Spec Sheet

# Cisco UCS 5108 Blade Server Chassis

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# CONTENTS

# OVERVIEW

The UCS 5108 chassis is a 6RU chassis the that can accommodate up to 8 half-width blades or 4 full-width blades, or any combination that will fit in the chassis. The chassis has two I/O bays for Fabric Extenders such as the UCS 2208XP.

*Figure 1* shows the front and rear views of a 5108 chassis filled the following blade servers (starting from top):

- Two Cisco UCS B200 M3 half-width blade servers
- One Cisco UCS B250 M2 full-width blade server
- One Cisco UCS B420 M3 full-width blade server
- One Cisco UCS B440 M2 full-width blade server

**Figure 1 Cisco UCS 5108 Blade Server Chassis (front view)**

**Figure 2 Cisco UCS 5108 Blade Server Chassis (rear view)**

# DETAILED VIEWS

## Chassis Front Views

*Figure 3* is a detailed front view of the Cisco UCS 5108 Blade Server Chassis with eight half-width blade servers installed.

**Figure 3 5108 Chassis Front View With Eight Half-Width Blade Servers Installed**

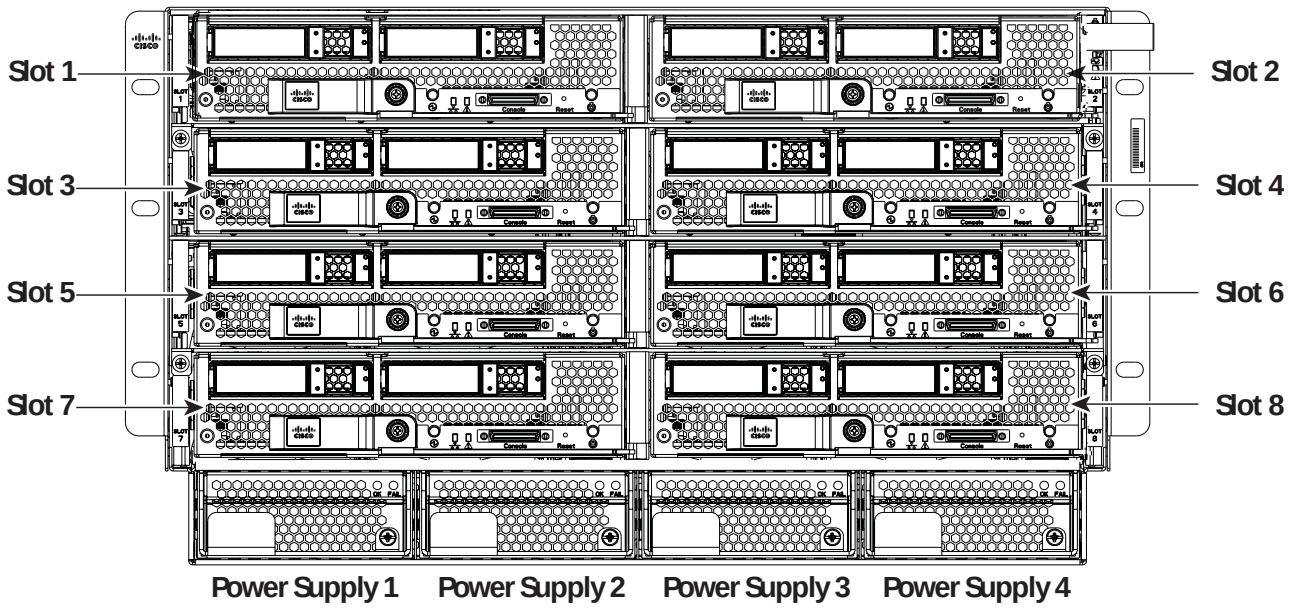



**Table 1 Front View Callouts**

| Callout | Description |
|---|---|
| Slot 1 - 8 | Slot numbering for half-width blade servers |
| Power Supply 1 - 4 | 4 x 2500 W power supplies |

*Figure 4* is a detailed front view of the Cisco UCS 5108 Blade Server Chassis with four full-width blade servers installed.

**Figure 4 5108 Chassis Front View With Four Full-Width Blade Servers Installed**

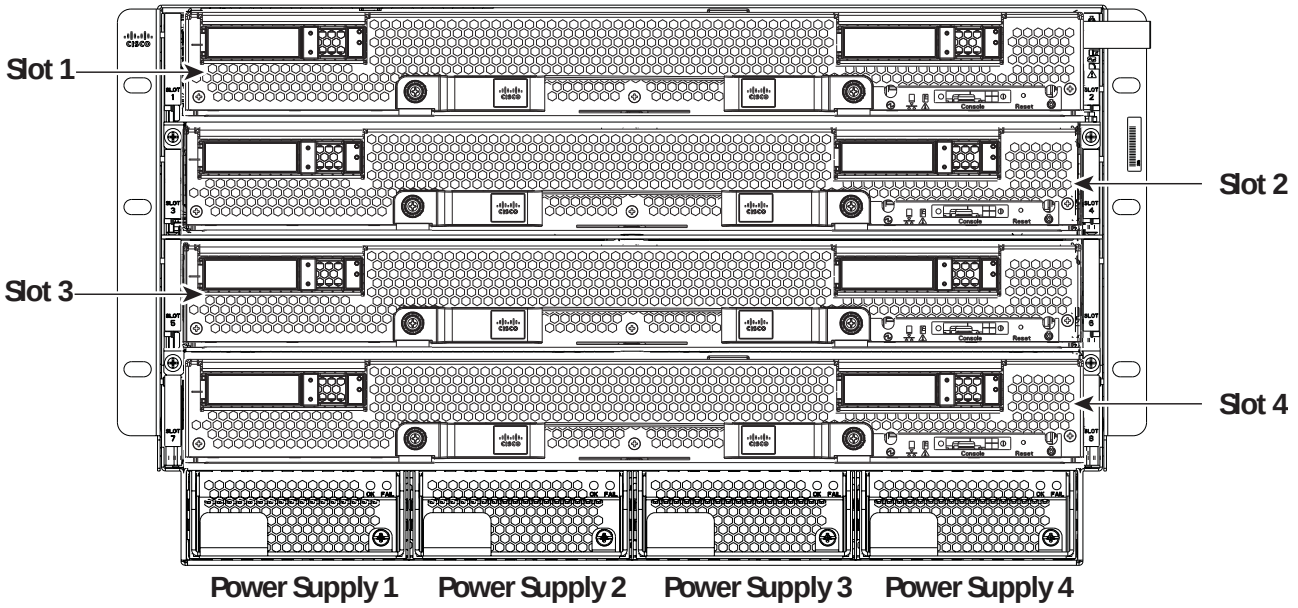


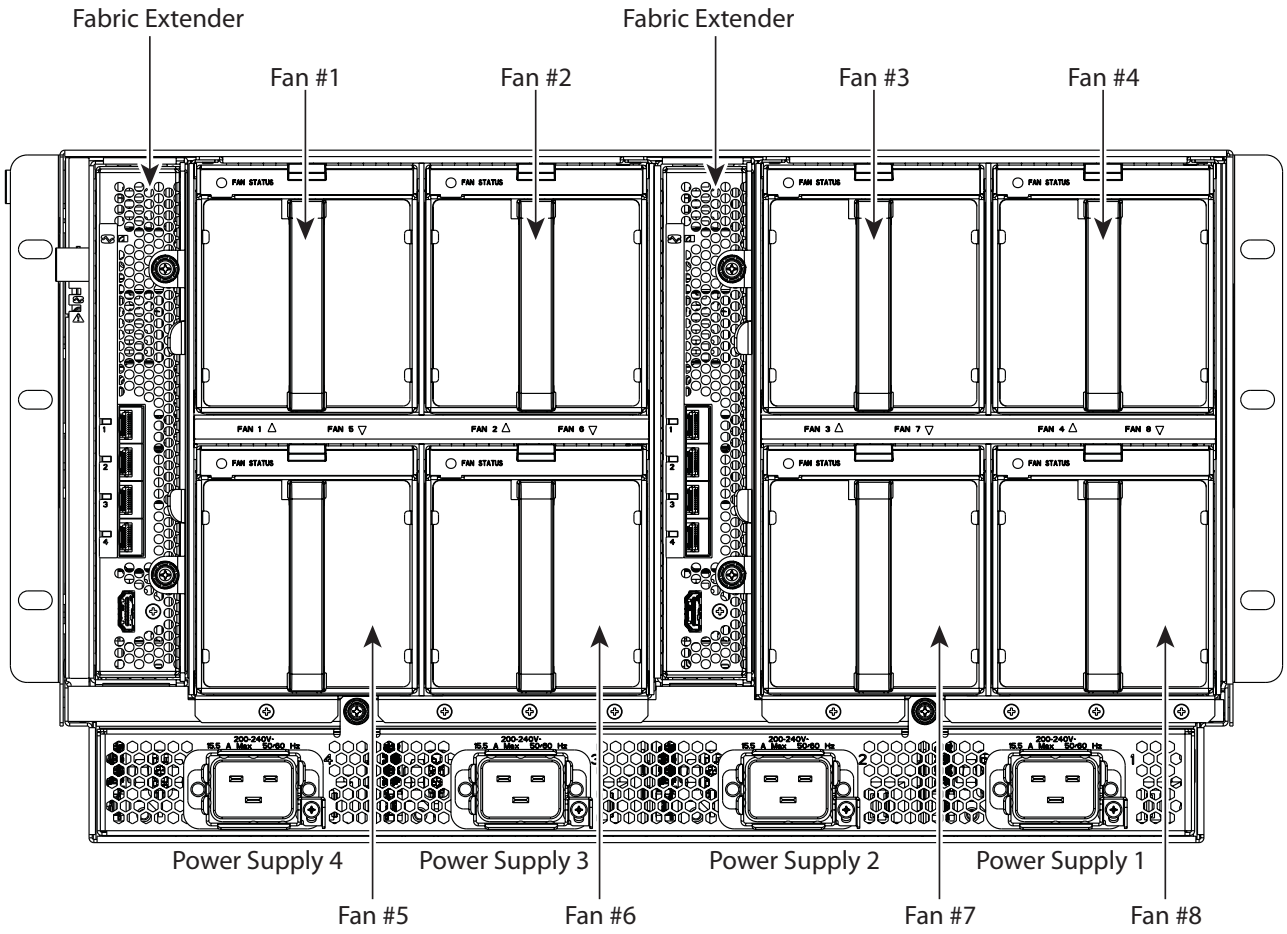

**Table 2 Front View Callouts**

| Callout | Description |
|---|---|
| Slot 1 - 4 | Slot numbering for full-width blade servers |
| Power Supply 1 - 4 | 4 x 2500 W power supplies |

## Chassis Rear View

*Figure 5* shows the rear view of the 5108 chassis (AC power version).

**Figure 5 Chassis Rear View (AC power supplies)**



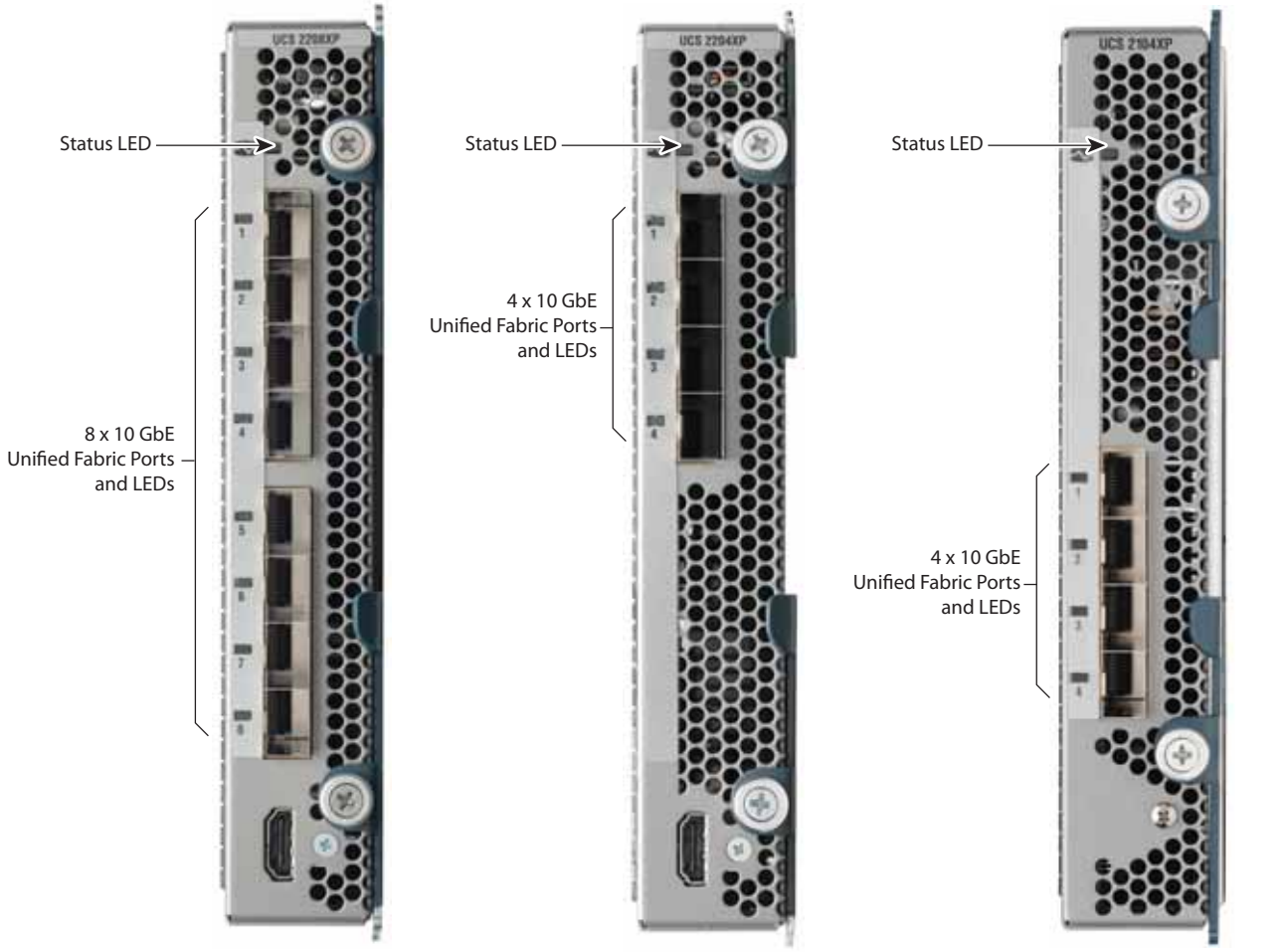
## Fabric Extender Modules

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 Fabric Extender modules:

- Cisco UCS 2208XP
- Cisco UCS 2204XP
- Cisco UCS 2104XP

*Figure 5* shows the Fabric Extenders.

