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# Cisco UCS B460 M4 Blade Server (with Intel® Xeon E7 v2 CPU)

# CONTENTS

# OVERVIEW

The Cisco® UCS B460 M4 High-Performance Blade Server (*Figure 1*) is a four-socket, full-width double-high blade server supporting the Intel® Xeon® E7-4800 v2 and E7-8800 v2 series processor family CPUs, with up to 6 terabytes[1] (TB) of double-data-rate 3 (DDR3) memory in 96 slots, up to 4 small form factor (SFF), hot-swappable [2] drive bays for hard disk drives (HDDs) or solid state drives (SSDs), four dual-port and two quad-port mezzanine card connections for up to 320 Gbps aggregate I/O bandwidth. The Cisco UCS B460 M4 server is designed to power the most demanding enterprise applications.

As shown in *Figure 1*, the B460 M4 server consists of two Scalable M4 Blade Modules and a Scalability Connector that cross-connects the two Blade Modules and allows them to function as a single server. The Blade Module on the bottom is the "Master" and the Blade Module on the top is the "Slave."

The server is controlled with UCS Manager (UCSM) version 2.2(2).

**Figure 1     Cisco UCS B460 M4 Blade Server**

**Front View**



Notes . . .

1. A maximum of 6 TB memory is available using 64 GB DIMMs.
2. Hot-swap replacement means that you do not have to precondition or shut down the component in software before you remove it.

# DETAILED VIEWS

## Chassis Front View

*Figure 2* shows the front of the Cisco UCS B460 M4 Blade Server.

**Figure 2**      **Chassis Front View**
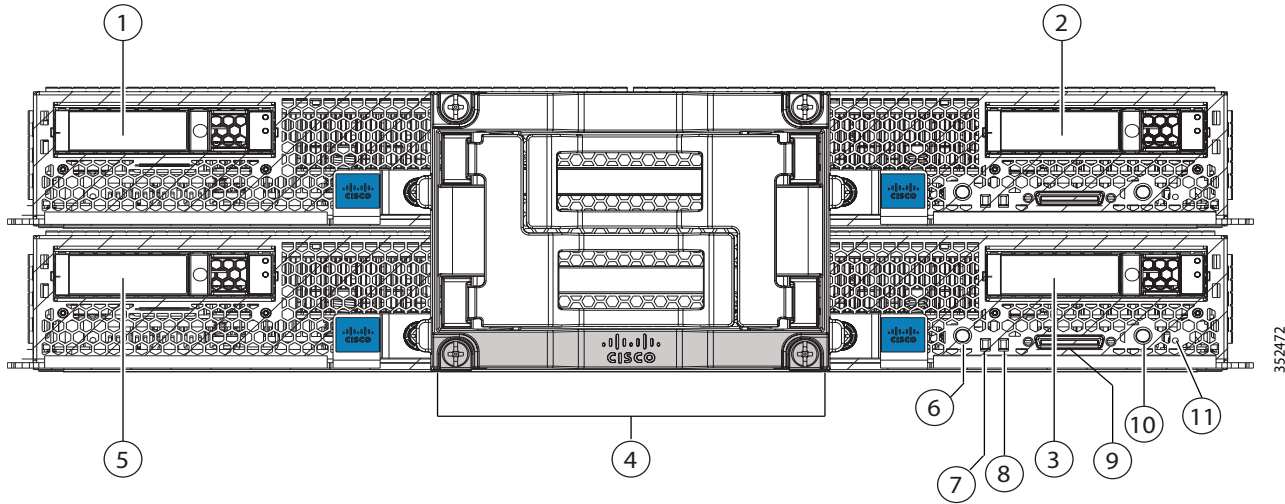


| 1 | Hard drive bay 3 | 7 | Network link status LED |
|---|---|---|---|
| 2 | Hard drive bay 4 | 8 | Blade health LED |
| 3 | Hard drive bay 2 | 9 | Local console connection[1] |
| 4 | UCS Scalability connector | 10 | Beaconing button and LED |
| 5 | Hard drive bay 1 | 11 | Reset button access |
| 6 | Power button and LED | — | — |

Notes . . .

1. See *SUPPLEMENTAL MATERIAL on page 39* for more information about the KVM cable that plugs into the console port.

# BASE SERVER STANDARD CAPABILITIES and FEATURES

*Table 1* lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in *CONFIGURING the SERVER on page 7*.

Table 1   Capabilities and Features

| Capability/Feature | Description |
|---|---|
| Chassis | The B460 M4 Blade Server mounts in a Cisco UCS 5100 series chassis and occupies four chassis slots (each chassis slot is a half-width slot). |
| CPU | Four Intel® Xeon® E7-8800 v2 or E7-4800 v2 series processor family CPUs. |
| Chipset | Intel® C602J chipset |
| Memory | 96 slots for registered DIMMs (48 per chassis). Maximum memory capacity is 6 TB[1]. This is accomplished with 96 DIMMs, consisting of 48 DIMM kits (2 64 GB matched DIMMs per kit). |
| Expansion slots | Two dual-port slots and one quad-port mezzanine slot are provided that can accommodate PCIe compatible adapters. |
| | One of the dual-port slots is dedicated for the VIC 1240 or VIC 1340 adapter which provides Ethernet and Fibre Channel over Ethernet (FCoE) |
| | NOTE:  The Cisco VIC 1200 Series (1240 and 1280) is compatible in UCS domains that implement both 6100 and 6200 Series Fabric Interconnects. However, the Cisco VIC 1300 Series (1340 and 1380) is compatible only with the 6200 Series Fabric Interconnects. |
| | The other dual-port slot and the quad-port slot are used for various types of Cisco adapters and Cisco UCS Storage Accelerator adapters. The VIC 1280 and VIC 1380 can only be plugged into the quad-port slot. |
| Storage controller | Two LSI SAS3008 12G SAS RAID controllers, one in each Blade Module, each providing 12 Gbps SAS connectivity. Provides RAID 0, 1, and JBOD capability. |
| Internal storage devices | ■ Up to four optional front-accessible, hot-swappable hard disk drives (HDDs) or solid state drives (SSDs), two per Blade Module. |
| | ■ One optional USB flash drive, mounted inside the "Master" Blade Module. |
| | ■ Dual sockets for optional Flexible Flash cards on the front left side of the "Master" Blade Module. |

Table 1   Capabilities and Features  *(continued)*

| Capability/Feature | Description |
|---|---|
| Video | The Cisco Integrated Management Controller (CIMC) provides video using the Matrox G200e video/graphics controller:<br><br>■ Integrated 2D graphics core with hardware acceleration<br><br>■ DDR2/3 memory interface supports up to 512 MB of addressable memory (8 MB is allocated by default to video memory)<br><br>■ Supports display resolutions up to 1920 x 1200 16bpp @ 60Hz<br><br>■ High-speed integrated 24-bit RAMDAC<br><br>■ Single lane PCI-Express host interface running at Gen 1 speed<br><br>Note that the two CIMCs (one in each server chassis) work together. |
| Interfaces | One front-accessible console connector on the master server chassis (see *SUPPLEMENTAL MATERIAL on page 39*) |
| Power subsystem | Integrated in the Cisco UCS 5100 series chassis |
| Fans | Integrated in the Cisco UCS 5100 series chassis |
| Integrated management processor | The built-in Cisco Integrated Management Controller (CIMC) GUI or CLI interface enables you to monitor the server inventory, health, and system event logs. |

Notes . . .

1. A maximum of 6 TB memory is available using 64 GB DIMMs.

# CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS B460 M4 Server:

## STEP 1 VERIFY BASE SKU

Verify the product ID (PID) of the base server as shown in *Table 2*.

**Table 2   PID of the Base B460 M4 Server**

| Product ID (PID) | Description |
|---|---|
| UCSB-EX-M4-1A | UCS Scalable B460 M4 Blade Module w/o E7 v2 CPU/DIMM/HDD |

The B460 M4 base server:

■ Includes two full-width Scalable M4 Blade Modules and a Scalability Connector that interconnects the two Blade Modules. \

■ Does not include CPUs, memory DIMMs, SSDs, HDDs, or mezzanine cards.

> **NOTE**: Use the steps on the following pages to configure the server with the components that you want to include.

> **NOTE**: The B460 M4 server consists of two Scalable M4 Blade Modules and a Scalability Connector that cross-connects the two Blade Modules. The Blade Module on the bottom is the "Master" and the Blade Module on the top is the "Slave". The optional USB flash and Flexible Flash cards must be mounted in the "Master" Blade Module of B460 M4 server; if they are in the "Slave" Blade Module, they are not recognized and do not operate.

> **NOTE**: If the B460 M4 server is mixed with other full-width or half-width blades in the chassis, the B460 M4 must occupy the bottom two full-width slots in the chassis. The chassis should be loaded with the largest server on the bottom, starting with B460 M4 on the bottom, followed by full-width blades above, and the half-width blades at the very top of the chassis.

**To upgrade from a B260 M4 server to a B460 M4 server:**

■ Your current B260 M4 server must be configured with two identical Intel® Xeon® E7-8800 v2 or two identical E7-4800 v2 series processor family CPUs. A B260 M4 with E7-2800 v2 CPUs cannot be upgraded.

■ Order the upgrade kit (PID UCSB-EX-M4-1E-U), which consists of the following:

— One Scalable M4 Blade Module

— One Scalability Connector

■ Configure the new Scalable M4 Blade Module with two Intel Xeon E7-8800 v2 or E7-4800 v2 series processor family CPU that are identical to the two processors in the B260 M4 server to be upgraded.

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NOTE: The two CPUs in the original B260 M4 server and the two CPUs in the Scalable M4 Blade Module from the upgrade kit must be identical.

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■ Configure both B260 server chassis with like kind DIMMs. All DIMMs must be either RDIMMs or LRDIMMs.

■ Remove the Scalability Terminator from your original B260 M4. Install the new Scalable M4 Blade Module from the upgrade kit in the chassis slot above or below. Then install the new Scalability Connector into the front of both Blade Module, connecting them together. You now have a B460 M4 server, consisting of two Scalable M4 Blade Modules ganged together by the Scalability Connector.

# STEP 2 CHOOSE CPU(S)

The standard CPU features are:

- Intel Xeon E7-8800 v2 or E7-4800 v2 series processor family CPUs
- Intel C602J chipset
- Cache size of up to 37.5 MB

## Choose CPUs

The available CPUs are listed in *Table 3*.

**Table 3 Available CPUs: Intel Xeon E7-4800 v2/E7-8800 v2 Family**

| Product ID (PID) | Intel Number | Clock Freq (GHz) | Power (W) | Cache Size (MB) | Cores | QPI | Highest DDR3 DIMM Clock Support (MHz) |
|---|---|---|---|---|---|---|---|
| UCS-CPU-E78893B | E7-8893 v2 | 3.4 | 155 | 37.5 | 6 | 8.0 | 1600 |
| UCS-CPU-E78891B | E7-8891 v2 | 3.2 | 155 | 37.5 | 10 | 8.0 | 1600 |
| UCS-CPU-E78880LB | E7-8880L v2 | 2.2 | 105 | 37.5 | 15 | 8.0 | 1600 |
| UCS-CPU-E78857B | E7-8857 v2 | 3.0 | 130 | 30 | 12 | 8.0 | 1600 |
| UCS-CPU-E74890B | E7-4890 v2 | 2.8 | 155 | 37.5 | 15 | 8.0 | 1600 |
| UCS-CPU-E74880B | E7-4880 v2 | 2.5 | 130 | 37.5 | 15 | 8.0 | 1600 |
| UCS-CPU-E74870B | E7-4870 v2 | 2.3 | 130 | 30 | 15 | 8.0 | 1600 |
| UCS-CPU-E74860B | E7-4860 v2 | 2.6 | 130 | 30 | 12 | 8.0 | 1600 |
| UCS-CPU-E74850B | E7-4850 v2 | 2.3 | 105 | 24 | 12 | 7.2 | 1600 |
| UCS-CPU-E74830B | E7-4830 v2 | 2.2 | 105 | 20 | 10 | 7.2 | 1600 |
| UCS-CPU-E74820B | E7-4820 v2 | 2.0 | 105 | 16 | 8 | 7.2 | 1600 |
| UCS-CPU-E74809B | E7-4809 v2 | 1.9 | 105 | 12 | 6 | 6.4 | 1333 |

## Approved Configurations

(1) Four-CPU Configuration

- Choose four identical CPUs from any one row in *Table 3*.

## Caveats

■ You must choose two identical CPUs.

> NOTE: The B260 M4 server consists of a Scalable M4 Blade Module and a Scalability Terminator that plugs into the front of the blade module.
>
> You can upgrade a B260 M4 blade server later to a B460 M4 server; however, each B260 M4 server must be configured with two identical Intel Xeon E7-8800 v2 or E7-4800 v2 series processor family CPUs. A B260 M4 with E7-2800 v2 CPUs cannot be upgraded See *To upgrade from a B260 M4 server to a B460 M4 server: on page 8* for details on upgrading.

# STEP 3   CHOOSE MEMORY

The standard memory features are:

■   DIMMs

— Clock speed: 1600, 1333, or 1066 MHz

— Ranks per DIMM: 4 (for 32 GB DIMMs), 2 (for 8 or 16 GB DIMMs),
or 8 (for 64 GB DIMMs)

— Operational voltage: 1.5 or 1.35 V

— Registered DIMM (RDIMM) or load-reduced DIMM (LRDIMM)

NOTE:  You cannot mix RDIMMs with LRDIMMs

■   Each CPU controls four serial memory interface 2 (SMI-2) channels. Memory buffers convert
each SMI-2 channel into two DDR3 subchannels. Memory is organized as 3 DIMMs per
subchannel, totaling 6 DIMMs per SMI-2 channel. See *Figure 3*.

NOTE:  Memory mirroring is supported and settable using the UCSM Service Profile
"Memory RAS Configuration" setting.

**Figure 3    B460 M4 Memory Organization**



"Slave" Blade Module mounted on top

"Master" Blade Module mounted on bottom
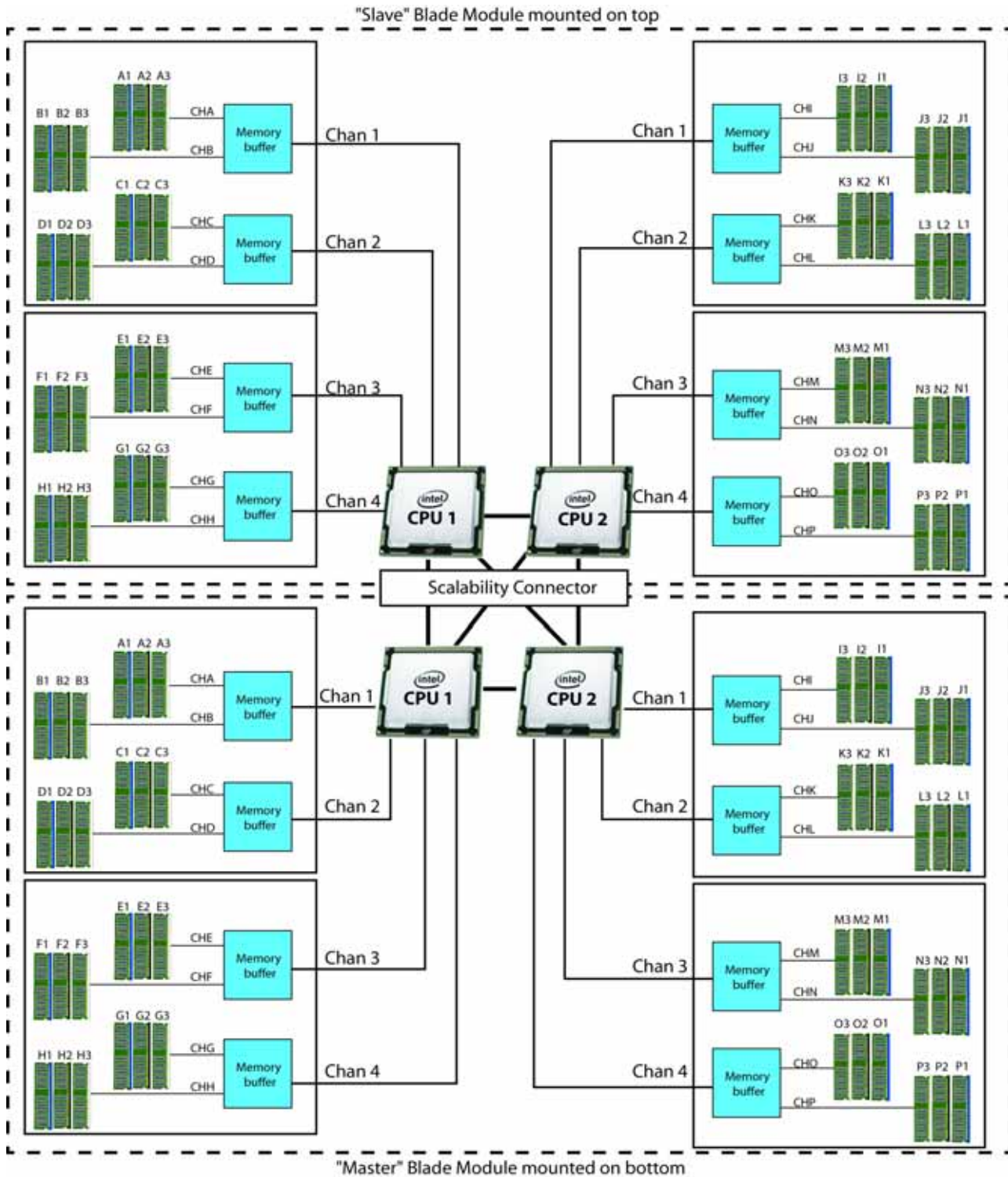
96 DIMMS, 6 TB maximum memory, 4 memory channels per CPU, up to 3 DIMMs per memory subchannel

### Select DIMMs

DIMMs are available as two-DIMM kits. Each of the product IDs in *Table 4* specifies two DIMMs.

