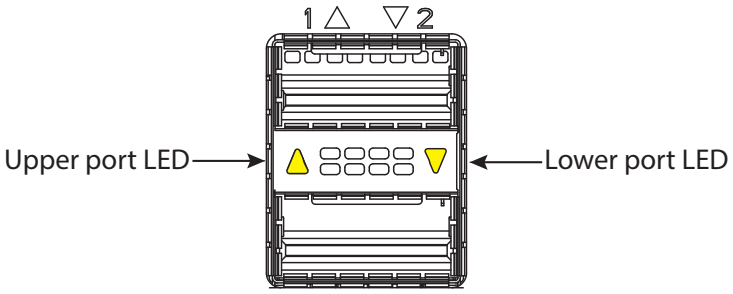
Table 4 System Environment LED States

LED State	Description
Solid Amber	Minor fan alarm (one fan missing or failure
Solid red	Major fan alarm (two more fans missing or failed, or fan direction mismatch)

QSFP+ Port LEDs

Figure 7 is an detailed view of a dual QSFP+ port and its LEDs.

Figure 8 QSFP+ Port LEDs



The port LED states are shown in *Table 5*.

Table 5 QSFP Port LED States

LED State	Description
Yellow	Enabled (but SFP not inserted)
Green	Enabled (and link is up)
Off	Enabled (but link not connected)
Blinking yellow	Power On Self Test (POST) failed
Blinking yellow	Port beacon enabled
Yellow	Administrative (software shut down)

L1/L2 Port LEDs

The L1/L2 port LED states are shown in *Table 6*.

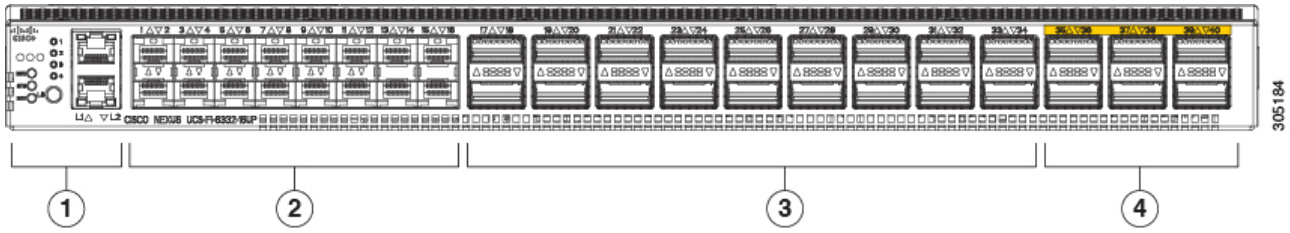
Table 6 L1/L2 Port LED States

LED Position	LED State	Description
Left	Off	No link
	Solid green	Physical link
Right	Off	No activity
	Blinking green	Activity

Cisco UCS 6332-16UP 40-Port Fabric Interconnect Rear View

Figure 9 is an overall rear view of the Cisco UCS 6332-16UP Fabric Interconnect.

Figure 9 40-port Fabric Interconnect Chassis Overall Rear View



1	Control buttons, LEDs, and L1/L2 ports (see *Figure 7*)	**3**	Ports 17—34
2	Ports 1—16	4	Ports 35—40

Refer to *Figure 7 on page 6* for a detailed rear view of the Cisco UCS 6332-16UP Fabric Interconnect and *Table 3 on page 7* for details on the beacon and system status LEDs.

Lane Switch Button and Lane LEDs

The lane switch button and lane LED states only apply to ports 17—34 and ports 35—40.

NOTE: Ports 17—34 (operate as either 40 Gbps QSFP+ ports or as 4 x 10 Gbps SFP+ breakout ports).

Ports 35—40 (operate as fixed 40 Gbps QSFP+ ports)

See *Lane Switch Button and Lane LEDs on page 7* for details. Note that ports 35—40 cannot operate as breakout ports, therefore, the port LEDs for those ports are always the same as the 40 Gbps mode status.

Refer to *Table 3 on page 7* for the beacon and system status LED states.

Refer to *Table 4 on page 8* for the System Environment LED states.

Refer to *Table 5 on page 8* for the QSFP+ port LED states.

Refer to *Table 6 on page 9* for the L1/L2 port LED states.

Ethernet Port (ports 1—16) LEDs

The port 1—16 LED states are shown in *Table 7*.

Table 7 L1/L2 Port LED States

LED Position	LED State	Description
Left	Off	No link
	Solid green	Physical link
Right	Off	No activity
	Blinking green	Activity

CISCO UCS 6300 FABRIC INTERCONNECT SERIES CAPABILITIES and FEATURES

Table 8 lists the capabilities and features of the Cisco UCS 6300 Fabric Interconnect series. Details about how to configure this Fabric Interconnect series for a particular feature or capability are provided in *CONFIGURING the FABRIC INTERCONNECT on page 14*.

Table 8 Capabilities and Features

Capability/Feature	Cisco UCS 6332 32-Port	Cisco UCS 6332 16-UP
Chassis	1RU 32-port Fabric Interconnect	1RU 40-port Fabric Interconnect
Throughput	2.56 Tbps	2.43 Tbps
Fan Modules	1 + 1	1 + 1
Unified Ports	None	16 ports (either fixed 1/10 GbE or 4/8/16 Gbps Fibre Channel).
Management by Cisco UCS Manager	■ Increases flexibility with a range of interconnect solutions, including copper Twinax cable for short runs and fiber for long runs ■ Consumes less power per port than traditional solution ■ Helps enable cost-effective connections on fabric extenders with Cisco Fabric Extender Transceiver (FET) optics ■ Allows all elements connected to the interconnects to participate in a single, highly available management domain **NOTE:** The 6300 series Fabric Interconnects require UCS Manager version UCS 3.1(1)A or later	
Unified Fabric	■ Decreases total cost of ownership (TCO) by reducing the number of NICs, HBAs, switches, and cables needed ■ Transparently encapsulates Fibre Channel packets into Ethernet	
Fabric Extender Architecture	■ Scales to 20 chassis without adding complexity by eliminating the need for dedicated chassis management and blade switches and by reducing the number of cables needed ■ Provides deterministic latency for optimized application performance	
QSFP-compatible Ports	Allows all ports to be configured to operate in 10-Gbps or 40-Gbps Ethernet mode with the transceiver options specified for use with QSFP+ and SFP+ compatible ports (see *Table 12 on page 18*).	
Transceivers	The Cisco UCS 6300 Series supports a wide variety of 10-Gbps and 40-Gbps Ethernet connectivity options using Cisco 40 Gbps QSFP+ and 10 Gbps SFP+ modules. Alternatively, 4/8/16 Gbps Fibre Channel interfaces are supported.	
Port-based Licensing	Helps enable a pay-as-you-go model, allowing customers to add capacity as the networking needs of an individual system increase	

Table 8 Capabilities and Features *(continued)*

Capability/Feature	Cisco UCS 6332 32-Port	Cisco UCS 6332 16-UP
Front-to-Back Cooling	Supports efficient data center hot- and cold-aisle designs	
Redundant hot-swappable fans and power supplies	■ Helps enable high availability in multiple configurations ■ Increases serviceability ■ Provides uninterrupted service during maintenance	
Rear Ports	Helps keep cable lengths short and efficient	
Performance	■ Provides high-speed, low-latency connectivity to the chassis ■ Provides approximately 50% reduction in end-to-end system latency (latency is 3.2 microseconds)	
Lossless Fabric	Provides a reliable, robust foundation for unifying LAN and SAN traffic on a single transport	
Priority Flow Control (PFC)	■ Simplifies management of multiple traffic flows over a single network link ■ Supports different classes of service, helping enable both lossless and classic Ethernet on the same fabric	
Systemwide Bandwidth Management	Helps enable consistent and coherent quality of service (QoS) throughout the system	
Cisco Data Center VM-FEX Technology	■ Helps enable a consistent operational model between virtual and physical environments ■ Provides the same level of network visibility for virtualized and nonvirtualized environments ■ Improves diagnostic and troubleshooting capabilities in a virtual environment ■ Simplifies network and security policy enforcement when migrating virtual machines from one host to another	

CONFIGURING the FABRIC INTERCONNECT

Follow these steps to configure the Cisco UCS 6300 Series Fabric Interconnect:

- *STEP 1 VERIFY FABRIC INTERCONNECT SKU, page 15*
- *STEP 2 CHOOSE PORT LICENSES (OPTIONAL), page 16*
- *STEP 3 CHOOSE TRANSCEIVERS (OPTIONAL), page 18*
- *STEP 4 CHOOSE POWER SUPPLIES, page 24*
- *STEP 5 SELECT AC POWER CORDS, page 25*
- *STEP 6 ACCESSORY KIT (INCLUDED), page 28*
- *STEP 7 CHOOSE SERVICE AND SUPPORT LEVEL, page 29*

STEP 1 VERIFY FABRIC INTERCONNECT SKU

Verify the product ID (PID) of the desired Fabric Interconnect as shown in *Table 9*.