**Figure 6 2208XP, 2204XP, and 2104XP Fabric Extenders**




2208XP Fabric Extender 2204XP Fabric Extender 2104XP Fabric Extender

# BASE CHASSIS STANDARD CAPABILITIES and FEATURES

*Table 3* lists the capabilities and features of the base 5108 chassis. Details about how to configure the chassis for a particular feature or capability are provided in **CONFIGURING the CHASSIS on page 10**.

**Table 3 Capabilities and Features**

| Capability/Feature | Description |
|---|---|
| Management by Cisco UCS Manager | ■ Reduces TCO by removing management modules from the chassis, making the chassis stateless, and UCS systems management inherently scalable<br>■ Provides a single, highly available management domain for all system chassis, reducing administrative tasks through automated service profile configuration |
| Unified fabric | Decreases TCO by reducing the number of network interface cards (NICs), host bus adapters (HBAs), switches, and cables needed |
| Support for one or two Cisco UCS 2100 or 2200 Series Fabric Extenders | ■ Eliminates switches from the chassis along with complex configuration and management of those switches, allowing a system to scale without adding complexity and cost<br>■ Allows use of two fabric extenders for redundancy or aggregation of bandwidth<br>■ Enables bandwidth scaling based on application needs; blades can be configured for 1.25 Gbps to 10 Gbps or more |
| Auto-discovery | Requires no configuration; like all components in the Cisco Unified Computing System, chassis are automatically recognized and configured by Cisco UCS Manager and its service profiles and service profile groups |
| High-performance mid-plane | ■ Provides investment protection<br>■ Supports up to 2x 40 Gbit Ethernet links to each half-width blade slot or up to 4x 40 Gbit links to each full-width slot<br>■ Provides 8 blades with 1.2 terabits (Tb) of available Ethernet throughput for future I/O requirements<br>■ Provides reconfigurable chassis to accommodate a variety of form factors and functions |
| Redundant hot-swappable power supplies and fans | ■ Provides high availability in multiple configurations<br>■ Provides uninterrupted service during maintenance |
| Hot-swappable blade servers and fabric extenders | Provides uninterrupted service during maintenance and server deployment |
| Comprehensive monitoring | ■ Provides extensive environmental monitoring on each chassis<br>■ Allows use of user thresholds to optimize environmental management of the chassis |

**Table 3 Capabilities and Features** *(continued)*

| Capability/Feature | Description |
|---|---|
| Thermal efficiencies | The Chassis Management Controller (CMC) monitors all the temperature sensors and regulates fan speeds to maintain the airflow at the minimum needed to cool the system. The open backplane and deep plenum allow air to be directed across the blades to ensure cooling is directed where it is needed most. |
| Tool-free installation | ■ Requires no specialized tools for chassis installation<br>■ Provides mounting rails for easy installation and servicing |
| Mixed blade configurations | The UCS 5108 Server Chassis can accommodate a maximum of 8 half-width sever blades or 4 full-width server blades or any combinations of the two sizes that will fit in the chassis. |

# CONFIGURING the CHASSIS

Follow these steps to configure the Cisco UCS 5108 chassis:

## STEP 1 VERIFY BASE CHASSIS SKU

Verify the product ID (PID) of the base 5108 chassis as shown in *Table 4*. Note that you can order either an AC-powered or DC-powered version of the chassis.

**Table 4 PID of the Base 5108 Chassis**

| Product ID (PID) | Description |
|---|---|
| N20-C6508 | AC-powered version of the Cisco UCS 5108 Blade Server Chassis |
| UCSB-5108-DC | DC-powered version of the Cisco UCS 5108 Blade Server Chassis |

**Included with AC and DC versions**:

- N20-CAK: Chassis Accessory Kit, consisting of:
  - N20-CRMK2: One Rail kit that supports square-holed racks (or round hole racks with an optional adapter - see below)
  - N20-BKVM=: KVM local console connector dongle cable that connects to the front of any UCS blade server, and documentation
  - N20-FAN5: Eight redundant and hot-swappable fan modules

**Not included with AC or DC versions (but may be ordered separately)**:

- N20-CRMK2=: Additional or spare rail kit for the Cisco UCS 5108 chassis
- N20-CRMK2-RHA=: Round hole adapter kit (for threaded and non-threaded holes) for the rail kit (N20-CRMK2) included with the chassis.

**NOTE:** The adapter kit only works with the N20-CRMK2 rail kit

### Caveats

- You must select either an AC or DC version of the 5108 chassis.
- There is no mixing allowed of AC and DC power supplies within the same 5108 chassis.

## STEP 2 SELECT FABRIC I/O EXTENDERS

The Fabric I/O Extender options are:

- Cisco UCS 2208XP
- Cisco UCS 2204XP
- Cisco UCS 2104XP

### Choose Fabric I/O Extenders

The available Fabric I/O Extenders are listed in *Table 5*. Each Fabric I/O Extender connects to the Fabric Interconnect 6100 series modules by means of several ports of 10GbE and Fibre Channel over Ethernet (FCoE).

**Table 5 Available Fabric I/O Extenders**

| Product ID (PID) | Fabric I/O Extender | Number of 10GbE/FCoE Ports to Fabric Interconnect | Number of Internal 10GbE/FCoE Ports | Total Chassis I/O per Fabric Extender |
|---|---|---|---|---|
| UCS-IOM-2208XP | 2208XP | 8 | 32 | 80 Gbs |
| UCS-IOM2208-16FET | Bundle that includes one 2208XP plus 16 Fabric Extender Transceivers (FETs)[1] | 8 | 32 | 80 Gbs |
| UCS-IOM-2204XP | 2204XP | 4 | 16 | 40 Gbs |
| UCS-IOM2204-8FET | Bundle that includes one 2204XP plus 8 Fabric Extender Transceivers (FETs)[1] | 4 | 16 | 40 Gbs |
| N20-I6584 | 2104XP | 4 | 8 | 40 Gbs |

**Notes . . .**

1. For more information on Fabric Extender bundles, see **Fabric Extender Bundles on page 42**.

### Approved Configurations

**(1) Choose one or two identical Fabric I/O Extenders, or**

**(2) Choose one or two identical Fabric Extender bundles (includes one Fabric Extender plus transceivers)**

### Caveats

- You must select either one or two identical Fabric I/O Extenders or bundles.
- Do not use any Fabric Extender transceivers other than those that come in the bundles.

## STEP 3 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 Extenders.

### Choose SFP+ Optical Transceivers

You can choose up to eight SFP+ optical transceivers for each 2208XP, or up to four for each 2204XP or 2104XP, as shown in *Table 6*.

**Table 6 SFP+ Transceivers**

| Product ID (PID) | PID Description |
|---|---|
| SFP-10G-SR | 10 Gigabit Ethernet - short range SFP+ module (MMF) |
| SFP-10G-LR | 10 Gigabit Ethernet - long range SFP+ module (SMF) |

### Choose SFP Optical or Copper Transceivers

You may choose up to eight SFP optical or copper transceivers for each 2208XP, or up to four for each 2204XP or 2104XP, as shown in *Table 7*.

**Table 7 SFP Optical Transceivers**

| Product ID (PID) | PID Description |
|---|---|
| GLC-T | 1 GbE copper SFP Module |
| GLC-SX-MM | 1 GbE short range (550 m max) SFP Module |
| GLC-LH-SM | 1 GbE long range (10 km max) SFP Module |
| SFP-GE-T | 1 GbE SFP, extended temperature range Module |
| SFP-GE-S | 1 GbE SFP, LC connector SX transceiver (MMF), ext. temp. range and DOM |
| SFP-GE-L | 1 GbE SFP, LC connector LX/LH transceiver (SMF), ext. temp. range and DOM |

### Choose Twinax Copper Cables

You can choose twinax copper cables of various lengths (from 1 to 10 meters) as shown in *Table 8*. 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 and plug directly into the Fabric Extender SFP receptacles on one end and into the Fabric Interconnect SFP receptacles on the other end.

**Table 8 Twinax Copper Cables**

| Product ID (PID) | PID Description |
|---|---|
| SFP-H10GB-CU1M | 10 G Base-CU SFP+, 1 meter (twinax cable) |
| SFP-H10GB-CU3M | 10 G Base-CU SFP+, 3 meter (twinax cable) |
| SFP-H10GB-CU5M | 10 G Base-CU SFP+, 5 meter (twinax cable) |
| SFP-H10GB-ACU7M | 10 G Base-CU SFP+, 7 meter (twinax cable) |
| SFP-H10GB-ACU10M | 10 G Base-CU SFP+, 10 meter (twinax cable) |

### Approved Configurations

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

### Caveats

- You should order enough SFPs and cables to accommodate your maximum forseeable needs.

## STEP 4 CHOOSE POWER SUPPLIES

The 5108 chassis accommodates up to four power supplies.

### Choose Power Supplies

The available power supplies are listed in *Table 9*.

**Table 9 Available Power Supplies**

| Product ID (PID) | PID Description |
|---|---|
| N20-PAC5-2500W | 2500 W AC power supply, redundant and hot-swappable (80Plus Gold Certified) |
| UCSB-PSU-2500ACPL | 2500 W AC hot-pluggable power supply (80Plus Platinum Certified) |
| UCSB-PSU-2500DC48 | 2500 W DC -48 V power supply |

### Approved Configurations

**(1) Choose from 2 to 4 power supplies**

### Caveats

- Do not mix AC and DC power supplies
- Use the 2500 W DC power supply (UCSB-PSU-2500DC48) only with the DC-powered version of the 5108 chassis (UCSB-5108-DC).
- Use the 2500 W AC power supplies (N20-PAC5-2500W or UCSB-PSU-2500ACPL) only with the AC-powered version of the 5108 chassis (N20-C6508).

## STEP 5 SELECT AC POWER CORD(s)

Select the appropriate AC power cords listed in *Table 10*. You may select up to 4 power cords.

**Table 10 Available Power Cords**

| Product ID (PID) | PID Description | Comment |
|---|---|---|
| CAB-AC-16A-AUS | 16A, 250 VAC | Australia |
| UCSB-CABL-C19-BRZ | 16A, 250 VAC | Brazil |
| CAB-AC16A-CH | 16A, 250 VAC | China |
| CAB-AC-2500W-EU | 16A, 250 VAC | Europe |
| CAB-AC-2500W-INT | 16A, 250 VAC | International |
| CAB-AC-2500W-ISRL | 16A, 250 VAC | Israel |
| CAB-AC-2500W-US1 | 16A, 250 VAC | NEMA 6-20P |
| CAB-AC-C6K-TWLK | 20A, 250 VAC (twist-lock) | NEMA L6-20 |
| CAB-ACS-16 | 16A, 250 VAC | Switzerland |
| CAB-C19-CBN | 16A, 250 VAC | Jumper cord C19/C20 |

## STEP 6 CHOOSE OPERATING SYSTEM (OPTIONAL)

Several operating systems are available from which to choose. Choose one of the operating systems listed in *Table 11*.

**Table 11 Operating Systems**

| Product ID (PID) | PID Description |
|---|---|
| **SUSE Linux Enterprise Server** | |
| SLES-11 | SLES 11 media only (multilingual) |
| SLES-CA-1A | SLES, 1-year subscription, services required, no media |
| SLES-CA-3A | SLES, 3-year subscription, services required, no media |

## 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) parts replacement eight hours a day, five days a week.
- 90-day software warranty on media.
- 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.

### Unified Computing Mission Critical Service

This service delivers personalized technical account management, expedited technical support, and expert field support engineering for the Cisco Unified Computing System (UCS).

The Mission Critical Support Service provides a designated technical account manager (TAM) who acts as a strategic resource to help ensure that the unified computing environment runs at peak efficiency. If a problem arises that threatens business continuity, the TAM provides crisis management leadership, and your IT staff receives expedited access to Cisco's Technical Assistance Center (TAC).

Please note: This service has qualification criteria. Your company must have $1.2M of UCS equipment, 200 blades and a single location to qualify for this service level. Choose the desired service listed in *Table 12*.

**Table 12 Unified Computing Mission Critical Service**

| Product ID (PID) | On Site? | Description |
|---|---|---|
| CON-UCM7-2C6508 | Yes | UC Mission Critical 24x7x4 On-site |
| CON-UCM8-2C6508 | Yes | UC Mission Critical 24x7x2 On-site |

### Unified Computing Support Service

For support of the entire Unified Computing System, Cisco offers the Cisco Unified Computing Support 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 Unified Computing Support 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 13*.