**Table 4   Available DDR3 DIMMs**

| Product ID (PID) | PID Description | Voltage | Ranks/ DIMM |
|---|---|---|---|
| **DIMM Pair Kit Options (2 DIMMs per kit)** | | | |
| UCS-ML-2X648RY-E | 2x64GB DDR3-1600-MHz LRDIMM/PC-12800/octal rank/x4 | 1.5 V | 8 |
| UCS-ML-2X324RY-E | 2x32GB DDR3-1600-MHz LRDIMM/PC-12800/quad rank /x4 | 1.5/1.35 V | 4 |
| UCS-MR-2X162RY-E | 2X16GB DDR3-1600-MHz RDIMM/PC-12800/dual rank/x4 | 1.5/1.35 V | 2 |
| UCS-MR-2X082RY-E | 2X8GB DDR3-1600-MHz RDIMM/PC-12800/dual rank/x2 | 1.5/1.35 V | 2 |
| **Memory Mirroring Option** | | | |
| N01-MMIRROR | Memory mirroring option | | |

### Approved Configurations

(1) 4-CPU Configuration

■ 96 DIMMs capacity total, up to 24 DIMMs per CPU

■ Select a minimum of 1 DIMM kit (2 DIMMs) or a maximum of 12 DIMM kits (24 DIMMs) per CPU The DIMMs for each CPU will be placed by the factory as shown in *Table 5*. DIMM labels shown in parentheses are DIMM pairs. Refer also to *Figure 3 on page 13* and *DIMM and CPU Layout on page 42* for more information about DIMM placement and labeling.

**Table 5   DIMM Population Order**

| DIMMs per CPU | CPU 1 DIMMs | CPU 2 DIMMs |
|---|---|---|
| 2 | (A1, B1) - blue slots | (O1, P1) - blue slots |
| 4 | (A1, B1) (C1, D1) - blue slots | (O1, P1) (L1, K1) - blue slots |
| 6 | (A1, B1) (C1, D1) (E1, F1) - blue slots | (O1, P1) (L1, K1) (M1, N1) - blue slots |
| 8 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots |
| 10 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) - black slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) - black slots |
| 12 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) (C2, D2) - black slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) (L2, K2) - black slots |

Cisco UCS B460 M4 Blade Server (with Intel® Xeon E7 v2 CPU)

Table 5 DIMM Population Order *(continued)*

| DIMMs per CPU | CPU 1 DIMMs | CPU 2 DIMMs |
|---|---|---|
| 14 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots<br>(A2, B2) (C2, D2) (E2, F2)- black slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots<br>(O2, P2) (L2, K2) (M2, N2) - black slots |
| 16 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots<br>(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots<br>(O2, P2) (L2, K2) (M2, N2) (J2, I2)- black slots |
| 18 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots<br>(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots<br>(A3, B3) - white or ivory slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots<br>(O2, P2) (L2, K2) (M2, N2) (J2, I2)- black slots<br>(O3, P3) - white or ivory slots |
| 20 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots<br>(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots<br>(A3, B3) (C3, D3)- white or ivory slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots<br>(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots<br>(O3, P3) (L3, K3)- white or ivory slots |
| 22 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots<br>(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots<br>(A3, B3) (C3, D3) (E3, F3) - white or ivory slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots<br>(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots<br>(O3, P3) (L3, K3) (M3, N3) - white or ivory slots |
| 24 | (A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots<br>(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots<br>(A3, B3) (C3, D3) (E3, F3) (G3, H3) - white or ivory slots | (O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots<br>(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots<br>(O3, P3) (L3, K3) (M3, N3) (J3, I3) - white or ivory slots |

Caveats

■ **Memory Mode.** System speed is dependent on how many DIMMs are populated per channel, the CPU DIMM speed support, and the BIOS memory mode. The BIOS default memory mode is performance mode. However, the BIOS can be changed to support lockstep mode.

— **Memory Performance Mode.** In this mode, the main memory channel from the CPU to the memory buffer runs at double the clock rate of each of the two memory subchannels from the buffer to the DIMMs, and each DIMM subchannel is accessed sequentially. For example, if the CPU channel clock speed is 2667 MHz, each of the DIMM subchannels operates at 1333 MHz. For this reason, performance mode is referred to as 2:1. Performance mode does not provide data protection, but can yield up to 1.5 times the performance of lockstep mode and is the best choice for high throughput requirements.

— **Memory Lockstep Mode.** In this mode, the main memory channel from the CPU to the memory buffer runs at the same clock rate of each of the two memory subchannels from the buffer to the DIMMs, and both DIMM subchannels are accessed simultaneously for a double-width access. For example, if the CPU channel clock speed is 1600 MHz, each of the DIMM subchannels operates at 1600 MHz. For this reason, lockstep mode is referred to as 1:1. Memory lockstep mode provides protection against both single-bit and multi-bit errors. Memory lockstep lets two memory channels work as a single channel, moving a data word two channels wide and providing eight bits of memory correction.

■ CPU Effect on DIMM Performance

Table 6      CPU Effect on DIMM Performance

| CPU Memory Mode | Advanced CPU[1] 8.0 GT/s QPI | Standard CPU[2] 7.2 GT/s QPI | Basic CPU[3] 6.4 GT/s QPI |
|---|---|---|---|
| Lockstep Mode (1:1) | 1600 MHz | 1600 MHz | 1333 MHz |
| Performance Mode (2:1) | 1333 MHz | 1066 MHz | 1066 MHz |

Notes . . .
   1. CPU examples: E7-4890/4880/4870/4860 v2, E7-8893/8891/8857 v2
   2. CPU examples: E7-4850/4830/4820 v2
   3. CPU example: E7-4809 v2

■ DIMM Clock Speeds

   DIMMs run at various clock speeds depending on the DIMM voltage and number of DIMMs per channel. See *Table 7* and *Table 8*.

Table 7      DIMM Performance (at 1.5 V)

| DIMM GB/Rank/Type | Performance Mode (2:1) 1.5 V DIMM | | | Lockstep Mode (1:1) 1.5 V DIMM | | |
|---|---|---|---|---|---|---|
| | 1 DPC | 2 DPC | 3 DPC | 1 DPC | 2 DPC | 3 DPC |
| 8 GB/2R/RDIMM | 1333 MHz | 1333 MHz | 1066 MHz | 1333 MHz | 1333 MHz | 1066 MHz |
| 16 GB/2R/RDIMM | 1333 MHz | 1333 MHz | 1066 MHz | 1333 MHz | 1333 MHz | 1066 MHz |
| 32 GB/4R/LRDIMM | 1333 MHz | 1333 MHz | 1333 MHz | 1600 MHz | 1600 MHz | 1333 MHz |
| 64 GB/8R/LRDIMM | 1066 MHz | 1066 MHz | 1066 MHz | 1066 MHz | 1066 MHz | 1066 MHz |

Table 8      DIMM Performance (at 1.35 V)

| DIMM GB/Rank/Type | Performance Mode (2:1) 1.35 V DIMM | | | Lockstep Mode (1:1) 1.35 V DIMM | | |
|---|---|---|---|---|---|---|
| | 1 DPC | 2 DPC | 3 DPC | 1 DPC | 2 DPC | 3 DPC |
| 8 GB/2R/RDIMM | 1333 MHz | 1066 MHz | N/A | 1333 MHz | 1066 MHz | N/A |
| 16 GB/2R/RDIMM | 1333 MHz | 1066 MHz | N/A | 1333 MHz | 1066 MHz | N/A |
| 32 GB/4R/LRDIMM | 1333 MHz | 1333 MHz | N/A | 1333 MHz | 1333 MHz | N/A |
| 64 GB/8R/LRDIMM | N/A | N/A | N/A | N/A | N/A | N/A |

- The only supported DIMM configurations are shown in *Table 5 on page 14*. Although the DIMMs are sold in matched pairs, exact pairing is not required. For best results, follow the DIMM population rules.

- The B460 M4 server needs at least one two-DIMM kit installed for each CPU.

- Memory DIMMs must be installed evenly across the installed CPUs.

- Do not mix RDIMMs and LRDIMMs.

- Your selected CPU(s) can have some effect on performance. The CPUs must be of the same type.

- For DIMM size mixing rules, see *Table 24 on page 44*.

## STEP 4   CHOOSE HARD DISK DRIVES (HDDs) or SOLID-STATE DRIVES (SSDs)

The standard disk drive features are:

■  Small form factor (SFF) HDDs or SSDs

■  Hot-pluggable

■  Sled-mounted

**Choose Drives**

The available drives are listed in *Table 9*.

NOTE:  4K format drives are supported and qualified as bootable with Cisco UCS Manager Release 3.1(2b)and later versions.

**Table 9   Available Hot-Pluggable Sled-Mounted HDDs or SSDs**

| Product ID (PID) | PID Description | Drive Type | Capacity |
|---|---|---|---|
| **HDDs** | | | |
| **12 Gbps Drives** | | | |
| UCS-HD600G15K12G | 600 GB 12G SAS 15K RPM SFF HDD | SAS | 600 GB |
| UCS-HD450G15K12G | 450 GB 12G SAS 15K RPM SFF HDD | SAS | 450 GB |
| UCS-HD300G15K12G | 300 GB 12G SAS 15K RPM SFF HDD | SAS | 300 GB |
| UCS-HD12TB10K12G | 1.2 TB 12G SAS 10K RPM SFF HDD | SAS | 1.2 TB |
| UCS-HD900G10K12G | 900 GB 12G SAS 10K RPM SFF HDD | SAS | 900 GB |
| UCS-HD600G10K12G | 600 GB 12G SAS 10K RPM SFF HDD | SAS | 600 GB |
| UCS-HD300G10K12G | 300 GB 12G SAS 10K RPM SFF HDD | SAS | 300 GB |
| **6 Gbps Drives** | | | |
| UCS-HD12T10KS2-E | 1.2 TB 6G SAS 10K RPM HDD | SAS | 1.2 TB |
| UCS-HDD900GI2F106 | 900 GB 6G SAS 10K RPM HDD | SAS | 900 GB |
| **SSDs** | | | |
| **12 Gbps Drives** | | | |
| UCS-SD16TB12S4-EP | 1.6 TB 2.5 inch Enterprise Performance 12G SAS SSD (10X endurance) | SAS | 1.6 TB |
| UCS-SD800G12S4-EP | 800 GB 2.5 inch Enterprise Performance 12G SAS SSD (10X endurance) | SAS | 800 GB |
| UCS-SD400G12S4-EP | 400 GB 2.5 inch Enterprise Performance 12G SAS SSD (10X endurance) | SAS | 400 GB |

**Table 9  Available Hot-Pluggable Sled-Mounted HDDs or SSDs**  *(continued)*

| Product ID (PID) | PID Description | Drive Type | Capacity |
|---|---|---|---|
| **6 Gbps Drives** | | | |
| UCS-SD19TBKSS-EV | 1.9 TB 2.5 inch Enterprise Value 6G SATA SSD (1 FWPD)(PM863) | SATA | 1.9 TB |
| UCS-SD960GBKS4-EV | 960 GB 2.5 inch Enterprise Value 6G SATA SSD | SATA | 960 GB |
| UCS-SD800G0KS2-EP | 800 GB Enterprise Performance 6G SAS SSD (Samsung 1625) | SAS | 800 GB |
| UCS-SD480GBKSS-EV | 480 GB 2.5 in Enterprise Value 6G SATA SSD (1FWPD) (PM86) | SATA | 480 GB |
| UCS-SD400G0KS2-EP | 400 GB Enterprise Performance 6G SAS SSD (Samsung 1625) | SAS | 400 GB |
| UCS-SD240GBKS4-EV | 240 GB 2.5 inch Enterprise Value 6G SATA SSD | SATA | 240 GB |

**Approved Configurations**

(1)  **Zero to Four Drives**

■  Select from 0 to 4 drives from *Table 9*. You can select up to 2 drives per Blade Module.

**Caveats**

■  HDDs and SSDs can be mixed in the same server. HDDs and SSDs cannot be mixed within the Blade Module. SAS SSD and SATA SSD can be mixed within the same Blade Module. See *STEP 5 CHOOSE RAID CONFIGURATION, page 20* for available RAID configurations.

## STEP 5 CHOOSE RAID CONFIGURATION

The B460 M4 chassis integrates the LSI SAS3008 12G SAS RAID controller (one in each Blade Module), which provides RAID 0/1 capability.

Caveats

- For each Blade Module, RAID configuration is possible if you have two identical drives. Otherwise, a JBOD configuration is supported.

- A RAID configuration cannot be built with drives residing in different Blade Modules.

# STEP 6  CHOOSE ADAPTERS

The adapter offerings are:

■ Cisco Virtual Interface Cards (VICs)

Cisco developed 1200 Series and 1300 Series Virtual Interface Cards (VICs) to provide flexibility to create multiple NIC and HBA devices. The VICs also support adapter Fabric Extender and Virtual Machine Fabric Extender technologies. The VIC features are listed here:

— 1200 Series VICs enable advanced networking features including Netflow for network statistics, and DPDK, USNIC for low-latency computing applications.

— 1300 Series VICs include all of the 1200 Series features plus additional enhancements including network overlay offload support for NVGRE and VXLAN, and RoCE services.

— In addition, 1300 Series VICs support PCIe Gen 3.0 for greater bandwidth than 1200 Series VICs

— Two Converged Network Adapter (CNA) ports, supporting both Ethernet and FCoE

— Delivers 80 Gbps total I/O throughput to the server

  • VIC 1240 supports dual 4 x 10 Gbps Unified I/O ports

  • VIC 1340 supports dual 4x 10 Gbps Unified I/O ports or 2x40 (native) Gbps Unified I/O ports

— Creates up to 256 fully functional unique and independent PCIe adapters and interfaces (NICs or HBAs) without requiring single-root I/O virtualization (SR-IOV) support from operating systems or hypervisors

— Provides virtual machine visibility from the physical network and a consistent network operations model for physical and virtual servers

— Supports customer requirements for a wide range of operating systems and hypervisors

■ Cisco UCS Storage Accelerator Adapters

Cisco UCS Storage Accelerator adapters are designed specifically for the Cisco UCS B-series M4 blade servers and integrate seamlessly to allow improvement in performance and relief of I/O bottlenecks.

NOTE:  For environments with 6100 Series Fabric Interconnects, you must configure only the VIC 1240/1280 adapters (1200 Series) and not 1340/1380 (1300 Series). From an I/O connectivity standpoint, configure only the VIC 1200 Series with the 6100 Series Fabric Interconnects.

NOTE:  There are three slots on the server. One is a dedicated slot for the VIC 1340/1240 adapter only and the other two accommodate Cisco adapters or Cisco Storage Accelerator adapters as well as other options. *Table 10* shows which adapters plug into each of the three slots. Only the VIC 1340 or 1240 adapter plugs into the VIC 1340/1240 adapter slot. All other adapters plug into the other two mezzanine adapter slots.

NOTE:  You must have each Scalable M4 Blade Module configured with 2 CPUs to support cards that plug into either of the two mezzanine connectors. The VIC 1340 and 1240 adapters are supported on both 1- and 2-CPU configured systems.

