



Cisco UCS 6324 Fabric Interconnect

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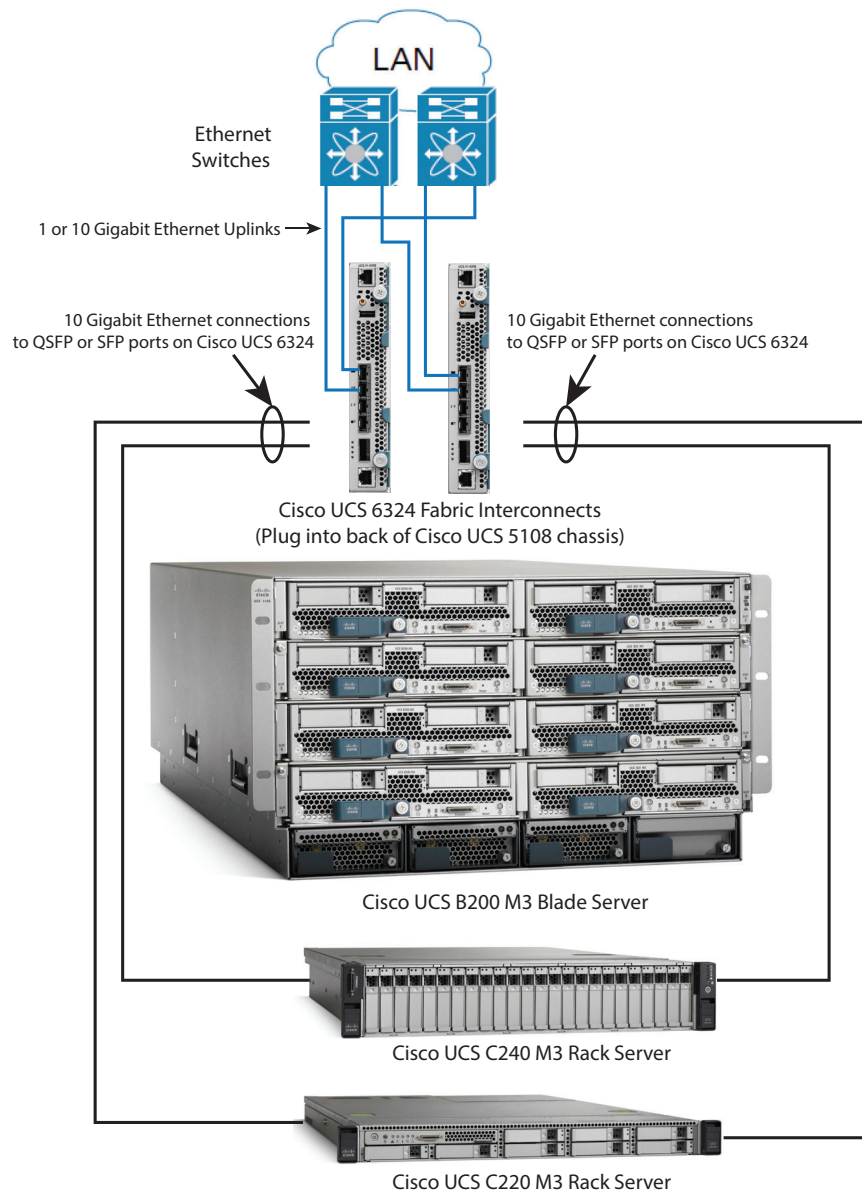
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SYSTEM OVERVIEW

The Cisco Unified Computing System™ (Cisco UCS™) is a next-generation data center platform that unites compute, network, storage access, and virtualization resources into a cohesive system designed to reduce total cost of ownership (TCO) and increase business agility. The system integrates a low-latency, lossless 10 Gigabit Ethernet unified network fabric with enterprise-class, x86-architecture servers. The system is an integrated, scalable, multichassis platform in which all resources participate in a unified management domain. **Figure 1** is a system diagram showing connectivity when the UCS 5018 chassis uses in-chassis 6324 Fabric Interconnect modules.

Figure 1 System Diagram (UCS 5018 Blade Server with in-chassis UCS 6324 Fabric Interconnects)



The Cisco UCS 6324 Fabric Interconnect extends the Cisco UCS architecture into environments with requirements for smaller domains. Providing the same unified server and networking capabilities as in the full-scale Cisco UCS solution, the Cisco UCS 6324 Fabric Interconnect embeds the connectivity within the Cisco UCS 5108 Blade Server Chassis to provide a smaller domain of up to 15 servers with a single chassis (8 blade servers and up to 7 direct-connect rack servers) or 20 servers with two chassis (16 blade servers and up to 4 direct-connect rack servers)

NOTE: Support for UCS Mini Secondary Chassis requires 3.1.1e Infra code or higher.

The UCS 6324 Fabric Interconnect modules (up to two) plug into the back of the Cisco 5108 Blade Server Chassis. A midplane connects the blade servers to the Fabric Interconnects.

Figure 2 shows the Fabric Interconnect.

