Spec Sheet

How to Buy

Cisco UCS 6200 Series Fabric Interconnect

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OVERVIEW

The Cisco UCS 6200 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 6200 Series offers line-rate, low-latency, lossless 10 Gigabit Ethernet, Fibre Channel over Ethernet (FCoE), and Fibre Channel functions.

The Cisco UCS 6200 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 6200 Series Fabric Interconnects become part of a single, highly available management domain. In addition, by supporting unified fabric, the Cisco UCS 6200 Series provides both the LAN and SAN connectivity for all blades within its domain.

From a networking perspective, the Cisco UCS 6200 Series uses a cut-through architecture, supporting deterministic, low-latency, line-rate 10 Gigabit Ethernet on all ports, switching capacity of 2 terabits (Tb), and 320-Gbps bandwidth per chassis, independent of packet size and enabled services. The product family supports Cisco® low-latency, lossless 10 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 6248UP 48-Port Fabric Interconnect

The Cisco UCS 6248UP 48-Port Fabric Interconnect (Figure 3) is a one-rack-unit (1RU) 10-Gigabit Ethernet, FCoE and Fiber Channel switch offering up to 960-Gbps throughput and up to 48 ports. The switch has 32 1/10-Gbps fixed Ethernet, FCoE, and FC ports and one expansion slot. The 48-port chassis is shown in *Figure 1*.

Figure 1 Cisco UCS 6248UP Fabric Interconnect (1RU)

Front View



Rear View



Cisco UCS 6296UP 96-Port Fabric Interconnect

The Cisco UCS 6296UP 96-Port Fabric Interconnect is a 2RU 10-Gigabit Ethernet, FCoE and native Fibre Channel switch offering up to 1920-Gbps throughput and up to 96 ports. The switch has 48 1/10-Gbps fixed Ethernet, FCoE, and Fiber Channel ports and three expansion slots. The 96-port chassis is shown in *Figure 2*.

Figure 2 Cisco UCS 6296UP Fabric Interconnect (2RU)

Front View



Rear View

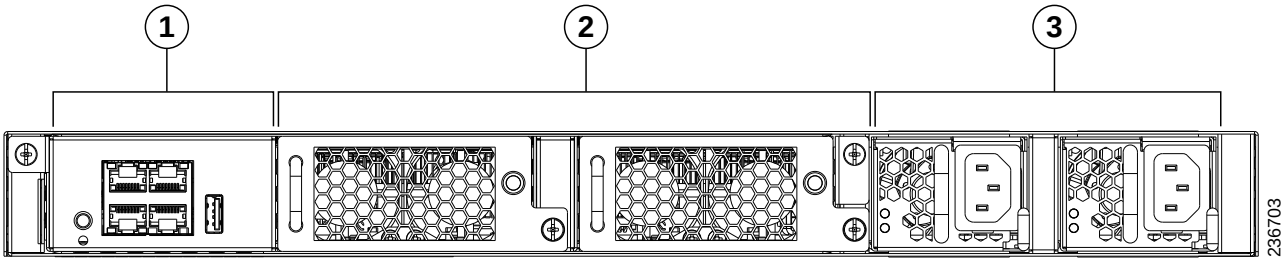


DETAILED VIEWS

Cisco UCS 6248UP 48-Port Fabric Interconnect Front View

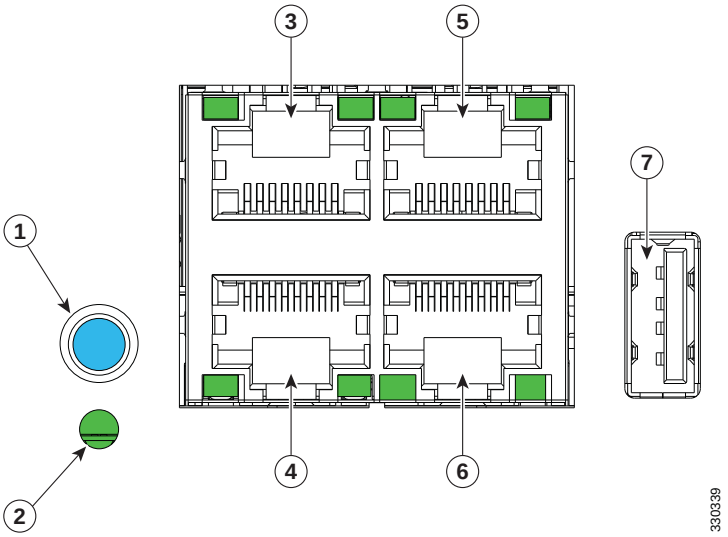
Figure 3 is a detailed front view of the Cisco UCS 6248UP Fabric Interconnect.

Figure 3 48-port Fabric Interconnect Chassis Front View



1	Connector and USB ports (see *Figure 4*)	**3**	Power supplies (two). AC versions shown.
2	Fan modules (two). The leftmost fan module houses the management daughter card (see *Management Daughter Card on page 34*.	**—**	—

Figure 4 Connector and USB Ports

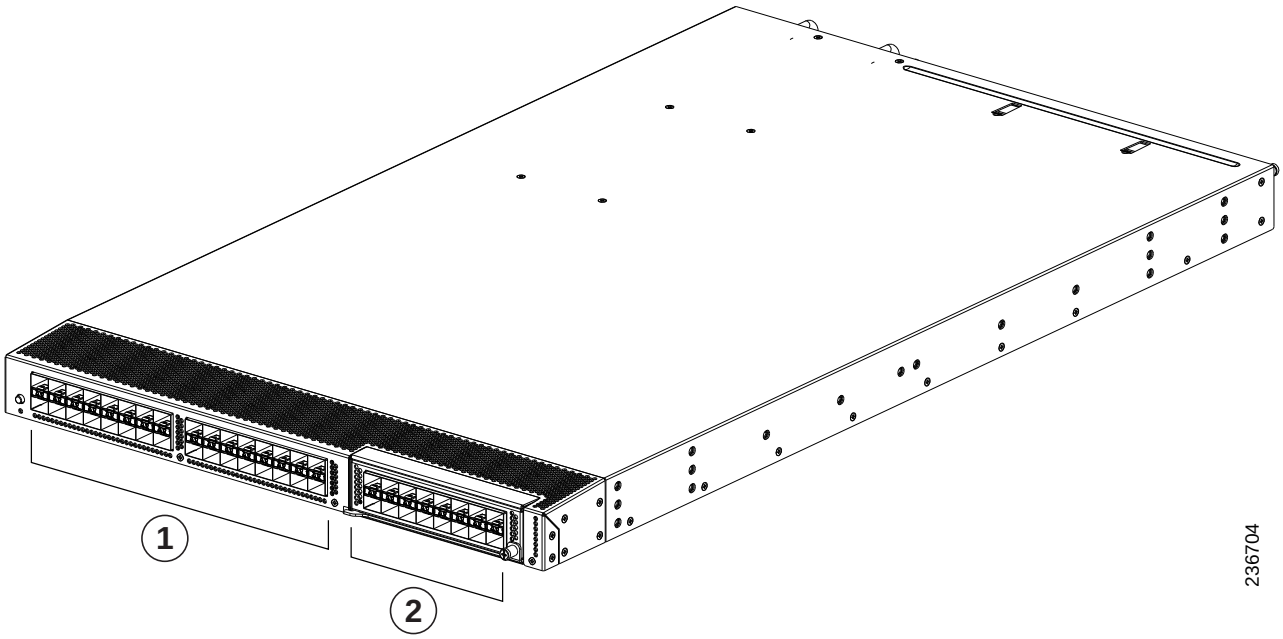


1	Beaconing LED/button	**5**	Network management port (10/100/1000 Mbps)
2	System status LED	**6**	Console port
3	UCS cross-connect port L1	**7**	USB port
4	UCS cross-connect port L2	**—**	—

Cisco UCS 6248UP 48-Port Fabric Interconnect Rear Views

Figure 5 is an overall rear view of the Cisco UCS 6248UP Fabric Interconnect.

Figure 5 48-port Fabric Interconnect Chassis Overall Rear View

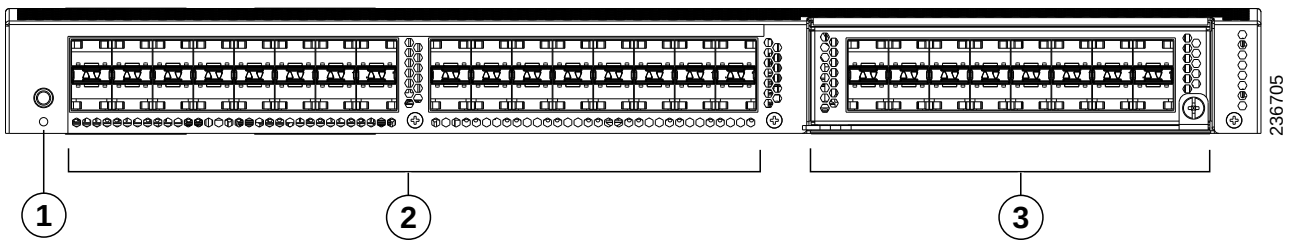


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1	32 Unified Ports	**2**	Expansion slot, show with 16 Unified Port Expansion Module

Figure 6 is an detailed rear view of the Cisco UCS 6248UP Fabric Interconnect.