*Table 10* shows the supported adapters.

To help ensure that your operating system is compatible with the cards you have selected, please check the Hardware Compatibility List at this URL:

http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html

**Choose an Adapter**

The supported mezzanine adapters in each of the Scalable M4 Blade Modules are listed in *Table 10*.

Table 10  Supported Mezzanine Adapters

| Product ID (PID) | PID Description | Connector |
|---|---|---|
| **Virtual Interface Cards (VICs)** | | |
| UCSB-MLOM-40G-03[1] | Cisco UCS VIC 1340 modular LOM for blade servers | Adapter 1 |
| UCSB-VIC-M83-8P[1] | Cisco UCS VIC 1380 mezzanine adapter | Adapter 3 |
| UCSB-MLOM-40G-01[2] | Cisco UCS VIC 1240 modular LOM for blade servers | Adapter 1 |
| UCS-VIC-M82-8P[2] | Cisco UCS VIC 1280 mezzanine adapter | Adapter 3 |
| **Cisco Storage Accelerators[3]** | | |
| UCSB-F-FIO-1600MS | UCS 1600 GB Fusion ioMemory3 SX Scale line for B-Series | Adapter 2 or Adapter 3 |
| UCSB-F-FIO-1300MP | UCS 1300 GB Fusion ioMemory3 PX Performance line for B-Series | Adapter 2 or Adapter 3 |
| UCSB-F-FIO-365M | Cisco UCS 365 GB MLC Fusion-io ioDrive2 | Adapter 2 or Adapter 3 |
| UCSB-F-FIO-785M | Cisco UCS 785GB MLC Fusion-io ioDrive2 | Adapter 2 or Adapter 3 |
| UCSB-F-LSI-400S | LSI 400GB SLC WarpDrive[4] | Adapter 2 or Adapter 3 |
| **Port Expander Card for VIC Option** | | |
| UCSB-MLOM-PT-01 | Cisco UCS Port Expander Card for VIC. This is a hardware option to enable an additional 4 ports of the VIC 1340 or VIC 1240, bringing the total capability of the VIC 1340 or VIC 1240 to dual 4 x 10 GbE | Adapter 2 |

Notes . . .

1. The VIC 1340/1380 are only supported with the 6200 Series Fabric Interconnects. They are not supported with the 6100 Series Fabric Interconnects.
2. The VIC 1240/1280 are supported with both the 6200 and 6100 Series Fabric Interconnects.
3. Do not mix Fusion io storage accelerator families. That is, do not mix "MP" or "MS" (ioMemory3) with "M" (ioDrive2) family cards.
4. The LSI 400 GB SLC WarpDrive has reached End of Sale status, but is still supported

"Adapter 1," "Adapter 2," and "Adapter 3" refer to the UCSM naming convention for the adapter slots (this document uses the UCSM naming convention). In the server BIOS and on the motherboard, the corresponding slots are labeled as "mLOM," "Mezz 1," and "Mezz 2,"

Cisco UCS B460 M4 Blade Server (with Intel® Xeon E7 v2 CPU)          23

respectively. See *Table 11*.

Table 11  Adapter Slot Naming and Bandwidth

| Server BIOS and Motherboard Slot Naming | UCSM Slot Naming | Available Bandwidth |
|---|---|---|
| mLOM (VIC 1240 or VIC 1340 only) | Adapter 1 | 20 Gbps per Fabric Extender |
| Mezz1 | Adapter 2 | 20 Gbps per Fabric Extender |
| Mezz2 | Adapter 3 | 40 Gbps per Fabric Extender |

## Supported Configurations

*Table 12* and *Table 13* shows the supported adapter combinations. The configuration rules for each Scalable M4 Blade Module are summarized as follows:

- Adapter slot 1 is dedicated for the VIC 1240 or VIC 1340 only. No other mezzanine card can fit in Adapter Slot 1.

- The Port Expander Card can only be selected if the VIC 1240 or VIC 1340 is also selected for the server.

- You must select at least one VIC or CNA. You may select up to two VICs or CNAs. However, you cannot mix a VIC and a CNA in the same server. The B460 M4 is made of two B260 M4 blade modules combined using a scalability connector. Each B260 M4 blade module in a B460 M4 connects to both fabric extenders in the blade chassis.

- However, B460M4 can be used with a single VIC adapter.

- You cannot select more than one VIC 1240 or VIC 1340. You cannot select more than one VIC 1280 or VIC 1380. A VIC 1240 and a VIC 1280 can be mixed in the same server. A VIC 1340 and VIC1380 can also be mixed.

- You can select up to two Storage Acceleration adapters. A Fusion-io adapter cannot be mixed with an LSI WarpDrive adapter in the same server.

Select an adapter combination according to *Table 12* or *Table 13*.

> NOTE:  CPU 1 controls adapter slot 1, and CPU 2 controls adapter slots 2 and 3.

Table 12  Supported 1340 and 1380 Adapter[1] Combinations (for each Scalable M4 Blade Module)

| Adapter Configurations | | | Fabric Extenders Aggregate Bandwidth | | | Fabric Interconnects | | CPUs Required |
|---|---|---|---|---|---|---|---|---|
| Adapter Slot 1 | Adapter Slot 2 | Adapter Slot 3 | 2 x 2208XP | 2 x 2204XP | 2 x 2104XP[2] | 2 x 61xx[2] | 2 x 62xx | |
| Two VICs (VIC 1340 + VIC 1380) | | | | | | | | |
| VIC 1340 | Port Expander Card | VIC 1380 | 160 Gb/s | 80 Gb/s | not supported | not supported | 62xx | 2 |
| VIC 1340 | Cisco UCS Storage Accelerator (Fusion-io or LSI) | VIC 1380 | 120 Gb/s | 60 Gb/s | not supported | not supported | 62xx | 2 |
| VIC 1340 | Not populated | VIC 1380 | 120 Gb/s | 60 Gb/s | not supported | not supported | 62xx | 2 |
| One VIC (VIC 1380) | | | | | | | | |
| Not populated | Cisco UCS Storage Accelerator (Fusion-io or LSI) | VIC 1380 | 80 Gb/s | 40 Gb/s | not supported | not supported | 62xx | 2 |
| Not populated | Not populated | VIC 1380 | 80 Gb/s | 40 Gb/s | not supported | not supported | 62xx | 2 |
| One VIC (VIC 1340) | | | | | | | | |
| VIC 1340 | Port Expander Card | Cisco UCS Storage Accelerator (Fusion-io or LSI) | 80 Gb/s | 40 Gb/s | not supported | not supported | 62xx | 2 |
| VIC 1340 | Port Expander Card | Not populated | 80 Gb/s | 40 Gb/s | not supported | not supported | 62xx | 2 |

**Table 12  Supported 1340 and 1380 Adapter[1] Combinations (for each Scalable M4 Blade Module)**

| Adapter Configurations | | | Fabric Extenders Aggregate Bandwidth | | | Fabric Interconnects | | CPUs Required |
|---|---|---|---|---|---|---|---|---|
| Adapter Slot 1 | Adapter Slot 2 | Adapter Slot 3 | 2 x 2208XP | 2 x 2204XP | 2 x 2104XP[2] | 2 x 61xx[2] | 2 x 62xx | |
| Note: for the following configuration, do not mix a Fusion-io adapter with an LSI WarpDrive. Slots 2 and 3 must have identical types of storage cards. | | | | | | | | |
| VIC 1340 | Cisco UCS Storage Accelerator (Fusion-io or LSI) | Cisco UCS Storage Accelerator (Fusion-io or LSI) | 40 Gb/s | 20 Gb/s | not supported | not supported | 62xx | 2 |
| VIC 1340 | Cisco UCS Storage Accelerator (Fusion-io or LSI) | Not populated | 40 Gb/s | 20 Gb/s | not supported | not supported | 62xx | 2 |
| VIC 1340 | Not populated | Not populated | 40 Gb/s | 20 Gb/s | not supported | not supported | 62xx | 1 |

Notes . . .

1. In the server BIOS and on the motherboard, "Adapter 1," "Adapter 2," and "Adapter 3" are labeled as "mLOM," "Mezz 1," and "Mezz 2," respectively
2. Supported only through UCS Manager version 2.2(3a) and later.

**Table 13  Supported 1240 and 1280 Adapter[1] Combinations (for each Scalable M4 Blade Module)**

| Adapter Configurations | | | Fabric Extenders Aggregate Bandwidth | | | Fabric Interconnects | | CPUs Required |
|---|---|---|---|---|---|---|---|---|
| Adapter Slot 1 | Adapter Slot 2 | Adapter Slot 3 | 2 x 2208XP | 2 x 2204XP | 2 x 2104XP[2] | 2 x 61xx[2] | 2 x 62xx | |
| Two VICs (VIC 1240 + VIC 1280) | | | | | | | | |
| VIC 1240 | Port Expander Card | VIC 1280 | 160 Gb/s | 80 Gb/s | 40 Gb/s | 61xx[2] | 62xx | 2 |
| VIC 1240 | Cisco UCS Storage Accelerator (Fusion-io or LSI) | VIC 1280 | 120 Gb/s | 60 Gb/s | 40 Gb/s | 61xx[2] | 62xx | 2 |
| VIC 1240 | Not populated | VIC 1280 | 120 Gb/s | 60 Gb/s | 40 Gb/s | 61xx[2] | 62xx | 2 |
| One VIC (VIC 1280) | | | | | | | | |
| Not populated | Cisco UCS Storage Accelerator (Fusion-io or LSI) | VIC 1280 | 80 Gb/s | 40 Gb/s | 20 Gb/s | 61xx[2] | 62xx | 2 |

Table 13  Supported 1240 and 1280 Adapter[1] Combinations (for each Scalable M4 Blade Module)

| Adapter Configurations | | | Fabric Extenders Aggregate Bandwidth | | | Fabric Interconnects | | CPUs Required |
|---|---|---|---|---|---|---|---|---|
| Adapter Slot 1 | Adapter Slot 2 | Adapter Slot 3 | 2 x 2208XP | 2 x 2204XP | 2 x 2104XP[2] | 2 x 61xx[2] | 2 x 62xx | |
| Not populated | Not populated | VIC 1280 | 80 Gb/s | 40 Gb/s | 20 Gb/s | 61xx[2] | 62xx | 2 |
| One VIC (VIC 1240) | | | | | | | | |
| VIC 1240 | Port Expander Card | Cisco UCS Storage Accelerator (Fusion-io or LSI) | 80 Gb/s | 40 Gb/s | 20 Gb/s | 61xx[2] | 62xx | 2 |
| VIC 1240 | Port Expander Card | Not populated | 80 Gb/s | 40 Gb/s | 20 Gb/s | 61xx[2] | 62xx | 2 |
| Note: for the following configuration, do not mix a Fusion-io adapter with an LSI WarpDrive. Slots 2 and 3 must have identical types of storage cards. | | | | | | | | |
| VIC 1240 | Cisco UCS Storage Accelerator (Fusion-io or LSI) | Cisco UCS Storage Accelerator (Fusion-io or LSI) | 40 Gb/s | 20 Gb/s | 20 Gb/s | 61xx[2] | 62xx | 2 |
| VIC 1240 | Cisco UCS Storage Accelerator (Fusion-io or LSI) | Not populated | 40 Gb/s | 20 Gb/s | 20 Gb/s | 61xx[2] | 62xx | 2 |
| VIC 1240 | Not populated | Not populated | 40 Gb/s | 20 Gb/s | 20 Gb/s | 61xx[2] | 62xx | 1 |

Notes . . .

1. In the server BIOS and on the motherboard, "Adapter 1," "Adapter 2," and "Adapter 3" are labeled as "mLOM," "Mezz 1," and "Mezz 2," respectively
2. Supported only through UCS Manager version 2.2(3a) and later.

To check that your operating system is compatible with the adapter you have selected, please check the Hardware Compatibility List at this URL

http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html

## STEP 7   ORDER A TRUSTED PLATFORM MODULE (OPTIONAL)

Trusted Platform Module (TPM) is a computer chip (microcontroller) that can securely store artifacts used to authenticate the platform (server). These artifacts can include passwords, certificates, or encryption keys. A TPM can also be used to store platform measurements that help ensure that the platform remains trustworthy. Authentication (ensuring that the platform can prove that it is what it claims to be) and attestation (a process helping to prove that a platform is trustworthy and has not been breached) are necessary steps to ensure safer computing in all environments.

The TPM ordering information is listed in *Table 14*.

Table 14     Trusted Platform Module

| Product ID (PID) | PID Description |
|---|---|
| UCSX-TPM1-001 | Trusted Platform Module |

**NOTE**:  The B460 M4 requires one TPM, to be located in the master (bottom) node.

**NOTE**:  The module used in this server conforms to TPM v1.2/1.3, as defined by the Trusted Computing Group (TCG).

## STEP 8 ORDER OPTIONAL KVM CABLE

The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB 2.0 ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.
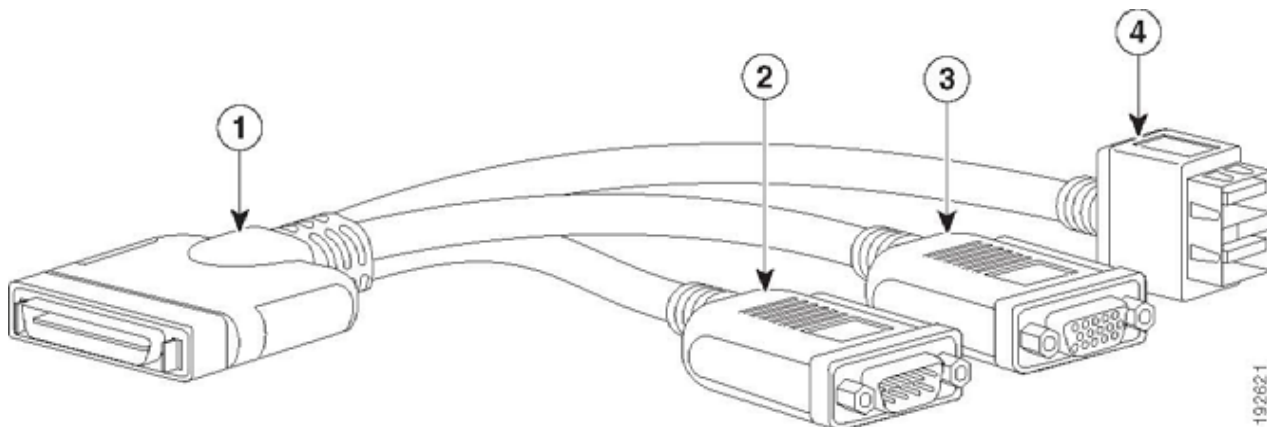
> **NOTE**: You can connect only one KVM cable to the B460 M4, and it must be connected to the lower (master) chassis only.

The KVM cable ordering information is listed in *Table 15*.

**Table 15  KVM Cable**

| Product ID (PID) | PID Description |
| --- | --- |
| 37-1016-01 | KVM Cable |

**Figure 4      KVM Cable**



| 1 | Connector (to server front panel) | 3 | VGA connector (for a monitor) |
| --- | --- | --- | --- |
| 2 | DB-9 serial connector | 4 | Two-port USB 2.0 connector (for a mouse and keyboard) |

## STEP 9 CHOOSE OPERATING SYSTEM AND VALUE-ADDED SOFTWARE

Several software programs are available. Select as desired from *Table 16*.