Figure 2 Cisco UCS 6324 Fabric Interconnect

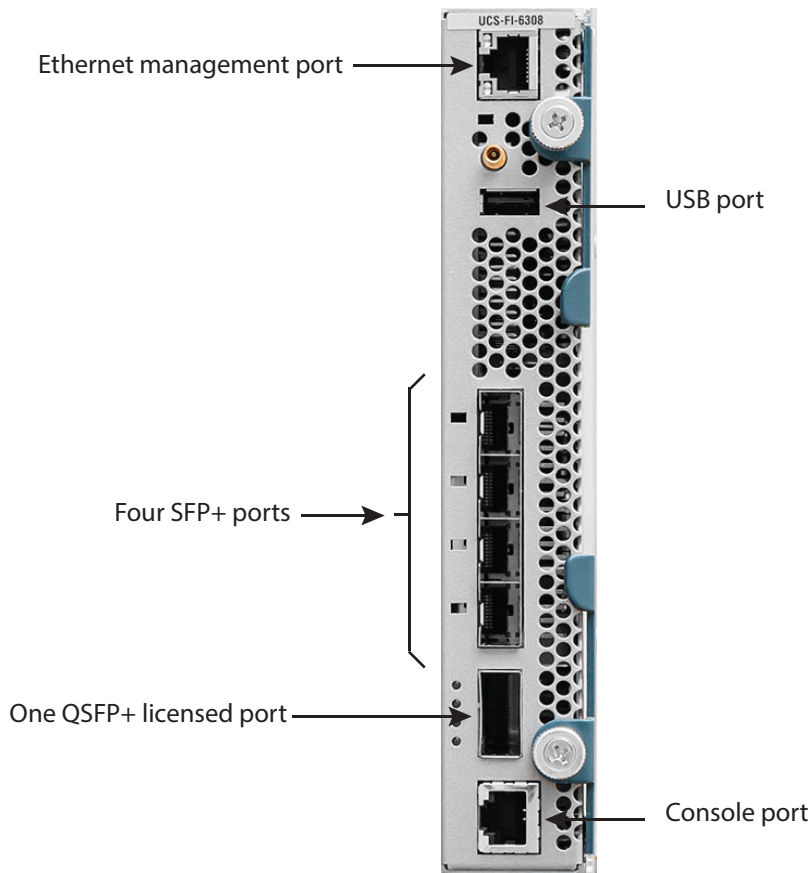
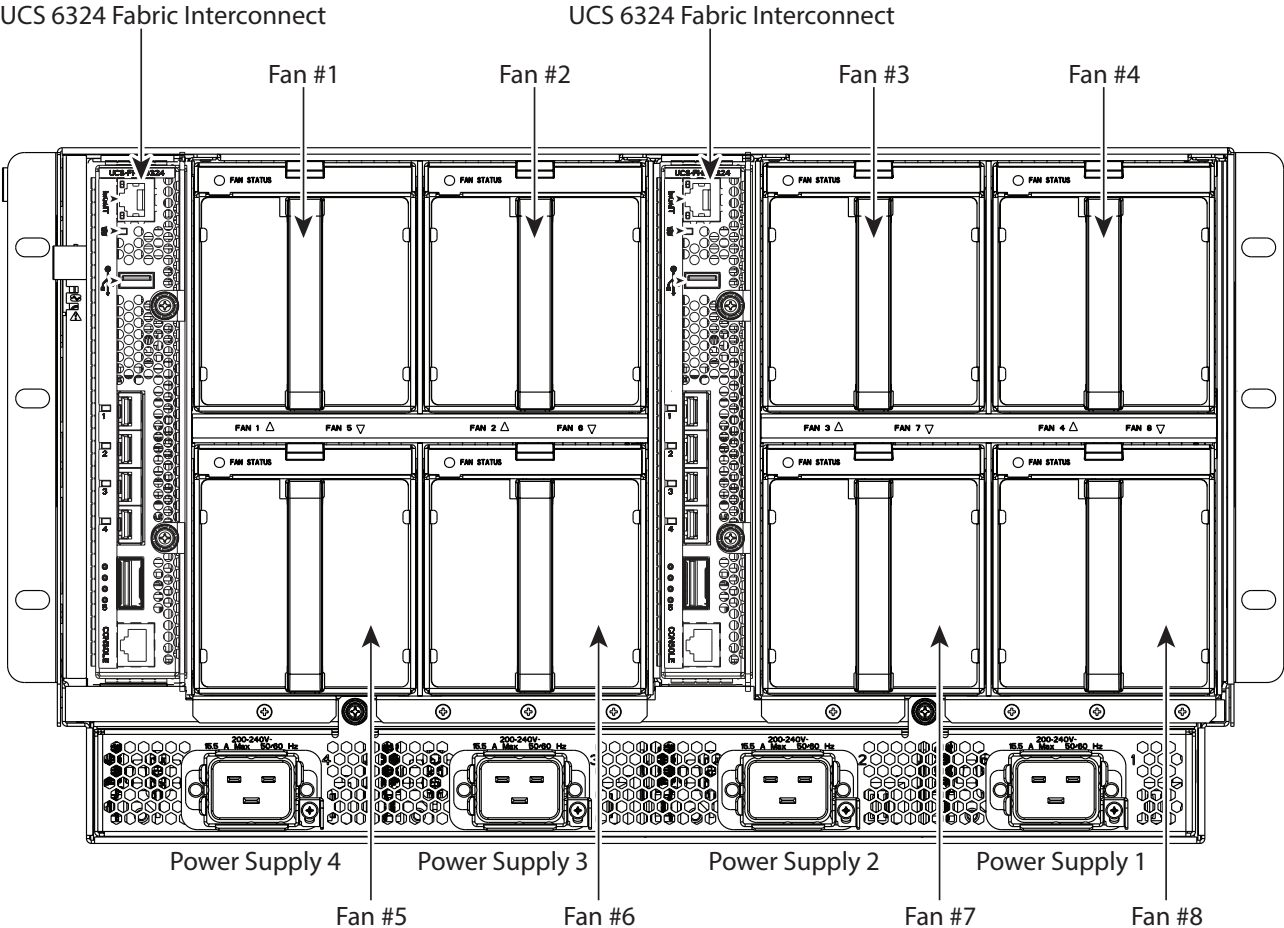


Figure 3 shows the rear view of the UCS 5108 Blade Server chassis (AC power version) with two UCS 6324 Fabric Interconnects installed.