Figure 6 48-port Fabric Interconnect Chassis Detailed Rear View



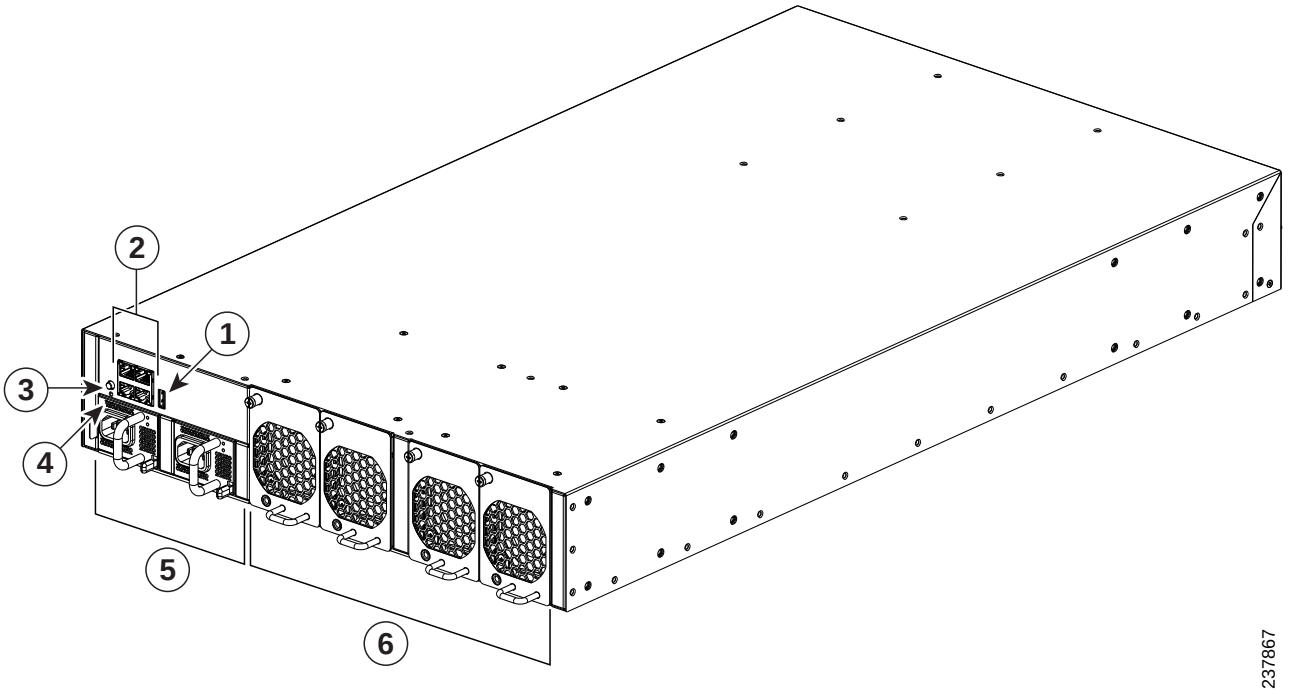
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1	System status LED and beaconing button	**3**	Expansion slot, show with 16 Unified Port Expansion Module
2	32 Unified Ports	**—**	—

Cisco UCS 6296UP 96-Port Fabric Interconnect Front View

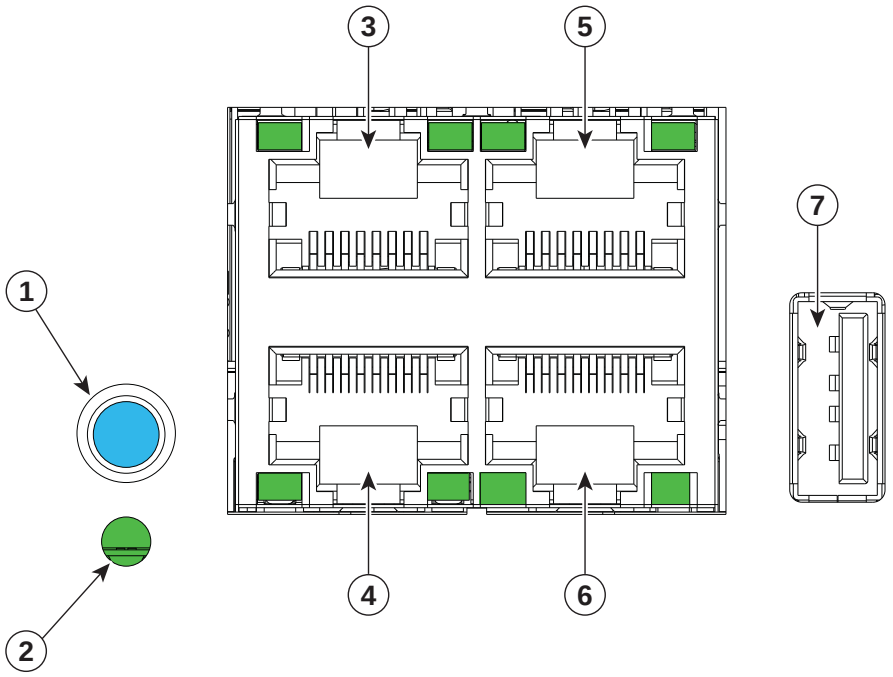
Figure 7 is a detailed front view of the Cisco UCS 6296UP Fabric Interconnect.

Figure 7 96-port Fabric Interconnect Chassis Front View



1	USB port	**4**	System status LED
2	Console ports	**5**	Two power supplies
3	Identifier LED	**6**	Four fan modules

Figure 8 Connector and USB Ports

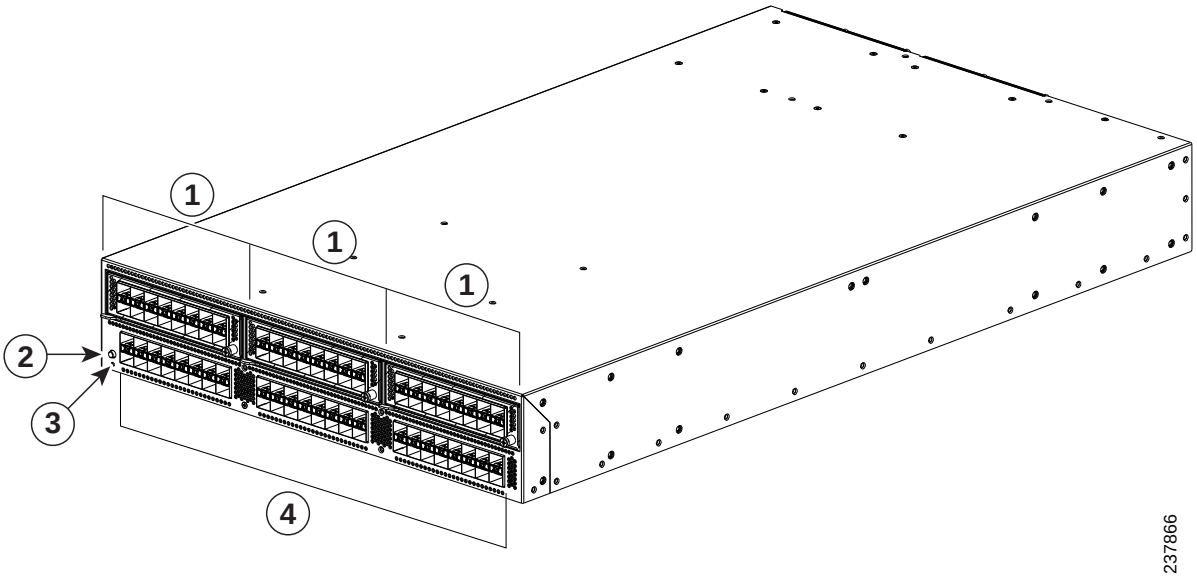


1	Beaconing LED/button	**5**	Network management port (10/100/1000 Mbps)
2	System status LED	**6**	Console port
3	UCS cross-connect port L1	**7**	USB port
4	UCS cross-connect port L2	**—**	—

Cisco UCS 6296UP 96-Port Fabric Interconnect Rear Views

Figure 9 is an overall rear view of the Cisco UCS 6296UP Fabric Interconnect.

Figure 9 96-port Fabric Interconnect Chassis Overall Rear View



s

1	Expansion slot (shown with 16 Unified Port Expansion Module)	**3**	System status LED
2	Identifier LED	**4**	48 Unified Ports

CISCO UCS 6200 FABRIC INTERCONNECT SERIES STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the Cisco UCS 6200 Fabric Interconnect series. Details about how to configure this Fabric Interconnect series for a particular feature or capability (for example, power supplies, expansion modules, or transceivers) are provided in *CONFIGURING the FABRIC INTERCONNECT on page 12*.