**Table 13 UCS Computing Support Service**

| Product ID (PID) | On Site? | Description |
|---|---|---|
| CON-UCS1-2C6508 | No | UC Support 8X5XNBD |
| CON-UCS2-2C6508 | No | UC Support 8X5X4 |
| CON-UCS3-2C6508 | No | UC Support 24x7x4 |
| CON-UCS4-2C6508 | No | UC Support 24x7x2 |
| CON-UCS5-2C6508 | Yes | UC Support 8X5XNBD |
| CON-UCS6-2C6508 | Yes | UC Support 8X5X4 |
| CON-UCS7-2C6508 | Yes | UC Support 24x7x4 |
| CON-UCS8-2C6508 | Yes | UC Support 24x7x2 |

### Unified Computing Warranty Plus Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco Unified Computing Warranty Plus Service. You can choose from several levels of advanced parts replacement coverage, including onsite parts replacement in as little as two hours. Warranty Plus 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 14*.

**Table 14 UCS Computing Warranty Plus Service**

| Product ID (PID) | On Site? | Description |
|---|---|---|
| CON-UCW3-2C6508 | No | UC Warranty Plus 24x7x4 |
| CON-UCW5-2C6508 | Yes | UC Warranty Plus 8X5XNBD |

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

**http://www.cisco.com/en/US/services/ps2961/ps10312/ps10321/Cisco_UC_Warranty_Support_DS.pdf**

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

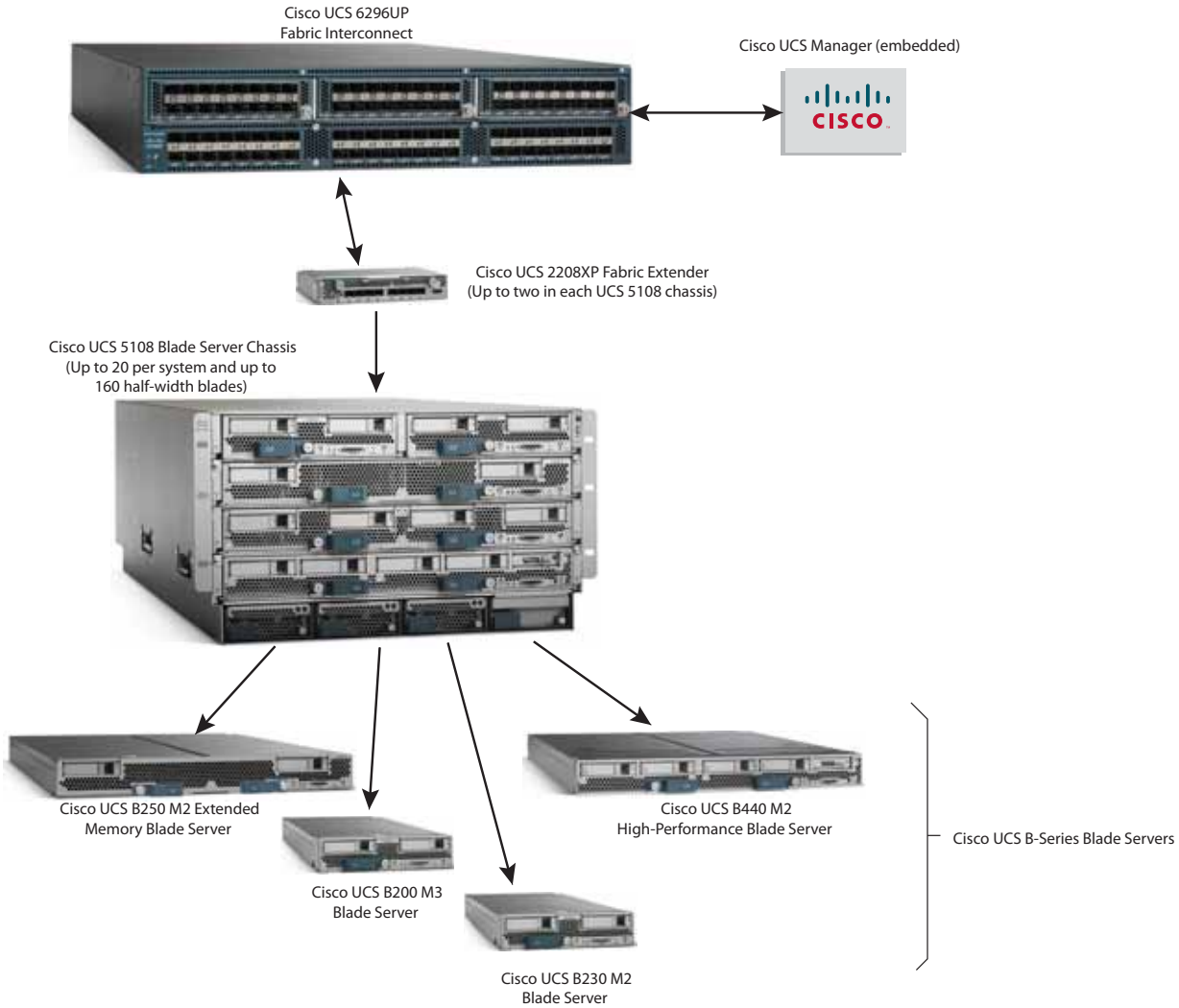
**http://www.cisco.com/en/US/products/ps10312/serv_group_home.html**

# SUPPLEMENTAL MATERIAL

## 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 (see *Figure 7*).

**Figure 7 System Diagram**



## Connectivity Between Blades and Fabric Extenders

Cisco UCS Fabric Extenders bring the unified fabric into the blade server enclosure, providing multiple 10 Gigabit Ethernet connections between blade servers and the fabric interconnect, simplifying diagnostics, cabling, and management.

The Fabric Extenders extend the I/O fabric between the Cisco UCS 6100 and 6200 Series Fabric Interconnects and the Cisco UCS 5108 Blade Server Chassis, enabling a lossless and deterministic Fibre Channel over Ethernet (FCoE) fabric to connect all blades and chassis together. Since the fabric extender is similar to a distributed line card, it does not perform any switching and is managed as an extension of the fabric interconnects. This approach removes switching from the chassis, reducing overall infrastructure complexity and enabling Cisco UCS to scale to many chassis without multiplying the number of switches needed, reducing TCO and allowing all chassis to be managed as a single, highly available management domain.

The Fabric Extenders also manage the chassis environment (the power supply and fans as well as the blades) in conjunction with the fabric interconnect. Therefore, separate chassis management modules are not required.

The Fabric Extenders fit into the back of the Cisco UCS 5108 chassis. Each Cisco UCS 5108 chassis can support up to two fabric extenders, allowing increased capacity and redundancy.

Connectivity between each unique blade and the Fabric Extenders varies according to the type of blade, its available adapter card slots, and the type of card plugged into each slot. See the individual blade server spec sheets for detailed connectivity information and connectivity diagrams at this link:

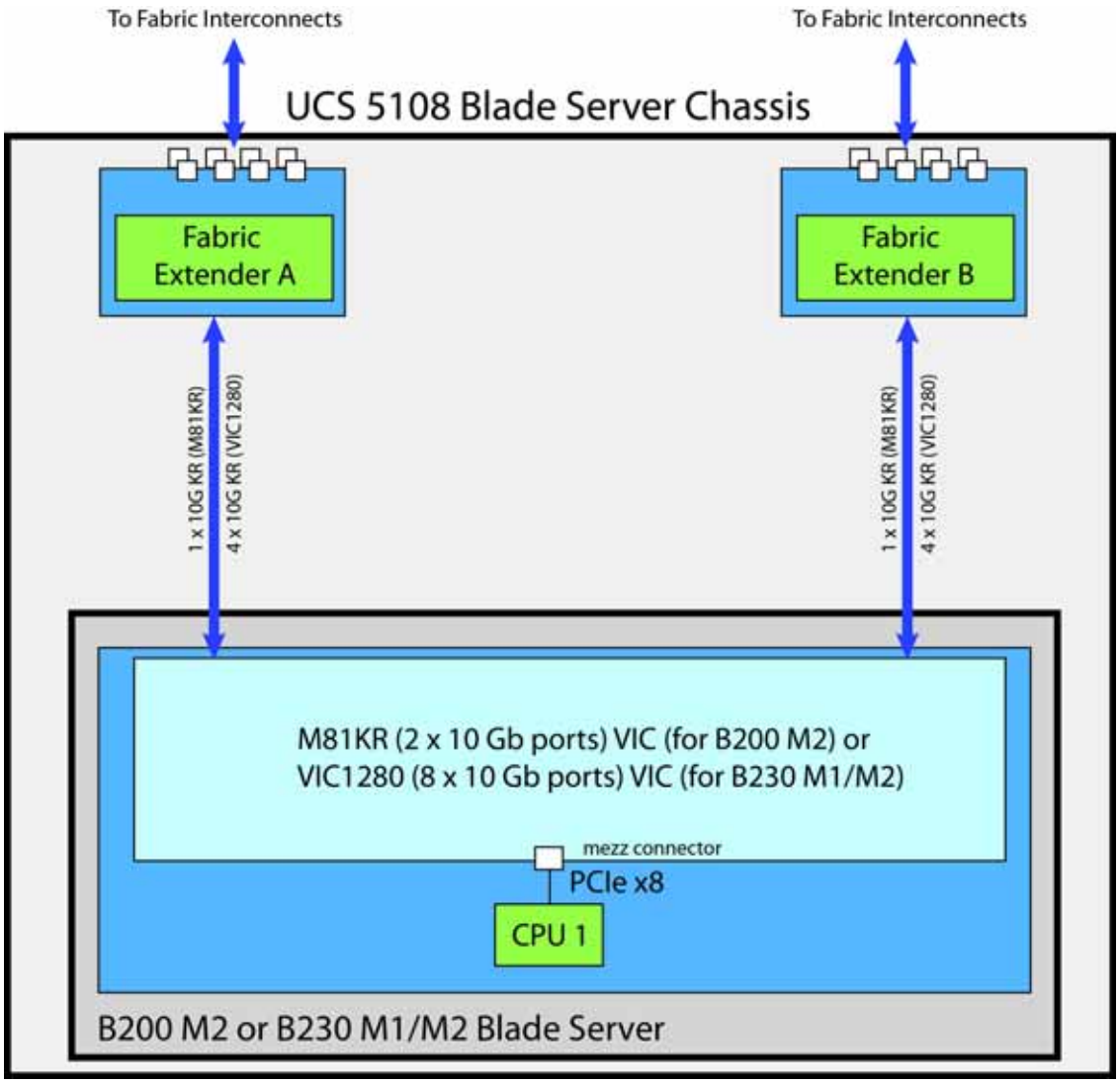
**http://www.cisco.com/en/US/products/ps10280/products_data_sheets_list.html**

The following sections show generally how the various blade connect to the Fabric Extenders.

## B200/B230 M1/M2Connectivity (Half-Width Blades with One Mezzanine Slot)

*Figure 8* shows in general how the B200/B230 M1/M2 blade servers connect to the fabric extenders in the UCS 5108 chassis. Several cards are available for use in the card adapter slot (see *Table 15 on page 23*).

**Figure 8 B200/B230 M1/M2 to Fabric Extenders**



For the B200/B230 M1/M2 blade servers, supported card adapter combinations are shown in *Table 17*.

**Table 15 Adapter Card Options**

| Fabric Extender Compatibility | Adapter in Mezzanine Connector | Ports[1] |
|---|---|---|
| **2208XP** | | |
| 2208XP | M81KR | 2 x 10 Gb |
| 2208XP | VIC 1280[2] | 8 x 10 Gb |
| 2208XP | Cisco-certified mezzanine adapter[3] | 2 x 10 Gb |
| **2204XP** | | |
| 2204XP | M81KR | 2 x 10 Gb |
| 2204XP | VIC 1280[2] | 4 x 10 Gb |
| 2204XP | Cisco-certified mezzanine adapter[3] | 2 x 10 Gb |
| **2104XP** | | |
| 2104 XP | M81KR | 2 x 10 Gb |
| 2104 XP | VIC 1280[2] | 2 x 10 Gb |
| 2104XP | Cisco-certified mezzanine adapter[3] | 2 x 10 Gb |

**Notes . . .**

1. Cisco-designed adapters are capable of port channeling. A port channel bundles up to four individual interfaces into a group to provide increased bandwidth and redundancy. Port channeling also load balances traffic across these physical interfaces. The port channel stays operational as long as at least one physical interface within the port channel is operational. Cisco-certified adapters suppled by third-party vendors do not support port channeling. Port channeling is indicated with an oval drawn around several individual ports.
2. Available only on M2 and M3 servers (not available on M1 servers)
3. Cisco-certified mezzanine adapters are manufactured by third-party vendors and are certified by Cisco for use in the servers. For more information about supported Cisco-certified mezzanine adapters, see **http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/blade.html#wp1010426**

The general connectivity diagrams between the mezzanine adapter cards and the different fabric extenders are shown in *Figure 9 on page 24* through *Figure 11 on page 25*.