Figure 3 Chassis Rear View (AC power supplies)



STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the UCS 6324 Fabric Interconnect.

Table 1 Capabilities and Features

Capability/Feature	Description
Management by Cisco UCS Manager	<ul style="list-style-type: none"> ■ Reduces TCO by consolidating management modules into the chassis, making the chassis stateless ■ Provides a single, highly available management domain for all system chassis, reducing administrative tasks through automated service profile configuration
Unified fabric	<ul style="list-style-type: none"> ■ Decreases TCO by reducing the number of network interface cards (NICs), host bus adapters (HBAs), switches, and cables needed ■ Transparently encapsulates Fibre Channel packets into Ethernet
Performance	<ul style="list-style-type: none"> ■ Provides high-speed, low-latency connectivity to the chassis
Lossless fabric	<ul style="list-style-type: none"> ■ Provides a reliable, robust foundation for unifying LAN and SAN traffic on a single transport
Priority flow control (PFC)	<ul style="list-style-type: none"> ■ 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
Cisco Data Center VM-FEX technology	<ul style="list-style-type: none"> ■ Helps enable a consistent operational model for both virtual and physical environments ■ Provides the same level of network visibility for virtualized and non-virtualized 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
SFP+ ports	<ul style="list-style-type: none"> ■ 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 solutions ■ Helps enable cost-effective connections on fabric extenders with Cisco Fabric Extender Transceiver (FET) optics
SFP-compatible ports	<ul style="list-style-type: none"> ■ Allows all fixed SFP+ ports to be configured to operate in 1 Gigabit Ethernet mode with the transceiver options specified for use with the SFP-compatible ports listed in Table 3 on page 10.


Table 1 Capabilities and Features (*continued*)

Capability/Feature	Description
Number of 1 and 10 Gigabit Ethernet, FCoE, or Fibre Channel Enhanced Small Form-Factor Pluggable (SFP+) external ports	4
Number of 40 Gigabit Ethernet or FCoE Enhanced Quad SFP (QSFP+) ports	1
Server ports	16 x 10GBASE-KR lanes
Throughput	500 Gbps
Latency	Less than 600 nanoseconds
Quality-of-service (QoS) hardware queues	16 (8 each for unicast and multicast)

SUPPORTED CONFIGURATIONS

Table 2 lists the supported features and configurations of the UCS 6324 Fabric Interconnect.

Table 2 Supported Configurations

Configurations	Description
Port Usage	<p>The UCS Mini has four SFP+ ports and one QSFP+ port.</p> <p>The four SFP+ ports can be configured as:</p> <ul style="list-style-type: none"> ■ Uplink ports ■ 1 Gbit ports ■ 10 Gbit ports ■ FCoE ports ■ 2/4/8 Gbit Fibre Channel ports <p>The QSFP+ port can only be used to connect rack servers or storage.</p> <hr/> <div style="display: flex; align-items: center;">  <p>NOTE: one SFP+ port must be used as a uplink</p> </div> <hr/>
Licensing	<p>The QSFP+ port must be licensed with a port expansion in order to be put into service.</p>
Cisco UCS 6324 Fabric Interconnect	<p>One or two Cisco UCS 6324 FIs can be installed in the UCS 5108 Blade Server Chassis.</p>

CONFIGURATION OPTIONS

Follow these steps to select Cisco UCS 6324 configuration options:

- [STEP 1 SELECT FABRIC INTERCONNECTS, page 10](#)
- [STEP 2 CHOOSE ADDITIONAL COMPONENTS \(OPTIONAL\), page 11](#)
- [STEP 3 CHOOSE SERVICE and SUPPORT LEVEL, page 15](#)
- [SUPPLEMENTAL MATERIAL on page 18](#)

STEP 1 SELECT FABRIC INTERCONNECTS

The UCS 6324 Fabric Interconnect characteristics are listed in [Table 3](#). Each Fabric Interconnect integrates the functions of a Fabric I/O Extender and Fabric Interconnect and connects directly to external Nexus switches by means of several ports of 10GbE and Fibre Channel over Ethernet (FCoE).

Table 3 Fabric Interconnects

Product ID (PID)	Fabric Interconnect	Number of Internal 10GbE/FCoE Ports	Number of 1Gb/10Gb FCoE Uplink Ports	Number of 40GbE/FCoE Scalability Ports ¹	Number of FC Ports (8 Gbps/4 Gbps)	Total Chassis I/O per Fabric Interconnect
UCS-FI-M-6324	UCS 6324 in-chassis FI with 4 x SFP+ ports, 1 x 40G QSFP+ expansion port, and 16 10G-KR links to servers	16	4	1	up to 4	500 Gbs ²

Notes . . .