Table 1 Capabilities and Features

Capability/Feature	Cisco UCS 6248UP	Cisco UCS 6296UP
Chassis	1RU 48-port Fabric Interconnect	2RU 96-port Fabric Interconnect
Throughput	960 Gbps	1920 Gbps
Fan Modules	1 + 1	2 + 2
Unified Ports (SFP+)	32 fixed 1/10 Gigabit Ethernet, FCoE, or 1/2/4/8 Gbps FC port with an additional 16 ports made available by adding an expansion module.	48 fixed 1/10 Gigabit Ethernet, FCoE, or 1/2/4/8 Gbps FC port with an additional 48 ports made available by adding an expansion module.
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 6200 series Fabric Interconnects require UCS Manager version 2.0 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	
SFP-compatible Ports	Allows all fixed and modular expansion ports to be configured to operate in 1 Gigabit Ethernet mode with the transceiver options specified for use with SFP-compatible ports (see *Table 6 on page 17*).	

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Cisco UCS 6248UP	Cisco UCS 6296UP
Transceivers	The Cisco UCS 6200 Series supports a wide variety of 10-Gigabit Ethernet connectivity options using Cisco 10GBASE SFP+ modules. In addition, all fixed and modular expansion ports on the Cisco UCS 6200 Series support 1 Gigabit Ethernet connectivity options using 1GBASE SFP modules. Alternatively, 1/2/4/8 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	
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 6200 Series Fabric Interconnect:

- *STEP 1 VERIFY FABRIC INTERCONNECT SKU, page 13*
- *STEP 2 CHOOSE EXPANSION MODULES (OPTIONAL), page 14*
- *STEP 3 CHOOSE PORT LICENSES (OPTIONAL), page 15*
- *STEP 4 CHOOSE TRANSCEIVERS (OPTIONAL), page 17*
- *STEP 5 CHOOSE POWER SUPPLIES, page 19*
- *STEP 6 SELECT AC POWER CORDS, page 20*
- *STEP 7 ORDER ACCESSORY KIT (OPTIONAL), page 23*
- *STEP 8 CHOOSE SERVICE AND SUPPORT LEVEL, page 24*

STEP 1 VERIFY FABRIC INTERCONNECT SKU

Verify the product ID (PID) of the desired Fabric Interconnect as shown in *Table 2*.

Table 2 PID of the Base UCS 6200 Series Fabric Interconnect

Product ID (PID)	Description
UCS-FI-6248UP-UPG	UCS 6248UP 1RU Fabric Int/No PSU/32 UP/ 12p LIC
UCS-FI-6296UP-UPG	UCS 6296UP 2RU Fabric Int/No PSU/48 UP/ 18p LIC

The base Cisco UCS 6200 series Fabric Interconnects do not include the following components. They must be selected during product ordering:

- Port expansion modules
- Power supplies
- Transceivers
- Cables
- Power cords
- Accessory kit
- 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 EXPANSION MODULES (OPTIONAL)

The Cisco UCS 6248UP has one slot for adding an optional uplink expansion module.The Cisco UCS 6296UP has three slots for adding optional uplink expansion modules. Only the 16-port UCS E16UP expansion module using the small form factor pluggable plus (SFP+) interfaces is supported.

Select Expansion Module

The supported unified port (UP) expansion module is listed in *Table 3*.

Table 3 Supported Expansion Module

Product ID (PID)	Description
UCS-FI-E16UP	UCS 6200 16-port Expansion module/16 UP/ 8p LIC

Supported Configurations

(1) Cisco USC 6248:

- Select either zero or one expansion module

(2) Cisco UCS 6296:

- Select either zero, one, two, or three expansion modules

Caveats

- For the 6248 FI, 12 of the 32 base FI ports are prelicensed and 8 of the 16 Gigabit Expansion Module (GEM) ports are prelicensed.
- For the 6296 FI, 18 of the 48 base FI ports are prelicensed and 8 ports of each GEM are prelicensed.



NOTE: Additional ports may be licensed. See *CHOOSE PORT LICENSES (OPTIONAL) on page 15*.

STEP 3 CHOOSE PORT LICENSES (OPTIONAL)

The base unit comes with a number of prelicensed ports (12 for the 6248 and 18 for the 6296). Each expansion module comes with 8 prelicensed ports that can be used with either the expansion module itself or on the base ports of the 6248 or 6296. Licenses for additional ports are available.



NOTE: The eight default licenses that come with a 6200 series fabric interconnect expansion module can be used to enable ports on the 6248 or 6296 base unit, but such licenses will be removed from the base unit with the expansion module's removal.

Select Port Licenses

The port license PID is shown in *Table 4*.

Table 4 Port License

Product ID (PID)	Description
UCS-LIC-10GE	UCS 6200 Series ONLY Fabric Int 1Port 1/10GE/FC-port license
UCS-L-6200-10G-C	UCS 6200 Series Only Fabric Int 1Port 1/10GE/FC-port license to connect to C-Direct[1]

Notes

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

Supported Configurations

Default port licensing is summarized in *Table 5*.

Table 5 Port Licensing Options

Component	Physical Ports	Licensed Ports
UCS-FI-6248UP-UPG (48-port FI)	32	12
UCS-FI-6296UP-UPG (96-port FI)	48	18
UCS-FI-E16UP (expansion module)	16	8

(1) Cisco UCS 6248:

The Cisco UCS 6248UP comes with 12 prelicensed ports out of 32 total ports in the base chassis. An expansion module comes with 8 prelicensed ports of the 16 ports available.

- If there is no expansion module installed, you can select up to 20 additional licenses (for 32 total port licenses).

- If there is an expansion module installed, you can select up to 28 additional licenses (for 48 total port licenses).

(2) Cisco UCS 6296:

The Cisco UCS 6296UP comes with 18 prelicensed ports out of 48 total ports in the base chassis. An expansion module comes with 8 prelicensed ports of the 16 ports available.

- If there are no expansion modules installed, you can select up to 30 additional licenses (for 48 total port licenses).
- If there is one expansion module installed, you can select up to 38 additional licenses (for 64 total port licenses).
- If there are two expansion modules installed, you can select up to 46 additional licenses (for 80 total port licenses).
- If there are three expansion modules installed, you can select up to 54 additional licenses (for 96 total port licenses).

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 4 CHOOSE TRANSCEIVERS (OPTIONAL)

The Cisco UCS 6200 series Fabric Interconnects support SFP+ Ethernet transceivers, SFP transceivers, SFP+ copper twinax cables with integrated transceivers, and SFP Fibre Channel transceivers.

Choose Transceivers

The supported transceivers are listed in *Table 6*.

Table 6 Supported Transceivers

Product ID (PID)	Description
SFP+ Transceivers	
SFP-10G-SR	10GBASE-SR SFP+ module (multimode fiber [MMF])
SFP-10G-LR	10GBASE-LR SFP+ module (single-mode fiber [SMF])
SFP-10G-SR-S	10GBASE-SR SFP+ module, (multi-mode fiber [MMF]) — no FCoE support
SFP-10G-LR-S	10GBASE-LR SFP +module (single-mode fiber [SMF]) — no FCoE support
SFP-10G-ER-S	10GBASE-ER SFP+ module (single-mode fiber [SMF]) — no FCoE support
FET-10G	10GBASE-FET SFP+ module (multimode fiber [MMF])
SFP 1-Gigabit Transceivers	
GLC-TE	1000BASE-T SFP transceiver module for Category 5 copper wire
GLC-LH-SMD	1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM
GLC-SX-MMD	1000BASE-SX SFP transceiver module, MMF, 850nm, DOM
SFP+ Copper and Optical Cables with Integrated Transceivers	
SFP-H10GB-CU1M	10GBASE-CU SFP+ 1-meter cable
SFP-H10GB-CU2M	10GBASE-CU SFP+ 2-meter cable
SFP-H10GB-CU3M	10GBASE-CU SFP+ 3-meter cable
SFP-H10GB-CU5M	10GBASE-CU SFP+ 5-meter cable
SFP-H10GB-ACU7M	10GBASE-CU SFP+ 7-meter cable
SFP-H10GB-ACU10M	10GBASE-CU SFP+ 10-meter cable
SFP-10G-AOC1M	10GBASE Active Optical SFP+ Cable, 1M
SFP-10G-AOC2M	10GBASE Active Optical SFP+ Cable, 2M
SFP-10G-AOC3M	10GBASE Active Optical SFP+ Cable, 3M
SFP-10G-AOC5M	10GBASE Active Optical SFP+ Cable, 5M

Table 6 Supported Transceivers *(continued)*

Product ID (PID)	Description
SFP-10G-AOC7M	10GBASE Active Optical SFP+ Cable, 7M
SFP-10G-AOC10M	10GBASE Active Optical SFP+ Cable, 10M
SFP Fibre Channel Transceivers	
DS-SFP-FC4G-SW	4-Gbps Fibre Channel SW SFP, LC (for FC configured Unified ports)
DS-SFP-FC8G-SW	8-Gbps Fibre Channel SW SFP+, LC (for FC configured Unified ports)
DS-SFP-FC8G-LW	8-Gbps Fibre Channel LW SFP+, LC (for FC configured Unified ports)

Supported Configurations

- Select as many transceivers as you have licenses (see *CHOOSE PORT LICENSES (OPTIONAL) on page 15*).
- Fibre channel ports must be physically connected to allow them to be selected using 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.