**Table 16 OSs and Value-Added Software**

| PID Description | Product ID (PID) |
| --- | --- |
| **Cisco One** | |
| C1F2PUCSK9 | Cisco ONE Foundation Perpetual UCS |
| C1A1PUCSK9 | Cisco ONE Enterprise Cloud Perpetual UCS |
| C1UCS-OPT-OUT | Cisco One Data Center Compute Opt Out Option |
| **Energy Management (JouleX)** | |
| CEM-DC-PER | Perpetual License Key for Cisco Energy Management for DC |
| **UCS Director** | |
| CUIC-PHY-SERV-BM-U | Cisco UCS Director Resource Lic - 1 Phy Sevr node bare metal |
| CUIC-PHY-SERV-U | Cisco UCS Director Resource Lic - One physical Server node |
| CUIC-TERM | Acceptance of Cisco UCS Director License Terms |
| **UCS Performance Manager** | |
| UCS-PM-IE | UCS Performance Manager |
| UCS-PM-EE | UCS Performance Manager Express |
| EVAL-UCS-PM-IE | UCS Performance Manager - 90 days evaluation |
| EVAL-UCS-PM-EE | UCS Performance Manager Express - 90 days evaluation |
| **Nexus 1000V for Hyper-V and vSphere** | |
| N1K-VSG-UCS-BUN | Nexus 1000V Adv Edition for vSphere Paper License Qty 1 |
| **IMC Supervisor** | |
| CIMC-SUP-B10 | IMC Supervisor- Branch Mgt SW for C & E-Series up to 1K Svrs |
| CIMC-SUP-B02 | IMC Supervisor- Branch Mgt SW for C & E-Series up to 250 Svrs |
| **UCS Multi-Domain Manager** | |
| UCS-MDMGR-100S | UCS Multi-Domain Manager (Central) Per Server License (100+) |
| UCS-MDMGR-50S | UCS Multi-Domain Manager (Central) Per Server License (50+) |
| UCS-MDMGR-1S | UCS Multi-Domain Manager (Central) Per Server License |
| UCS-MDMGR-10S | UCS Multi-Domain Manager (Central) Per Server License (10+) |
| UCS-MDMGR-1DMN | UCS Multi-Domain Manager (Central) Per Domain License |
| **VMware vCenter** | |
| VMW-VCS-STD-1A | VMware vCenter 6 Server Standard, 1 yr support required |
| VMW-VCS-STD-3A | VMware vCenter 6 Server Standard, 3 yr support required |
| VMW-VCS-STD-5A | VMware vCenter 6 Server Standard, 5 yr support required |
| VMW-VCS-FND-1A | VMware vCenter 6 Server Foundation (3 Host), 1 yr supp reqd |
| VMW-VCS-FND-3A | VMware vCenter 6 Server Foundation (3 Host), 3 yr supp reqd |
| VMW-VCS-FND-5A | VMware vCenter 6 Server Foundation (3 Host), 5 yr supp reqd |

Table 16  OSs  and Value-Added Software  *(continued)*

| PID Description | Product ID (PID) |
|---|---|
| **Microsoft Windows Server** | |
| MSWS-12R2-ST2S | Windows Server 2012 R2 Standard (2 CPU/2 VMs) |
| MSWS-12R2-DC2S | Windows Server 2012 R2 Datacenter (2 CPU/Unlimited VMs) |
| MSWS-12R2-ST2S-NS | Windows Server 2012 R2 Standard (2 CPU/2 VMs) No Cisco SVC |
| MSWS-12R2-DC2S-NS | Windows Server 2012 R2 Datacen (2 CPU/Unlim VM) No Cisco Svc |
| MSWS-16-ST16C | Windows Server 2016 Standard (16 Cores/2 VMs) |
| MSWS-16-ST24C | Windows Server 2016 Standard (24 Cores/2 VMs) |
| MSWS-16-ST16C-NS | Windows Server 2016 Standard (16 Cores/2 VMs) - No Cisco SVC |
| MSWS-16-ST24C-NS | Windows Server 2016 Standard (24 Cores/2 VMs) - No Cisco SVC |
| MSWS-16-DC16C | Windows Server 2016 Data Center (16 Cores/Unlimited VMs) |
| MSWS-16-DC24C | Windows Server 2016 Data Center (24 Cores/Unlimited VMs) |
| MSWS-16-DC16C-NS | Windows Server 2016 DC (16 Cores/Unlim VMs) - No Cisco SVC |
| MSWS-16-DC24C-NS | Windows Server 2016 DC (24 Cores/Unlim VMs) - No Cisco SVC |
| MSWS-16-STA2C | Windows Server 2016 Standard - Additional 2 Cores |
| MSWS-16-STA4C | Windows Server 2016 Standard - Additional 4 Cores |
| MSWS-16-STA16C | Windows Server 2016 Standard - Additional 16 Cores |
| MSWS-16-STA2C-NS | Windows Server 2016 Stan - Additional 2 Cores - No Cisco SVC |
| MSWS-16-STA4C- NS | Windows Server 2016 Stan - Additional 4 Cores - No Cisco SVC |
| MSWS-16-STA16C-NS | Windows Server 2016 Stan - Additional 16 Cores - No Cisco SVC |
| MSWS-16-DCA2C | Windows Server 2016 Data Center - Additional 2 Cores |
| MSWS-16-DCA4C | Windows Server 2016 Data Center - Additional 4 Cores |
| MSWS-16-DCA16C | Windows Server 2016 Data Center - Additional 16 Cores |
| MSWS-16-DCA2C-NS | Windows Server 2016 DC - Additional 2 Cores - No Cisco SVC |
| MSWS-16-DCA4C- NS | Windows Server 2016 DC - Additional 4 Cores - No Cisco SVC |
| MSWS-16-DCA16C-NS | Windows Server 2016 DC - Additional 16 Cores - No Cisco SVC |
| **Red Hat** | |
| RHEL-2S2V-3A | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 3-Yr Support Req |
| RHEL-2S2V-1A | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 1-Yr Support Req |
| **VMware** | |
| VMW-VSP-EPL-5A | VMware vSphere 6 Ent Plus (1 CPU), 5-yr, Support Required |
| VMW-VSP-STD-3A | VMware vSphere 6 Standard (1 CPU), 3-yr, Support Required |
| VMW-VSP-STD-1A | VMware vSphere 6 Standard (1 CPU), 1-yr, Support Required |
| VMW-VSP-EPL-3A | VMware vSphere 6 Ent Plus (1 CPU), 3-yr, Support Required |
| VMW-VSP-EPL-1A | VMware vSphere 6 Ent Plus (1 CPU), 1-yr, Support Required |
| VMW-VSP-STD-5A | VMware vSphere 6 Standard (1 CPU), 5-yr, Support Required |
| **SLES SAP** | |
| SLES-SAP-2S2V-1S | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 1-Yr SnS |

Table 16  OSs  and Value-Added Software  *(continued)*

| PID Description | Product ID (PID) |
|---|---|
| SLES-SAP-2SUV-1S | SLES for SAP Apps (1-2 CPU, Unl VM); Priority 1-Yr SnS |
| SLES-SAP-2S2V-3S | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 3-Yr SnS |
| SLES-SAP-2SUV-3S | SLES for SAP Apps (1-2 CPU, Unl VM); Priority 3-Yr SnS |
| SLES-SAP-2S2V-5S | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 5-Yr SnS |
| SLES-SAP-2SUV-5S | SLES for SAP Apps (1-2 CPU, Unl VM); Priority 5-Yr SnS |
| SLES-SAP-2S2V-5A | SLES for SAP Apps (1-2 CPU, 1-2 VM); 5-Yr Support Reqd |
| SLES-SAP-2SUV-3A | SLES for SAP Apps (1-2 CPU, Unl VM); 3-Yr Support Reqd |
| SLES-SAP-2S2V-3A | SLES for SAP Apps (1-2 CPU, 1-2 VM); 3-Yr Support Reqd |
| SLES-SAP-2SUV-5A | SLES for SAP Apps (1-2 CPU, Unl VM); 5-Yr Support Reqd |
| SLES-SAP-2S2V-1A | SLES for SAP Apps (1-2 CPU, 1-2 VM); 1-Yr Support Reqd |
| SLES-SAP-2SUV-1A | SLES for SAP Apps (1-2 CPU, Unl VM); 1-Yr Support Reqd |
| **SUSE** | |
| SLES-2S2V-1A | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 1-Yr Support Req |
| SLES-2SUV-1A | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 1-Yr Support Req |
| SLES-2S2V-3A | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 3-Yr Support Req |
| SLES-2SUV-3A | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 3-Yr Support Req |
| SLES-2S2V-5A | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 5-Yr Support Req |
| SLES-2SUV-5A | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 5-Yr Support Req |
| SLES-2S2V-1S | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 1-Yr SnS |
| SLES-2SUV-1S | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 1-Yr SnS |
| SLES-2S2V-3S | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 3-Yr SnS |
| SLES-2SUV-3S | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 3-Yr SnS |
| SLES-2S2V-5S | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 5-Yr SnS |
| SLES-2SUV-5S | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 5-Yr SnS |
| SLES-2S-HA-1S | SUSE Linux High Availability Ext (1-2 CPU); 1yr SnS |
| SLES-2S-HA-3S | SUSE Linux High Availability Ext (1-2 CPU); 3yr SnS |
| SLES-2S-HA-5S | SUSE Linux High Availability Ext (1-2 CPU); 5yr SnS |
| SLES-2S-GC-1S | SUSE Linux GEO Clustering for HA (1-2 CPU); 1yr Sns |
| SLES-2S-GC-3S | SUSE Linux GEO Clustering for HA (1-2 CPU); 3yr SnS |
| SLES-2S-GC-5S | SUSE Linux GEO Clustering for HA (1-2 CPU); 5yr SnS |

Cisco UCS B460 M4 Blade Server (with Intel® Xeon E7 v2 CPU)

## STEP 10 CHOOSE OPERATING SYSTEM MEDIA KIT

Choose the optional operating system media listed in *Table 17*.

Table 17    OS Media

| Product ID (PID) | PID Description |
|---|---|
| RHEL-6 | RHEL 6 Recovery Media Only (Multilingual) |
| SLES-11 | SLES 11 media only (multilingual) |
| MSWS-08R2-STHV-RM | Windows Svr 2008 R2 ST (1-4CPU, 5CAL), Media |
| MSWS-08RS-ENHV-RM | Windows Svr 2008 R2 EN (1-8CPU, 25CAL), Media |
| MSWS-08R2-DCHV-RM | Windows Svr 2008 R2 DC (1-8CPU, 25CAL), Media |
| MSWS-12-ST2S-RM | Windows Server 2012 Standard (2 CPU/2 VMs) Recovery Media |
| MSWS-12-DC2S-RM | Windows Server 2012 Datacenter (2 CPU/Unlimited VM) Rec Media |
| MSWS-12R2-ST2S-RM | Windows Server 2012 R2 Standard (2 CPU/2 VMs) Recovery Media |
| MSWS-12R2-DC2S-RM | Windows Server 2012 R2 Datacen(2 CPU/Unlimited VM) Rec Media |

## STEP 11 CHOOSE SERVICE and SUPPORT LEVEL

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

> NOTE: Because the B460 M4 server is structurally two Scalable M4 Blade Modules connected by means of the Scalability Connector, separate support for each of the two Scalable M4 Blade Modules in the B460 M4 server configuration is automatically purchased when you order support for the B460 M4 server. The online ordering tool enforces that the service level is always the same (for example, SNTP) for both Scalable M4 Blade Modules. If you change the service level, the new service level is applied to both Scalable M4 Blade Modules so that they remain the same.
>
> In addition, there are no separate, single-support SKUs for the B460 M4 server or for the Scalability Connector.

**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 18*.

Table 18    Cisco SMARTnet for UCS Service

| Service SKU | On Site? | Description |
|---|---|---|
| CON-PREM-B260M4 | Yes | ONSITE 24X7X2 UCS Blade Module for B260/B460 M4 |
| CON-OSP-B260M4 | Yes | ONSITE 24X7X4 UCS Blade Module for B260/B460 M4 |
| CON-OSE-B260M4 | Yes | ONSITE 8X5X4 UCS Blade Module for B260/B460 M4 |
| CON-OS-B260M4 | Yes | ONSITE 8X5XNBD UCS Blade Module for B260/B460 M4 |
| CON-S2P-B260M4 | No | SMARTNET 24X7X2 UCS Blade Module for B260/B460 M4 |
| CON-SNTP-B260M4 | No | SMARTNET 24X7X4 UCS Blade Module for B260/B460 M4 |
| CON-SNTE-B260M4 | No | SMARTNET 8X5X4 UCS Blade Module for B260/B460 M4 |
| CON-SNT-B260M4 | No | SMARTNET 8X5XNBD UCS Blade Module for B260/B460 M4 |

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 19*.

Table 19    SMARTnet for UCS Hardware Only Service

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-UCW7-B260M4 | UCW7 | Yes | UC PLUS 24X7X4OS<br>UCS Blade Module for B260/B460 M4 |
| CON-UCW5-B260M4 | UCW5 | Yes | UC PLUS 8X5XNBDOS<br>UCS Blade Module for B260/B460 M4 |

**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 20*.

Table 20    Partner Support Service for UCS

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-PSJ1-B260M4 | PSJ1 | No | UCS SUPP PSS 8X5XNBD UCS Blade Module for B260/B460 M4 |
| CON-PSJ2-B260M4 | PSJ2 | No | UCS SUPP PSS 8X5X4 UCS Blade Module for B260/B460 M4 |
| CON-PSJ3-B260M4 | PSJ3 | No | UCS SUPP PSS 24X7X4 UCS Blade Module for B260/B460 M4 |
| CON-PSJ4-B260M4 | PSJ4 | No | UCS SUPP PSS 24X7X2 UCS Blade Module for B260/B460 M4 |
| CON-PSJ6-B260M4 | PSJ6 | Yes | UCS SUPP PSS 8x5x4 Onsite UCS Blade Module for B260/B460 M4 |
| CON-PSJ7-B260M4 | PSJ7 | Yes | UCS SUPP PSS 24X7X4 Onsite UCS Blade Module for B260/B460 M4 |
| CON-PSJ8-B260M4 | PSJ8 | Yes | UCS SUPP PSS 24X7X2 Onsite UCS Blade Module for B260/B460 M4 |

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

Table 21    Partner Support Service for UCS (Hardware Only)

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-PSW2-B260M4 | PSW2 | No | UCS W PL PSS 8X5X4<br>UCS Blade Module for B260/B460 M4 |
| CON-PSW3-B260M4 | PSW3 | No | UCS W PL PSS 24X7X4<br>UCS Blade Module for B260/B460 M4 |
| CON-PSW4-B260M4 | PSW4 | No | UCS W PL PSS 24X7X2<br>UCS Blade Module for B260/B460 M4 |
| CON-PSW6-B260M4 | PSW6 | Yes | UCS HW ONLY PSS 8x5x4 Onsite<br>UCS Blade Module for B260/B460 M4 |
| CON-PSW7-B260M4 | PSW7 | Yes | UCS HW ONLY PSS 24x7x4 Onsite<br>UCS Blade Module for B260/B460 M4 |

**Cisco Combined Services**

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

**Unified Computing Drive Retention Service**

With the Cisco Unified Computing Drive Retention (UCDR) Service, you can obtain a new disk drive in exchange for a faulty drive without returning the faulty drive. In exchange for a Cisco replacement drive, you provide a signed Certificate of Destruction (CoD) confirming that the drive has been removed from the system listed, is no longer in service, and has been destroyed.

Sophisticated data recovery techniques have made classified, proprietary, and confidential information vulnerable, even on malfunctioning disk drives. The UCDR service enables you to retain your drives and ensures that the sensitive data on those drives is not compromised, which reduces the risk of any potential liabilities. This service also enables you to comply with regulatory, local, and federal requirements.

If your company has a need to control confidential, classified, sensitive, or proprietary data, you might want to consider one of the Drive Retention Services listed in *Table 22*, *Table 23*, or *Table 24*.

> NOTE:  Cisco does not offer a certified drive destruction service as part of this service.

Table 22  Drive Retention Service Options

| Service Description | Service Program Name | Service Level GSP | Service Level | Product ID (PID) |
|---|---|---|---|---|
| SMARTnet for UCS Service with Drive Retention | UCS DR | UCSD7 | 24x7x4 Onsite | CON-UCSD7-B260M4 |
| | | UCSD5 | 8x5xNBD Onsite | CON-UCSD5-B260M4 |
| SMARTnet for UCS HW ONLY+Drive Retention | UCS HW+DR | UCWD7 | 24x7x4 Onsite | CON-UCWD7-B260M4 |
| | | UCWD5 | 8x5xNBD Onsite | CON-UCWD5-B260M4 |

Table 23  Drive Retention Service Options for Partner Support Service

| Service Description | Service Level GSP | Service Level | Product ID (PID) |
|---|---|---|---|
| Partner Support Service for UCS Drive Retention | PSJD6 | 8x5x4 Onsite | CON-PSJD6-B260M4 |
| | PSJD7 | 24x7x4 Onsite | CON-PSJD7-B260M4 |

Table 24  Drive Retention Service Options for Partner Support Service (Hardware Only)

| Service Description | Service Level GSP | Service Level | Product ID (PID) |
|---|---|---|---|
| Partner Support Service for UCS Drive Retention Hardware only | PSWD6 | 8x5x4 Onsite | CON-PSWD6-B260M4 |
| | PSWD7 | 24x7x4 Onsite | CON-PSWD7-B260M4 |

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

Cisco UCS B460 M4 Blade Server (with Intel® Xeon E7 v2 CPU)

# SUPPLEMENTAL MATERIAL

## Motherboard

The top view of one of the two Blade Modules with the cover removed is shown in *Figure 5*. The B460 M4 consists of two Blade Modules connected by a Scalability Connector.