**Figure 9 B200/B230 M1/M2 to 2208XP Fabric Extenders**

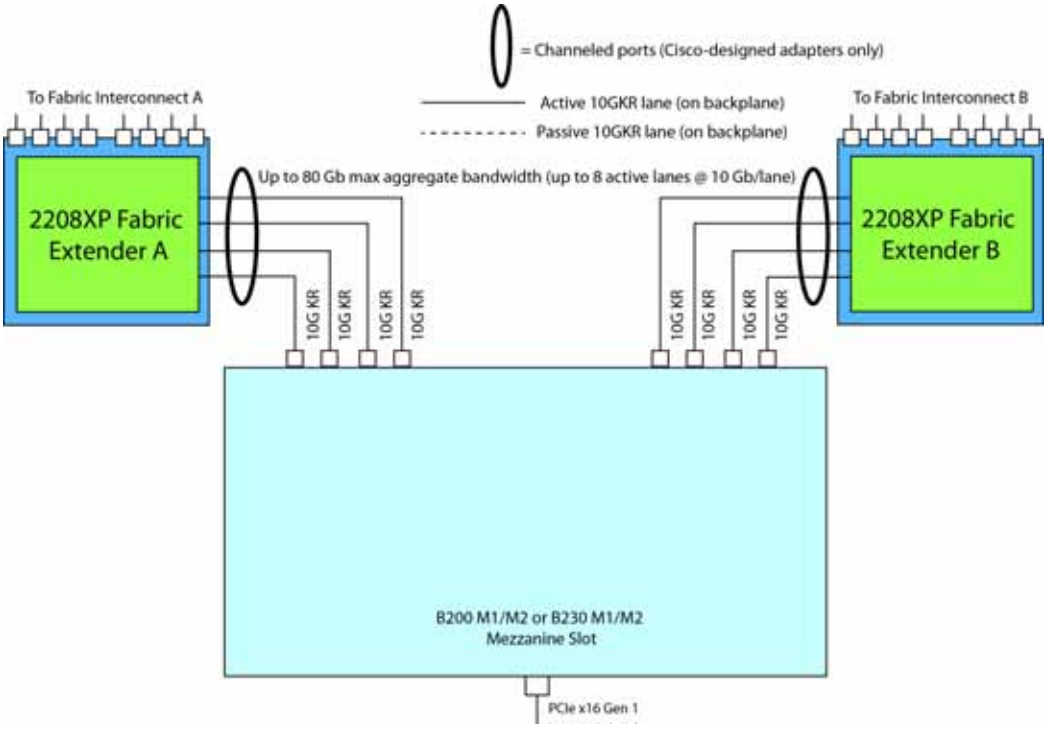



**Figure 10 B200/B230 M1/M2 2204XP Fabric Extenders**

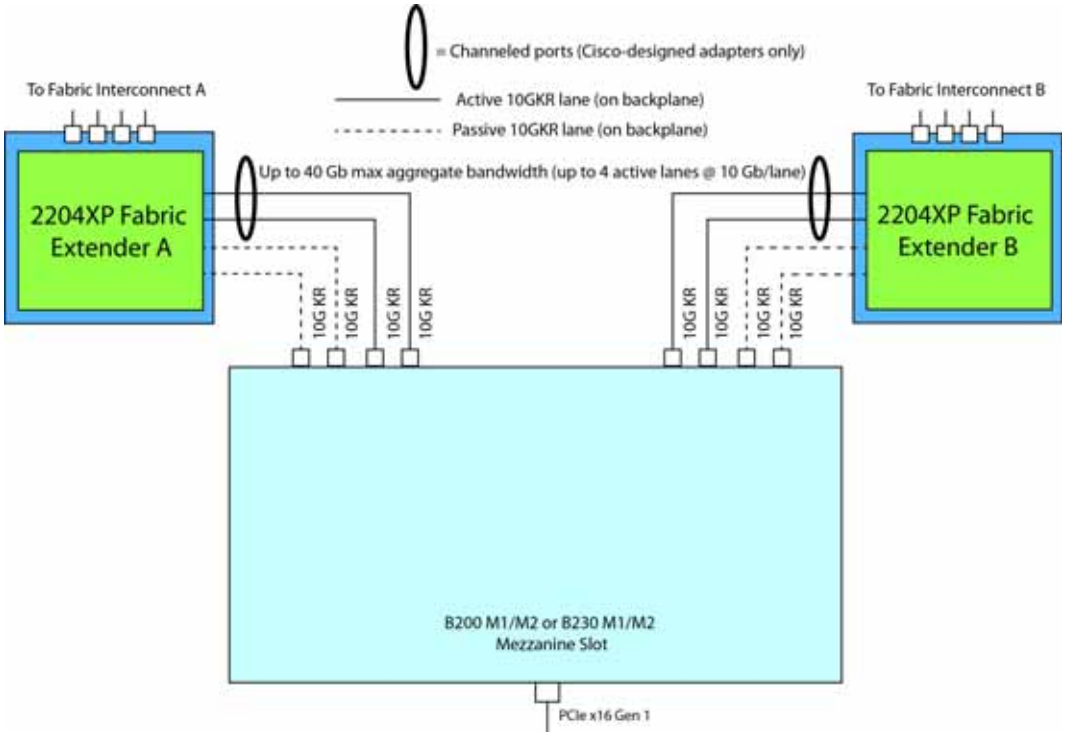
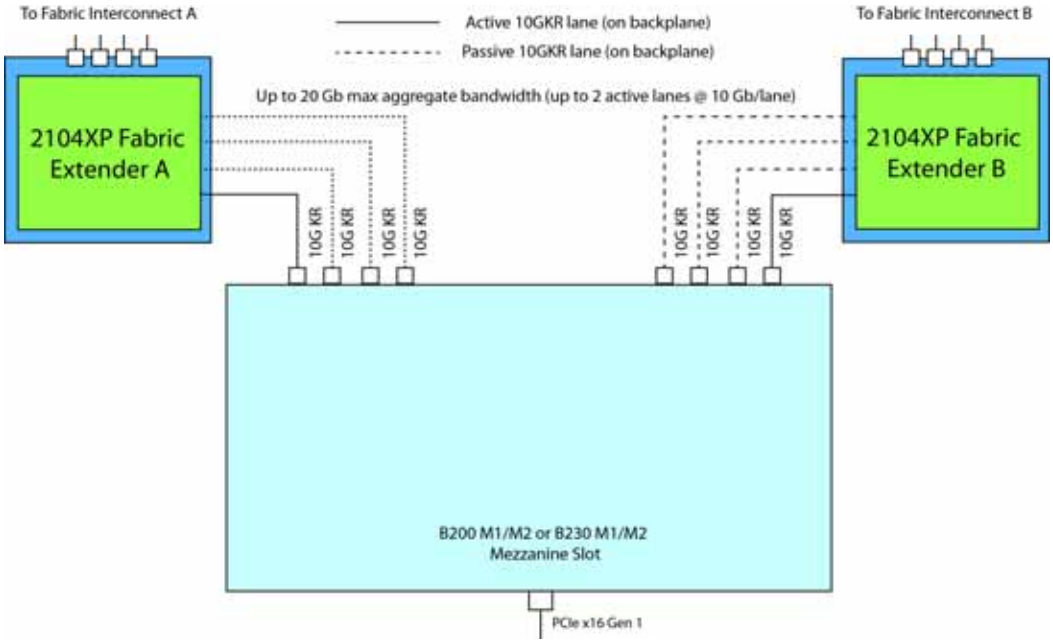


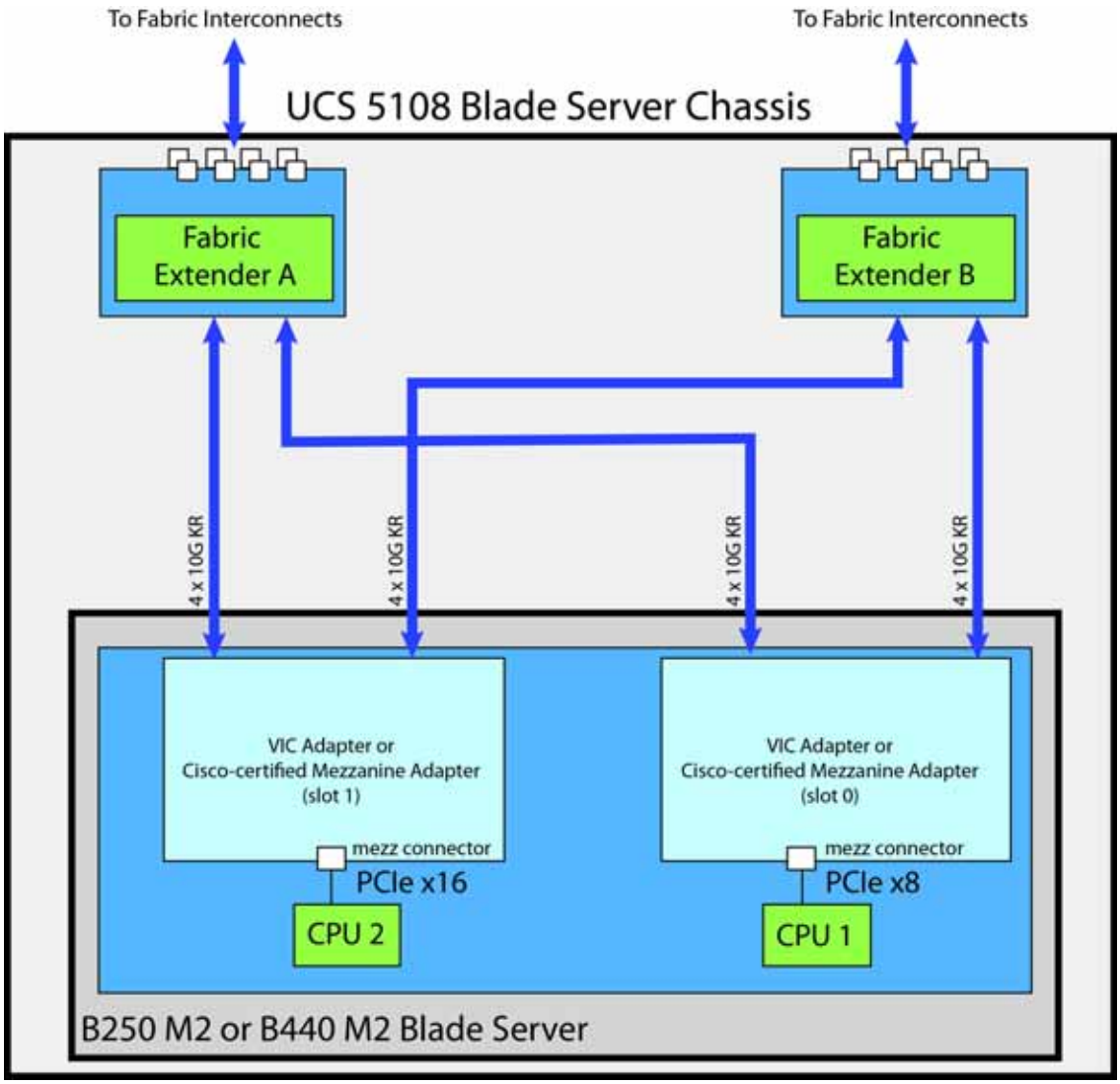
**Figure 11 B200/B230 M1/M2 to 2104XP Fabric Extenders**



## B250/B440 M1/M2 Connectivity (Full-Width Blades with Two Mezzanine Slots)

*Figure 12* shows in general how the B250/B440 M1/M2 blade servers connect to the fabric extenders in the UCS 5108 chassis. Several cards are available for use in the two card adapter slots (see *Table 16 on page 27*). Note that adapter slot 0 is on the right when the server is viewed from the rear and slot 1 is on the left.

**Figure 12 B250/B440 M1/M2 to Fabric Extenders**



For the B250/B440 M1/M2 blade servers, supported card adapter combinations are shown in *Table 16*.

**Table 16 Adapter Card Options**

| Fabric Extender Compatibility | Adapter in Slot 0 | Adapter in Slot 1 | Ports[1] |
|---|---|---|---|
| **2208XP** | | | |
| 2208XP | M81KR | Unoccupied | 2 x 10 Gb |
| 2208XP | Cisco-certified mezzanine adapter[2] | Unoccupied | 2 x 10 Gb |
| 2208XP | VIC 1280[3] | Unoccupied | 8 x 10 Gb |
| 2208XP | M81KR | Cisco-certified mezzanine adapter | 4 x 10 Gb |
| 2208XP | Cisco-certified mezzanine adapter | M81KR | 4 x 10 Gb |
| 2208XP | VIC 1280[3] | Cisco-certified mezzanine adapter | 10 x 10 Gb |
| 2208XP | Cisco-certified mezzanine adapter | VIC 1280[3] | 10 x 10 Gb |
| 2208XP | Cisco-certified mezzanine adapter | Cisco-certified mezzanine adapter | 4 x 10 Gb |
| **2204XP** | | | |
| 2204XP | M81KR | Unoccupied | 2 x 10 Gb |
| 2204XP | VIC 1280[3] | Unoccupied | 4 x 10 Gb |
| 2204XP | Cisco-certified mezzanine adapter | Unoccupied | 2 x 10 Gb |
| 2204XP | M81KR | Cisco-certified mezzanine adapter | 4 x 10 Gb |
| 2204XP | Cisco-certified mezzanine adapter | M81KR | 4 x 10 Gb |
| 2204XP | VIC 1280[3] | Cisco-certified mezzanine adapter | 6 x 10 Gb |
| 2204XP | Cisco-certified mezzanine adapter | VIC 1280[3] | 6 x 10 Gb |
| 2204XP | Cisco-certified mezzanine adapter | Cisco-certified mezzanine adapter | 4 x 10 Gb |
| **2104XP** | | | |
| 2104 XP | M81KR | Unoccupied | 2 x 10 Gb |
| 2104 XP | Cisco-certified mezzanine adapter | Unoccupied | 2 x 10 Gb |
| 2104 XP | VIC 1280[3] | Unoccupied | 2 x 10 Gb |
| 2104 XP | M81KR | Cisco-certified mezzanine adapter | 2 x 10 Gb |
| 2104 XP | Cisco-certified mezzanine adapter | M81KR | 2 x 10 Gb |
| 2104 XP | VIC 1280[3] | Cisco-certified mezzanine adapter | 2 x 10 Gb |
| 2104 XP | Cisco-certified mezzanine adapter | VIC 1280[3] | 2 x 10 Gb |

**Table 16 Adapter Card Options** *(continued)*

| Fabric Extender Compatibility | Adapter in Slot 0 | Adapter in Slot 1 | Ports[1] |
|---|---|---|---|
| 2104XP | Cisco-certified mezzanine adapter | Cisco-certified mezzanine adapter | 2 x 10 Gb |

**Notes . . .**

1. Cisco-designed adapters are capable of port channeling. A port channel bundles up to four individual interfaces into a group to provide increased bandwidth and redundancy. Port channeling also load balances traffic across these physical interfaces. The port channel stays operational as long as at least one physical interface within the port channel is operational. Cisco-certified adapters suppled by third-party vendors do not support port channeling. Port channeling is indicated with an oval drawn around several individual ports.
2. Cisco-certified mezzanine adapters are manufactured by third-party vendors and are certified by Cisco for use in the servers. For more information about supported Cisco-certified mezzanine adapters, see **http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/blade.html#wp1010426**
3. Available only on M2 and M3 servers (not available on M1 servers)

The general connectivity diagrams between the adapter cards and the different fabric extenders are shown in *Figure 13 on page 28* through *Figure 15 on page 29*.