STEP 5 CHOOSE POWER SUPPLIES

The Cisco UCS 6200 series Fabric Interconnects use AC or DC power supplies.

Choose Power Supplies

The supported power supplies for the Cisco UCS 6200 series Fabric Interconnects are listed in *Table 7*.

Table 7 Supported Power Supplies

Product ID (PID)	Description
UCS-FI-6248UP-UPG (48-port FI)	
UCS-PSU-6248UP-AC	UCS 6248UP 100-240 VAC Power Supply
UCS-PSU-6248UP-DC	UCS 6248UP -48 VDC Power Supply
UCS-PSU-6248-HVDC	UCS 6248UP 750W 200V-380 VDC Hot Plug Power Supply
UCS-FI-6296UP-UPG (96-port FI)	
UCS-PSU-6296UP-AC	UCS 6296UP 100-240 VAC Power Supply
UCS-PSU-6296UP-DC	UCS 6296UP DC Power Supply

Supported Configurations

(1) Cisco UCS 6248:

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

(2) Cisco UCS 6296:

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

Caveats

- In the 6248 FI, you cannot mix power supply types
- In the 6296 FI, there is only one type of power supply available

STEP 6 SELECT AC POWER CORDS

Select the appropriate AC power cords listed in *Table 8*. You must select two power cords if you have an AC-powered Fabric Connect chassis. If you select the option R2XX-DMYMPWRCORD, no power cord is shipped with the server.

Table 8 Available Power Cords

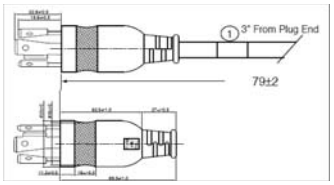
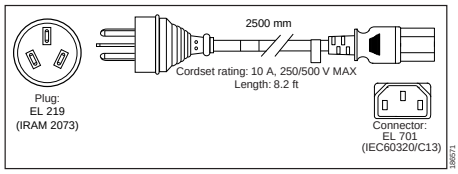
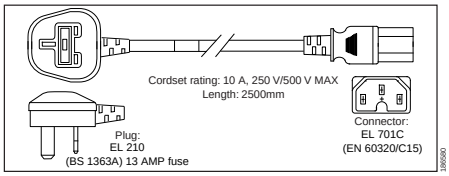
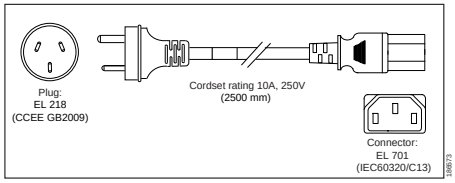
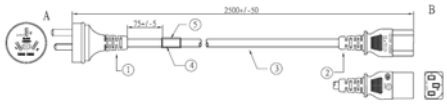
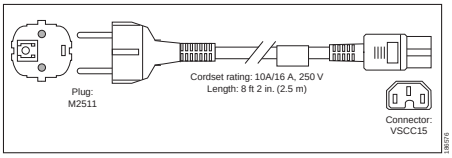
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-AC-L620-C13	AC Power Cord, NEMA L6-20 - C13, 2M/6.5ft	
CAB-250V-10A-AR	Power Cord, 250V, 10A, Argentina	
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	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

Table 8 Available Power Cords *(continued)*

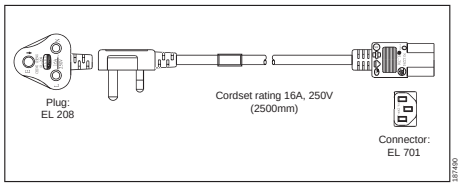
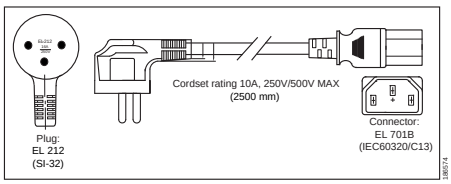
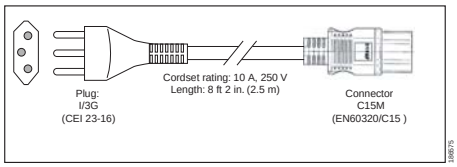
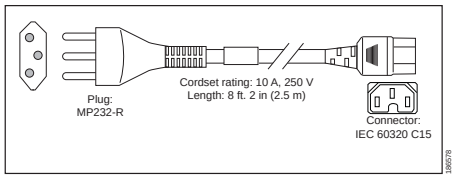
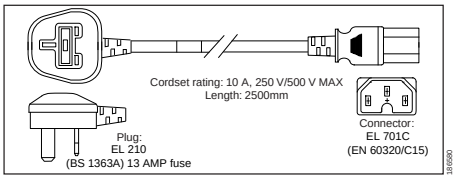
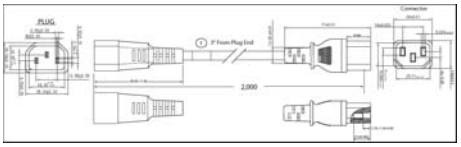
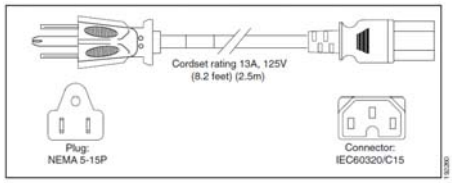
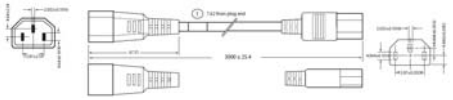
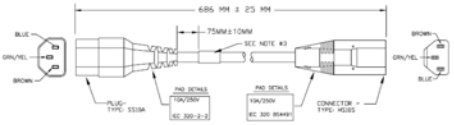
Product ID (PID)	PID Description	Images
CAB-250V-10A-ID	Power Cord, 250V, 10A, India	
CAB-250V-10A-IS	Power Cord, 250V, 10A, Israel	
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, Switzerland	
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK	
CAB-C13-C14-2M	CABASY,WIRE,JUMPER CORD, PWR, 2 Meter, C13/C14,10A/250V	
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	

Table 8 Available Power Cords *(continued)*

Product ID (PID)	PID Description	Images
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

STEP 7 ORDER ACCESSORY KIT (OPTIONAL)

An optional accessory kit can be ordered for either of the Cisco UCS 6200 series Fabric Interconnects.

Choose Accessory Kit

The supported accessory kits for the Cisco UCS 6200 series Fabric Interconnects are listed in *Table 9*.

Table 9 Supported Accessory Kits

Product ID (PID)	Description
UCS-FI-6248UP-UPG (48-port FI)	
UCS-ACC-6248UP	UCS 6248UP accessory kit
UCS-FI-6296UP-UPG (96-port FI)	
UCS-ACC-6296UP	UCS 6296UP accessory kit

For details regarding the accessory kits, see *Accessory Kit on page 31*.

STEP 8 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.

SMARTnet for UCS

For support of the entire Unified Computing System, Cisco offers the Cisco SMARTnet 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 SMARTnet 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 10*.

Table 10 Cisco SMARTnet for UCS Service

Product ID (PID)	On Site?	Description
UCS-FI-6248UP-UPG (48-port FI)		
CON-PREM-FI6248UP	Yes	ONSITE 24X7X2 UCS 6248UP 1RU FI
CON-OSP-FI6248UP	Yes	ONSITE 24X7X4 UCS 6248UP 1RU FI
CON-OSE-FI6248UP	Yes	ONSITE 8X5X4 UCS 6248UP 1RU FI
CON-OS-FI6248UP	Yes	ONSITE 8X5XNBD UCS 6248UP 1RU FI
CON-S2P-FI6248UP	No	SMARTNET 24X7X2 UCS 6248UP 1RU FI
CON-SNTP-FI6248UP	No	SMARTNET 24X7X4 UCS 6248UP 1RU FI
CON-SNTE-FI6248UP	No	SMARTNET 8X5X4 UCS 6248UP 1RU FI
CON-SNT-FI6248UP	No	SMARTNET 8X5XNBD UCS 6248UP 1RU FI

Table 10 Cisco SMARTnet for UCS Service *(continued)*

Product ID (PID)	On Site?	Description
UCS-FI-6296UP-UPG (96-port FI)		
CON-PREM-FI6296UP	Yes	ONSITE 24X7X2 UCS 6296UP 1RU FI
CON-OSP-FI6296UP	Yes	ONSITE 24X7X4 UCS 6296UP 1RU FI
CON-OSE-FI6296UP	Yes	ONSITE 8X5X4 UCS 6296UP 1RU FI
CON-OS-FI6296UP	Yes	ONSITE 8X5XNBD UCS 6296UP 2RU FI
CON-S2P-FI6296UP	No	SMARTNET 24X7X2 UCS 6296UP 2RU FI
CON-SNTP-FI6296UP	No	SMARTNET 24X7X4 UCS 6296UP 2RU FI
CON-SNTE-FI6296UP	No	SMARTNET 8X5X4 UCS 6296UP 2RU FI
CON-SNT-FI6296UP	No	SMARTNET 8X5XNBD UCS 6296UP 2RU FI

SMARTnet for UCS Hardware Only Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco SMARTnet for UCS Hardware Only Service. You can choose from two levels of advanced onsite parts replacement coverage in as little as four hours. SMARTnet 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 11*.