1. The scalability port supports a QSFP+ breakout cable. A QSFP license (PID UCS-6324-40G) is required for each 6324 Fabric Interconnect scalability port that is to be put into service (see [Table 9 on page 13](#)).
2. 40 Gbps QSFP+ port plus 4 uplink SFP+ ports * 10Gbps plus 16 server internal ports * 10 Gbps plus 1 crosslink port * 10Gbps = 250 Gbps. Full duplex = 500 Gbps.

Approved Configurations

- (1) Choose one or two identical UCS 6324 Fabric Interconnects

Caveats

- You must select either one or two identical Fabric Interconnects. A QSFP license must be purchased for each scalability port that is to be placed into service.

STEP 2 CHOOSE ADDITIONAL COMPONENTS (OPTIONAL)

A variety of optical and copper Small Form-Factor Pluggable (SFP) transceivers and copper twinax cables are available for use with the Fabric Interconnects.

Choose SFP+ Optical Transceivers

You can choose up to four SFP+ optical transceivers for each 6324 from [Table 4](#).

Table 4 SFP+ Transceivers

Product ID (PID)	PID Description
SFP-10G-LR	10GBASE-LR SFP Module
SFP-10G-LR-X	10GBASE-LR SFP Module for extended temp range
SFP-10G-LR-S	10GBASE-LR SFP Module, Enterprise-Class
SFP-10G-SR	10 Gigabit Ethernet - short range SFP+ module (MMF)
SFP-10G-SR-X	10 Gigabit Ethernet - short range SFP+ module (MMF), extended temperature
SFP-10G-SR-S	10GBASE-SR SFP Module, Enterprise-Class

Choose QSFP+ 40-Gbps Transceivers

Table 5 QSFP+ Transceivers

Product ID (PID)	PID Description
QSFP-40G-SR4	40GBASE-SR4 QSFP Transceiver Module with MPO Connector

Choose SFP Optical or Copper Transceivers

You may choose up to four SFP optical or copper transceivers for each 6324 from [Table 6](#).

Table 6 SFP Optical Transceivers

Product ID (PID)	PID Description
GLC-SX-MM	1 GbE short range (550 m max) SFP Module
GLC-LH-SM	1 GbE long range (10 km max) SFP Module
GLC-TE	1000BASE-T SFP transceiver module for Category 5 copper wire

Choose Twinax Copper Cables

You can choose twinax copper cables of various lengths (from 1 to 10 meters) as shown in [Table 7](#). The two longer cables (7 and 10 meters) are active, which means that they contain active components within the SFP+ connector housing to improve signal quality. The ends of these cables are connectorized to plug directly into SFP receptacles.

Table 7 Twinax Copper Cables

Product ID (PID)	PID Description
SFP-H10GB-CU1M	10GBase-CU SFP+, 1 meter (twinax cable)
SFP-H10GB-CU2M	10GBase-CU SFP+, 2 Meter (twinax cable)
SFP-H10GB-CU3M	10GBase-CU SFP+, 3 meter (twinax cable)
SFP-H10GB-CU5M	10GBase-CU SFP+, 5 meter (twinax cable)
SFP-H10GB-ACU7M	10GBase-CU SFP+, 7 meter (twinax cable)
SFP-H10GB-ACU10M	10GBase-CU SFP+, 10 meter (twinax 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
SFP-10G-AOC7M	10GBASE Active Optical SFP+ Cable, 7M
SFP-10G-AOC10M	10GBASE Active Optical SFP+ Cable, 10M

Choose QSFP+ Copper/Optical Transceivers

The 40-Gigabit QSFP+ transceiver module is a hot-swappable, parallel fiber-optical module with four independent optical transmit and receive channels. These channels can terminate in another 40-Gigabit QSFP+ transceiver, or the channels can be broken out to four separate 10-Gigabit SFP+ transceivers. The QSFP+ transceiver module connects the electrical circuitry of the system with either a copper or an optical external network. The transceiver is used primarily in short reach applications in switches, routers, and data center equipment where it provides higher density than SFP+ modules. See the following link for more details:

http://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/installation/note/OL_24862.html#wp44860

You may choose one QSFP+ copper/optical transceiver for each 6324, as shown in [Table 8](#).

Table 8 QSFP+ Copper/Optical Transceivers

Product ID (PID)	PID Description
QSFP-4SFP10G-CU1M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable assembly, 1 meter passive
QSFP-4SFP10G-CU3M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable assembly, 3 meter passive

Table 8 QSFP+ Copper/Optical Transceivers (*continued*)

Product ID (PID)	PID Description
QSFP-4SFP10G-CU5M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable assembly, 5 meter passive
QSFP-4x10G-AC7M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable assembly, 7 meter active
QSFP-4x10G-AC10M	40GBASE-CR4 QSFP+ to four 10GBASE-CU SFP+ direct attach breakout cable assembly, 10 meter active
QSFP-4X10G-AOC1M	40GBASE Active Optical QSFP to 4SFP breakout Cable, 1m
QSFP-4X10G-AOC2M	40GBASE Active Optical QSFP to 4SFP breakout Cable, 2m
QSFP-4X10G-AOC3M	40GBASE Active Optical QSFP to 4SFP breakout Cable, 3m
QSFP-4X10G-AOC5M	40GBASE Active Optical QSFP to 4SFP breakout Cable, 5m
QSFP-4X10G-AOC7M	40GBASE Active Optical QSFP to 4SFP breakout Cable, 7m
QSFP-4X10G-AOC10M	40GBASE Active Optical QSFP to 4SFP breakout Cable, 10m

Choose QSFP+ Port License

In order to use the QSFP+ port on a UCS 6324 Fabric Interconnect, a license must be added. Separate licenses must be purchased for each UCS 6324. See [Table 9](#).