Table 9 PID of the Base 6300 Series Fabric Interconnect

Product ID (PID)	Description
UCS-FI-6332-U	Standalone model: UCS 6332 1RU Fabric Interconnect, with no PSU, with 32 QSFP+ ports and includes eight 40-Gbps port licenses.
UCS-FI-6332-16UP-U	Standalone model: UCS 6332 1RU Fabric Interconnect, with no PSU, with 24 QSFP+ ports and 16 Unified Ports, and includes four 40-Gbps port licenses and eight Unified Port licenses

The base Cisco UCS 6300 series Fabric Interconnects do not include the following components. They must be selected during product ordering:

- Power supplies
- Transceivers
- Cables
- Power cords
- Warranty Services

NOTE: Use the steps on the following pages to order the desired Fabric Interconnect with the configurable components that you want configured in your order.

STEP 2 CHOOSE PORT LICENSES (OPTIONAL)

The base unit comes with a number of prelicensed ports. The 6332 comes with 8 prelicensed ports (you can choose which ports are prelicensed). The 6332-16UP comes with 4 prelicensed QSFP+ ports and 8 prelicensed Unified Ports (you can choose which ports are prelicensed). Licenses for additional ports are available.

Select Port Licenses

The port license PIDs are shown in *Table 10*.

Table 10 Port License PIDs

Product ID (PID)	Description
Licenses for 6332	
UCS-LIC-6300-40G	3rd Gen FI Per port license to connect to server, switch or FEX (including C-direct[1])
UCS-LIC-6300-40GC	3rd Gen FI Per port License to connect C-direct only
Licenses for 6332-16UP	
UCS-LIC-6300-40G	3rd Gen FI Per port License to connect B-series, FEX, or C-direct
UCS-LIC-6300-40GC	3rd Gen FI Per port License to connect C-direct only
UCS-LIC-6300-10G	UCS 6300 Series ONLY Fabric Int 1PORT 10GE/FC-port license
UCS-LIC-6300-10GC	UCS 6300 Series Fabric Int 1PORT 10GE/FC-port license-C-direct only

Notes

1. C-direct license is only supported on C-Series servers

Supported Configurations

Default port licensing is summarized in *Table 11*.

Table 11 Port Licensing Options

Component	Physical Ports	Pre-Licensed Ports	Optional Additional Licensed Ports
UCS-FI-6332 (32-port FI)	32	8	24
UCS-FI-6332-16UP (40-port FI)	40	4 QSFP+ ports 8 Unified Ports	20 QSFP+ ports 8 Unified Ports

Caveats

- An additional license must be added for every port added beyond the quantity of prelicensed ports
- Additional licensed ports can be located in any desired physical location (however, fibre channel ports must be physically colocated)

STEP 3 CHOOSE TRANSCEIVERS (OPTIONAL)

The Cisco UCS 6300 series Fabric Interconnects support SFP+ Ethernet transceivers, SFP transceivers, SFP+ copper twinax cables with integrated transceivers, SFP Fibre Channel transceivers, QSFP transceivers, and QSFP cables.

Choose Transceivers

The supported transceivers are for the UCS-FI-6332 are listed in *Table 12*.

Table 12 UCS-FI-6332 Supported Transceivers

Product ID (PID)	Description
SFP 1-Gigabit Transceivers[1]	
GLC-TE	1000BASE-T SFP transceiver module for Category 5 copper wire
GLC-SX-MMD	1000BASE-SX short wavelength; with DOM
SFP+ Transceivers[1]	
SFP-10G-SR	Cisco 10GBASE-SR SFP+ Module for MMF
SFP-10G-SR-S	Cisco 10GBASE-SR SFP+ Module for MMF (S-Class)
SFP-10G-LR	Cisco 10GBASE-LR SFP+ Module for SMF
SFP-10G-LR-S	Cisco 10GBASE-LR SFP+ Module for SMF (S-Class)
FET-10G	Cisco 10G Line Extender for FEX
QSFP Transceivers	
QSFP-40G-SR4	40zGBASE-SR4 QSFP module (multimode fiber [MMF] at 100m)
QSFP-40G-SR4-S	40zGBASE-SR4 QSFP module (multimode fiber [MMF] at 100m)
QSFP-40G-CSR4	40GBASE Extended CSR4 QSFP module (MMF at 300m)
QSFP-40G-LR4	Cisco 40GBASE-LR4 QSFP+ transceiver module for SMF, duplex LC connector
QSFP-40G-LR4-S	Cisco 40GBASE-LR4 QSFP+ transceiver module for SMF, duplex LC connector
QSFP-40G-SR-BD	Cisco QSFP40G BiDi Short-reach Transceiver
FET-40G	Cisco 40G Line Extender for FEX
SFP+ Copper Cables with Integrated Transceivers[1]	
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable 1 Meter, passive
SFP-H10GB-CU2M	10GBASE-CU SFP+ Cable 2 Meter, passive
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable 3 Meter, passive
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable 5 Meter, passive

Table 12 UCS-FI-6332 Supported Transceivers *(continued)*

Product ID (PID)	Description
SFP-H10GB-ACU7M	10GBASE-CU SFP+ Cable 7 Meter, active
SFP-H10GB-ACU10M	10GBASE-CU SFP+ Cable 10 Meter, active
SFP-10G-AOC1M	10GBASE-AOC SFP+ Cable 1 Meter
SFP-10G-AOC2M	10GBASE-AOC SFP+ Cable 2 Meter
SFP-10G-AOC3M	10GBASE-AOC SFP+ Cable 3 Meter
SFP-10G-AOC5M	10GBASE-AOC SFP+ Cable 5 Meter
SFP-10G-AOC7M	10GBASE-AOC SFP+ Cable 7 Meter
SFP-10G-AOC10M	10GBASE-AOC SFP+ Cable 10 Meter
QSFP Cables	
QSFP-4x10G-AC7M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 7-meter, active
QSFP-4x10G-AC10M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 10-meter, active
QSFP-H40G-CU1M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 1-meter, passive
QSFP-H40G-CU3M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 3-meter, passive
QSFP-H40G-CU5M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 5-meter, passive
QSFP-H40G-ACU7M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 7-meter, active
QSFP-H40G-ACU10M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 10-meter, active
QSFP-4SFP10G-CU1M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ passive direct-attach copper transceiver assembly, 1 meter
QSFP-4SFP10G-CU3M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ passive direct-attach copper transceiver assembly, 3 meter
QSFP-4SFP10G-CU5M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ passive direct-attach copper transceiver assembly, 5 meter
QSFP-4X10G-AOC1M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 1-meter
QSFP-4X10G-AOC2M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 2-meter
QSFP-4X10G-AOC3M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 3-meter
QSFP-4X10G-AOC5M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 5-meter
QSFP-4X10G-AOC7M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 7-meter
QSFP-4X10G-AOC10M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 10-meter
QSFP-H40G-AOC1M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 1-meter

Table 12 UCS-FI-6332 Supported Transceivers *(continued)*

Product ID (PID)	Description
QSFP-H40G-AOC2M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 2-meter
QSFP-H40G-AOC3M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 3-meter
QSFP-H40G-AOC5M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 5-meter
QSFP-H40G-AOC7M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 7-meter
QSFP-H40G-AOC10M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 10-meter
QSFP-H40G-AOC15M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 15-meter
CVR-QSFP-SFP10G[2]	Cisco 40GBASE QSFP to SFP+ and SFP adapter (QSA)

Notes

1. All 1-Gigabit and 10-Gigabit transceivers and twinax cables must use a QSA module (PID CVR-QSFP-SFP10G) in order to operate in a 40 Gbps QSFP+ port.
2. QSA module (CVR-QSFP-SFP10G) is required for a 40 Gbps QSFP+ port to operate at 1 Gbps or 10 Gbps.

The supported transceivers are for the UCS-FI-6332-16UP are listed in *Table 13*.