Table 11 SMARTnet for UCS Hardware Only Service

Product ID (PID)	Service Level GSP	On Site?	Description
UCS-FI-6248UP-UPG (48-port FI)			
CON-UCW7-FI6248UP	UCW7	Yes	UC PLUS 24X7X4OS UCS 6248UP 1RU FI
CON-UCW5-FI6248UP	UCW5	Yes	UC PLUS 8X5XNBDOS UCS 6248UP 1RU FI
UCS-FI-6296UP-UPG (96-port FI)			
CON-UCW7-FI6296UP	UCW7	Yes	UC PLUS 24X7X4OS UCS 6296UP 2RU FI
CON-UCW5-FI6296UP	UCW5	Yes	UC PLUS 8X5XNBDOS UCS 6296UP 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 12*.

Table 12 Partner Support Service for UCS

Product ID (PID)	Service Level GSP	On Site?	Description
UCS-FI-6248UP-UPG (48-port FI)			
CON-PSJ1-FI6248UP	PSJ1	No	UCS SUPP PSS 8X5XNBD UCS 6248UP 1RU FI
CON-PSJ2-FI6248UP	PSJ2	No	UCS SUPP PSS 8X5X4 UCS 6248UP 1RU FI
CON-PSJ3-FI6248UP	PSJ3	No	UCS SUPP PSS 24X7X4 UCS 6248UP 1RU FI
CON-PSJ4-FI6248UP	PSJ4	No	UCS SUPP PSS 24X7X2 UCS 6248UP 1RU FI
UCS-FI-6296UP-UPG (96-port FI)			
CON-PSJ1-FI6296UP	PSJ1	No	UCS SUPP PSS 8X5XNBD UCS 6296UP 2RU FI
CON-PSJ2-FI6296UP	PSJ2	No	UCS SUPP PSS 8X5X4 UCS 6296UP 2RU FI
CON-PSJ3-FI6296UP	PSJ3	No	UCS SUPP PSS 24X7X4 UCS 6296UP 2RU FI
CON-PSJ4-FI6296UP	PSJ4	No	UCS SUPP PSS 24X7X2 UCS 6296UP 2RU FI

Partner Support Service for UCS Hardware Only provides customers with replacement parts in as little as two hours. See *Table 13*.

Table 13 Partner Support Service for UCS (Hardware Only)

Product ID (PID)	Service Level GSP	On Site?	Description
UCS-FI-6248UP-UPG (48-port FI)			
CON-PSW2-FI6248UP	PSW2	No	UCS W PL PSS 8X5X4 UCS 6248UP 1RU FI
CON-PSW3-FI6248UP	PSW3	No	UCS W PL PSS 24X7X4 UCS 6248UP 1RU FI
CON-PSW4-FI6248UP	PSW4	No	UCS W PL PSS 24X7X2 UCS 6248UP 1RU FI
UCS-FI-6296UP-UPG (96-port FI)			
CON-PSW2-FI6296UP	PSW2	No	UCS W PL PSS 8X5X4 UCS 6296UP 2RU FI
CON-PSW3-FI6296UP	PSW3	No	UCS W PL PSS 24X7X4 UCS 6296UP 2RU FI
CON-PSW4-FI6296UP	PSW4	No	UCS W PL PSS 24X7X2 UCS 6296UP 2RU FI

Unified Computing Combined Support Service

Combined Services makes it easier to purchase and manage required services under one contract. SMARTnet 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 14*.

Table 14 UCS Computing Combined Support Service

Product ID (PID)	Service Level GSP	On Site?	Description
UCS-FI-6248UP-UPG (48-port FI)			
CON-NCF2-FI6248UP	NCF2	No	CMB SPT SVC 24X7X2 UCS 6248UP 1RU FI
CON-NCF2P-FI6248UP	NCF2P	Yes	CMB SPT SVC 24X7X2OS UCS 6248UP 1RU FI

Table 14 UCS Computing Combined Support Service *(continued)*

Product ID (PID)	Service Level GSP	On Site?	Description
CON-NCF4P-FI6248UP	NCF4P	Yes	CMB SPT SVC 24X7X4OS UCS 6248UP 1RU FI
CON-NCF4S-FI6248UP	NCF4S	Yes	CMB SPT SVC 8X5X4OS UCS 6248UP 1RU FI
CON-NCFCS-FI6248UP	NCFCS	Yes	CMB SPT SVC 8X5XNBDOS UCS 6248UP 1RU FI
CON-NCFE-FI6248UP	NCFE	No	CMB SPT SVC 8X5X4 UCS 6248UP 1RU FI
CON-NCFP-FI6248UP	NCFP	No	CMB SPT SVC 24X7X4 UCS 6248UP 1RU FI
CON-NCFT-FI6248UP	NCFT	No	CMB SPT SVC 8X5XNBD UCS 6248UP 1RU FI
UCS-FI-6296UP-UPG (96-port FI)			
CON-NCF2-FI6296UP	NCF2	No	CMB SPT SVC 24X7X2 UCS 6296UP 2RU FI
CON-NCF2P-FI6296UP	NCF2P	Yes	CMB SPT SVC 24X7X2OS UCS 6296UP 2RU FI
CON-NCF4P-FI6296UP	NCF4P	Yes	CMB SPT SVC 24X7X4OS UCS 6296UP 2RU FI
CON-NCF4S-FI6296UP	NCF4S	Yes	CMB SPT SVC 8X5X4OS UCS 6296UP 2RU FI
CON-NCFCS-FI6296UP	NCFCS	Yes	CMB SPT SVC 8X5XNBDOS UCS 6296UP 2RU FI
CON-NCFE-FI6296UP	NCFE	No	CMB SPT SVC 8X5X4 UCS 6296UP 2RU FI
CON-NCFP-FI6296UP	NCFP	No	CMB SPT SVC 24X7X4 UCS 6296UP 2RU FI
CON-NCFT-FI6296UP	NCFT	No	CMB SPT SVC 8X5XNBD UCS 6296UP 2RU FI

For more service and support information, see the following URL:

http://www.cisco.com/en/US/services/ps2961/ps10312/Unified_Computing_Services_Overview.pdf

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

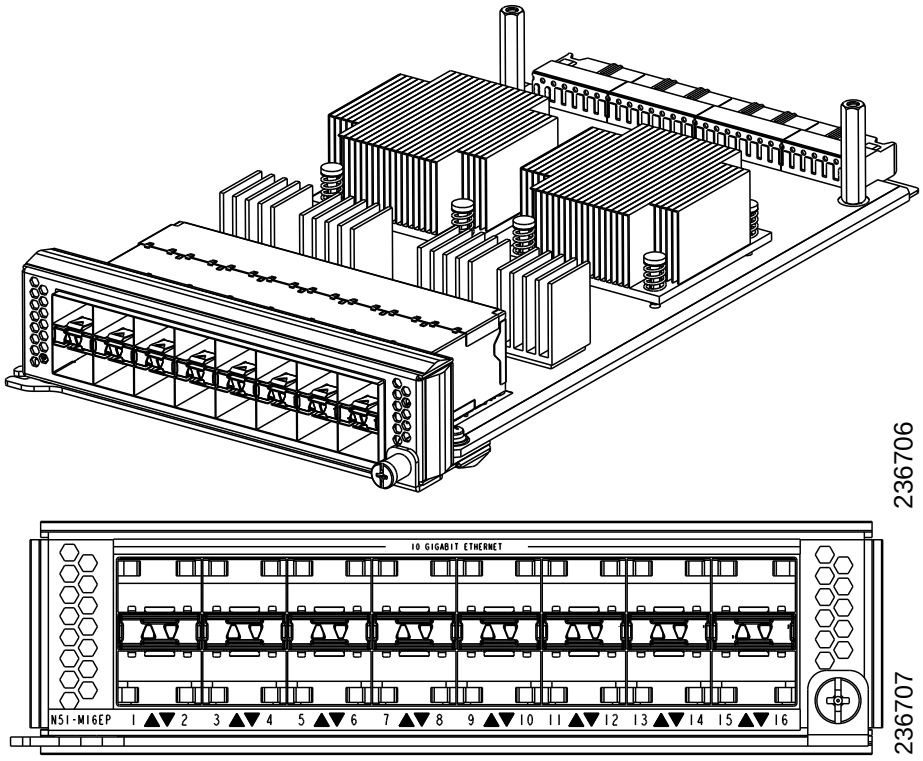
http://www.cisco.com/en/US/products/ps10312/serv_group_home.html

SUPPLEMENTAL MATERIAL

Expansion Module

Both the Cisco UCS 6248UP and Cisco UCS 6296UP Fabric Interconnects use a common 10 Gigabit 16-port expansion module (GEM), shown in *Figure 10*.