Table 9 QSFP+ Port License

Product ID (PID)	PID Description
UCS-6324-40G	FI License for 40G Scalability Port

Choose Fibre channel SFPs as needed for the 6324 from [Table 10](#).

Table 10 Fibre Channel SFP Transceivers

Product ID (PID)	PID Description
4 Gb Transceivers	
DS-SFP-FC4G-SW	4 Gbps Fibre Channel-SW SFP, LC connector
DS-SFP-FC4G-LW	4 Gbps Fibre Channel-LW SFP, LC, (10km Reach)
8 Gb Transceivers	
DS-SFP-FC8G-SW	8-Gbps Fibre Channel SW SFP+, LC connector
DS-SFP-FC8G-LW	8 Gbps Fibre Channel LW SFP+, LC

Approved Configurations

(1) Choose the number of transceivers or copper twinax cables according to the number of Fabric Interconnect ports that are active that or will be become active in the future.

Caveats

- You should order enough SFPs, QSFPs, and cables to accommodate your maximum foreseeable needs.
- If you selected a QSFP+ transceiver, make sure you choose a QSFP+ port license.
- For the 6324, observe the following:
 - The maximum number of SFP+ transceivers, SFP optical transceivers, copper transceivers, or twinax cables must be less than or equal to four. A minimum of one of these must be installed for the 6324 to have network connectivity.
 - The maximum number of Fibre Channel SFPs must be less than or equal to three. The reason for this is that at least one SFP+ port on the 6324 must be free so the 6324 can connect to a network.

STEP 3 CHOOSE SERVICE and SUPPORT LEVEL

A variety of service options are available for the UCS 6324 Fabric Interconnect module, 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 the UCS 6324, 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 11](#).

Table 11 Cisco SMARTnet for UCS Service

Service SKU	On Site?	Description
CON-PREM-FIM6324U	Yes	ONSITE 24X7X2 UCS 6324 FI
CON-OSP-FIM6324U	Yes	ONSITE 24X7X4 UCS 6324 FI
CON-OSE-FIM6324U	Yes	ONSITE 8X5X4 UCS UCS 6324 FI
CON-OS-FIM6324U	Yes	ONSITE 8X5XNBD UCS 6324 FI
CON-S2P-FIM6324U	No	SMARTNET 24X7X2 UCS 6324 FI
CON-SNTP-FIM6324U	No	SMARTNET 24X7X4 UCS 6324 FI
CON-SNTE-FIM6324U	No	SMARTNET 8X5X4 UCS 6324 FI
CON-SNT-FIM6324U	No	SMARTNET 8X5XNBD UCS 6324 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 12](#).

Table 12 SMARTnet for UCS Hardware Only Service

Service SKU	Service Level GSP	On Site?	Description
CON-UCW7-FIM6324U	UCW7	Yes	UC PLUS 24X7X40S UCS 6324 FI
CON-UCW5-FIM6324U	UCW5	Yes	UC PLUS 8X5XNBDOS UCS 6324 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.

Partner Unified Computing Support Options are available to Cisco PSS partners. 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 13](#).

Table 13 Partner Support Service for UCS

Service SKU	Service Level GSP	On Site?	Description
CON-PSJ1-FIM6324U	PSJ1	No	UCS SUPP PSS 8X5XNBD UCS 6324 FI
CON-PSJ2-FIM6324U	PSJ2	No	UCS SUPP PSS 8X5X4 UCS 6324 FI
CON-PSJ3-FIM6324U	PSJ3	No	UCS SUPP PSS 24X7X4 UCS 6324 FI
CON-PSJ4-FIM6324U	PSJ4	No	UCS SUPP PSS 24X7X2 UCS 6324 FI
CON-PSJ6-FIM6324U	PSJ6	Yes	UCS SUPP PSS 8x5x4 Onsite UCS 6324 FI
CON-PSJ7-FIM6324U	PSJ7	Yes	UCS SUPP PSS 24X7X4 Onsite UCS 6324 FI

Partner Support Service for UCS Hardware Only provides customers with replacement parts in as little as two hours. See [Table 14](#).

Table 14 Partner Support Service for UCS (Hardware Only)

Service SKU	Service Level GSP	On Site?	Description
CON-PSW2-FIM6324U	PSW2	No	UCS W PL PSS 8X5X4 UCS 6324 FI
CON-PSW3-FIM6324U	PSW3	No	UCS W PL PSS 24X7X4 UCS 6324 FI
CON-PSW4-FIM6324U	PSW4	No	UCS W PL PSS 24X7X2 UCS 6324 FI
CON-PSW6-FIM6324U	PSW6	Yes	UCS HW ONLY PSS 8x5x4 Onsite UCS 6324 FI
CON-PSW7-FIM6324U	PSW7	Yes	UCS HW ONLY PSS 24x7x4 Onsite UCS 6324 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

Connectivity Between Blades and UCS 6324 FI

Figure 4 is an example of how the B200 M3 blade chassis implements a VIC 1240 adapter and VIC 1280 adapter to connect to the 6324 fabric interconnects in the UCS Mini chassis.