Table 13 UCS-FI-6332-16UP Supported Transceivers

Product ID (PID)	Description
SFP 1-Gigabit Transceivers[1]	
GLC-SX-MMD	1000BASE-SX short wavelength; with DOM
GLC-TE	1000BASE-T SFP transceiver module for Category 5 copper wire
SFP+ Transceivers[1]	
SFP-10G-SR	Cisco 10GBASE-SR SFP+ Module for MMF
SFP-10G-SR-S	Cisco 10GBASE-SR SFP+ Module for MMF (S-Class)
SFP-10G-LR	Cisco 10GBASE-LR SFP+ Module for SMF
SFP-10G-LR-S	Cisco 10GBASE-LR SFP+ Module for SMF (S-Class)
FET-10G	Cisco 10G Line Extender for FEX
QSFP Transceivers	
QSFP-40G-SR4	40zGBASE-SR4 QSFP module (multimode fiber [MMF] at 100m)
QSFP-40G-SR4-S	40zGBASE-SR4 QSFP module (multimode fiber [MMF] at 100m)
QSFP-40G-CSR4	40GBASE Extended CSR4 QSFP module (MMF at 300m)
QSFP-40G-LR4	Cisco 40GBASE-LR4 QSFP+ transceiver module for SMF, duplex LC connector
QSFP-40G-LR4-S	Cisco 40GBASE-LR4 QSFP+ transceiver module for SMF, duplex LC connector
QSFP-40G-SR-BD	Cisco QSFP40G BiDi Short-reach Transceiver
FET-40G	Cisco 40G Line Extender for FEX

Table 13 UCS-FI-6332-16UP Supported Transceivers *(continued)*

Product ID (PID)	Description
Fibre Channel Transceivers[1]	
DS-SFP-FC4G-SW	4 Gbps Fibre Channel-SW SFP, LC
DS-SFP-FC8G-SW	8 Gbps Fibre Channel SW SFP+, LC
DS-SFP-FC8G-LW	8 Gbps Fibre Channel LW SFP+, LC
DS-SFP-FC16G-SW	16Gbps Fibre Channel-SW SFP+, LC
SFP+ Copper Cables with Integrated Transceivers[1]	
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable 1 Meter, passive
SFP-H10GB-CU2M	10GBASE-CU SFP+ Cable 2 Meter, passive
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable 3 Meter, passive
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable 5 Meter, passive
SFP-H10GB-ACU7M	10GBASE-CU SFP+ Cable 7 Meter, active
SFP-H10GB-ACU10M	10GBASE-CU SFP+ Cable 10 Meter, active
SFP-10G-AOC1M	10GBASE-AOC SFP+ Cable 1 Meter
SFP-10G-AOC2M	10GBASE-AOC SFP+ Cable 2 Meter
SFP-10G-AOC3M	10GBASE-AOC SFP+ Cable 3 Meter
SFP-10G-AOC5M	10GBASE-AOC SFP+ Cable 5 Meter
SFP-10G-AOC7M	10GBASE-AOC SFP+ Cable 7 Meter
SFP-10G-AOC10M	10GBASE-AOC SFP+ Cable 10 Meter
QSFP Cables	
QSFP-4x10G-AC7M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 7-meter, active
QSFP-4x10G-AC10M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ direct-attach breakout cable, 10-meter, active
QSFP-H40G-CU1M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 1-meter, passive
QSFP-H40G-CU3M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 3-meter, passive
QSFP-H40G-CU5M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 5-meter, passive
QSFP-H40G-ACU7M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 7-meter, active
QSFP-H40G-ACU10M	Cisco 40GBASE-CR4 QSFP+ direct-attach copper cable, 10-meter, active
QSFP-4SFP10G-CU1M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ passive direct-attach copper transceiver assembly, 1 meter
QSFP-4SFP10G-CU3M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ passive direct-attach copper transceiver assembly, 3 meter

Table 13 UCS-FI-6332-16UP Supported Transceivers *(continued)*

Product ID (PID)	Description
QSFP-4SFP10G-CU5M	Cisco 40GBASE-CR4 QSFP+ to 4 10GBASE-CU SFP+ passive direct-attach copper transceiver assembly, 5 meter
QSFP-4X10G-AOC1M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 1-meter
QSFP-4X10G-AOC2M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 2-meter
QSFP-4X10G-AOC3M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 3-meter
QSFP-4X10G-AOC5M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 5-meter
QSFP-4X10G-AOC7M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 7-meter
QSFP-4X10G-AOC10M	Cisco 40GBASE-AOC QSFP to 4 SFP+ Active Optical breakout Cable, 10-meter
QSFP-H40G-AOC1M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 1-meter
QSFP-H40G-AOC2M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 2-meter
QSFP-H40G-AOC3M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 3-meter
QSFP-H40G-AOC5M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 5-meter
QSFP-H40G-AOC7M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 7-meter
QSFP-H40G-AOC10M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 10-meter
QSFP-H40G-AOC15M	Cisco 40GBASE-AOC QSFP direct-attach Active Optical Cable, 15-meter
CVR-QSFP-SFP10G[2]	Cisco 40GBASE QSFP to SFP+ and SFP adapter (QSA)

Notes

1. All 1-Gigabit and 10-Gigabit transceivers, twinax cables must use a QSA module (PID CVR-QSFP-SFP10G) in order to operate in ports 17—40 (the 40 Gbps QSFP+ ports). Note however that ports 1—16 operate as SFP+ Universal Ports capable of operating at 1/10-Gbps fixed Ethernet or 4/8/16 Gbps Fibre Channel ports, and do not need a QSFP to SFP+ adapter.
2. QSA module (PID CVR-QSFP-SFP10G) is required for a 40 Gbps QSFP+ port to operate at 1 Gbps or 10 Gbps.

Supported Configurations

- Select as many transceivers as you have licenses (see *CHOOSE PORT LICENSES (OPTIONAL) on page 16*).
- Fibre channel ports must be physically colocated in to allow them to be selected using the UCS Manager software GUI.

Caveats

- The maximum length of fiber optic runs is limited to 300 meters. This is imposed by our use of 802.3X/802.1Qbb Priority Pauses.

NOTE:

- When connecting non uplink ports from FI 6300 series to uplink ports to a peer N9K switch, the N9K switch must support auto-negotiation. In this case only AOC will work.

STEP 4 CHOOSE POWER SUPPLIES

The Cisco UCS 6300 series Fabric Interconnects use AC or DC power supplies.

Choose Power Supplies

The supported power supplies for the Cisco UCS 6300 series Fabric Interconnects are listed in *Table 14*.

Table 14 Supported Power Supplies 6332

Product ID (PID)	Description
UCS-PSU-6332-AC	UCS 6332 Power Supply/100-240VAC (650 W)
UCS-PSU-6332-DC	UCS 6332 Power Supply/-48VDC (930 W)
UCS-PSU-6332-NAC	UCS 6332 NEBS 650W V2 AC Power Supply (100-240V)

Table 15 Supported Power Supplies 6332-16UP

Product ID (PID)	Description
UCS-PSU-6332-AC	UCS 6332 Power Supply/100-240VAC (650 W)
UCS-PSU-6332-DC	UCS 6332 Power Supply/-48VDC (930 W)
UCS-PSU-6332-NAC	UCS 6332 NEBS 650W V2 AC Power Supply (100-240V)
N9K-PUV-1200W	Nexus 9300 1200W, 200-277AC,240-380DC, Dual airflow PSU

Supported Configurations

(1) You must choose two identical power supplies (either two AC power supplies or two DC power supplies).

(2) If you select DC power supplies, you must also select two DC power cords (CAB-48DC-40A-8AWG). See *Table 16 on page 25*.

Caveats

- You cannot mix power supply types.

STEP 5 SELECT AC POWER CORDS

Select the appropriate AC power cords listed in *Table 16*. You must select two identical power cords. If you select the option R2XX-DMYMPWRCORD, no power cord is shipped with the server.

Table 16 Available Power Cords

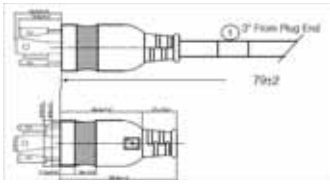
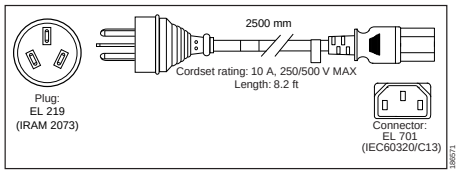
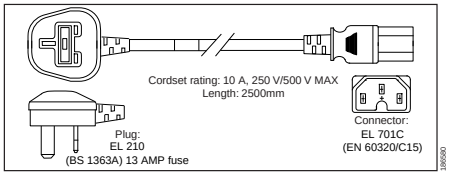
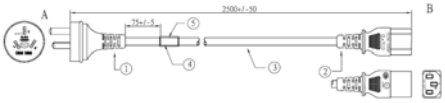
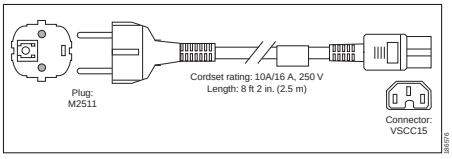
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-AC-L620-C13	AC Power Cord, NEMA L6-20 - C13, 2M/6.5ft	
CAB-250V-10A-AR	Power Cord, 250V, 10A, Argentina	
CAB-250V-10A-BR	Power Cord - 250V, 10A - Brazil	
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	
CAB-250V-10A-CN	AC Power Cord - 250V, 10A - PRC	
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU	