**Figure 5      Top view of one of the two Blade Modules for B460 M4 (cover off)**
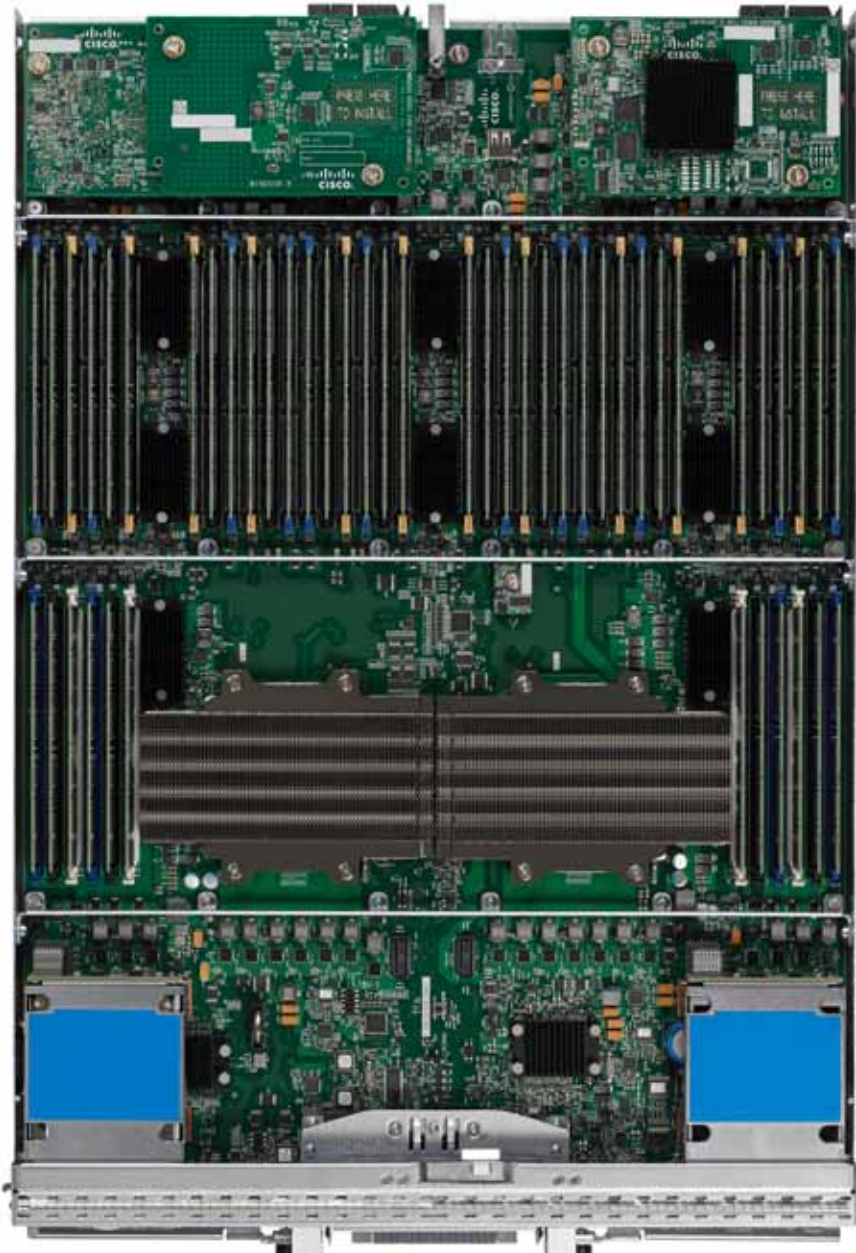
A drawing of the top view of one of the two Blade Modules for B460 M4 with the cover removed is shown in Figure *Figure 5*.

Figure 6    Top view of one of the two Blade Modules for B460 M4 (cover off)



Cisco UCS B460 M4 Blade Server (with Intel® Xeon E7 v2 CPU)
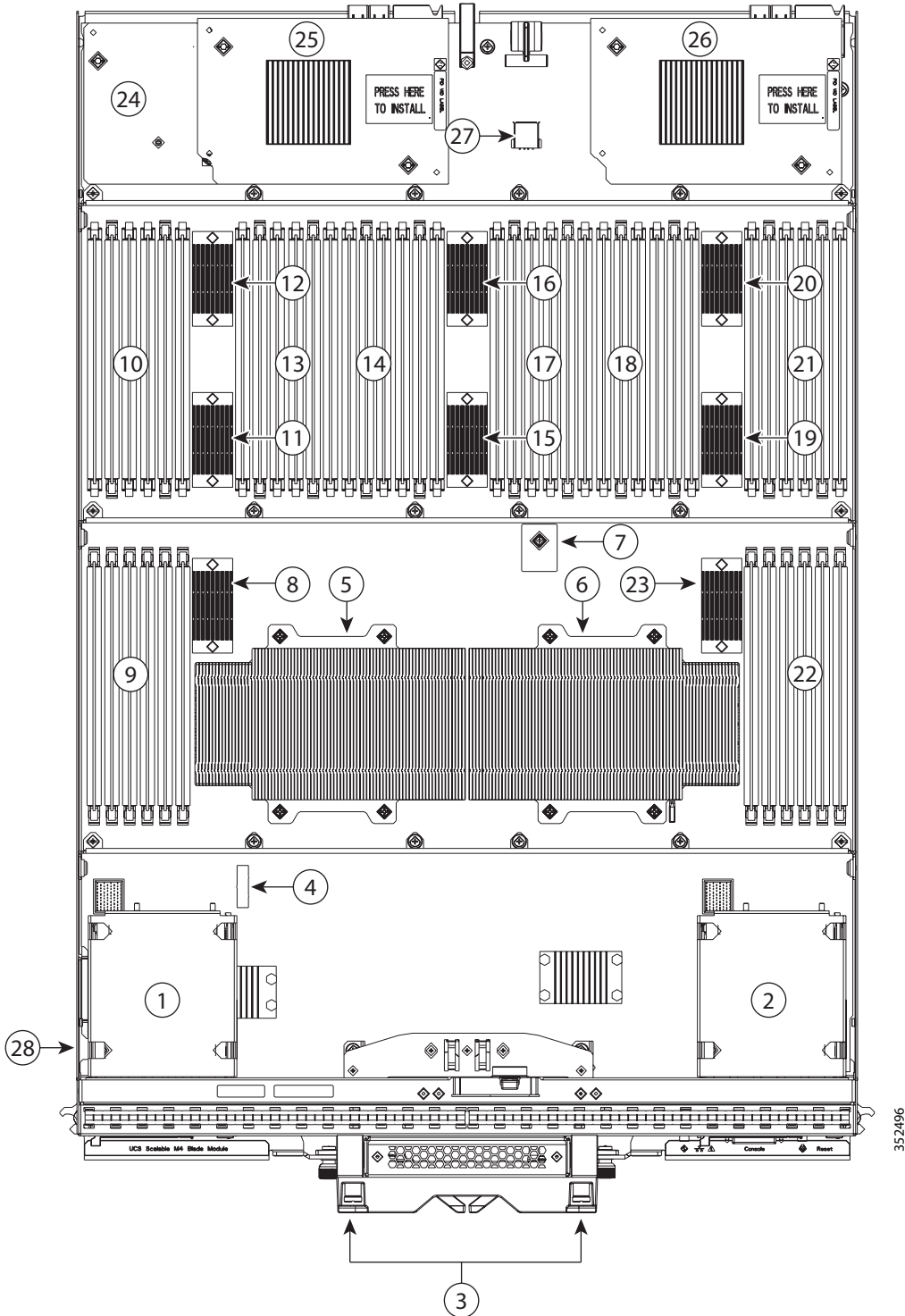
| | | | |
|---|---|---|---|
| 1 | Drive bay 1 | 15 | Memory buffer for subchannels G and H |
| 2 | Drive bay 2 | 16 | Memory buffer for subchannels I and J |
| 3 | UCS scalability terminator | 17 | DIMM slots I1-I3 and J1-J3 |
| 4 | CMOS battery | 18 | DIMM slots N1-N3 and M1-M3 |
| 5 | CPU 1 (under heat sink) | 19 | Memory buffer for subchannels M and N |
| 6 | CPU 2 (under heat sink) | 20 | Memory buffer for subchannels I and J |
| 7 | Trusted Platform Module (TPM) | 21 | DIMM slots K1-K3 and L1-L3 |
| 8 | Memory buffer for subchannels A and B | 22 | DIMM slots O1-O3 and P1-P3 |
| 9 | DIMM slots A1-A3 and B1-B3 | 23 | Memory buffer for subchannels O and P |
| 10 | DIMM slots C1-C3 and D1-D3 | 24 | mLOM card<br><br>This slot is shown in Cisco UCS manager as "Adapter 1" but the BIOS lists it as "mLOM." The VIC 1340/1240 is a type of adapter with a specific footprint that can only be used in this slot. |
| 11 | Memory buffer for subchannels C and D | 25 | Adapter card<br><br>This slot is shown in Cisco UCS manager as "Adapter 2" but the BIOS lists it as "Mezz 1." Mixing adapter types is supported. |
| 12 | Memory buffer for subchannels E and F | 26 | Adapter card<br><br>This slot is shown in Cisco UCS manager as "Adapter 3" but the BIOS lists it as "Mezz 2." Mixing adapter types is supported. |
| 13 | DIMM slots E1-E3 and F1-F3 | 27 | Internal USB connector |
| 14 | DIMM slots G1-G3 and H1-H3 | 28 | Flexible Flash card locations (2) |

# DIMM and CPU Layout

The DIMM and CPU layout is shown in *Figure 7*.

**Figure 7    DIMM and CPU Layout**
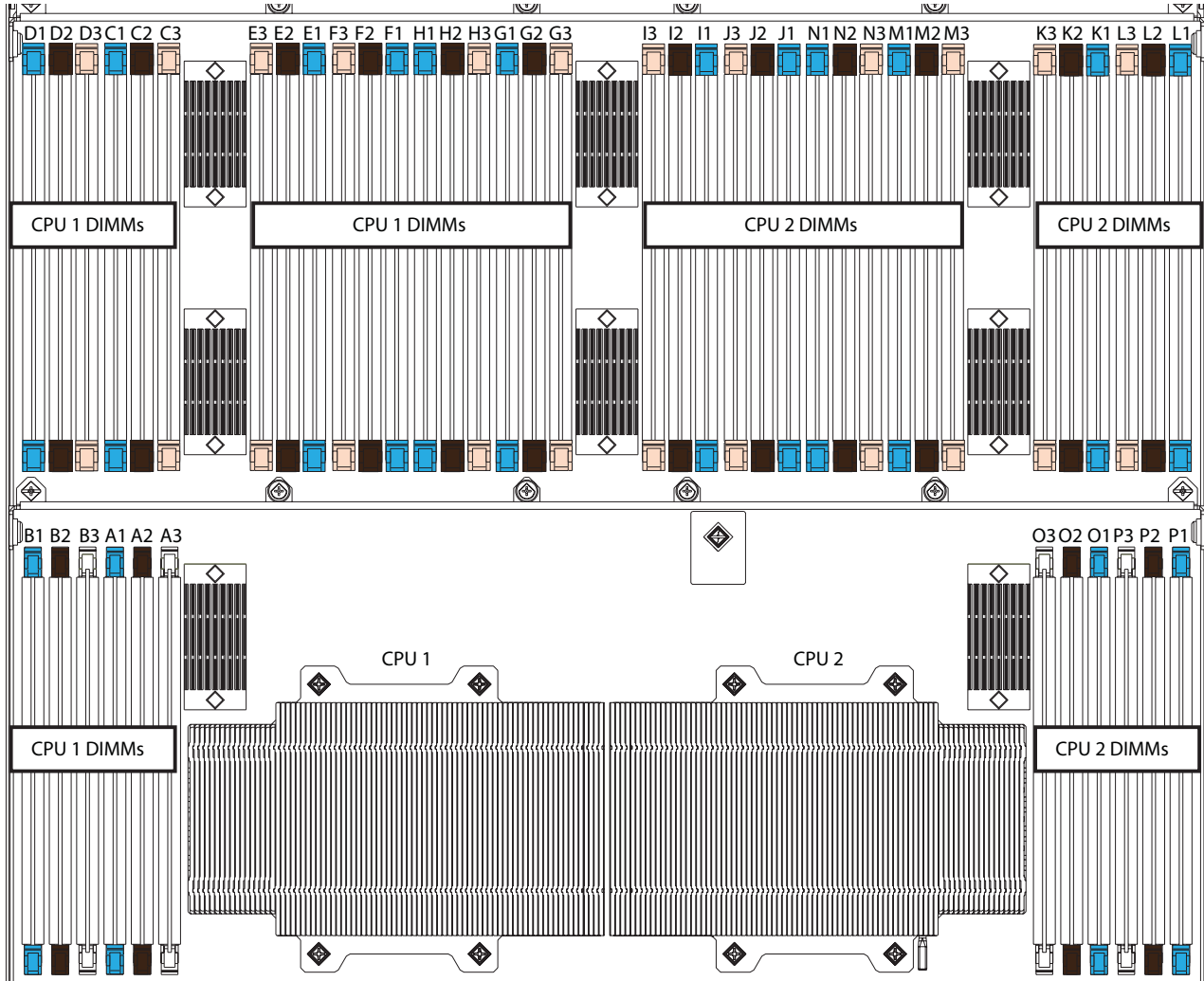


Each CPU controls four memory channels, and each memory channel controls two subchannels each through individual memory buffers placed around the motherboard (shown as black rectangles on *Figure 7*). Each subchannel controls 3 DIMMs as follows (refer also to *Figure 3 on page 13*):

■ CPU 1 subchannels A through H and DIMMs controlled:

— A1 (blue DIMM slot), A2 (black DIMM slot), A3 (white DIMM slot)

— B1 (blue DIMM slot), B2 (black DIMM slot), B3 (white DIMM slot)

— C1 (blue DIMM slot), C2 (black DIMM slot), C3 (ivory DIMM slot)

— D1 (blue DIMM slot), D2 (black DIMM slot), D3 (ivory DIMM slot)

— E1 (blue DIMM slot), E2 (black DIMM slot), E3 (ivory DIMM slot)

- F1 (blue DIMM slot), F2 (black DIMM slot), F3 (ivory DIMM slot)

- G1 (blue DIMM slot), G2 (black DIMM slot), G3 (ivory DIMM slot)

- H1 (blue DIMM slot), H2 (black DIMM slot), H3 (ivory DIMM slot)

■ CPU 2 subchannels I through P and DIMMs controlled:

- I1 (blue DIMM slot), I2 (black DIMM slot), I3 (ivory DIMM slot)

- J1 (blue DIMM slot), J2 (black DIMM slot), J3 (ivory DIMM slot)

- K1 (blue DIMM slot), K2 (black DIMM slot), K3 (ivory DIMM slot)

- L1 (blue DIMM slot), L2 (black DIMM slot), L3 (ivory DIMM slot)

- M1 (blue DIMM slot), M2 (black DIMM slot), M3 (ivory DIMM slot)

- N1 (blue DIMM slot), N2 (black DIMM slot), N3 (ivory DIMM slot)

- O1 (blue DIMM slot), O2 (black DIMM slot), O3 (white DIMM slot)

- P1 (blue DIMM slot), P2 (black DIMM slot), P3 (white DIMM slot)

# Memory Population Recommendations

See for DIMM population guidelines.

When considering the memory configuration of your server, you should observe the following:

■ Your selected CPU(s) can have some effect on performance. All CPUs in the server must be of the same type.

■ Performance degradation can result from unevenly populating DIMMs between CPUs.

## Memory Mixing Guidelines

For the most part, it is recommended that all DIMMs that are installed be of the same type and size. See *Table 25* for guidelines about DIMM installation in the B460 M4 blade and where DIMM sizes can be mixed.