**Figure 13 B250/B440 M1/M2 to 2208XP Fabric Extenders**

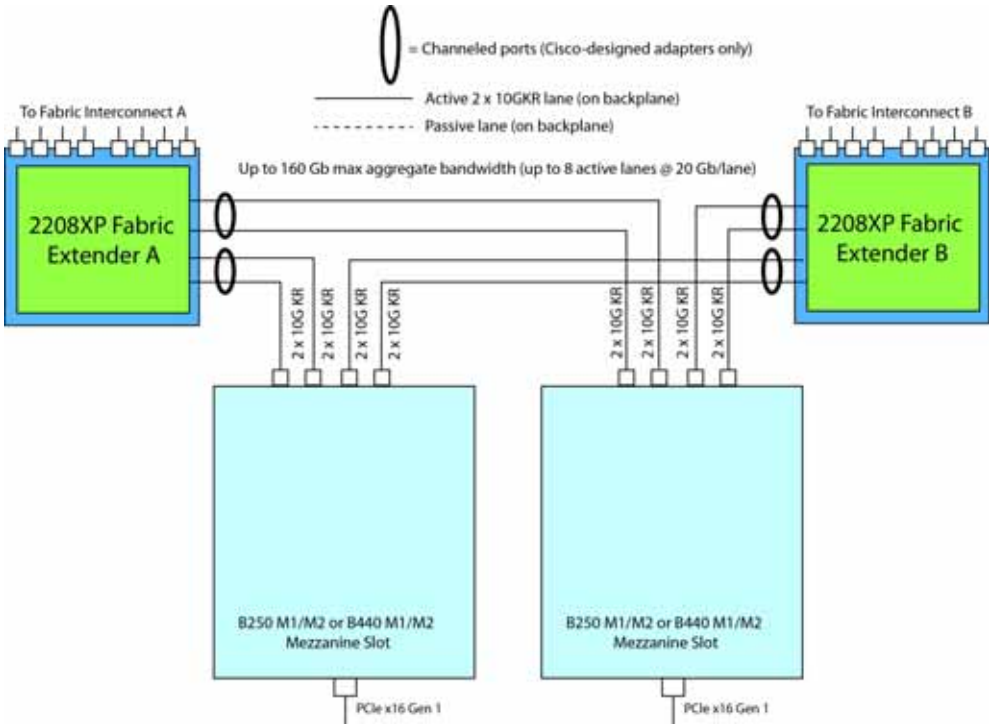


**Figure 14 B250/B440 M1/M2 to 2204XP Fabric Extenders**

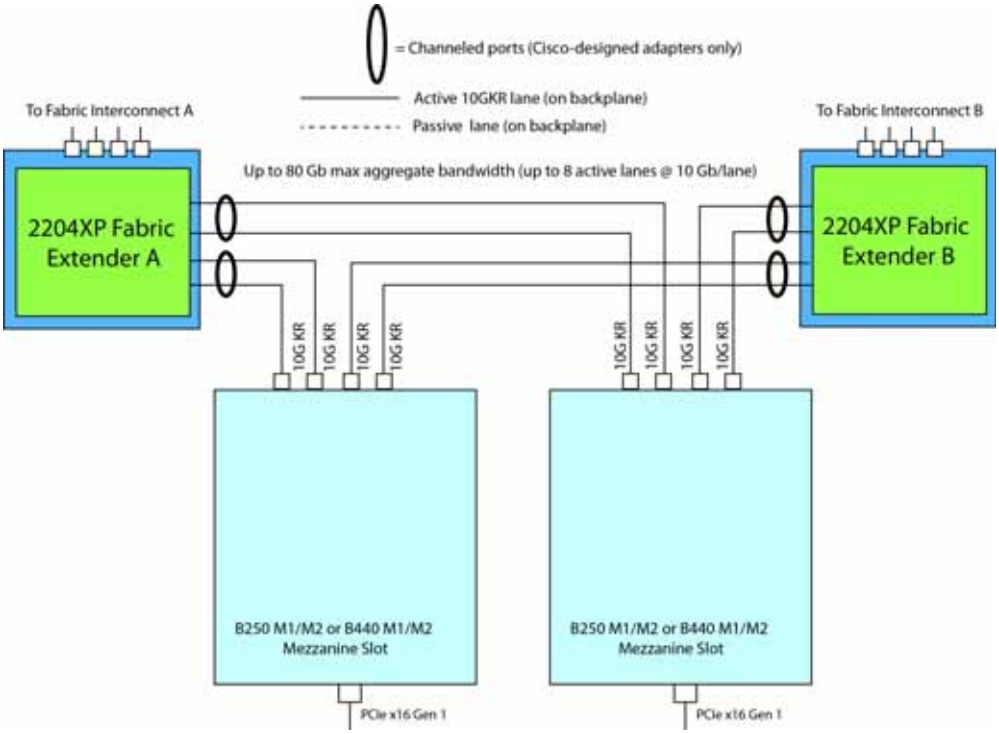
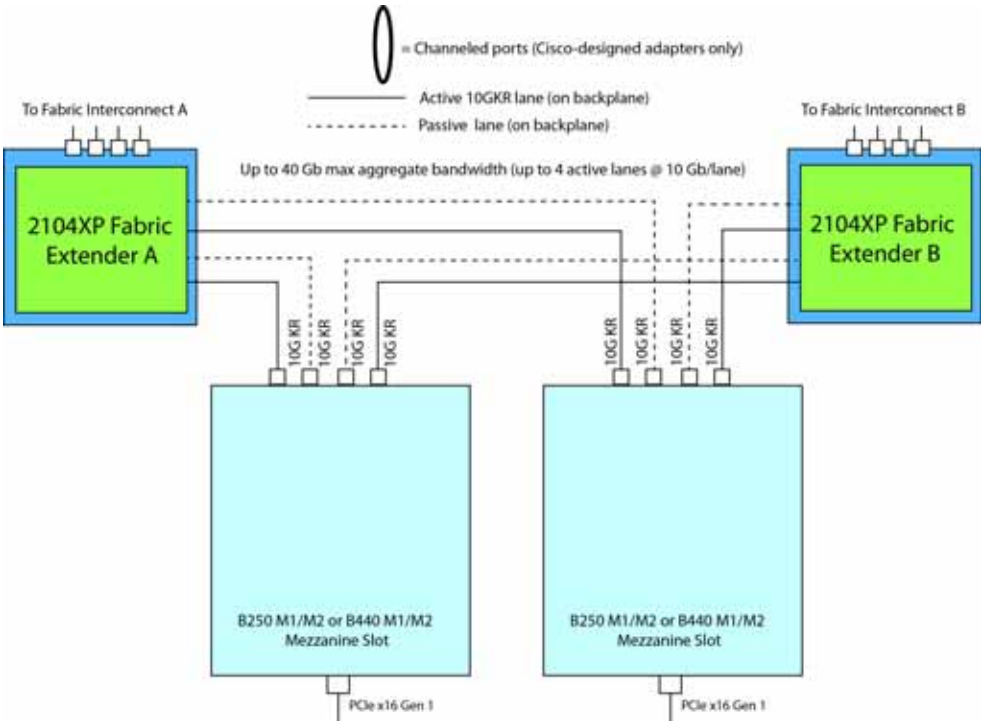


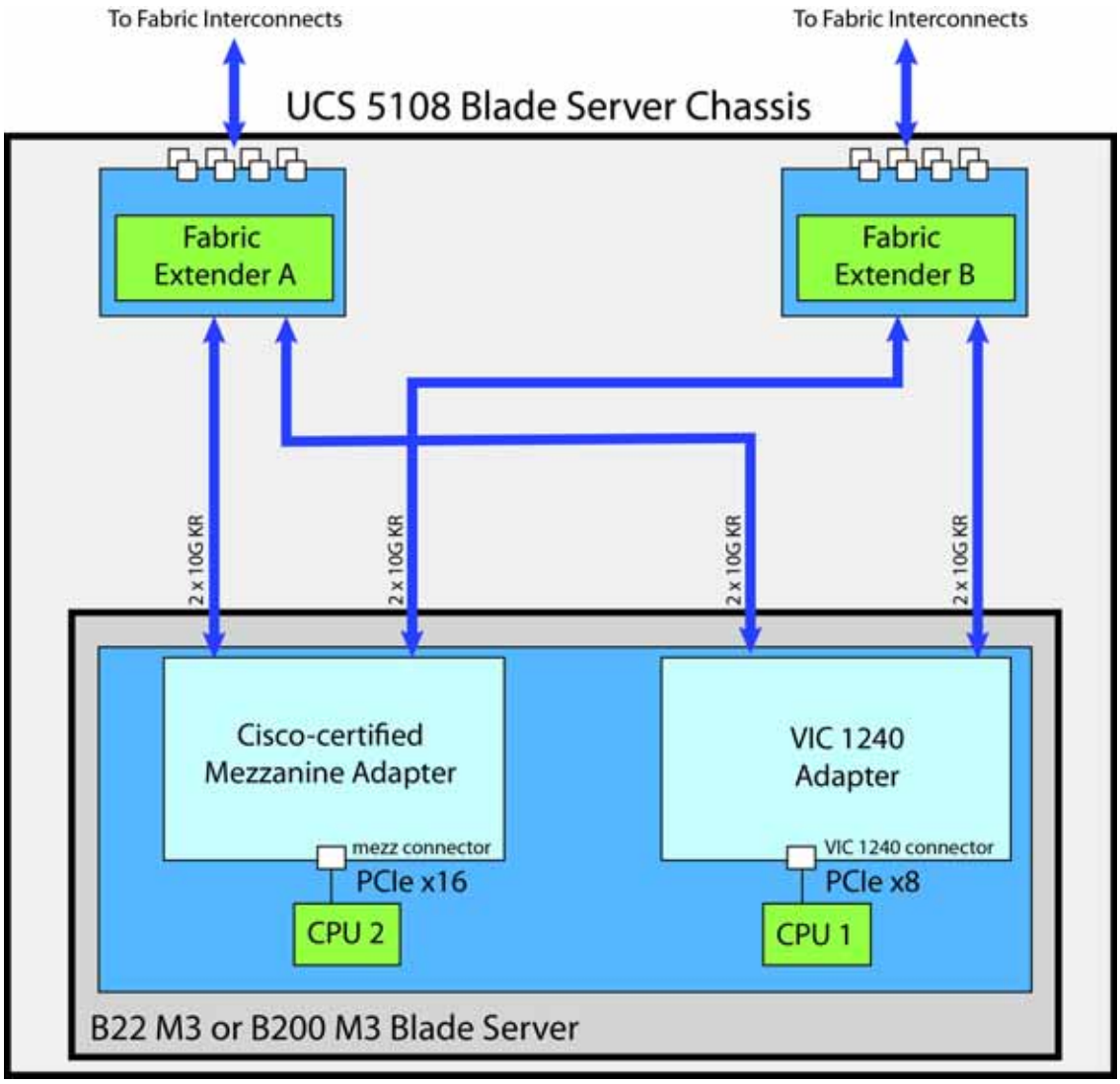

**Figure 15 B250/B440 M1/M2 to 2104XP Fabric Extenders**



## B22/B200 M3 Connectivity (Half-Width Blades with Two Mezzanine Slots)

*Figure 16* shows in general how the B22 M3 and B200 M3 blade servers connect to the fabric extenders in the UCS 5108 chassis. Several cards are available for use in the two card adapter slots (see *Table 19 on page 36* and *Table 20 on page 37*).

**Figure 16 B22 M3 or B200 M3 to Fabric Extenders**



For the B22 M3 blade server, supported card adapter combinations are shown in *Table 17*.

**Table 17 Adapter Card Options**

| Fabric Extender Compatibility | Adapter in VIC 1240 Connector | Adapter in Mezzanine Connector | Ports[1] |
|---|---|---|---|
| **2208XP** | | | |
| 2208XP | VIC 1240 | None | 4 x 10 Gb |
| 2208XP | VIC 1240 | VIC 1280 | 8 x 10 Gb |
| 2208XP | VIC 1240 | Cisco-certified mezzanine adapter[2] | 6 x 10 Gb |
| 2208XP | None | Cisco-certified mezzanine adapter | 2 x 10 Gb |
| **2204XP** | | | |
| 2204XP | VIC 1240 | None | 2 x 10 Gb |
| 2204XP | VIC 1240 | VIC 1280 | 4 x 10 Gb |
| 2204XP | VIC 1240 | Cisco-certified mezzanine adapter | 4 x 10 Gb |
| 2204XP | None | Cisco-certified mezzanine adapter | 2 x 10 Gb |
| **2104XP** | | | |
| 2104XP | VIC 1240 | None[3] | 2 x 10 Gb |

**Notes . . .**

1. Cisco-designed adapters are capable of port channeling. A port channel bundles up to four individual interfaces into a group to provide increased bandwidth and redundancy. Port channeling also load balances traffic across these physical interfaces. The port channel stays operational as long as at least one physical interface within the port channel is operational. Cisco-certified adapters suppled by third-party vendors do not support port channeling. Port channeling is indicated with an oval drawn around several individual ports.
2. Cisco-certified mezzanine adapters are manufactured by third-party vendors and are certified by Cisco for use in the servers. For more information about supported Cisco-certified mezzanine adapters, see **http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/blade.html#wp1010426**
3. The 2104XP fabric extender is not compatible with any I/O card installed in the mezzanine connector.