Table 16 Available Power Cords *(continued)*

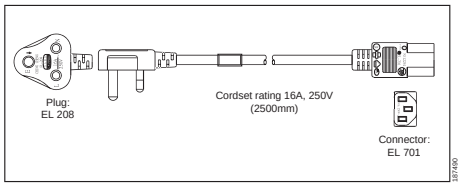
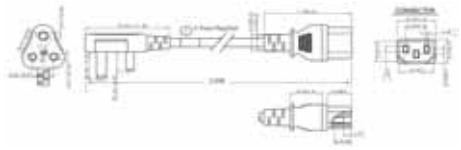
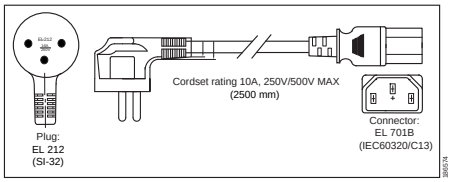
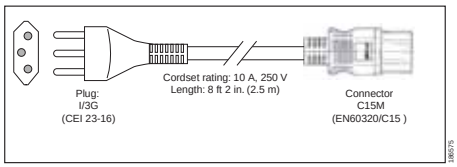
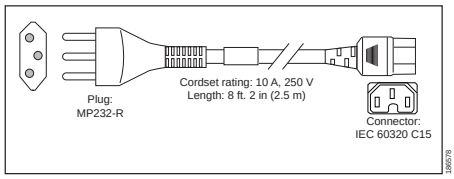
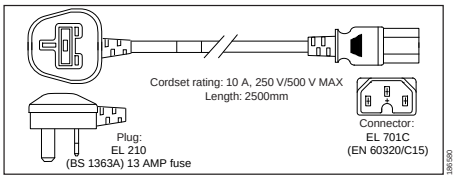
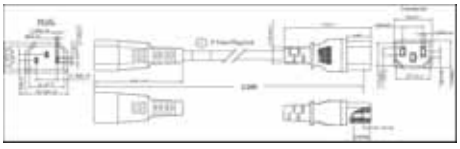
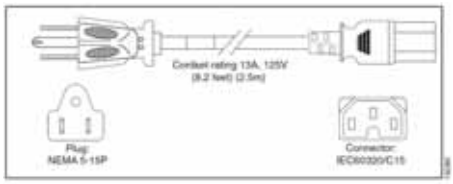
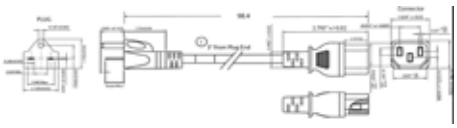
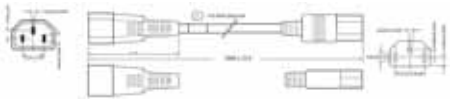
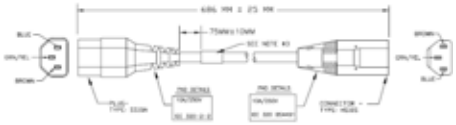
Product ID (PID)	PID Description	Images
CAB-250V-10A-ID	Power Cord, 250V, 10A, India	
CAB-IND-10A	10A Power cable for India	
CAB-250V-10A-IS	Power Cord, 250V, 10A, Israel	
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, Switzerland	
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK	
CAB-C13-C14-2M	CABASY,WIRE,JUMPER CORD, PWR, 2 Meter, C13/C14,10A/250V	

Table 16 Available Power Cords *(continued)*

Product ID (PID)	PID Description	Images
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	
CAB-N5K6A-NA	Power Cord, 200/240V 6A North America	
CAB-C13-C14-AC	Power cord, C13 to C14 (recessed receptacle), 10A	
CAB-C13-CBN	CABASY,WIRE,JUMPER CORD, 27" L, C13/C14, 10A/250V	
CAB-JPN-3PIN	Power Cord 3PIN, Japan	Image not available
CAB-48DC-40A-8AWG[1]	-48VDC PSU Power Cord, 3.5M, 3 Wire, 8AWG, 40A	Image not available
CAB-C13-C14-2M-JP	Power Cord C13-C14, 2M/6.5ft Japan PSE mark	Image not avaiable

Notes

1. A minimum of two DC power cables must be selected.

STEP 6 ACCESSORY KIT (INCLUDED)

An accessory kit is included for either the of the Cisco UCS 6300 series Fabric Interconnects.

Choose Accessory Kit

The supported accessory kit for the Cisco UCS 6300 series Fabric Interconnects is listed in *Table 17*.

Table 17 Accessory Kit

Product ID (PID)	Description
UCS-ACC-6332	UCS 6332 Chassis Accessory Kit

For details regarding the accessory kits, see *Cisco UCS 6332-16UP (Supported speed matrix) on page 36*.

STEP 7 CHOOSE SERVICE AND SUPPORT LEVEL

A variety of service options are available, as described in this section.

Unified Computing Warranty, No Contract

If you have noncritical implementations and choose to have no service contract, the following coverage is supplied:

- Three-year parts coverage.
- Next business day (NBD) onsite parts replacement eight hours a day, five days a week.
- 90-day software warranty on media.
- Ongoing downloads of BIOS, drivers, and firmware updates.
- UCSM updates for systems with Unified Computing System Manager. These updates include minor enhancements and bug fixes that are designed to maintain the compliance of UCSM with published specifications, release notes, and industry standards.

Smart Net Total Care for UCS

For support of the entire Unified Computing System, Cisco offers the Cisco Smart Net Total Care for UCS Service. This service provides expert software and hardware support to help sustain performance and high availability of the unified computing environment. Access to Cisco Technical Assistance Center (TAC) is provided around the clock, from anywhere in the world.

For UCS blade servers, there is Smart Call Home, which provides proactive, embedded diagnostics and real-time alerts. For systems that include Unified Computing System Manager, the support service includes downloads of UCSM upgrades. The Cisco Smart Net Total Care for UCS Service includes flexible hardware replacement options, including replacement in as little as two hours. There is also access to Cisco's extensive online technical resources to help maintain optimal efficiency and uptime of the unified computing environment. You can choose a desired service listed in *Table 18*.

Table 18 Cisco Smart Net Total Care for UCS Service

Product ID (PID)	On Site?	Description
UCS-FI-6332 (32-port FI)		
CON-PREM-FI6332	Yes	ONSITE 24X7X2 UCS 6332 1RU FI
CON-OSPT-FI6332	Yes	ONSITE TROUBLESHOOTING 24X7X4 UCS 6332 1RU FI
CON-OSP-FI6332	Yes	ONSITE 24X7X4 UCS 6332 1RU FI
CON-OSE-FI6332	Yes	ONSITE 8X5X4 UCS 6332 1RU FI
CON-OS-FI6332	Yes	ONSITE 8X5XNBD UCS 6332 1RU FI
CON-S2P-FI6332	No	SMART NET TOTAL CARE 24X7X2 UCS 6332 1RU FI
CON-SNTP-FI6332	No	SMART NET TOTAL CARE 24X7X4 UCS 6332 1RU FI
CON-SNTE-FI6332	No	SMART NET TOTAL CARE 8X5X4 UCS 6332 1RU FI

Table 18 Cisco Smart Net Total Care for UCS Service *(continued)*

Product ID (PID)	On Site?	Description
CON-SNT-FI6332	No	SMART NET TOTAL CARE 8X5XNBD UCS 6332 1RU FI
UCS-FI-6332-16UP (40-port FI)		
CON-PREM-FI633216UP	Yes	ONSITE 24X7X2 UCS 633216UP 1RU FI
CON-OSPT-FI633216UP	Yes	ONSITE TROUBLESHOOTING 24X7X4 UCS 633216UP 1RU FI
CON-OSP-FI633216UP	Yes	ONSITE 24X7X4 UCS 633216UP 1RU FI
CON-OSE-FI633216UP	Yes	ONSITE 8X5X4 UCS 633216UP 1RU FI
CON-OS-FI633216UP	Yes	ONSITE 8X5XNBD UCS 633216UP 2RU FI
CON-S2P-FI633216UP	No	SMART NET TOTAL CARE 24X7X2 UCS 633216UP 2RU FI
CON-SNTP-FI633216UP	No	SMART NET TOTAL CARE 24X7X4 UCS 633216UP 2RU FI
CON-SNTE-FI633216UP	No	SMART NET TOTAL CARE 8X5X4 UCS 633216UP 2RU FI
CON-SNT-FI633216UP	No	SMART NET TOTAL CARE 8X5XNBD UCS 633216UP 2RU FI

Smart Net Total Care for UCS Hardware Only Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco Smart Net Total Care for UCS Hardware Only Service. You can choose from two levels of advanced onsite parts replacement coverage in as little as four hours. Smart Net Total Care for UCS Hardware Only Service provides remote access any time to Cisco support professionals who can determine if a return materials authorization (RMA) is required. You can choose a service listed in *Table 19*.

Table 19 Smart Net Total Care for UCS Hardware Only Service

Product ID (PID)	Service Level GSP	On Site?	Description
UCS-FI-6332 (32port FI)			
CON-UCW7-FI6332	UCW7	Yes	Smart Net Total Care for UCS HW Only 24X7X4OS UCS 6332 1RU FI
CON-UCW5-FI6332	UCW5	Yes	Smart Net Total Care for UCS HW Only 8X5XNBDOS UCS 6332 1RU FI
UCS-FI-6332-16UP (40-port FI)			
CON-UCW7-FI633216UP	UCW7	Yes	Smart Net Total Care for UCS HW Only 24X7X4OS UCS 633216UP 2RU FI
CON-UCW5-FI633216UP	UCW5	Yes	Smart Net Total Care for UCS HW Only 8X5XNBDOS UCS 633216UP 2RU FI

Unified Computing Partner Support Service

Cisco Partner Support Service (PSS) is a Cisco Collaborative Services service offering that is designed for partners to deliver their own branded support and managed services to enterprise customers. Cisco PSS provides partners with access to Cisco's support infrastructure and assets to help them:

- Expand their service portfolios to support the most complex network environments
- Lower delivery costs
- Deliver services that increase customer loyalty

Partner Unified Computing Support Options enable eligible Cisco partners to develop and consistently deliver high-value technical support that capitalizes on Cisco intellectual assets. This helps partners to realize higher margins and expand their practice.