Figure 4 B200 M3 (with VIC 1240 and VIC 1280) to UCS 6324 Fabric Interconnect and LAN

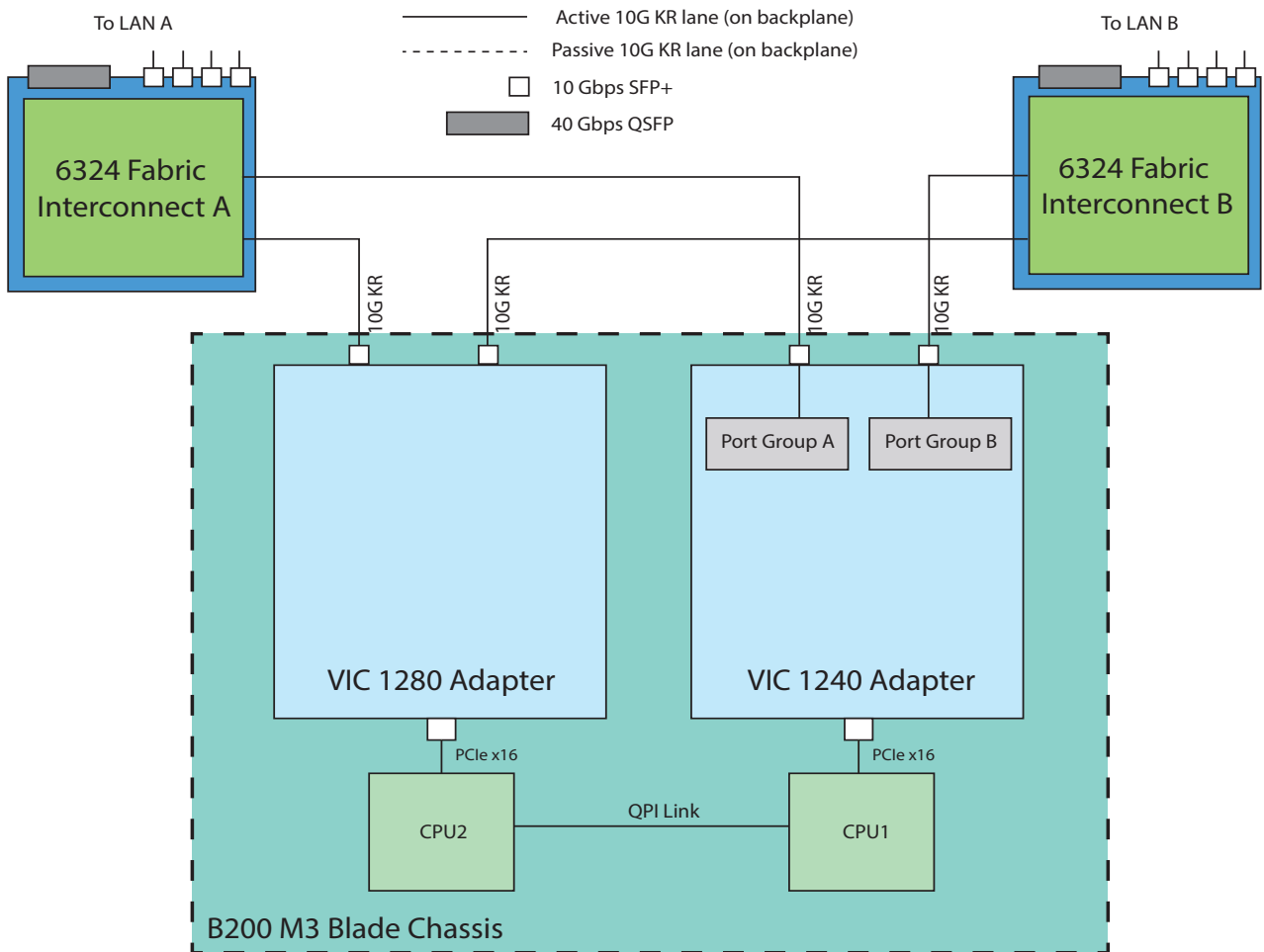
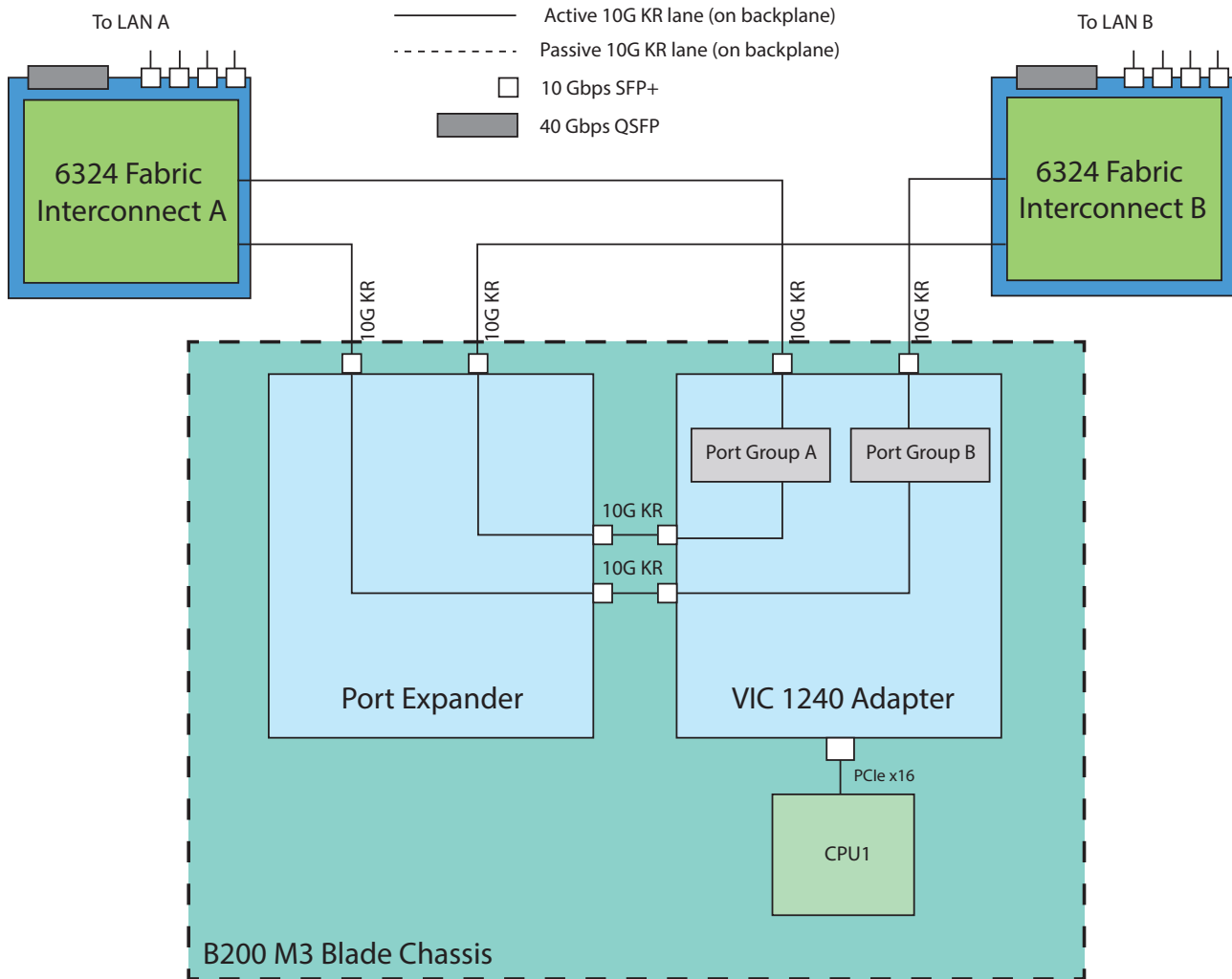