For the B200 M3 blade server, supported card adapter combinations are shown in *Table 18*.

**Table 18 Adapter Card Options**

| Fabric Extender Compatibility | Adapter in VIC 1240 Connector | Adapter in Mezzanine Connector | Ports[1] |
|---|---|---|---|
| **2208XP** | | | |
| 2208XP | VIC 1240 | None | 4 x 10 Gb |
| 2208XP | VIC 1240 | VIC 1280 | 8 x 10 Gb |
| 2208XP | VIC 1240 | Cisco-certified mezzanine adapter[2] | 6 x 10 Gb |
| 2208XP | VIC 1240 | Port Expander Card for VIC 1240 | 8 x 10 Gb |
| 2208XP | None | Cisco-certified mezzanine adapter | 2 x 10 Gb |
| **2204XP** | | | |
| 2204XP | VIC 1240 | None | 2 x 10 Gb |
| 2204XP | VIC 1240 | VIC 1280 | 4 x 10 Gb |
| 2204XP | VIC 1240 | Cisco-certified mezzanine adapter | 4 x 10 Gb |
| 2204XP | VIC 1240 | Port Expander Card for VIC 1240 | 4 x 10 Gb |
| 2204XP | None | Cisco-certified mezzanine adapter | 2 x 10 Gb |
| **2104XP** | | | |
| 2104XP | VIC 1240 | None[3] | 2 x 10 Gb |

**Notes . . .**

1. Cisco-designed adapters are capable of port channeling. A port channel bundles up to four individual interfaces into a group to provide increased bandwidth and redundancy. Port channeling also load balances traffic across these physical interfaces. The port channel stays operational as long as at least one physical interface within the port channel is operational. Cisco-certified adapters suppled by third-party vendors do not support port channeling. Port channeling is indicated with an oval drawn around several individual ports.
2. Cisco-certified mezzanine adapters are manufactured by third-party vendors and are certified by Cisco for use in the servers. For more information about supported Cisco-certified mezzanine adapters, see **http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/blade.html#wp1010426**
3. The 2104XP fabric extender is not compatible with any I/O card installed in the mezzanine connector.

The general connectivity diagrams between the adapter cards and the different fabric extenders are shown in *Figure 17 on page 33* through *Figure 19 on page 34*.

**Figure 17 B22/B200 M3 to 2208XP Fabric Extenders**

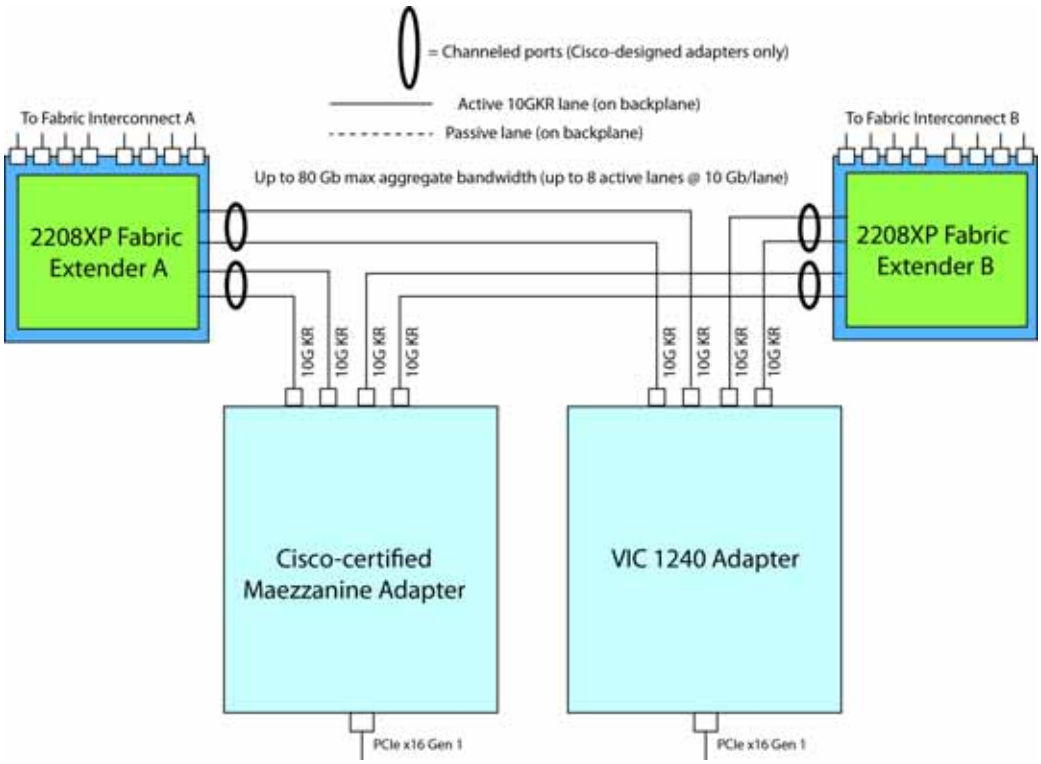



**Figure 18 B22/B200 M3 to 2204XP Fabric Extenders**

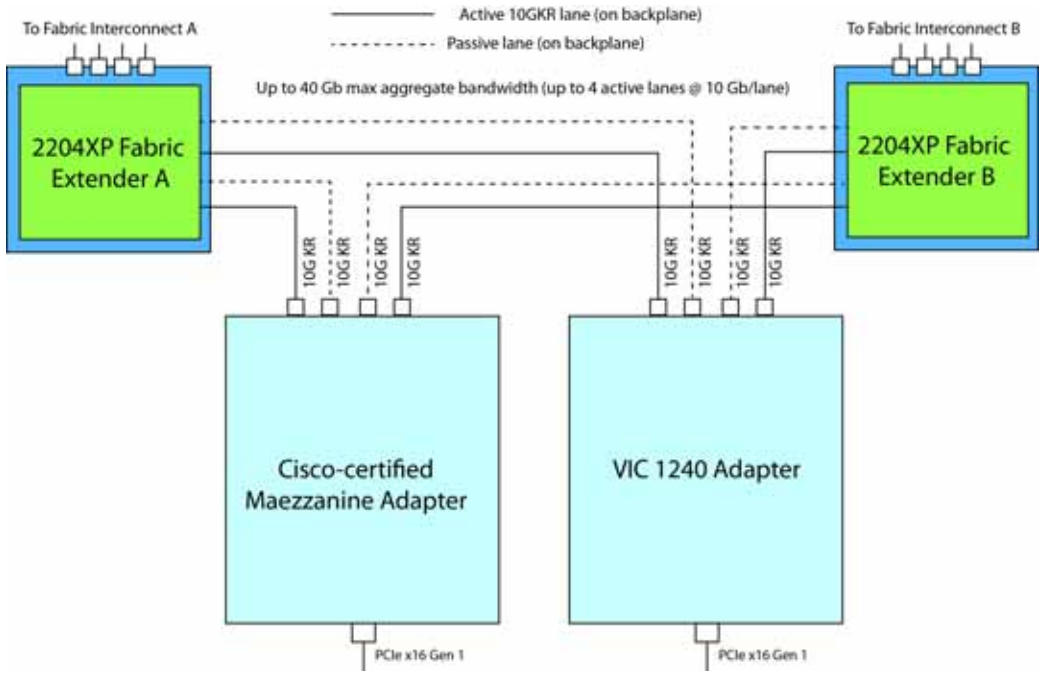
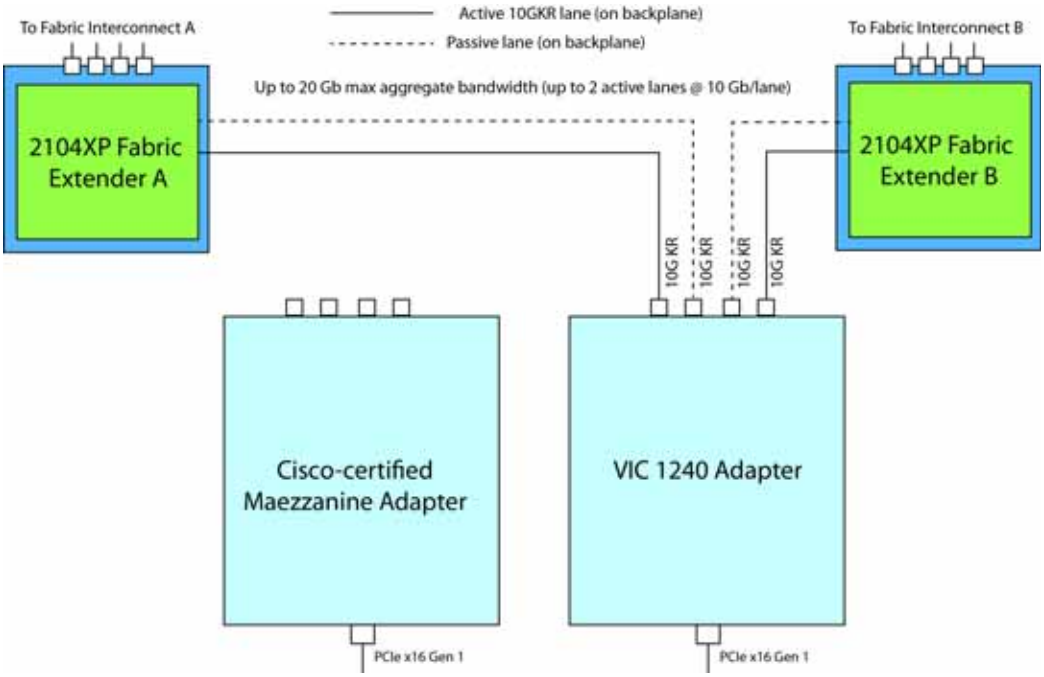


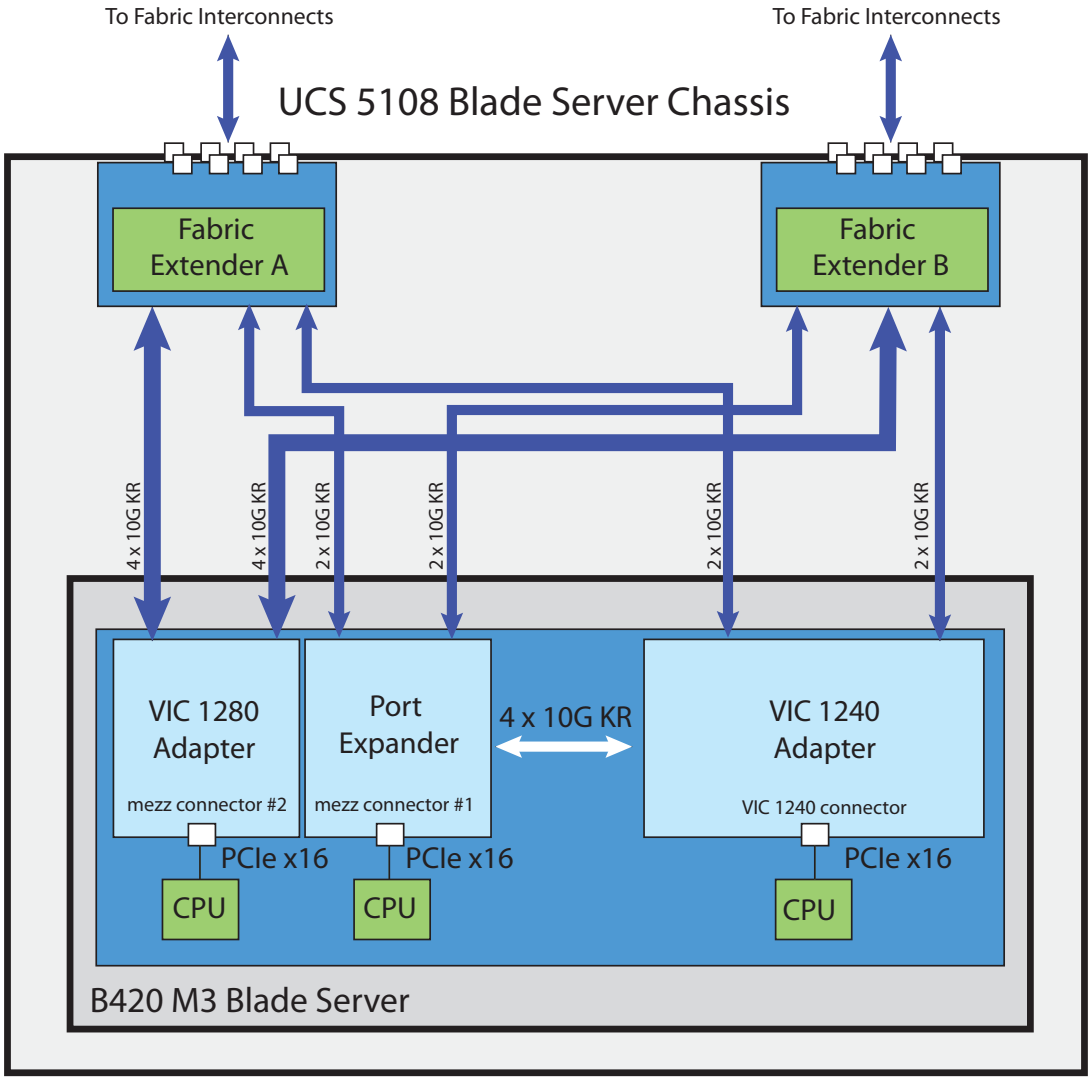
**Figure 19 B22/B200 M3 to 2104XP Fabric Extenders**



## B420 M3 Connectivity (Full-Width Blade with Three Mezzanine Slots)

*Figure 20* shows in general how the B420 M3 blade server connects to the fabric extenders in the UCS 5108 chassis. Several cards available for use in the three adapter card slots (see *Table 19 on page 36* and *Table 20 on page 37*).