**Table 25  DIMM Mixing**

| Identical DIMMs or Mixed DIMMs | Qty of 2x8GB DIMM kits (UCS-MR-2X082RY-E) | Qty of 2x16GB DIMM kit (UCS-MR-2X162RY-E) | Qty of 2x32GB DIMM kit (UCS-ML-2X324RY-E) | Qty of 2x64GB DIMM kit (UCS-ML-2X648RY-E) | Total Memory Capacity |
|---|---|---|---|---|---|
| Mixed | 16 (32 DIMMs) | 16 (32 DIMMs) | | | 768 GB |
| Mixed | 16 (32 DIMMs) | 32 (64 DIMMs) | | | 1280 GB |
| Mixed | 32 (64 DIMMs) | 16 (32 DIMMs) | | | 1024 GB |
| Mixed | | | 16 (32 DIMMs) | 16 (32 DIMMs) | 3072 GB |
| Mixed | | | 16 (32 DIMMs) | 32 (64 DIMMs) | 5120 GB |
| Mixed | | | 32 (64 DIMMs) | 16 (32 DIMMs) | 4096 GB |

# Upgrade and Servicing-Related Parts

This section lists the upgrade and servicing-related parts you may need during the life of your server. Some of these parts are configured with every server or with every UCS 5108 blade server chassis, and some may be ordered when needed or may be ordered and kept on hand as spares for future use. See *Table 26*.

Table 26  Upgrade and Servicing-related Parts for UCS B460 M4 Server

| Spare Product ID (PID) | Description |
| --- | --- |
| N20-BBLKD= | 2.5-inch HDD Blanking Panel[1] |
| UCSB-HS-01-EX= | CPU Heat Sink for UCS B260 M4 and B460 M4[1] |
| UCS-CPU-LPCVR= | CPU load plate dust cover (for unpopulated CPU sockets) |
| N20-MBLIBATT= | Replacement Lithium Battery for Server Motherboard (CR2032)[1] |
| N20-BKVM= | KVM local IO cable for UCS servers console port[2] |
| UCS-CPU-EP-PNP= | Pick n place CPU tools for M3/EP and M4/EX CPUs[3] |
| UCS-CPU-GREASE3= | Thermal grease for M4/EX heat sink seal[3] |
| UCSX-HSCK= | UCS Processor Heat Sink Cleaning Kit (when replacing a CPU)[3] |
| UCS-SD-32G-S[4] | 32 GB SD card module for UCS servers |
| UCS-USBFLSH-S-4GB= | 4 GB Flash USB drive (shorter) |
| UCS-USBFLSHB-16GB= | UCS Servers 16GB Flash USB Drive |
| UCSB-MRAID-SC= | Supercap for FlexStorage 12G SAS RAID controller w/1GB FBWC |

Notes . . .

1. This part is included/configured with your UCS server (in some cases, as determined by the configuration of your server).
2. This part is included/configured with the UCS 5108 blade server chassis.
3. This part is included with the purchase of each optional or spare CPU processor kit.
4. Only half the capacity of the 32 GB SD card is available in this server.

## Drive and Blade Server Blanking Panels

A drive blanking panel (N20-BBLKD=) must be installed if you remove a disk drive from a UCS server. These panels are required to maintain system temperatures at safe operating levels, and to keep dust away from system components.

## Replacing a CPU (with CPU heat sink)

Instructions for replacing a CPU and heat sink can be found at the following link:

http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B460M4.html

## Motherboard Lithium Battery

You can order a replacement motherboard battery. Installation instructions are found at this link:

http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B460M4.html

## CPU Removal and Installation ("pick n place") Tool Set

The Pick n Place tool set is used to install a CPU in its socket without damage. It must be used each time a CPU is installed in the server.

Instructions for using this tool set are found at the following link:

http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B460M4.html

---

**NOTE:** When you purchase a spare CPU, the Pick n Place Toolkit is included.

---

## Thermal Grease (with syringe applicator) for CPU to Heatsink Seal

Thermal grease must be applied to the top of the CPU where it comes in contact with the heat sink. Instructions for applying thermal grease are found at:

http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B460M4.html

---

**CAUTION:**
DO NOT use thermal grease available for purchase at any commercial electronics store. If these instructions are not followed, the CPU may overheat and be destroyed.

---

**NOTE:** When you purchase a spare CPU, the thermal grease with syringe applicator is included.

---

## CPU Heat Sink Cleaning Kit

The cleaning kit is used to remove the existing thermal compound from the bottom of the heat sink during a CPU replacement process. Instructions for cleaning are found at the following link:

http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B460M4.html

NOTE: When you purchase a spare CPU, the CPU cleaning kit is included.

# Network Connectivity

This section shows how the supported adapter card configurations for each one of the two Blade Modules connecting to the Fabric Extender modules in the 5108 blade server chassis. Recall that the B460 M4 consists of two cross-connected Scalable M4 Blade Modules.

There are three configurable adapter slots on each one of the two Blade Modules for B460 M4. For each Blade Module, one slot supports only the VIC 1340/1240 adapter, and two additional slots can accommodate Cisco adapters, as well as the Storage Accelerator adapters. *Table 12 on page 25* shows supported adapter configurations. You must install at least one VIC or CNA in one of the six adapter slots.

"Adapter 1," "Adapter 2," and "Adapter 3" refer to the UCSM naming convention for the adapter slots (this document uses the UCSM naming convention). In the server BIOS and on the motherboard, the corresponding slots are labeled as "mLOM," "Mezz 1," and "Mezz 2," respectively. See *Table 27*.

Table 27  Adapter Slot Naming and Bandwidth

| B460 M4 Blade Module | Server BIOS and Motherboard Slot Naming | UCSM Slot Naming | Available Bandwidth |
|---|---|---|---|
| "Slave" Blade Module (top) | mLOM (VIC 1340/1240 only) | Adapter 1 | 20 Gbps per Fabric Extender |
| | Mezz1 | Adapter 2 | 20 Gbps per Fabric Extender |
| | Mezz2 | Adapter 3 | 40 Gbps per Fabric Extender |
| "Master" Blade Module (bottom) | mLOM (VIC 1340/1240 only) | Adapter 1 | 20 Gbps per Fabric Extender |
| | Mezz1 | Adapter 2 | 20 Gbps per Fabric Extender |
| | Mezz2 | Adapter 3 | 40 Gbps per Fabric Extender |

Total bandwidth is a function of the Fabric Extender, the adapter, and the adapter slot, as shown in *Table 28* and *Table 29*.

Table 28      Maximum Bandwidth Using Dual Fabric Extenders (FEXs)

| FEX Model | Maximum Bandwidth Using Dual FEXs |
|---|---|
| 2208XP | 160 Gb |
| 2204XP | 160 Gb |
| 2104XP | 40 Gb |

Table 29      Maximum Bandwidth for Each of the Three Adapter Slots

| Adapter Slot | Maximum Bandwidth Using Dual FEXs |
|---|---|
| VIC 1340/1240 (Adapter 1) slot | 40 Gb |
| Adapter 2 Slot | 40 Gb |
| Adapter 3 Slot | 80 Gb |

*Figure 8* shows the configuration for maximum bandwidth, where the following ports are routed to Fabric Extender Modules A and B inside the 5108 blade server chassis:

- Two 2 x 10G KR ports from the VIC 1340/1240 adapter
- Two 2 x 10G KR ports from the Port Expander
- Two 4 x 10G KR ports from the VIC 1380/1280 adapter

The resulting aggregate bandwidth is 160 Gb (80 Gb to each Fabric Extender).

**Figure 8        Scalable M4 Blade Module Connections to the Fabric Extenders**
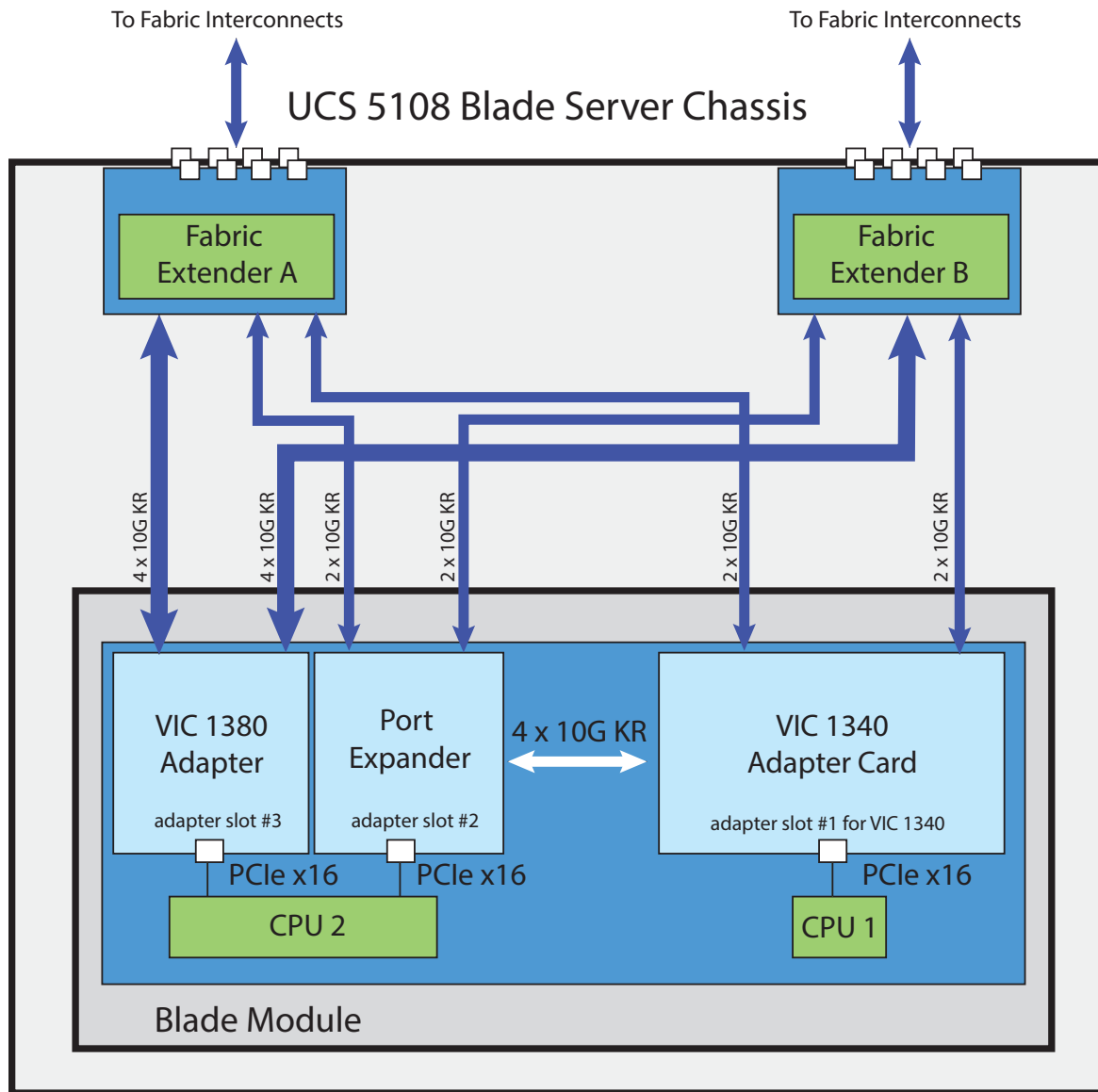


NOTE:  *Figure 8* applies to each of the two B260 M4 Blade Modules that make up the B460 M4 server.

## VIC 1340/1240 and Port Expander

Adapter slot 1 is dedicated to the VIC 1340/1240 adapter, and no other adapter card can be installed in this slot. There are two groups of four ports on the VIC 1340/1240:

■ Two ports of the first group and two ports of the second group are wired through the UCS 5108 Blade Server chassis to Fabric Extender A and Fabric Extender B.

■ The other two ports of each group are wired to adapter slot 2. The VIC 1340/1240 adapter senses the type of adapter installed in adapter slot 2. If a Port Expander is installed in adapter slot 2, the four 10G KR ports between the adapters are used for port expansion; otherwise they are unused.

With the Port Expander installed, there are up to eight (depending on the Fabric Extender installed) 10 Gb network interfaces, as represented in *Figure 9*.

**Figure 9     VIC 1340/1240 Connectivity**
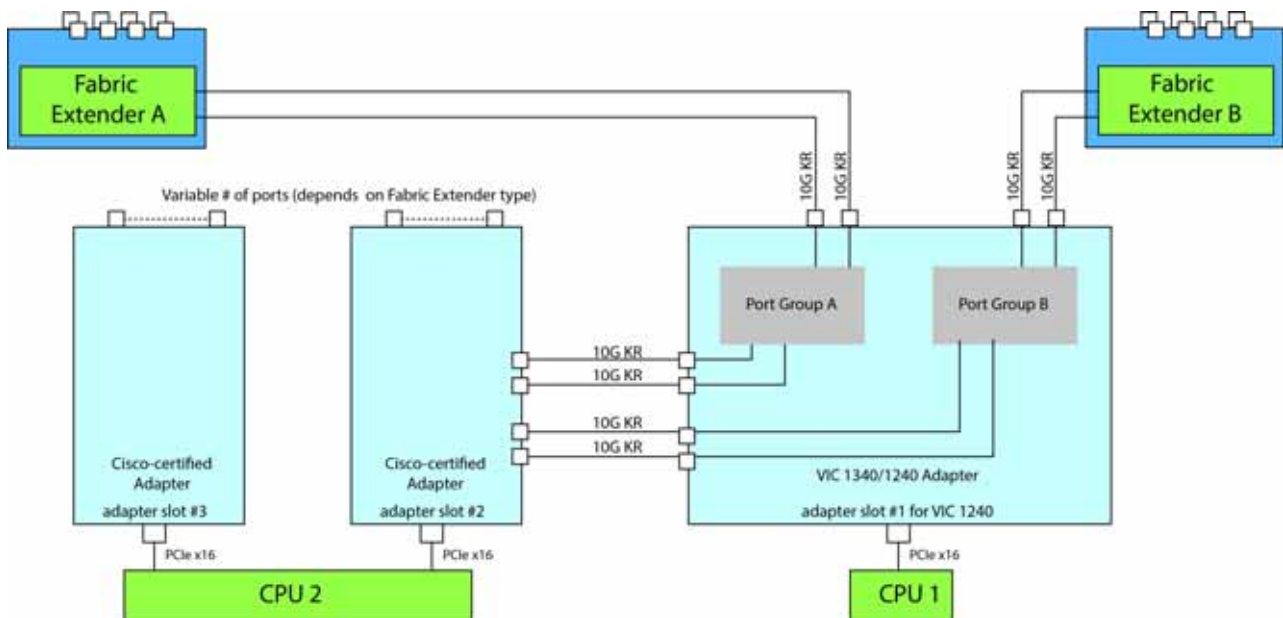
## Connectivity Using the Cisco UCS 2208XP/2204XP Fabric Extender

The connectivity options for each of the two Blade Modules shown in *Figure 10* through *Figure 19* are summarized in *Table 30*.

Table 30  Supported Adapter[1] Combinations Using the 2208XP/2204XP FEX

| Adapter Slot 1 | Adapter Slot 2 | Adapter Slot 3 | Total Available Bandwidth |
|---|---|---|---|
| | | | **2 x 2208XP/ 2 x 2204XP** |
| VIC 1340/1240 | Port Expander Card | VIC 1380/1280 | 160/80 Gb *Figure 10 on page 52* |
| VIC 1340/1240 | Cisco UCS Storage Accelerator | VIC 1380/1280 | 120/60 Gb *Figure 11 on page 52* |
| VIC 1340/1240 | Not populated | VIC 1380/1280 | 120/60 Gb *Figure 12 on page 53* |
| Not populated | Cisco UCS Storage Accelerator | VIC 1380/1280 | 80/40 Gb *Figure 13 on page 53* |
| Not populated | Not populated | VIC 1380/1280 | 80/40 Gb *Figure 14 on page 54* |
| VIC 1340/1240 | Port Expander Card | Cisco UCS Storage Accelerator | 80/40 Gb *Figure 15 on page 54* |
| VIC 1340/1240 | Port Expander Card | Not populated | 80/40 Gb *Figure 16 on page 55* |
| Note: for the following configuration, do not mix a Fusion-io adapter with an LSI WarpDrive. Slots 2 and 3 must have identical types of storage cards. | | | |
| VIC 1340/1240 | Cisco UCS Storage Accelerator | Cisco UCS Storage Accelerator | 40/20 Gb *Figure 17 on page 55* |
| VIC 1340/1240 | Cisco UCS Storage Accelerator | Not populated | 40/20 Gb *Figure 18 on page 56* |
| VIC 1340/1240 | Not populated | Not populated | 40/20 Gb *Figure 19 on page 56* |

Notes . . .