Figure 5 on page 19 is an example of how the B200 M3 blade chassis implements a VIC 1240 adapter and a Port Expander to connect to the 6324 fabric interconnects in the UCS Mini chassis.

Figure 5 B200 M3 (with VIC 1240 and Port Expander) to UCS 6324 Fabric Interconnect and LAN



SFP+ Transceivers

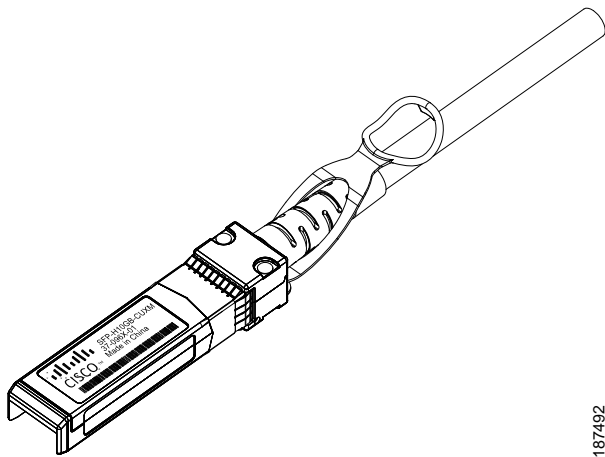
Each Cisco Fabric Extender within the chassis supports Small Form-Factor Pluggable (SFP+) copper or optical transceivers. Each transceiver runs at 10 Gbs.

Copper SFP+ Twinax Transceivers

The Cisco Fabric Extenders support Twinax copper transceivers with twinax cables of various lengths. The assembly consists of two transceivers connected by a twinax copper cable. The enhanced SFP+ 10-Gb Ethernet transceiver is a bidirectional device with a transmitter and receiver in the same physical package. It has a 20-pin connector on the electrical interface.

Figure 6 shows the SFP-H10GB-CU5M transceiver. The rubber loop is used for removing the SFP+ from its port on the I/O module.

Figure 6 SFP+ 10 Gb Twinax Copper Transceiver



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Optical SFP+ Transceivers

If distances greater than 5 meters (16.4 feet) must be spanned, the Fabric Extender supports the substitution of the copper SFP+ by optical SFP+ transceivers. The SFP+ 10-Gb Ethernet optical transceiver is a bidirectional device with a transmitter and receiver in the same physical package, as shown in [Figure 7](#). It has a duplex LC connector on the optical interface. A fiber optic cable must be used to connect the two transceivers together.