PSS is available to all Cisco PSS partners, but requires additional specializations and requirements. For additional information, see the following URL:

www.cisco.com/go/partnerucssupport

The two Partner Unified Computing Support Options include:

- Partner Support Service for UCS
- Partner Support Service for UCS Hardware Only

Partner Support Service for UCS provides hardware and software support, including triage support for third party software, backed by Cisco technical resources and level three support. See *Table 20*.

Table 20 Partner Support Service for UCS

Product ID (PID)	Service Level GSP	On Site?	Description
UCS-FI-6332 (32-port FI)			
CON-PSJ1-FI6332	PSJ1	No	PSS for UCS 8X5XNBD UCS 6332 1RU FI
CON-PSJ2-FI6332	PSJ2	No	PSS for UCS 8X5X4 UCS 6332 1RU FI
CON-PSJ3-FI6332	PSJ3	No	PSS for UCS 24X7X4 UCS 6332 1RU FI
CON-PSJ4-FI6332	PSJ4	No	PSS for UCS 24X7X2 UCS 6332 1RU FI
CON-PSJ6-FI6332	PSJ6	Yes	PSS for UCS 8X5X4 UCS 6332 1RU FI
CON-PSJ7-FI6332	PSJ7	Yes	PSS for UCS 24X7X4 UCS 6332 1RU FI
CON-PSJ8-FI6332	PSJ8	Yes	PSS for UCS 24x7x2 UCS 6332 1RU FI
UCS-FI-6332-16UP (40-port FI)			
CON-PSJ1-FI633216UP	PSJ1	No	PSS for UCS PSS 8X5XNBD UCS 633216UP 2RU FI
CON-PSJ2-FI633216UP	PSJ2	No	PSS for UCS PSS 8X5X4 UCS 633216UP 2RU FI

Table 20 Partner Support Service for UCS *(continued)*

Product ID (PID)	Service Level GSP	On Site?	Description
CON-PSJ3-FI633216UP	PSJ3	No	PSS for UCS PSS 24X7X4 UCS 633216UP 2RU FI
CON-PSJ4-FI633216UP	PSJ4	No	PSS for UCS PSS 24X7X2 UCS 633216UP 2RU FI
CON-PSJ6-FI633216UP	PSJ6	Yes	PSS for UCS 8X5X4 UCS 633216UP 2RU FI
CON-PSJ7-FI633216UP	PSJ7	Yes	PSS for UCS 24X7X4 UCS 633216UP 2RU FI
CON-PSJ8-FI533216UP	PSJ8	Yes	PSS for UCS 24x7x2 UCS 633216UP 2RU FI

Partner Support Service for UCS Hardware Only provides customers with replacement parts in as little as two hours. See *Table 21*.

Table 21 Partner Support Service for UCS (Hardware Only)

Product ID (PID)	Service Level GSP	On Site?	Description
UCS-FI-6332 (32-port FI)			
CON-PSW2-FI6332	PSW2	No	PSS for UCS HW Only 8X5X4 UCS 6332 1RU FI
CON-PSW3-FI6332	PSW3	No	PSS for UCS HW Only 24X7X4 UCS 6332 1RU FI
CON-PSW4-FI6332	PSW4	No	PSS for UCS HW Only 24X7X2 UCS 6332 1RU FI
CON-PSW6-FI6332	PSW6	Yes	PSS for UCS HW Only 8X5X4 UCS 6332 1RU FI
CON-PSW7-FI6332	PSW7	Yes	PSS for UCS HW Only 24x7x4 UCS 6332 1RU FI
UCS-FI-6332-16UP (40-port FI)			
CON-PSW2-FI633216UP	PSW2	No	PSS for UCS HW Only 8X5X4 UCS 633216UP 2RU FI
CON-PSW3-FI633216UP	PSW3	No	PSS for UCS HW Only 24X7X4 UCS 633216UP 2RU FI
CON-PSW4-FI633216UP	PSW4	No	PSS for UCS HW Only 24X7X2 UCS 633216UP 2RU FI
CON-PSW6-FI633216UP	PSW6	Yes	PSS for UCS HW Only 8x5x4 UCS 633216UP 2RU FI
CON-PSW7-FI633216UP	PSW7	Yes	PSS for UCS HW Only 24x7x4 UCS 633216UP 2RU FI

Unified Computing Combined Support Service

Combined Services makes it easier to purchase and manage required services under one contract. Smart Net Total Care services for UCS help increase the availability of your vital data center infrastructure and realize the most value from your unified computing investment. The more benefits you realize from the Cisco Unified Computing System (Cisco UCS), the more important the technology becomes to your business. These services allow you to:

- Optimize the uptime, performance, and efficiency of your UCS
- Protect your vital business applications by rapidly identifying and addressing issues
- Strengthen in-house expertise through knowledge transfer and mentoring
- Improve operational efficiency by allowing UCS experts to augment your internal staff resources
- Enhance business agility by diagnosing potential issues before they affect your operations

You can choose a service listed in *Table 22*.

Table 22 UCS Computing Combined Support Service

Product ID (PID)	Service Level GSP	On Site?	Description
UCS-FI-6332 (32-port FI)			
CON-NCF2-FI6332	NCF2	No	CMB SPT SVC 24X7X2 UCS 6332 1RU FI
CON-NCF2P-FI6332	NCF2P	Yes	CMB SPT SVC 24X7X2OS UCS 6332 1RU FI
CON-NCF4P-FI6332	NCF4P	Yes	CMB SPT SVC 24X7X4OS UCS 6332 1RU FI
CON-NCF4S-FI6332	NCF4S	Yes	CMB SPT SVC 8X5X4OS UCS 6332 1RU FI
CON-NCFCS-FI6332	NCFCS	Yes	CMB SPT SVC 8X5XNBDOS UCS 6332 1RU FI
CON-NCFE-FI6332	NCFE	No	CMB SPT SVC 8X5X4 UCS 6332 1RU FI
CON-NCFP-FI6332	NCFP	No	CMB SPT SVC 24X7X4 UCS 6332 1RU FI
CON-NCFT-FI6332	NCFT	No	CMB SPT SVC 8X5XNBD UCS 6332 1RU FI
UCS-FI-6332-16UP (40-port FI)			
CON-NCF2-FI633216UP	NCF2	No	CMB SPT SVC 24X7X2 UCS 633216UP 2RU FI
CON-NCF2P-FI633216UP	NCF2P	Yes	CMB SPT SVC 24X7X2OS UCS 633216UP 2RU FI
CON-NCF4P-FI633216UP	NCF4P	Yes	CMB SPT SVC 24X7X4OS UCS 633216UP 2RU FI
CON-NCF4S-FI633216UP	NCF4S	Yes	CMB SPT SVC 8X5X4OS UCS 633216UP 2RU FI
CON-NCFCS-FI633216UP	NCFCS	Yes	CMB SPT SVC 8X5XNBDOS UCS 633216UP 2RU FI
CON-NCFE-FI633216UP	NCFE	No	CMB SPT SVC 8X5X4 UCS 633216UP 2RU FI
CON-NCFP-FI633216UP	NCFP	No	CMB SPT SVC 24X7X4 UCS 633216UP 2RU FI
CON-NCFT-FI633216UP	NCFT	No	CMB SPT SVC 8X5XNBD UCS 633216UP 2RU FI

For a complete listing of available services for Cisco Unified Computing System, see this URL:

http://www.cisco.com/en/US/products/ps10312/serv_group_home.html

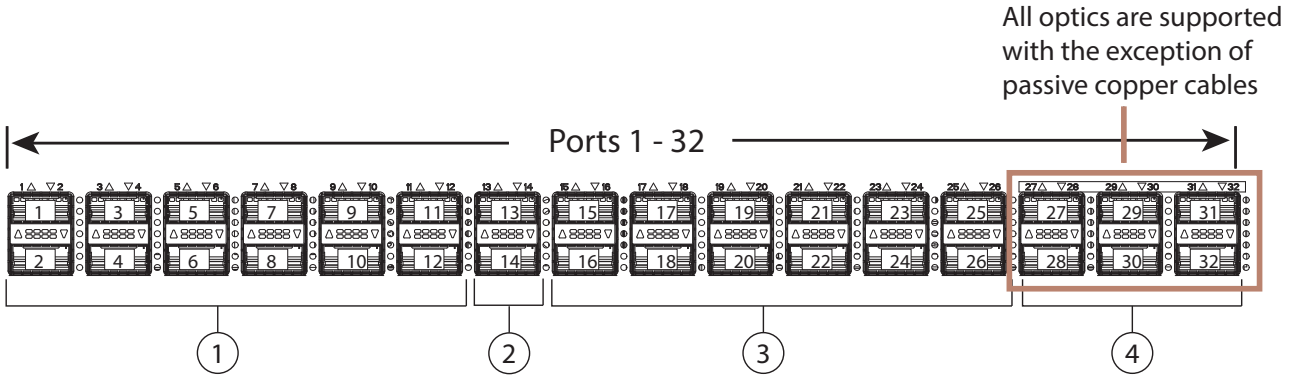
SUPPLEMENTAL MATERIAL

Cisco UCS 6332 Port Numbering

Each port on the Cisco UCS 6332 is numbered, and groups of ports are numbered based on their function. The ports are numbered top to bottom and left to right.