Figure 10 10-Gigabit 16-Port Expansion Module (PID = UCS-FI-E16UP)

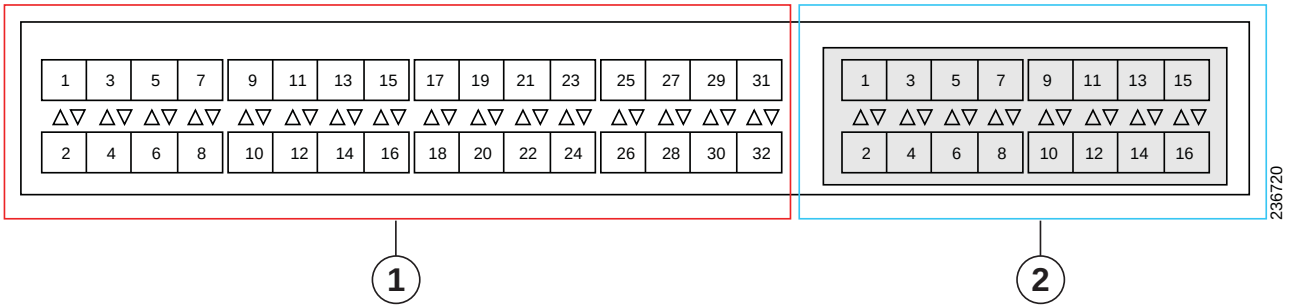


Cisco UCS 6248 Port Numbering

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

There are 32 to 48 ports on the Cisco UCS 6248 UP, depending on whether an expansion module is installed. Each individual port is numbered, and groups of ports are numbered based on their function. The ports are numbered from top to bottom and left to right. See *Figure 11*.

Figure 11 Port Numbering of the Cisco UCS 6248 (with an Expansion Module)



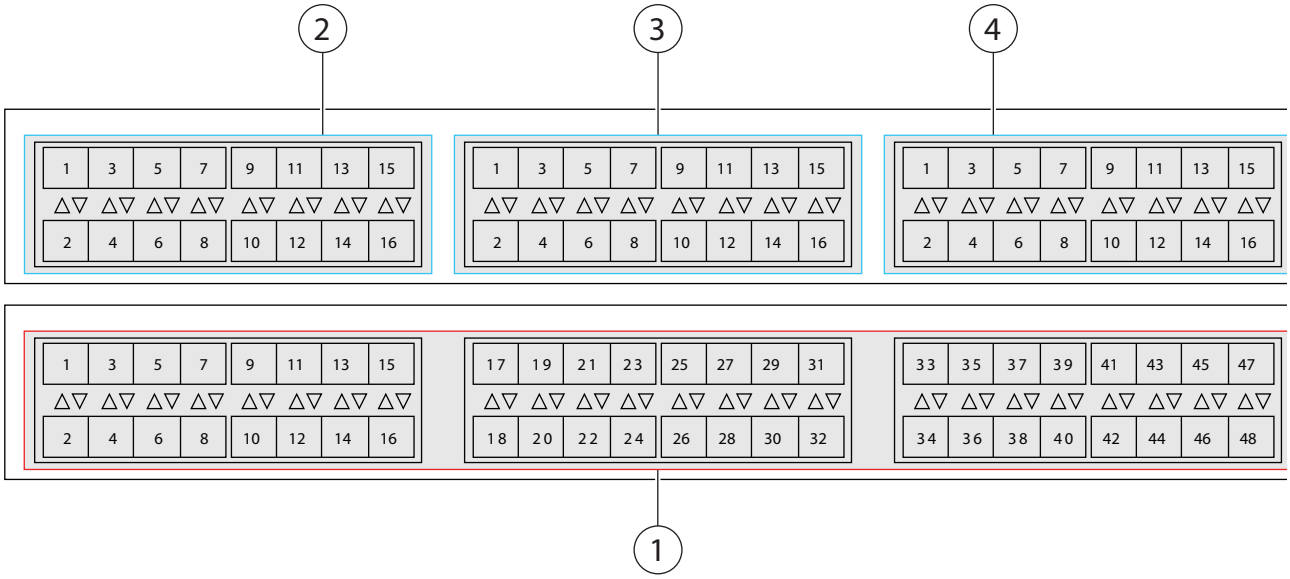
1	Slot 1: 32 fixed ports	**2**	Slot 2: Expansion module (UCS E16UP) with 16 ports

Cisco UCS 6296 Port Numbering

Each port on the Cisco UCS 6296 UP is numbered, and groups of ports are numbered based on their function. The ports are numbered top to bottom and left to right. The 48 fixed ports support 8-, 4-, 2-, or 1-Gbps Fibre Channel transceivers and 1- or 10-Gigabit Ethernet transceivers.

Figure 12 shows how ports are numbered and grouped by function for both the fixed ports and the Fibre Channel plus Ethernet expansion module ports.

Figure 12 Port Numbering of the Cisco UCS 6296 (with three Expansion Modules)



S

1	48 fixed ports	**2**	Expansion module (UCS E16UP) with 16 ports
3	Expansion module (UCS E16UP) with 16 ports	**4**	Expansion module (UCS E16UP) with 16 ports

Accessory Kit

The Cisco UCS 6248 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 12 describes the LEDs for the Cisco UCS 6200 series fabric interconnect.

Table 15 Cisco UCS 6248 and 6296 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
Power Supply LEDs					
Fault (top LED) Power (bottom LED)	Front	Power supply fault Power	Amber Green	Off Off	No AC power to all power supplies
		Power supply fault Power	Amber Green	On solid Off	Power supply failure, including over voltage, over current, over temperature, and fan failure.
		Power supply fault Power	Amber Green	Off Blinking	AC present, 3.3 voltage standby (VSB) on, and the power supply unit is off.
		Power supply fault Power	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

Transceivers and Cabling

The 6200 fabric interconnect series supports SFP+ Ethernet transceivers, SFP transceivers, and SFP Fibre Channel transceivers.

SFP+ Transceivers

The high bandwidth of 10-Gigabit Ethernet poses challenges to transmissions that are met by the transceiver and cabling options supported by the Cisco UCS 6200 platform.

The enhanced SFP+ 10-Gigabit Ethernet transceiver module is a bidirectional device with a transmitter and receiver in the same physical package. It has a 20-pin connector on the electrical interface and duplex LC connector on the optical interface. *Table 6 on page 17* lists the supported SFP+ transceiver options.

SFP Transceivers

The SFP 1-Gigabit Ethernet transceiver module is a bidirectional device with a transmitter and receiver in the same physical package. *Table 6 on page 17* lists the supported SFP transceiver options.

SFP+ Copper Cables

Copper cables are available for use with the 10-Gigabit Ethernet SFP+ module. *Table 6 on page 17* lists the supported cable options.

On the Cisco UCS 6200 platforms, you can use an innovative Twinax copper cable that connects to standard SFP+ connectors for in-rack use. For longer runs, you can use an optical cable.

For in-rack or adjacent-rack cabling, the Cisco UCS 6200 platform supports SFP+ direct-attach 10-Gigabit Ethernet copper, which integrates transceivers with Twinax cables into an energy efficient, low-cost, and low-latency solution. SFP+ direct-attach 10-Gigabit Twinax copper cables use only 0.1 watts of power per transceiver and introduce only approximately 0.25 microsecond of latency per link.

For longer cable runs, the Cisco UCS 6200 platform supports multimode, short-reach optical SFP+ transceivers. These optical transceivers use approximately 1 W per transceiver and have a latency of less than 0.1 microsecond.

SFP Fibre Channel Transceivers

The Cisco UCS 6200 series fabric interconnects support multimode 850nm 4 Gbps and 8 Gbps SFPs with 150m reach (see *Table 6 on page 17*).

Management Daughter Card

The Cisco UCS 6248UP 48-Port Fabric Interconnect Management Daughter Card is located at the left side of the chassis, as shown in *Figure 13*.

Figure 13 6248 FI Management Daughter Card



The Management Daughter Card and left fan assembly are a single unit and are removed and replaced as one single assembly.

If you need to return a Cisco UCS 6248 and receive a replacement bare chassis, it might not have the management daughter card (UCS-FI-DL2), fans, power supplies, or expansion modules.