1. In the server BIOS and on the motherboard, "Adapter 1," "Adapter 2," and "Adapter 3" are labeled as "mLOM," "Mezz 1," and "Mezz 2," respectively
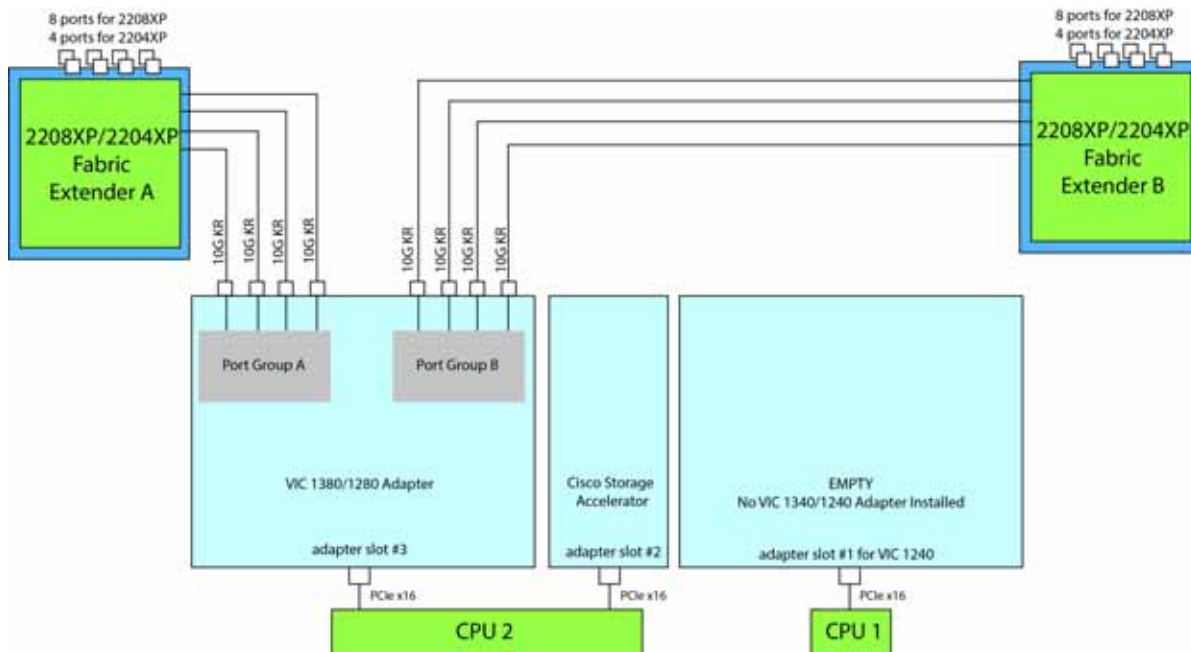
In *Figure 10*, two ports from the VIC 1340/1240 are channeled to Fabric Extender A and two are channeled to Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device, channeling two ports to each of the Fabric Extenders. In addition, the VIC 1380/1280 channels four ports to each Fabric Extender. The result is 80 Gb of bandwidth to each Fabric Extender.

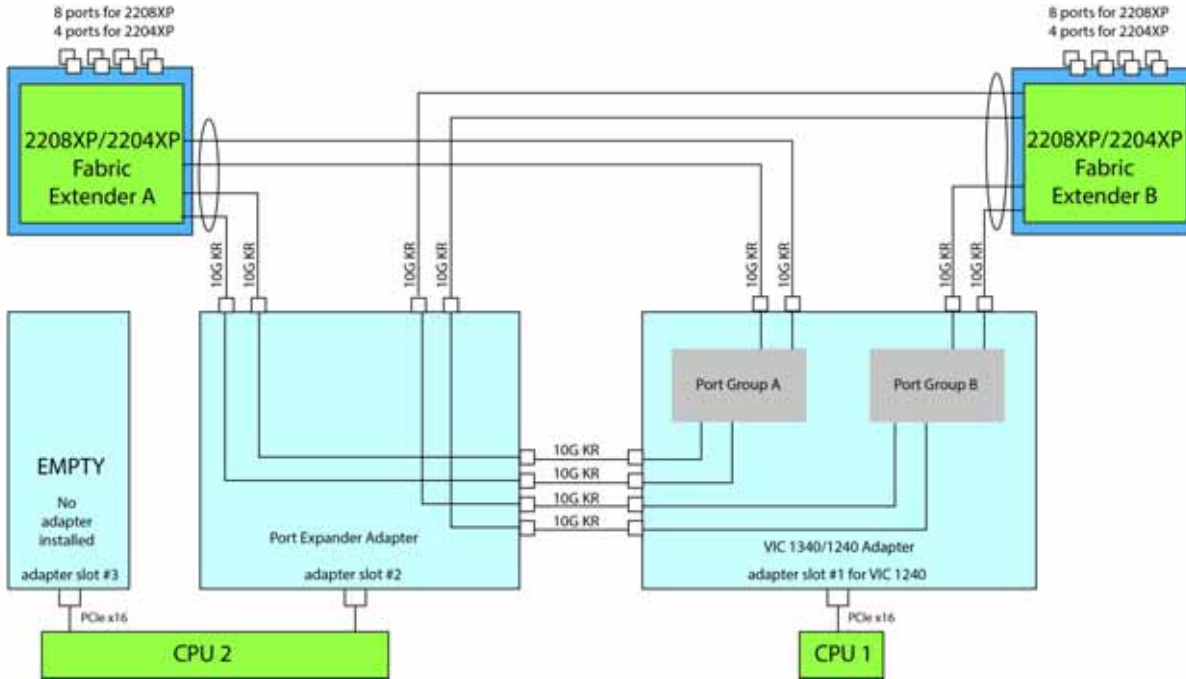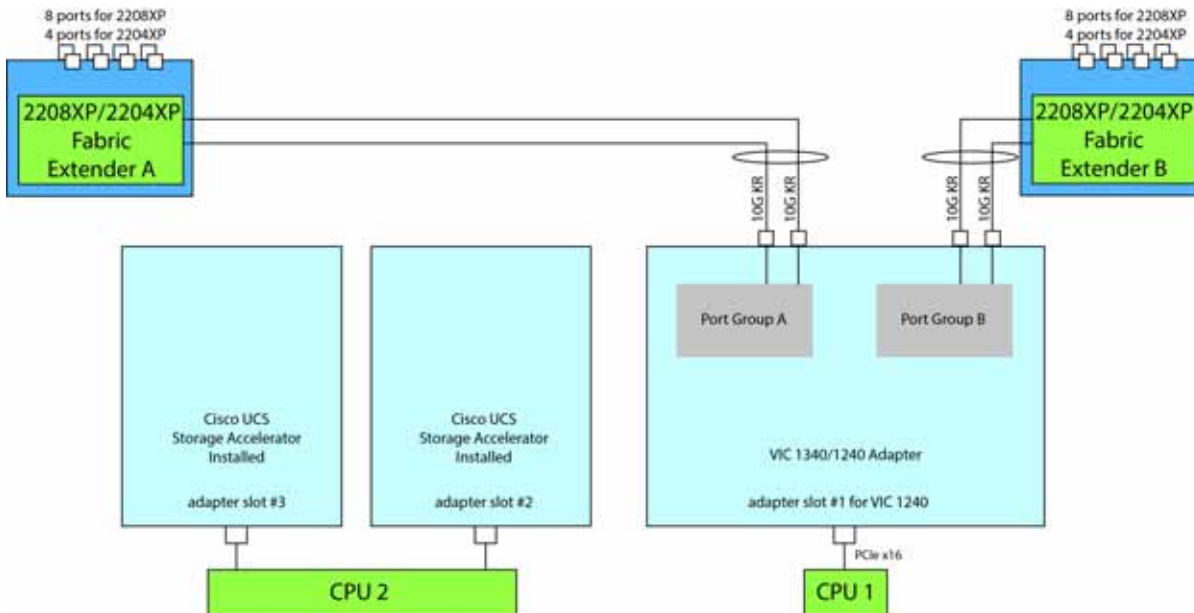**Figure 10    VIC 1340/1240, Port Expander in adapter slot 2, and VIC 1380/1280 in adapter slot 3**
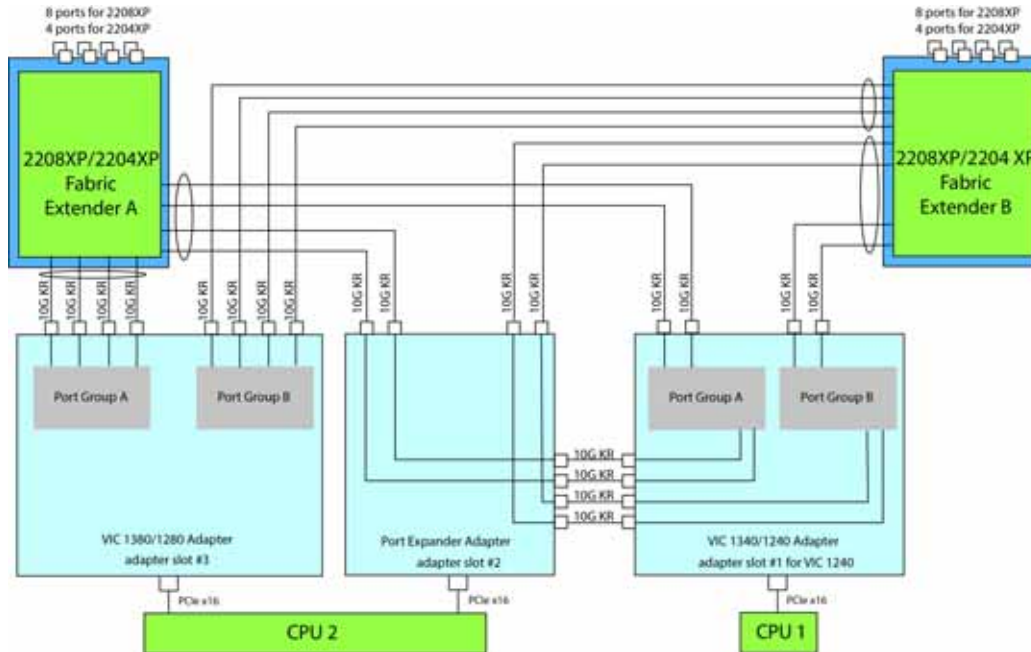


In *Figure 11*, two ports from the VIC 1340/1240 are channeled to Fabric Extender A and two are channeled to Fabric Extender B. A Cisco UCS Storage Accelerator adapter is installed in slot 2, but provides no network connectivity. The VIC 1380/1280 installed in adapter slot 3 channels four ports to each of the Fabric Extenders. The result is 60 Gb of bandwidth to each Fabric Extender.

**Figure 11    VIC 1340/1240, Cisco UCS SA in adapter slot 2, and VIC 1380/1280 in adapter slot 3**
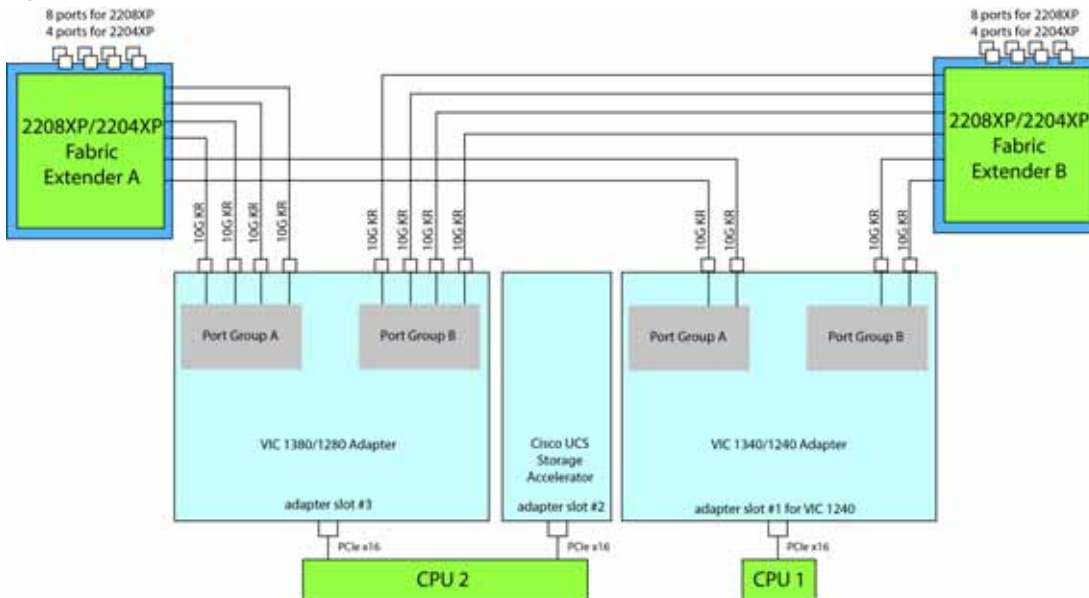
In *Figure 12*, two ports from the VIC 1340/1240 are channeled to Fabric Extender A and two are channeled to Fabric Extender B. Adapter slot 2 is empty. The VIC 1380/1280 installed in adapter slot 3 channels four ports to each of the Fabric Extenders. The result is 60 Gb of bandwidth to each Fabric Extender.

**Figure 12      VIC 1340/1240 and VIC 1380/1280 (adapter slot 2 empty)**
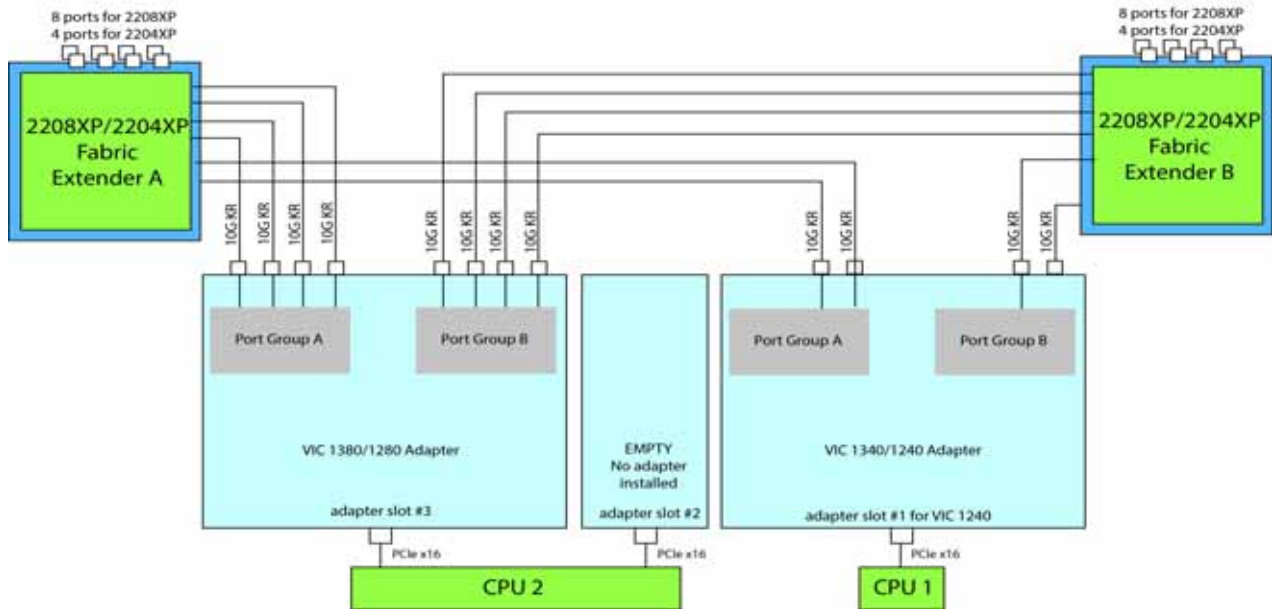


In *Figure 13*, no VIC 1340/1240 is installed. A Cisco UCS Storage Accelerator adapter is installed in slot 2, but provides no network connectivity. The VIC 1380/1280 installed in adapter slot 3 channels four ports to each of the Fabric Extenders. The result is 40 Gb of bandwidth to each Fabric Extender.

**Figure 13      No VIC 1340/1240 installed, UCS Storage Accelerator in slot 2 and VIC 1380/1280 in slot 3**

In *Figure 14*, no VIC 1340/1240 is installed. Adapter 2 slot is also not occupied. The VIC 1380/1280 installed in adapter slot 3 channels four ports to each of the Fabric Extenders. The result is 40 Gb of bandwidth to each Fabric Extender.