Figure 11 shows how ports are numbered and the table below explains how each port group functions.

Figure 10 Port Numbering of the Cisco UCS 6332



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1	Ports 1—12 and 15—26. Each port can operate as either a 40 Gbps QSFP+ port or as 4 x 10 Gbps SFP+ breakout ports (northbound or southbound). Can also be outfitted with Quad to SFP (QSA) adapters to provide 10 Gbps operation when port is in breakout mode. Only first breakout port will be used when QSA adapter is used. For example, in case of breakout port 1/1, only 1/1/1 will be used and the other 3 breakout ports (1/1/2-1/1/4) will be inactive.	**2**	Ports 13, 14 and 27-32. Can operate as 40-Gbps QSFP+ ports only. Do not support QSA adapters and cannot be used in 4x10 Gbps breakout mode.
3	Ports 1- 4. Can be operated at 1Gbps speed in breakout mode, either using 4x10Gbps breakout cable, or using a Quad to SFP (QSA) adapter.	—	—

Cisco UCS 6332 (Supported speed matrix)

Speed	Port Range				
	1-4	5-12	13-14	15-26	27-32
1 Gbps (Breakout required)	Yes	No	No	No	No
4x10 Gbps	Yes	Yes	No	Yes	No
40 Gbps	Yes	Yes	Yes	Yes	Yes

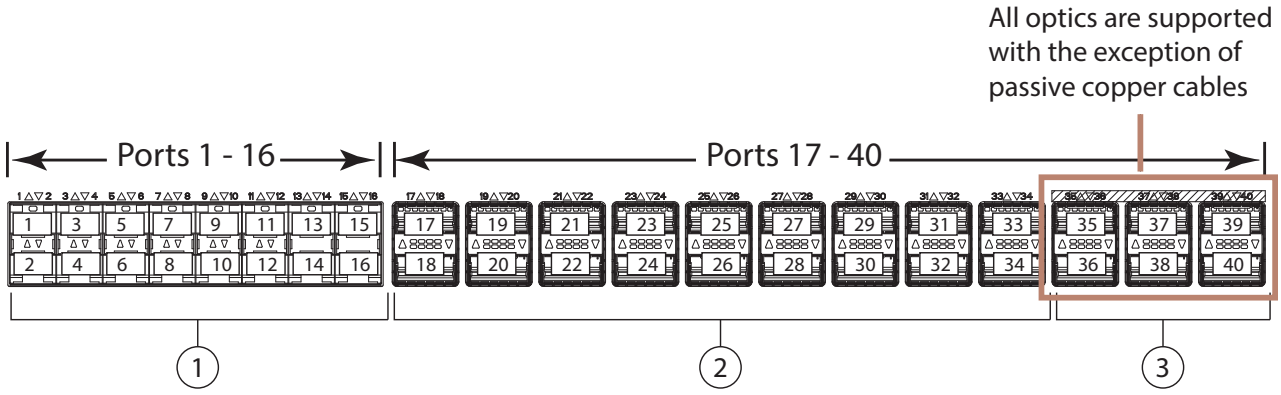
NOTE: QSA is not supported on ports 13 and 14.

Cisco UCS 6332-16UP Port Numbering

Each port on the Cisco UCS 6332-16UP is numbered, and groups of ports are numbered based on their function. The ports are numbered top to bottom and left to right.

Figure 11 shows how ports are numbered and the table below explains how each port group functions.

Figure 11 Port Numbering of the Cisco UCS 6332-16UP



1	Ports 1—16 are Universal ports (operate either as 1- or 10-Gbps fixed Ethernet or as 4/8/16 Gbps Fibre channel)	**2**	Ports 17—34 (operate as either 40 Gbps QSFP+ ports or as 4 x 10 Gbps SFP+ breakout ports). Can also be outfitted with Quad to SFP (QSA) adapters to provide 10 Gbps operation when port is in breakout mode. Only first breakout port will be used when QSA adapter is used. For example, in case of breakout port 1/1, only 1/1/1 will be used and the other 3 breakout ports (1/1/2-1/1/4) will not be active.
3	Port 35—40 (operate as fixed 40 Gbps QSFP+ ports)[1]	**—**	—

Notes

1. These ports (35—40) do not support passive cables.

Cisco UCS 6332-16UP (Supported speed matrix)

Speed	Port Range		
	1-16	17-34	35-40
1 Gbps	Yes	No	No
4x10 Gbps	No	Yes	No
40 Gbps	No	Yes	Yes

NOTE: QSA adapter is used for using a single 10G out of a breakout port, instead of using breakout cable.

Accessory Kit

The Cisco UCS 6300 Fabric Interconnect accessory kit includes the following items:

- 2 slider rails
- 2 rack-mount guides
- 2 rack-mount brackets
- 12 M4 x 0.7 x 8-mm Phillips countersunk screws
- 10 10-32 rack nuts
- 10 10-32 x 3/4-inch Phillips pan-head screws
- 1 console cable with an RJ-45-RS-232 adapter and a DB9 adapter
- 1 ground lug kit
- 1 ESD wrist strap
- 1 power cord clip (a wire clip that is used to retain the power cord)
- 1 pointer document (specifies where to find the online product documentation)

LED Descriptions

Table 20 describes the LEDs for the Cisco UCS 6300 series fabric interconnect.

Table 23 Cisco UCS 6300 Fabric Interconnect LED Descriptions

LED	Location	Function	Color	Status	Description
Management Port LEDs					
Beaconing LED	Front	Identify selected chassis	Blue	Solid on	Chassis is selected
				Off	Chassis is not selected
System Status LED	Front	System Power/Health	Green	Solid on	Normal operation
				Off	System is powered off
			Amber	On	System fault
Environment LED	Front	System Environment	Green	Solid on	Normal operation
				Off	System is powered off
			Amber	On	Environment fault
Lane LEDs (1, 2, 3, 4)	Front	Lane switch allows QSFP+ connectors to display link/activity for lanes 1, 2, 3, or 4 when the QSFP+ port is operating as a 4 x 10 Gbps breakout port Pushing the lane switch cycles from lane 1 through lane 4. After the button is pressed four times, all four LEDs go off to notify you that the current selection is 1 x 40 Gbps mode.			
Power Supply LEDs					
Fault (top LED) Power (bottom LED)	Front	Fault LED Power LED	Amber Green	Off Off	No AC power to all power supplies
		Fault LED Power LED	Amber Green	On solid Off	Power supply failure, including over voltage, over current, over temperature, and fan failure.
		Fault LED Power LED	Amber Green	Off Blinking	AC present, 3.3 voltage standby (VSB) on, and the power supply unit is off.
		Fault LED Power LED	Amber Green	Off On	Power supply on and OK
Fan Module LED					
Fan status	Front	Fan tray health	Green	On	Normal operation
			Amber	On	Fan failure has occurred within the fan tray

Connectivity

This section explains the connectivity between the Fabric Interconnects (FIs) and Fabric Extenders (FEX). The Fabric Extenders are extensions of the Fabric Interconnects and act as remote line cards to form a distributed modular fabric system. The fabric extension is accomplished through the FEX fabric link, which is the connection between the Fabric Interconnect and the FEX.

A minimum of one connection between the FI and FEX is required to provide server connectivity. Depending on the FEX model, subsequent connections can be up to eight links, which provides added bandwidth to the servers.