Refer to the *Cisco UCS 6200 Series Fabric Interconnect Hardware Installation Guide* for instructions on how to remove and replace the Management Daughter Card.

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

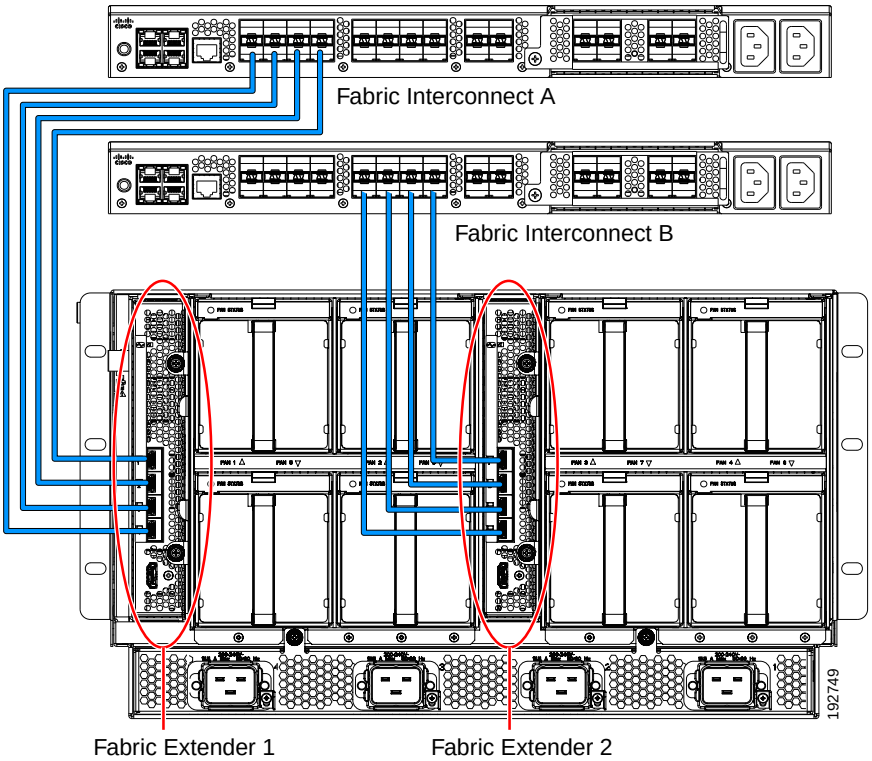
For the 5100 blade chassis series, the Fabric Extender modules (up to two) plug into the back of the UCS 5108 series blade server chassis. A midplane connects the blade servers to the Fabric Extenders. The 5108 chassis accommodates the following FEXs:

- Cisco UCS 2208XP
- Cisco UCS 2204XP

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

Figure 14 shows how the FEX modules in the blade chassis connect to the FIs.

Figure 14 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:

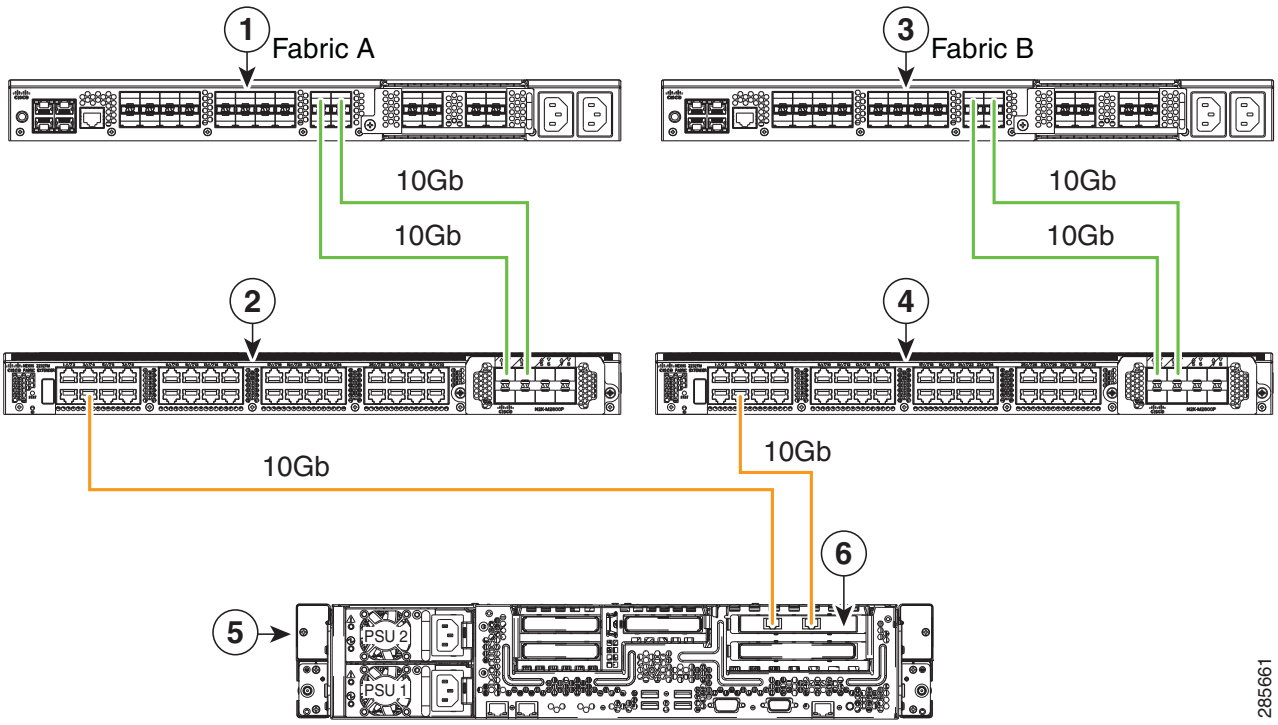
- Single-Wire Management
- Dual-Wire Management

Single-Wire Management

Cisco UCS Manager 2.1 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 Manager2.1 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 15 shows how the C-Series rack mount chassis connect to the FEXs and FIs for single-wire management.

Figure 15 Connecting C-Series Rack Chassis (single-wire management)



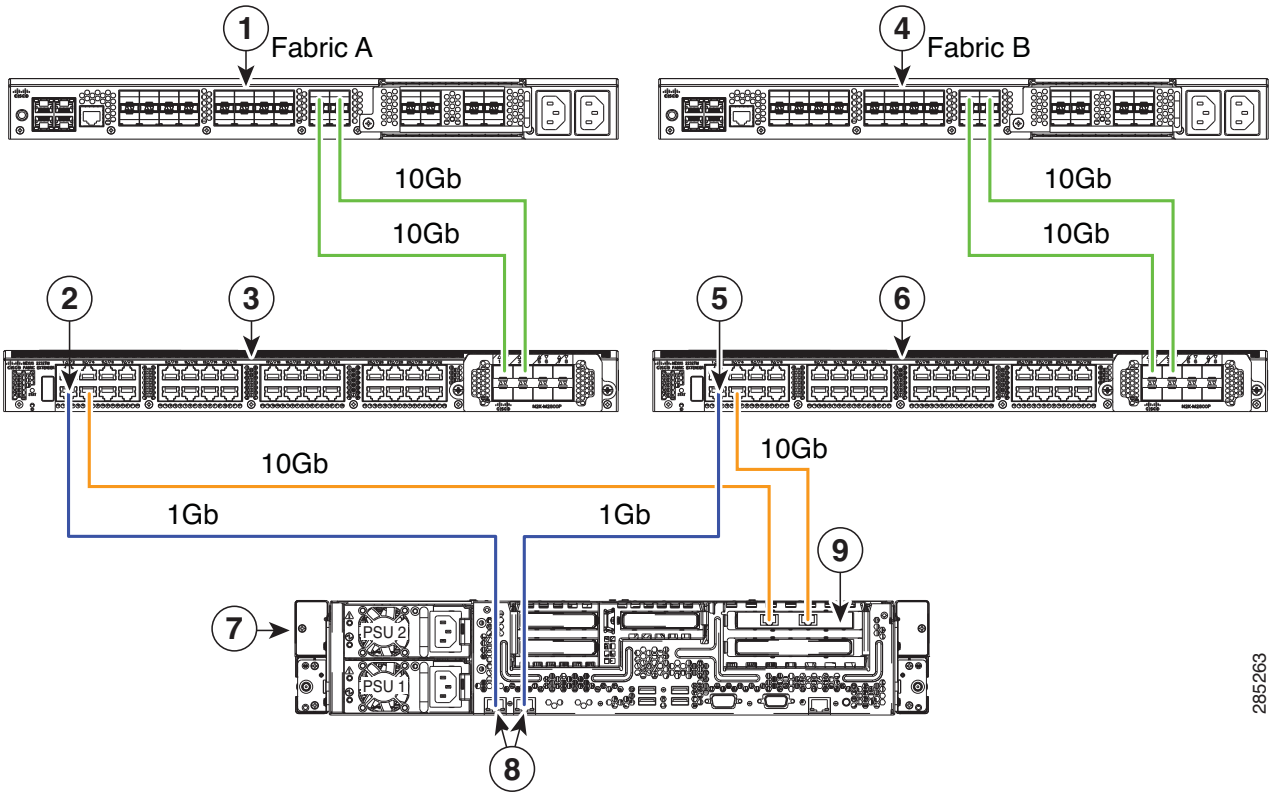
1	Cisco UCS 6200 FI (Fabric A)	**4**	Cisco FEX (Fabric B)
2	Cisco FEX (Fabric A)	**5**	Cisco UCS C-series server
3	Cisco UCS 6200 FI (Fabric B)	**6**	Cisco UCS VIC1225 in PCIe slot 1

Dual-Wire Management

Cisco UCS Manager version 2.1 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 16 shows how the C-Series rack mount chassis connect to the FEXs and FIs for dual-wire management.