Figure 7 SFP+ Optical Transceiver

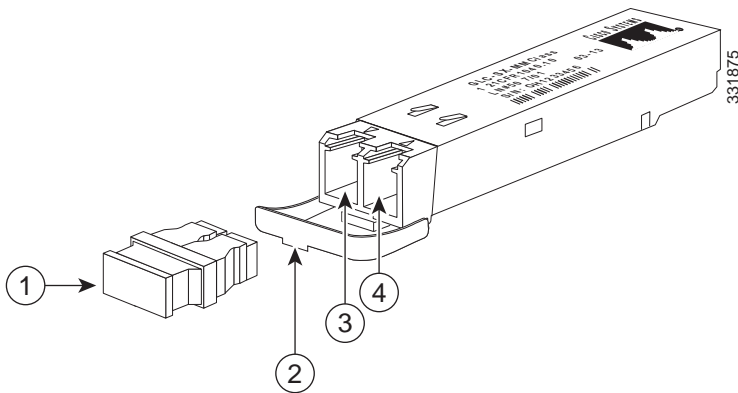


Table 15 SFP+ Callouts

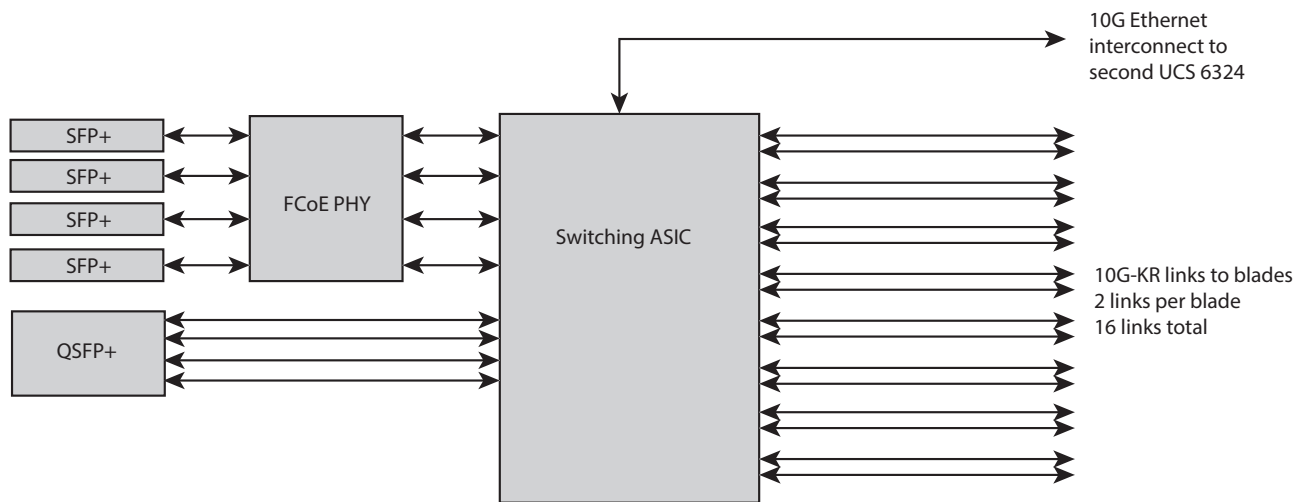
Callout	Description
1	Dust plug
2	Bail clasp with clasp tab
3	Transmit bore
4	Receive bore

Datapath Between Blades and External Ports

The UCS 6324 implements a switching ASIC to transfer data between the 8 half-width blades in the UCS 5108 Blade Server chassis and the front ports by means of two 10G-KR links per blade. Four 10 GbE uplink connections are provided by a FCoE PHY. These uplink ports consist of four separate SFP+ connectors on the front panel. The switching ASIC also has a 4-port 10G interface directly connected to a QSFP+ scalability connector on the front panel. In addition, the ASIC provides a 10G-KR interface between the two UCS 6324 FIs.

Figure 8 shows how up to eight blades in the UCS 5108 Blade Server chassis are connected to the external ports.

Figure 8 Datapath Connectivity Diagram



TECHNICAL SPECIFICATIONS

UCS 6324 Physical and Environmental Specifications

Table 16 UCS 6324 Specifications

Parameter	Value
Height	7.64 in (19.41 cm)
Width	1.36 in (3.45 cm)
Depth	7.2 in (18.29)
Weight	2.5 lb (1.13 kg)
Ambient operating temperature	32 to 95° F (0 to 35° C)
Non-operating temperature	-40 to 158° F (-40 to 70° C)
Humidity	5 to 95% (noncondensing)
Altitude	0 to 10,000 ft (0 to 300m)
Power consumption	80 Watts

Regulatory Standards Compliance: Safety and EMC

The regulatory compliance for the UCS 6324 are listed in [Table 17](#).

Table 17 UCS 6324 Regulatory Compliance Specifications

Parameter	Minimum
Regulatory Compliance	Complies with CE Markings according to directives 2004/108/EC and 2006/95/EC
Safety	<ul style="list-style-type: none"> ■ UL 60950-1 ■ CAN/CSA-C22.2 No. 60950-1 ■ EN 60950-1 & IEC 60950-1 ■ AS/NZS 60950-1 ■ GB4943
Emissions	<ul style="list-style-type: none"> ■ 47CFR Part 15 (CFR 47) Class A ■ AS/NZS CISPR22 Class A ■ CISPR22 Class A ■ EN55022 Class A ■ ICES003 Class A ■ VCCI Class A ■ EN61000-3-2 ■ EN61000-3-3 ■ KN22 Class A ■ CNS13438 Class A
Immunity	<ul style="list-style-type: none"> ■ EN50082-1 ■ EN61000-6-1 ■ EN55024 ■ CISPR24 ■ EN300386 ■ KN 61000-4 series
RoHS	<ul style="list-style-type: none"> ■ The product is RoHS 6-compliant



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