5108 Blade Chassis Server Connectivity

For the 5100 blade chassis series, the Fabric Extender modules (up to two) plug into the back of the UCS 5108 series blade server chassis. A midplane connects the blade servers to the Fabric Extenders. The 5108 chassis accommodates the following FEXs:

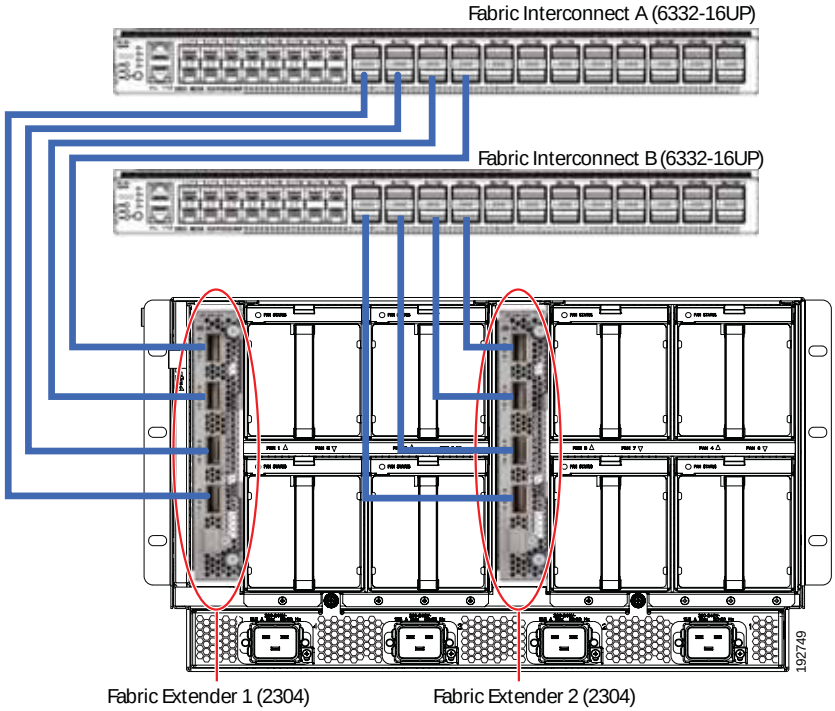
- Cisco UCS 2304

NOTE: The Cisco UCS 2304 Fabric Extender is not compatible with the Cisco UCS 6200 Fabric Interconnect series

- Cisco UCS 2208XP
- Cisco UCS 2204XP

Figure 12 shows how the FEX modules in the blade chassis connect to the FIs.

Figure 12 Connecting Blade Chassis Fabric Extenders to Fabric Interconnect Chassis



C-Series Rack-Mounted Server Connectivity

C-Series servers connect to external FEXs and FIs as summarized in this section. Two interconnection methods are possible:

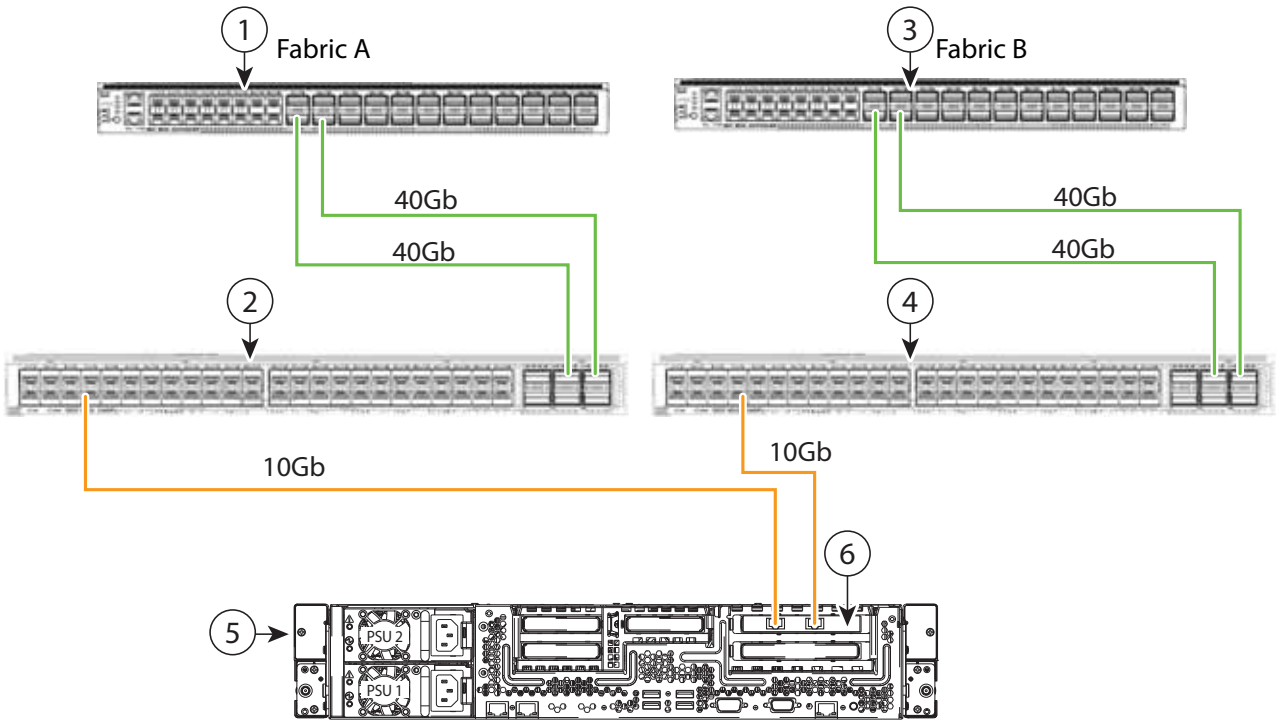
- Single-Wire Management
- Dual-Wire Management

Single-Wire Management

Cisco UCS Manager 3.1 supports an additional option to integrate the C-Series Rack-Mount Server with Cisco UCS Manager using the NC-SI. This option enables Cisco UCS Manager to manage the C-Series Rack-Mount Servers using a single-wire for both management traffic and data traffic. When you use the single-wire management mode, one host facing port on the FEX is sufficient to manage one rack-mount server, instead of the two ports you would use in the Shared-LOM mode. This connection method allows you to connect more rack-mount servers with Cisco UCS Manager 3.1 for integrated server management. Make sure you have correct server firmware for integration with Cisco UCS Manager. If not, upgrade your server firmware before integrating the server with Cisco UCS Manager.

Figure 13 shows how the C-Series rack mount chassis connect to the FEXs and FIs for single-wire management.

Figure 13 Connecting C-Series Rack Chassis (single-wire management)



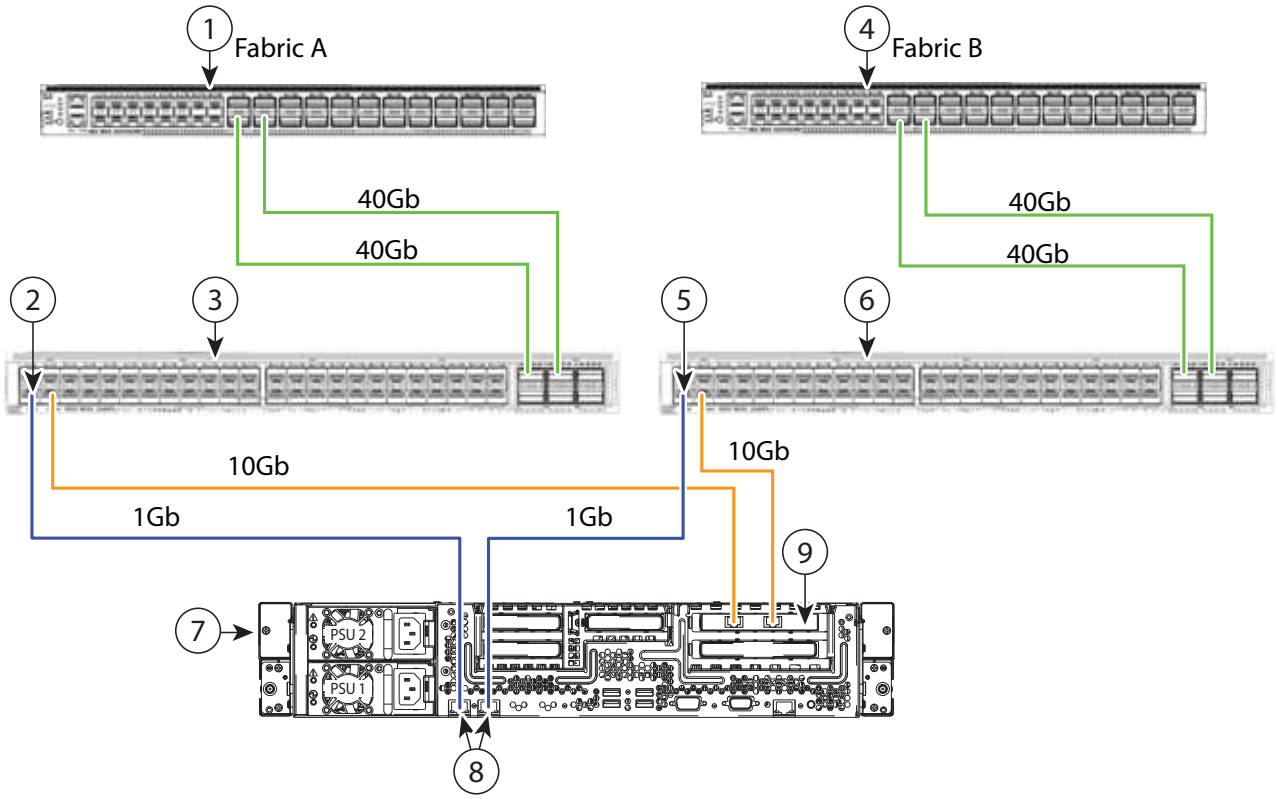
1	Cisco UCS 6332-16UP FI (Fabric A)	**4**	Cisco Nexus 2232PP, 2232TM-E, or 2348UPQ (Fabric B)
2	Cisco Nexus 2232PP, 2232TM-E, or 2348UPQ (Fabric A)	**5**	Cisco UCS C-series server
3	Cisco UCS 6332-16UP FI (Fabric B)	**6**	Cisco UCS VIC1225 in PCIe slot 1

Dual-Wire Management

Cisco UCS Manager version 3.1 supports the existing rack server integration and management option through Shared LOM, using two separate cables for data traffic and management traffic. The prerequisites for integration with Cisco UCS Manager are built into the C-Series servers. Make sure you have correct server firmware for integration with Cisco UCS Manager. If not, upgrade your server firmware before integrating the server with Cisco UCS Manager.