Figure 16 Connecting C-Series Rack Chassis (dual-wire management)



1	Cisco UCS 6200 FI (Fabric A)	**6**	Cisco FEX (Fabric B)
2	GLC-TE transceiver in FEX port (Fabric A)	**7**	Cisco UCS C-series server
3	Cisco FEX (Fabric A)	**8**	1-Gb Ethernet LOM ports
4	Cisco UCS 6200 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 17*. The figure shows how each FEX fabric link services a particular slot. It is an example of four FEX fabric link connections.

Figure 17 Discrete Mode FEX Fabric Link

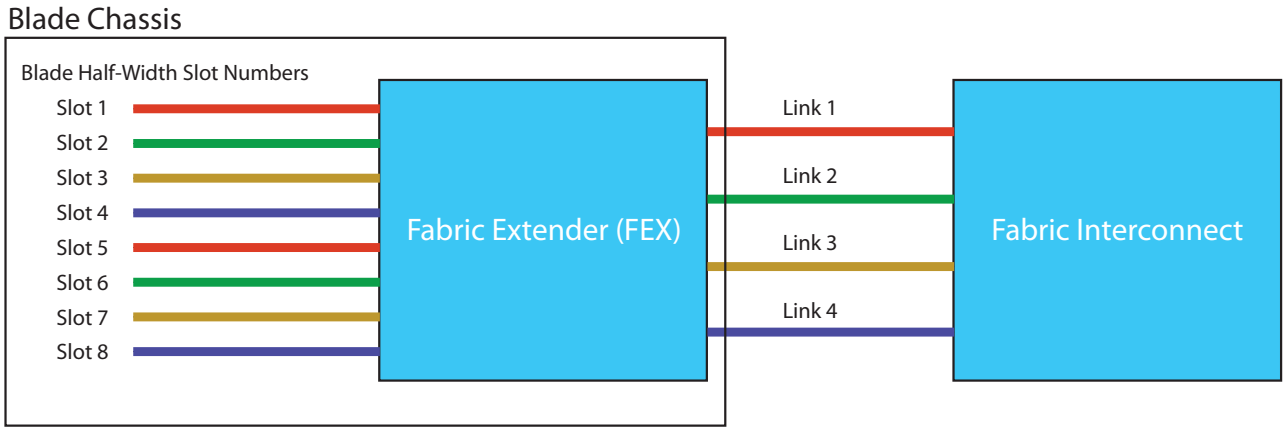


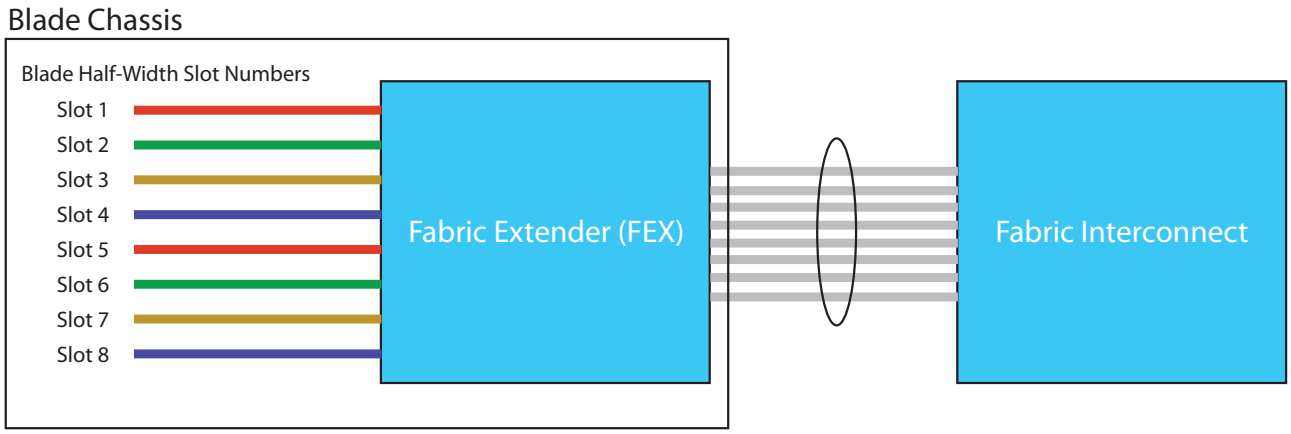
Table 16 shows the mapping from the blade chassis server half slots to the FEX fabric links.

Table 16 Blade Chassis Slot to Link Mapping

FEX Type	Number of FEX Fabric Links	Half-Width Server Slot to Link
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 18*) to provide higher bandwidth to the servers. Depending the FEX, up to 8 links can be port-channeled.

Figure 18 FEX Fabric Links in Port Channel Mode



TECHNICAL SPECIFICATIONS

Physical and Environmental Specifications

Table 17

Description	Specification
Cisco UCS 6248 UP	
Dimensions (H x W x D)	1.72 in. x 17.3 in. x 29.5 in. (4.4 x 43.9 x 74.9 cm)
Weight (with two power supplies and one expansion module installed)	35 lb (15.875 kg)
Cisco UCS 6296 UP	
Dimensions (H x W x D)	3.47 in. (8.8 cm) x 17.3 in. (43.9 cm) x 30.0 in. (76.2 cm)
Weight (with two power supplies and two expansion modules installed)	50 lb (22.680 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 10000 ft (0 to 3000 m)

Power Specifications

The power supplies connect to the system through panel mount connectors and connectors attach to the baseboard through cables. There are three connectors on the baseboard, two for power delivery, and one for power supply control signals.

Table 18 Specifications for the Cisco UCS 6248UP DC Power Supply (UCS-PSU-6248UP-DC=)

DC Power Supply Properties	Description
Maximum output power	750 W
Input Voltage	-40 to -72 VDC
DC input current at max voltage	25 A maximum @ -40 VDC input
Efficiency	88 to 92% (50 to 100% load)
Maximum input KVA rating	820

Table 18 Specifications for the Cisco UCS 6248UP DC Power Supply (UCS-PSU-6248UP-DC=) *(continued)*

DC Power Supply Properties	Description
DC input terminal block	If a replacement DC connector is needed, a Phoenix Contact part number PC 5/ 2-STF-7,62, order number 1975697 or direct equivalent. Connector information is available at: **http:/?/?eshop.phoenixcontact.de/?phoenix/?treeViewClick.do?UID=1975697**
Output holdup time	4 ms
RoHS compliance	Yes
Hot swappable	Yes
Heat dissipation	2497 BTU/hr (732 W)

Table 19 Specifications for the Cisco UCS 6248UP AC Power Supply (UCS-PSU-6248UP-AC=)

DC Power Supply Properties	Description
Maximum output power	750 W
Input Voltage	90 to 264 VAC
Frequency	50 to 60 Hz
Efficiency	88 to 92% (50 to 100% load)
RoHS compliance	Yes
Hot swappable	Yes
Heat dissipation	2497 BTU/hr (732 W)

Table 20 Specifications for the Cisco UCS 6296 750W Power Supply (N10-PAC2-750W=)

DC Power Supply Properties	Description
Input Voltage	90 to 264 VAC
Frequency	50 to 60 Hz (nominal 47 to 63 Hz)
Input current	9.2 Amps @ 90 VAC
Maximum Input VA	828 VA @ 90 VAC
Maximum output power per power supply	750 W @ 12 VDC (up to two power supplies)
Maximum inrush current	35 A <sub cycle duration

Table 20 Specifications for the Cisco UCS 6296 750W Power Supply (N10-PAC2-750W=) *(continued)*

DC Power Supply Properties	Description
Maximum Heat Output	2561 BTU/hr
Maximum hold up time	12 ms
Power supply output voltage	12 VDC
Efficiency	89% (Climate Savers Gold qualified)

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 links:

http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/installation/note/78_15160.html

http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/6200-install-guide/6200_HIG_appendix_0100.html#ID164

http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/6200-install-guide/6200_HIG_appendix_0100.html#ID195

http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/6200-install-guide/6200_HIG_appendix_0100.html#ID220

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