**Figure 20 B420 M3 to Fabric Extenders**



Supported 4-CPU card adapter combinations are shown in *Table 19*.

**Table 19 Supported Mezzanine Adapter Combinations (4-CPU Configuration)**

| Adapter in VIC 1240 Connector | Adapter in Mezzanine Slot 1 | Adapter in Mezzanine Slot 2 | Total Available Bandwidth[1] | | |
|---|---|---|---|---|---|
| | | | 2 x 2208 XP | 2 x 2204 XP | 2 x 2104 XP |
| VIC 1240 | Not populated | Not populated | 40 Gb | 20 Gb | 20 Gb |
| VIC 1240 | Not populated | VIC 1280 | 120 Gb | 60 Gb | 40 Gb |
| Not populated | Not populated | VIC 1280 | 80 Gb | 40 Gb | 20 Gb |
| VIC 1240 | Not populated | Cisco-certified mezzanine adapter[2] | 60 Gb | 40 Gb | 40 Gb |
| VIC 1240 | Port Expander Card for VIC 1240 | Not populated | 80 Gb | 40 Gb | Not supported[3] |
| Not populated | Not populated | Cisco-certified mezzanine adapter | 20 Gb | 20 Gb | 20 Gb |
| Not populated | Cisco-certified mezzanine adapter | Cisco-certified mezzanine adapter | 40 Gb | 40 Gb | Not supported[3] |
| VIC 1240 | Port Expander Card for VIC 1240 | VIC 1280 | 160 Gb | 80 Gb | Not supported[3] |

**Notes . . .**

1. Cisco-designed adapters are capable of port channeling. A port channel bundles up to four individual interfaces into a group to provide increased bandwidth and redundancy. Port channeling also load balances traffic across these physical interfaces. The port channel stays operational as long as at least one physical interface within the port channel is operational. Cisco-certified adapters suppled by third-party vendors do not support port channeling. Port channeling is indicated with an oval drawn around several individual ports.
2. Cisco-certified mezzanine adapters are manufactured by third-party vendors and are certified by Cisco for use in the servers. For more information about supported Cisco-certified mezzanine adapters, see **http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/blade.html#wp1010426**
3. The 2104XP fabric extender is not compatible with any I/O card installed in mezzanine connector 1.

Supported 2-CPU card adapter combinations are shown in *Table 20*.

**Table 20 Supported Mezzanine Adapter Combinations (2-CPU Configuration)**

| Adapter in VIC 1240 Connector | Adapter in Mezzanine Slot 1 | Adapter in Mezzanine Slot 2 | Total Available Bandwidth[1] | | |
|---|---|---|---|---|---|
| | | | 2 x 2208XP | 2 x 2204 XP | 2 x 2104 XP |
| VIC 1240 | Not populated | Not populated | 40 Gb | 20 Gb | 20 Gb |
| VIC 1240 | Not populated | VIC 1280 | 120 Gb | 60 Gb | 40 Gb |
| VIC 1240 | Not populated | Cisco-certified mezzanine adapter[2] | 60 Gb | 40 Gb | 40 Gb |
| VIC 1240 | Port Expander Card for VIC 1240[3] | Not populated | 80 Gb | 40 Gb | Not supported[4] |
| Not populated | Not populated | Cisco-certified mezzanine adapter | 20 Gb | 20 Gb | 20 Gb |
| VIC 1240 | Port Expander Card for VIC 1240[3] | VIC 1280 | 160 Gb | 80 Gb | Not supported[4] |

**Notes . . .**

1. Cisco-designed adapters are capable of port channeling. A port channel bundles up to four individual interfaces into a group to provide increased bandwidth and redundancy. Port channeling also load balances traffic across these physical interfaces. The port channel stays operational as long as at least one physical interface within the port channel is operational. Cisco-certified adapters suppled by third-party vendors do not support port channeling. Port channeling is indicated with an oval drawn around several individual ports.
2. Cisco-certified mezzanine adapters are manufactured by third-party vendors and are certified by Cisco for use in the servers. For more information about supported Cisco-certified mezzanine adapters, see **http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/blade.html#wp1010426**
3. Only the Port Expander for VIC 1240 is functional in mezzanine slot 1 in 2-CPU configurations
4. The 2104XP fabric extender is not compatible with any adapter installed in mezzanine slot 1

The general connectivity diagrams between the card adapters and the different fabric extenders are shown in *Figure 21 on page 38* through *Figure 23 on page 39*.

**Figure 21 B420 M3 to 2208XP Fabric Extenders**

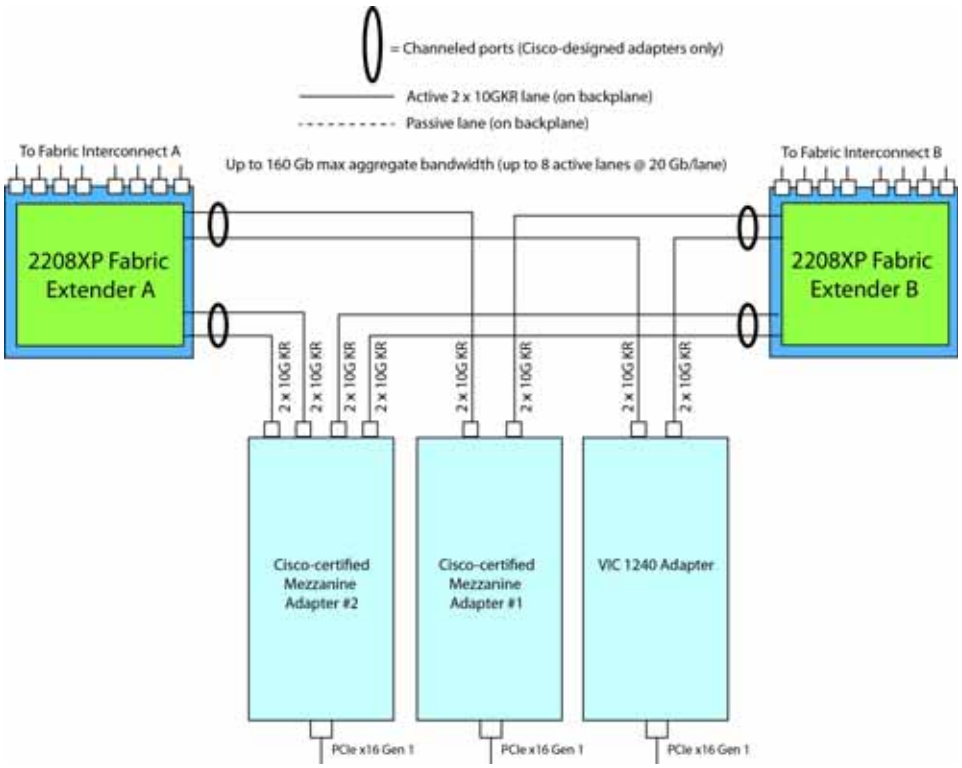



**Figure 22 B420 M3 to 2204XP Fabric Extenders**

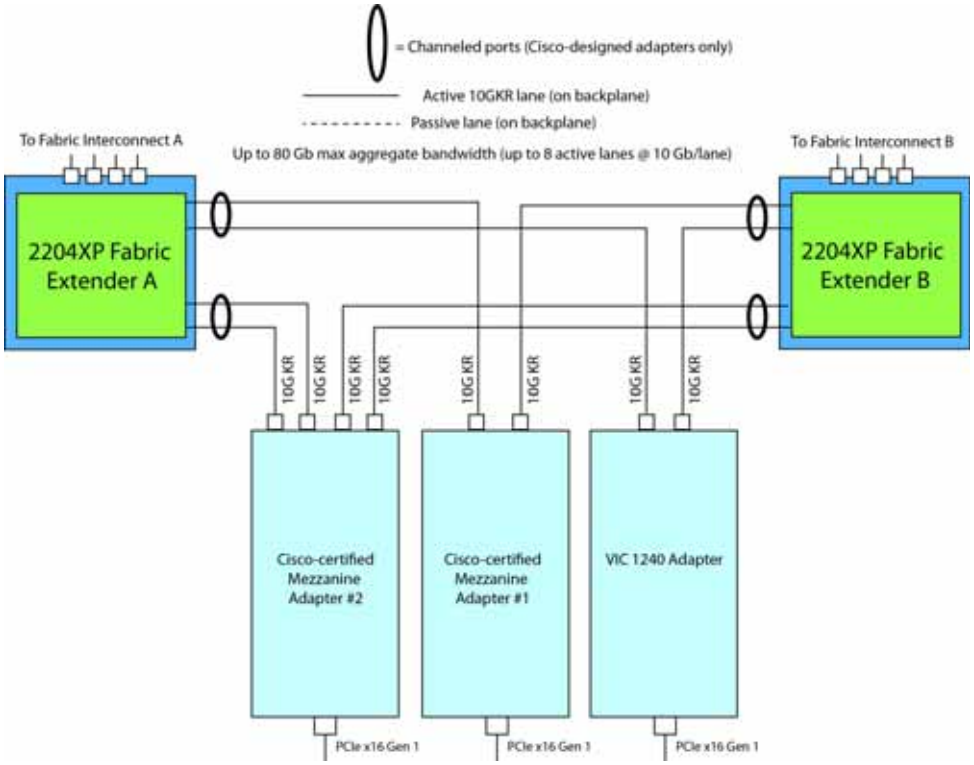
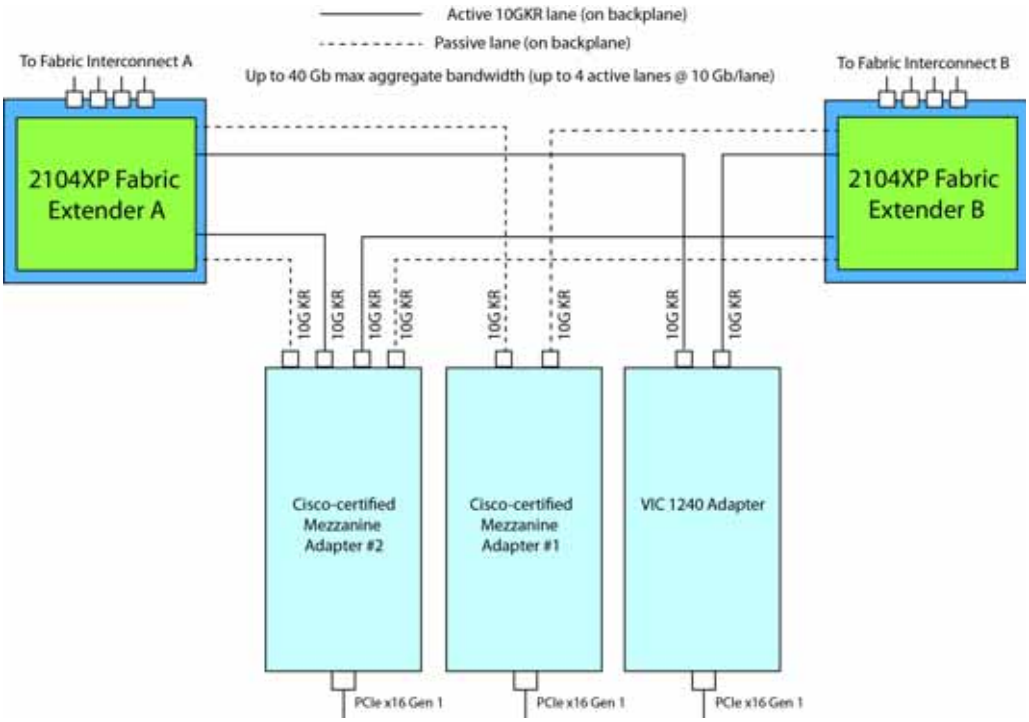