Figure 14 shows how the C-Series rack mount chassis connect to the FEXs and FIs for dual-wire management.

Figure 14 Connecting C-Series Rack Chassis (dual-wire management)



1	Cisco UCS 6332-16UP FI (Fabric A)	**6**	Cisco Nexus 2232PP, 2232TM-E, or 2348UPQ (Fabric B)
2	GLC-TE transceiver in FEX port (Fabric A)	**7**	Cisco UCS C-series server
3	Cisco Nexus 2232PP, 2232TM-E, or 2348UPQ (Fabric A)	**8**	1-Gb Ethernet LOM ports
4	Cisco UCS 6332-16UP FI (Fabric B)	**9**	10-Gb Adapter card in PCIe slot 1
5	GLC-TE transceiver in FEX port (Fabric B)	**—**	—

Blade Chassis Connection Types

In a blade chassis, the FEX fabric link (the link between the FEX and the FI) supports two different types of connections:

- Discrete Mode
- Port Channel Mode

In discrete mode, a half-width server slot is pinned to a given FEX fabric link. The supported number of links are 1, 2, 4, and 8, as shown in *Figure 15*. The figure shows how each FEX fabric link services a particular slot. It is an example of four FEX fabric link connections.

Figure 15 Discrete Mode FEX Fabric Link

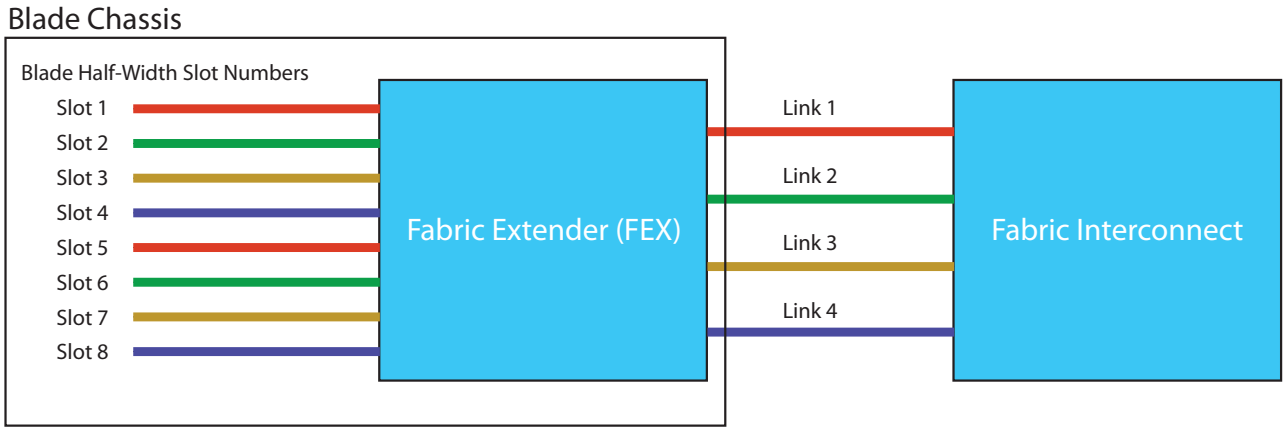


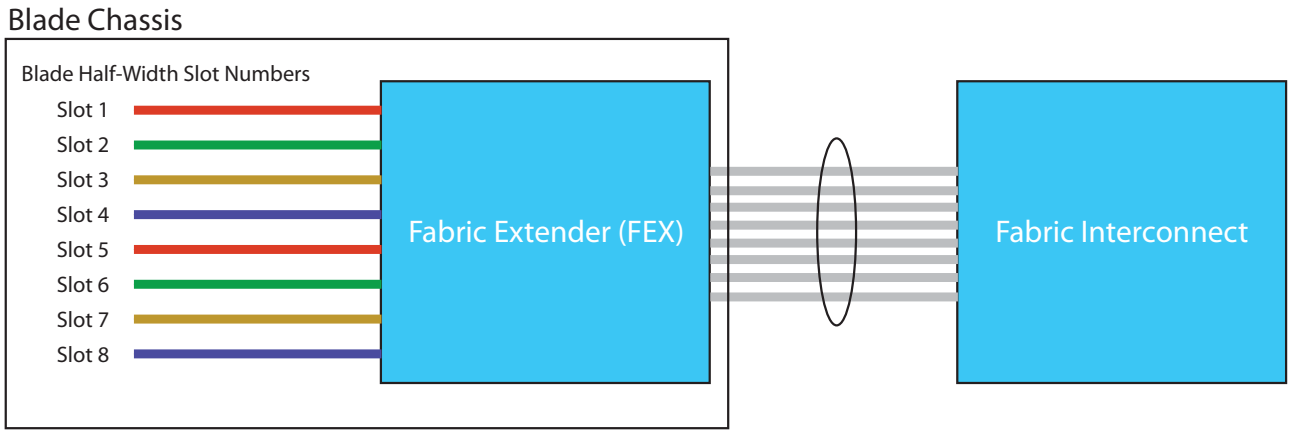
Table 24 shows the mapping from the blade chassis server half slots to the FEX fabric links.

Table 24 Blade Chassis Slot to Link Mapping

FEX Type	Number of FEX Fabric Links	Half-Width Server Slot to Link
Cisco UCS 2304, Cisco UCS 2208XP, and Cisco UCS 2204XP	1	Server Slots 1 - 8 merged to link 1
	2	Server Slots 1, 3, 5, 7 merged to link 1 Server Slots 2, 4, 6, 8 merged to link 2
	4	Server Slots 1, 5 merged to link 1 Server Slots 2, 6 merged to link 2 Server Slots 3, 7 merged to link 3 Server Slots 4, 8 merged to link 4
Cisco UCS 2208XP only	8	1:1 mapping. Each half-width server slot is pinned to a single FEX fabric link.

In port channel mode, the FEX fabric links are bundled into a single logical link (see *Figure 16*) to provide higher bandwidth to the servers. Depending the FEX, up to 8 links can be port-channeled.

Figure 16 FEX Fabric Links in Port Channel Mode



TECHNICAL SPECIFICATIONS

Physical and Environmental Specifications

Table 25 Physical and Environmental Specifications

Description	Specification
Cisco UCS 6332	
Dimensions (H x W x D)	1.72 in. x 17.3 in. x 22.5 in. (4.4 cm x 43.9 cm x 57.1 cm)
Weight (with two power supplies and one expansion module installed)	22 lb (9.97 kg)
Cisco UCS 6332-16UP	
Dimensions (H x W x D)	1.72 in. x 17.3 in x 22.5 in (4.4 cm x 43.9 cm x 57.1 cm)
Weight (with two power supplies and two expansion modules installed)	22.61 lb (10.25 kg)
Environmental	
Temperature, operating	32 to 104°F (0 to 40°C)
Temperature, nonoperating	-40 to 158°F (-40 to 70°C)
Humidity (RH), noncondensing	5 to 95%
Altitude	0 to 10,000 ft (0 to 3000 m)

Power Supply Specifications

Table 26 Specifications for the Cisco UCS 6332/6332-16UP AC Power Supply (UCS-PSU-6332-AC)

AC Power Supply Properties	Description
Maximum AC input current	7.6 A @ 100 VAC 3.65 A @ 208 VAC
Maximum input VA	760 VA
Maximum output per power supply	650 W
Maximum inrush current	11 A peak at +35 degrees C @208 VAC
Maximum holdup time	12 ms @50% load
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	Climate Savers Platinum Efficiency (80Plus Platinum Certified)
Form factor	1U
Input connector	IEC320 C14

Table 27 Specifications for the Cisco UCS 6332/6332-16UP DC Power Supply (UCS-PSU-6332-DC)

DC Power Supply Properties	Description
Maximum AC input current	23 A @ -48 VDC
Maximum input VA	1104 VA
Maximum output per power supply	930 W
Maximum inrush current	35 A Peak at +35 degree C
Maximum holdup time	8 ms @50% load
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	Climate Savers Platinum Efficiency (80Plus Platinum Certified)
Form factor	1U
Input connector	Molex: 445401-1001

For configuration-specific power specifications, use the Cisco UCS Power Calculator at:

https://express.salire.com/Go/Cisco/Cisco-UCS-Power-Calculator.aspx

Transceiver Specifications

For transceiver specifications, see the following link:

http://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/GE_Tx_Matrix.html

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