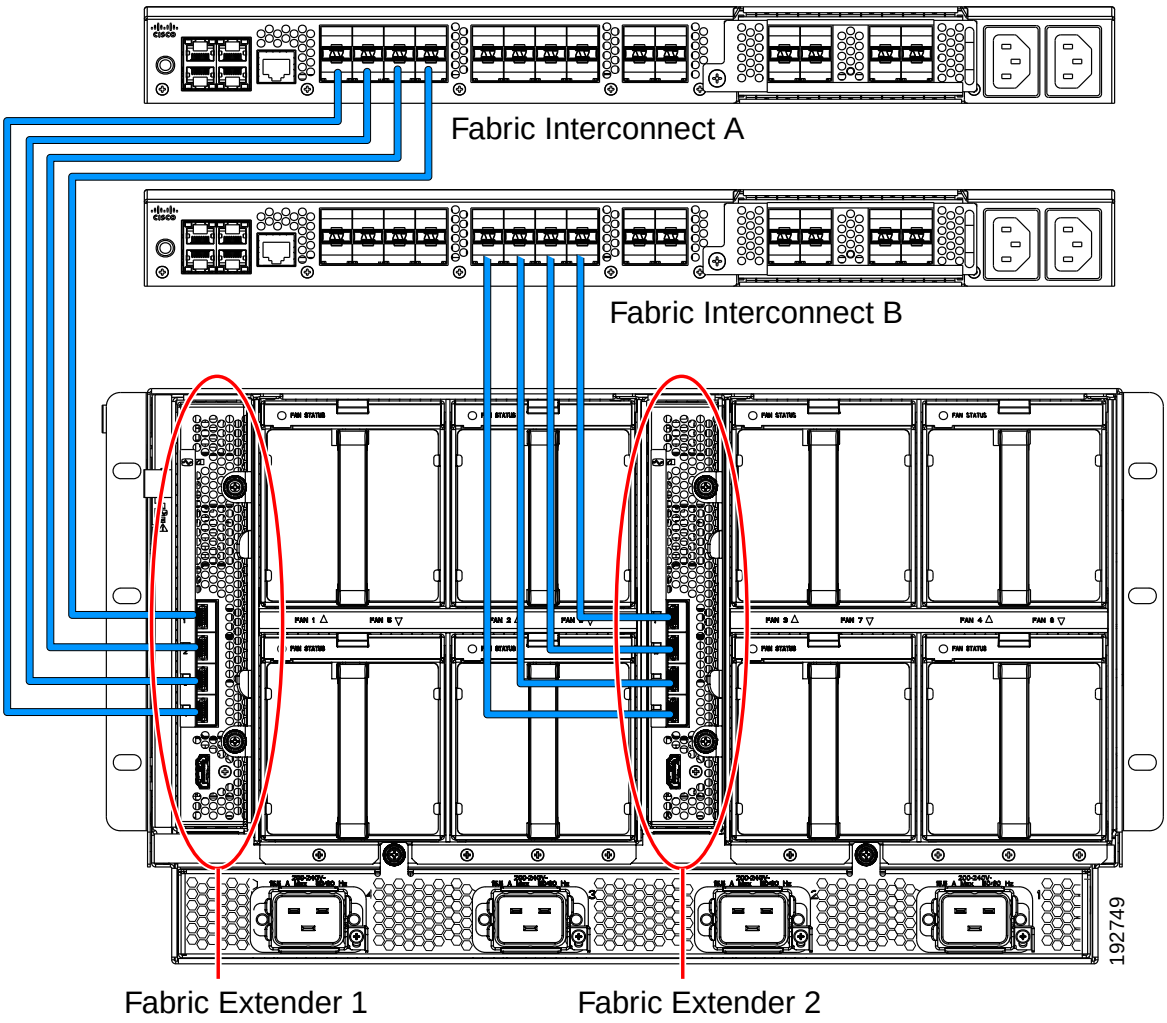
**Figure 23 B420 M3 to 2104XP Fabric Extenders**



## Connectivity Between Fabric Extender and Fabric Interconnect

*Figure 24* shows the correct method to connect the Fabric Interconnect modules to two separate port fabric interconnects. You must connect each port fabric interconnect to the chassis through its own Fabric Extender.

**Figure 24 Connecting Blade Chassis Fabric Extenders to Fabric Interconnect Chassis**



## SFP+ Transceivers

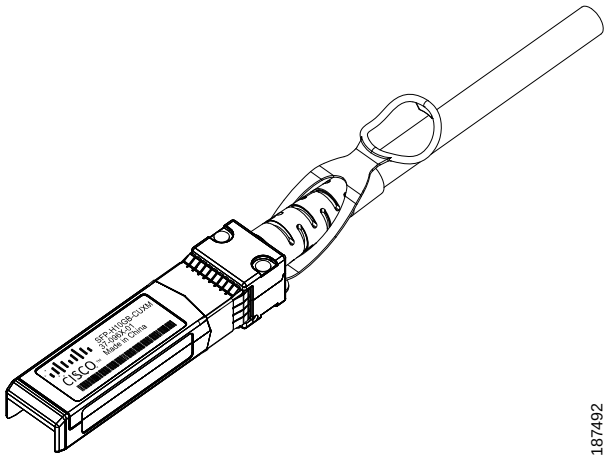
Each Cisco Fabric Extender within the chassis supports Small Form-Factor Pluggable (SFP+) copper or optical transceivers. Each transceiver runs at 10 Gbs.

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

**Figure 25 SFP+ 10 Gb Twinax Copper Transceiver**



## 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 26*. It has a duplex LC connector on the optical interface. A fiber optic cable must be used to connect the two transceivers together.

**Figure 26 SFP+ Optical Transceiver**

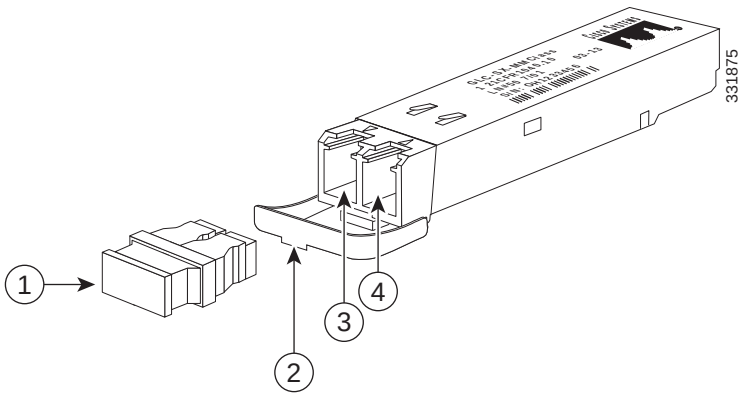



**Table 21 SFP+ Callouts**

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

## Fabric Extender Bundles

You can order two kinds of Fabric Extender bundles:

- UCS-IOM2208-16FET. This bundle includes one 2208XP Fabric Extender plus 16 Fabric Extender Transceivers (FETs). 8 FETs are used for the Fabric Extender and 8 for the Fabric Interconnect.
- UCS-IOM2204-8FET. This bundle includes one 2204XP Fabric Extender plus 16 Fabric Extender Transceivers (FETs). 4 FETs are used for the Fabric Extender and 4 for the Fabric Interconnect.

The FETs are in an SFP+ form-factor and support 10 Gbps full-duplex transmissions between the Fabric Extender and Fabric Interconnect, using your own multimode fiber (MMF) optical cables. The reach is 25 meters using OM2 MMF optical cables and 100 meters using OM3 MMF optical cables.

If you do not order the bundle that includes the transceivers, you can order the transceivers separately as spares (PID = FET-10G=).

# TECHNICAL SPECIFICATIONS

## Physical Dimensions and Specifications

**Table 22 Cisco UCS 5108 Chassis Specifications**

| Parameter | Value |
|---|---|
| Height | 10.5 in. (26.7 cm); 6 rack unit (6RU) |
| Width | 17.5 in. (44.5 cm); fits standard 19-inch square-hole rack (or round hole threaded or non-threaded, with optional adapter kit) |
| Depth | 32 in. (81.2 cm) |
| Weight | 90 lbs (40.83 kg) empty, 255 lbs (115.66 kg) fully configured |
| Blade server slots | 8 half-width slots, 4 full-width slots, or combination of half- and full-width slots. |
| Fabric Extender slots | 2 |
| Fabric Extenders | Compatible with 2208XP, 2204XP, and 2104XP Fabric Extenders |
| Power | Four 2500 W output, 200 V – 240 V, 50 to 60 Hz, single-phase, hot-swappable, redundant power supplies, with IEC-320 C20 connections or 2500 W output -48 V DC Input<br>Supports non-redundant, N+1 redundant, and N+N grid redundant configurations |
| Fans | 8 hot-swappable fans<br>Each fan module contains 2 redundant fans; up to two fans can fail in the system. |
| Management | Managed from the Cisco UCS 6100/6200 Series Fabric Interconnects by Cisco UCS Manager (redundant management operations when the chassis is configured with two fabric extenders) |
| Backplane | 1.2 TB of aggregate throughput; supports 10BASE-KR connections for 8 blades |
| Regulatory compliance | Products comply with CE Markings per directives 2004/108/EC and 2006/108/EC |
| Safety | ■ UL 60950-1<br>■ CAN/CSA-C22.2 No. 60950-1<br>■ EN 60950-1<br>■ IEC 60950-1<br>■ AS/NZS 60950-1<br>■ GB4943 |

**Table 22 Cisco UCS 5108 Chassis Specifications** *(continued)*

| Parameter | Value |
|---|---|
| EMC: Emissions | ■ 47CFR Part 15 (CFR 47) Class A<br>■ AS/NZS CISPR22 Class A<br>■ CISPR2 2 Class A<br>■ EN55022 Class A<br>■ ICES003 Class A<br>■ VCCI Class A<br>■ EN61000-3-2<br>■ EN61000-3-3<br>■ KN22 Class A |
| EMC: Immunity | ■ EN50082-1<br>■ EN61000-6-1<br>■ EN55024<br>■ CISPR24<br>■ EN300386<br>■ KN 61000-4 Series |

## Power Specifications

The specifications for the various 5108 blade chassis power supplies are listed in *Table 23* through *Table 25*.

**Table 23 AC Input Gold Power Supply (N20-PAC5-2500W) Specifications**

| Description | Specification |
|---|---|
| AC-input voltage | 200 to 240 VAC nominal (Range: 180 to 264 VAC) |
| AC-input frequency | 50 to 60 Hz nominal (Range: 47 to 63 Hz) |
| AC-input current | 15.5 Amps @ 200 VAC |
| Maximum Input VA | 2790 VA @ 200 VAC |
| Maximum output power per power supply | 2500 W @ 200 to 240 VAC |
| Maximum inrush current | 35 A (sub cycle duration) |
| Maximum hold up time | 12 ms @ 2500 W |
| Power supply output voltage | 12 VDC @ 208 V |
| Efficiency rating | Climate Savers Gold |

**Table 23 AC Input Gold Power Supply (N20-PAC5-2500W) Specifications** *(continued)*

| Description | Specification | | | |
|---|---|---|---|---|
| Efficiency (80Plus Gold Certified) | 10% load | 20% load | 50% load | 100% load |
| | 88.61% | 91.64% | 92.21% | 90.97% |
| Input Connector | IEC320 C20 | | | |

**Table 24 AC Input Platinum Power Supply (UCSB-PSU-2500ACPL) Specifications**

| Description | Specification | | | |
|---|---|---|---|---|
| AC-input voltage | 200 to 240 VAC nominal (Range: 180 to 264 VAC) | | | |
| AC-input frequency | 50 to 60 Hz nominal (Range: 47 to 63 Hz) | | | |
| AC-input current | < 16 Amps @ 200 VAC | | | |
| Maximum Input VA | 2790 VA @ 200 VAC | | | |
| Maximum output power per power supply | 2500 W @ 200 to 240 VAC (up to four power supplies) | | | |
| Maximum inrush current | 35 A (sub cycle duration) | | | |
| Maximum hold up time | 12 ms @ 2500 W | | | |
| Power supply output voltage | 12 VDC | | | |
| Power supply standby voltage | 3.3 VDC | | | |
| Efficiency rating | Climate Savers Platinum | | | |
| Efficiency (80Plus Platinum Certified) | 10% load | 20% load | 50% load | 100% load |
| | 89.63% | 93.25% | 94.19% | 92.07% |
| Input Connector | IEC320 C20 | | | |

**Table 25 DC Input Power Supply (UCSB-PSU-2500DC48) Specifications**

| Description | Specification | | | |
|---|---|---|---|---|
| Minimum software requirement | Cisco UCS Manager Release 2.0(1)<br>Capability Catalog Version 42 | | | |
| DC input voltage | -48 VDC to -60 VDC nominal (range: -40 to -72 VDC) | | | |
| Maximum output power per power supply | 2500 W | | | |
| Maximum inrush current | 35 A (sub cycle duration) | | | |
| Current draw at min voltage | 62 A | | | |
| Current draw at max voltage | 50 A | | | |
| Maximum input VA | 2880 | | | |
| Efficiency | 10% load | 20% load | 50% load | 100% load |
| | 88.73% | 91.68% | 92.19% | 90.51% |
| DC input terminal block | Accepts Panduit LCD4-14AF-L or equivalent barrel-type lug terminals with 90-degree angle, two- hole tongue, which accommodates 1/0 AWG size copper wire. The connector tongue width is 0.82 in, the stud hole spacing is 5/8 in, and the hole size is 1/4 in. | | | |
| Maximum hold up time | 8 ms | | | |

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

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

## Environmental Specifications

The environmental specifications for the 5108 blade chassis are listed in *Table 26*.

**Table 26 UCS 5108 Blade Server Environmental Specifications**

| Parameter | Minimum |
|---|---|
| Temperature operating | 10°C to 35°C (50°F to 95°F) |
| Temperature nonoperating | -40°C to 65°C (-40°F to 149°F) |
| Altitude operating | 0 to 3, 000 m (0 to 10,000 ft.); maximum ambient temperature decreases by 1° per 300 m |
| Humidity operating | 10 to 90%, non-condensing |
| Humidity nonoperating | 5 to 93%, non-condensing |
| Vibration nonoperating | 2.2 Grms, 10 minutes per axis on each of the three axes |
| Shock operating | Half-sine 2 G, 11 ms pulse, 100 pulses in each direction, on each of the three axes |
| Shock nonoperating | Trapezoidal, 25 G, two drops on each of six faces ΔV: 175 inches per second each corner on bottom face drop, 90 inches per second each corner on other five faces |
| Safety | UL60 950-1 No. 21CFR1040, CAN/CSA-C22.2 No. 60950-1, IRAM IEC60950-1, CB IEC60950-1, EN<br>60950-1, IEC 60950-1, GOST IEC60950-1, SABS/CB IEC6095-1, CCC*/CB GB4943-1995, CNS14336, CB IEC60950-1, AS/NZS 60950-1, GB4943 |
| Emissions | 47CFR Part 15 (CFR 47) Class A, AS/NZS CISPR22 Class A, CISPR2 2 Class A, EN55022 Class A, ICES003 Class A, VCCI Class A, EN61000-3-2, EN61000-3-3, KN22 Class A, CNS13438 Class A |
| Immunity | Verified to comply with EN55024, CISPR 24, KN 61000-4 Series, KN 24 |
| Electrostatic discharge | Tested to ESD levels up to 15 kilovolts (kV) air discharge and up to 8 kV contact discharge without physical damage |
| Acoustic | ■ Sound power: 68.8 dBA at ambient temperature 23° C measured using the Dome Method<br>■ GOST MsanPiN 001-96 |

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