**Figure 14      No VIC 1340/1240 installed, no adapter installed in slot 2, and VIC 1380/1280 in slot 3**
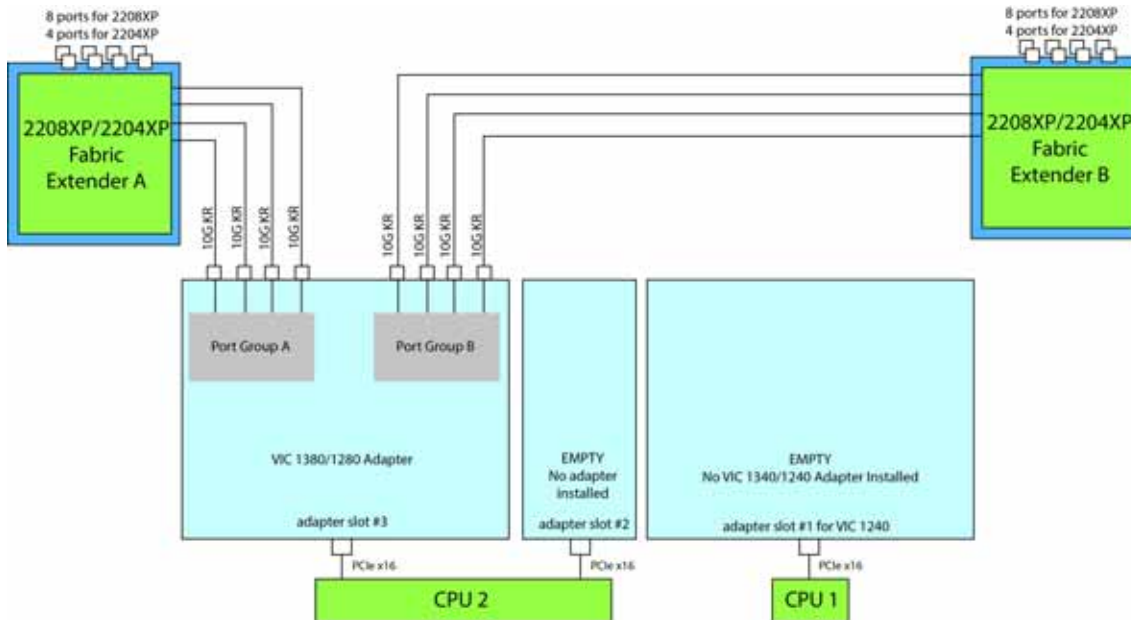


In *Figure 15*, two ports from the VIC 1340/1240 are channeled to Fabric Extender A and two are channeled to Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device, channeling two ports to each of the Fabric Extenders. A Cisco UCS storage accelerator is installed in slot 3, but provides no network connectivity. The result is 40 Gb of bandwidth to each Fabric Extender.

**Figure 15      VIC 1340/1240 and Port Expander in Adapter Slot 2 with UCS storage accelerator in slot 3**
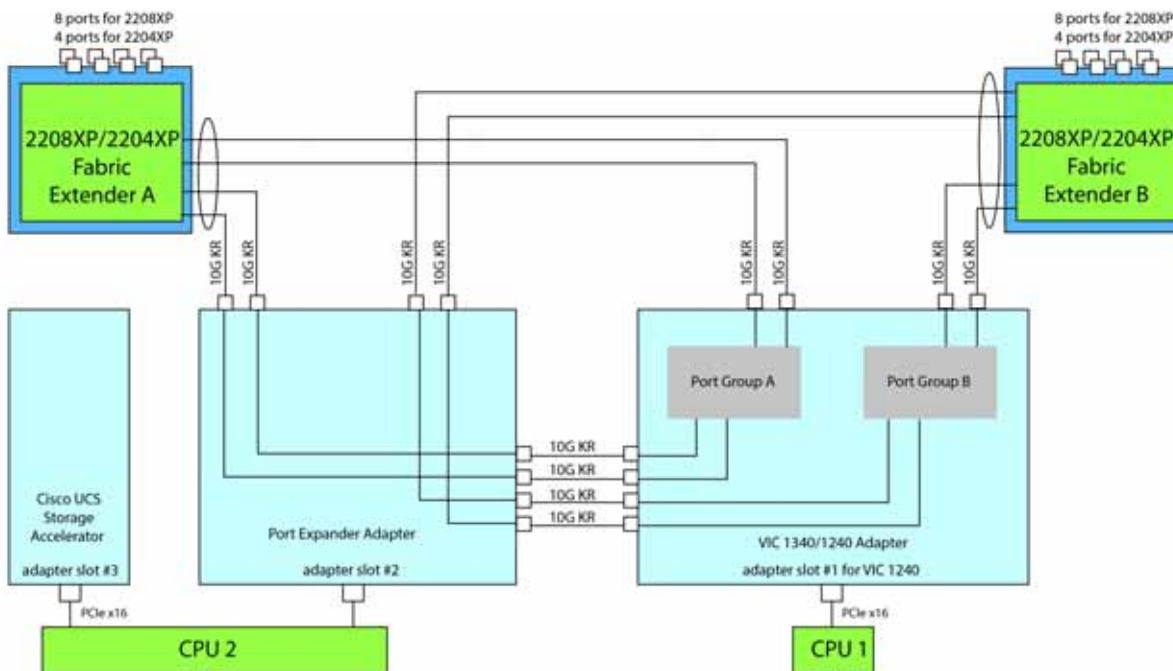
In *Figure 16*, two ports from the VIC 1340/1240 are channeled to Fabric Extender A and two are channeled to Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device, channeling two ports to each of the Fabric Extenders. Adapter slot 3 is empty. The result is 40 Gb of bandwidth to each Fabric Extender.

**Figure 16     VIC 1340/1240 and Port Expander in Adapter Slot 2 (adapter slot 3 empty)**



In *Figure 17*, two ports from the VIC 1340/1240 adapter are channeled to Fabric Extender A and two are channeled to Fabric Extender B. UCS storage accelerators are installed in adapter slots 2 and 3, but provide no network connectivity. The result is 20 Gb of bandwidth to each Fabric Extender.

**Figure 17     VIC 1340/1240 with UCS storage accelerators installed in adapter slots 2 and 3**

In *Figure 18*, two ports from the VIC 1340/1240 adapter are channeled to Fabric Extender A and two are channeled to Fabric Extender B. A UCS storage accelerator is installed in adapter slot 2 but provides no network connectivity and slot 3 is empty. The result is 20 Gb of bandwidth to each Fabric Extender.

**Figure 18     VIC 1340/1240 with UCS storage accelerator installed in adapter slot 2 and slot 3 empty**
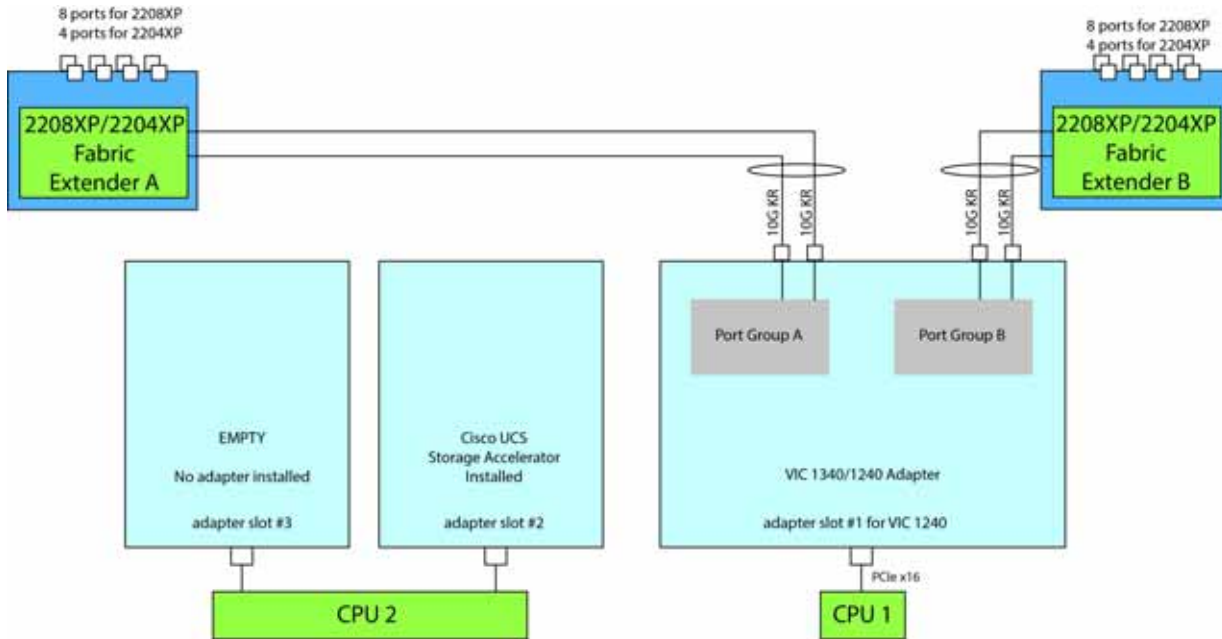


In *Figure 19*, two ports from the VIC 1340/1240 adapter are channeled to Fabric Extender A and two are channeled to Fabric Extender B. Adapter slots 2 and 3 are empty. The result is 20 Gb of bandwidth to each Fabric Extender.

**Figure 19     VIC 1340/1240 (adapter slots 2 and 3 empty)**
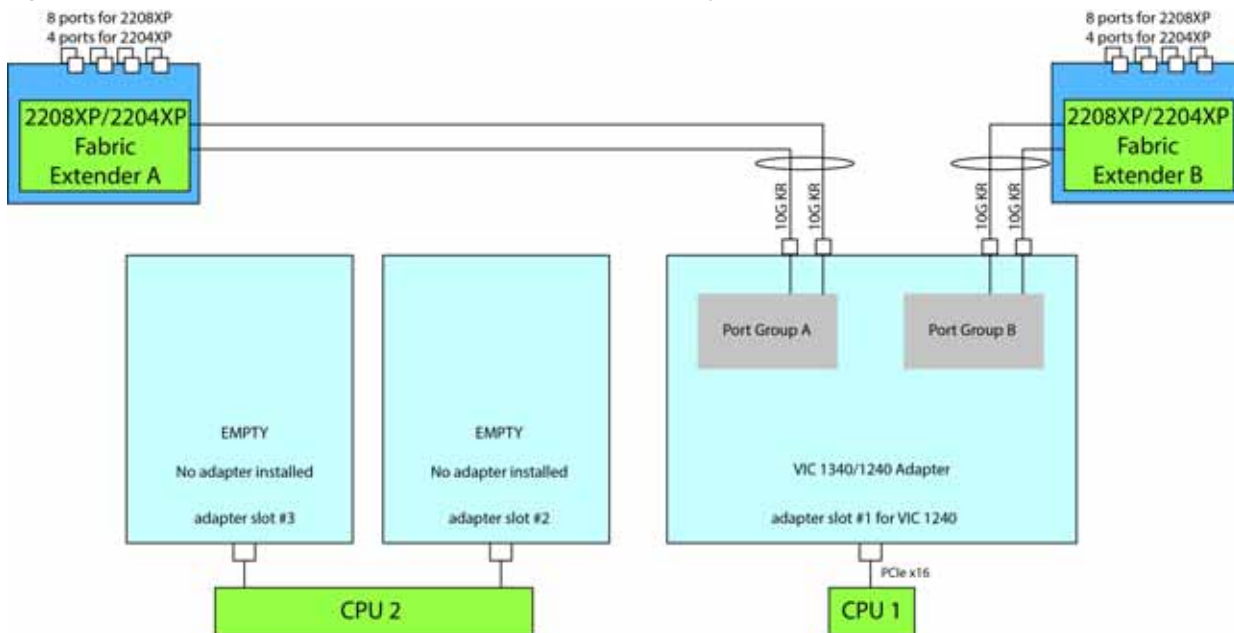
## Connectivity using the Cisco UCS 2104XP Fabric Extender

The connectivity options for each of the two Blade Modules shown in *Figure 20* through *Figure 29* are summarized in *Table 31*.

Table 31  Supported Adapter[1] Combinations Using the 2104XP FEX

| Adapter Slot 1 | Adapter Slot 2 | Adapter Slot 3 | Total Available Bandwidth |
|---|---|---|---|
| | | | **2 x 2104XP** |
| VIC 1340/1240 | Port Expander Card | VIC 1380/1280 | 40 Gb<br>*Figure 20 on page 58* |
| VIC 1340/1240 | Cisco UCS Storage Accelerator | VIC 1380/1280 | 40 Gb<br>*Figure 21 on page 58* |
| VIC 1340/1240 | Not populated | VIC 1380/1280 | 40 Gb<br>*Figure 22 on page 59* |
| Not populated | Cisco UCS Storage Accelerator | VIC 1380/1280 | 20 Gb<br>*Figure 23 on page 59* |
| Not populated | Not populated | VIC 1380/1280 | 20 Gb<br>*Figure 24 on page 60* |
| VIC 1340/1240 | Port Expander Card | Cisco UCS Storage Accelerator | 20 Gb<br>*Figure 25 on page 60* |
| VIC 1340/1240 | Port Expander Card | Not populated | 20 Gb<br>*Figure 26 on page 61* |
| Note: for the following configuration, do not mix a Fusion-io adapter with an LSI WarpDrive. Slots 2 and 3 must have identical types of storage cards. | | | |
| VIC 1340/1240 | Cisco UCS Storage Accelerator | Cisco UCS Storage Accelerator | 20 Gb<br>*Figure 27 on page 61* |
| VIC 1340/1240 | Cisco UCS Storage Accelerator | Not populated | 20 Gb<br>*Figure 28 on page 62* |
| VIC 1340/1240 | Not populated | Not populated | 20 Gb<br>*Figure 29 on page 62* |

Notes . . .

1. In the server BIOS and on the motherboard, "Adapter 1," "Adapter 2," and "Adapter 3" are labeled as "mLOM," "Mezz 1," and "Mezz 2," respectively

In *Figure 20*, one port from the VIC 1340/1240 is connected to Fabric Extender A and one is connected to Fabric Extender B. The Port Expander Card installed in adapter slot 2 has no role in this case. In addition, the VIC 1380/1280 channels one port to each Fabric Extender. The result is 20 Gb of bandwidth to each Fabric Extender.

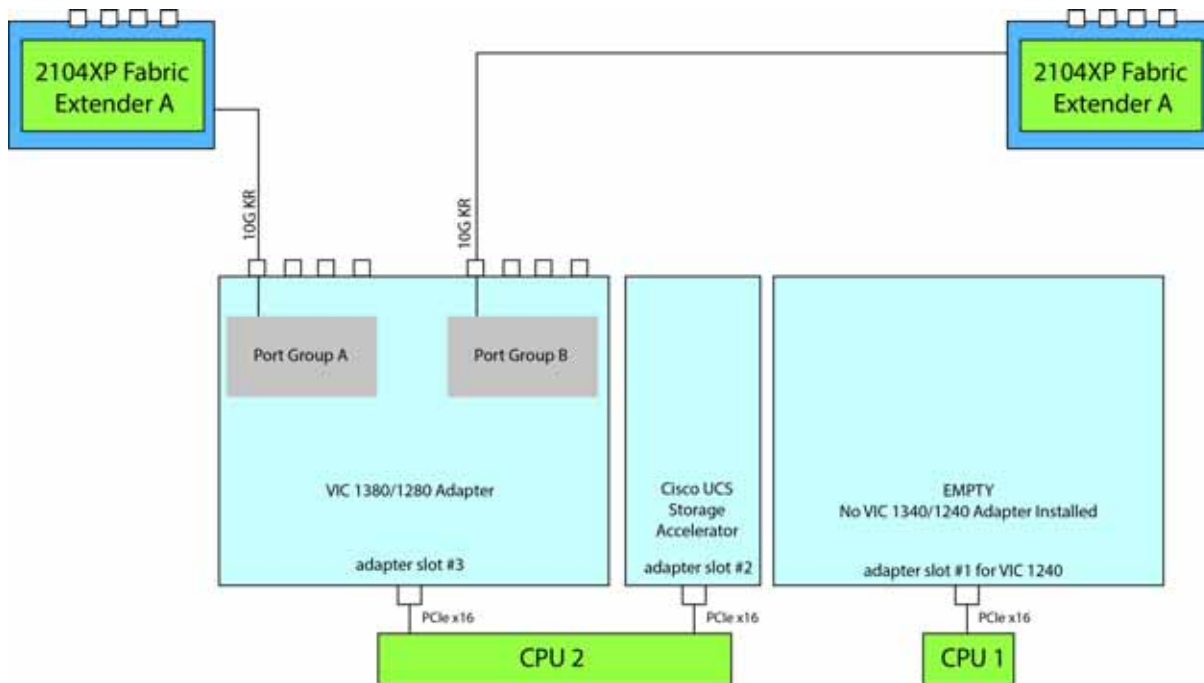**Figure 20**    VIC 1340/1240, Port Expander in adapter slot 2, and VIC 1380/1280 in adapter slot 3
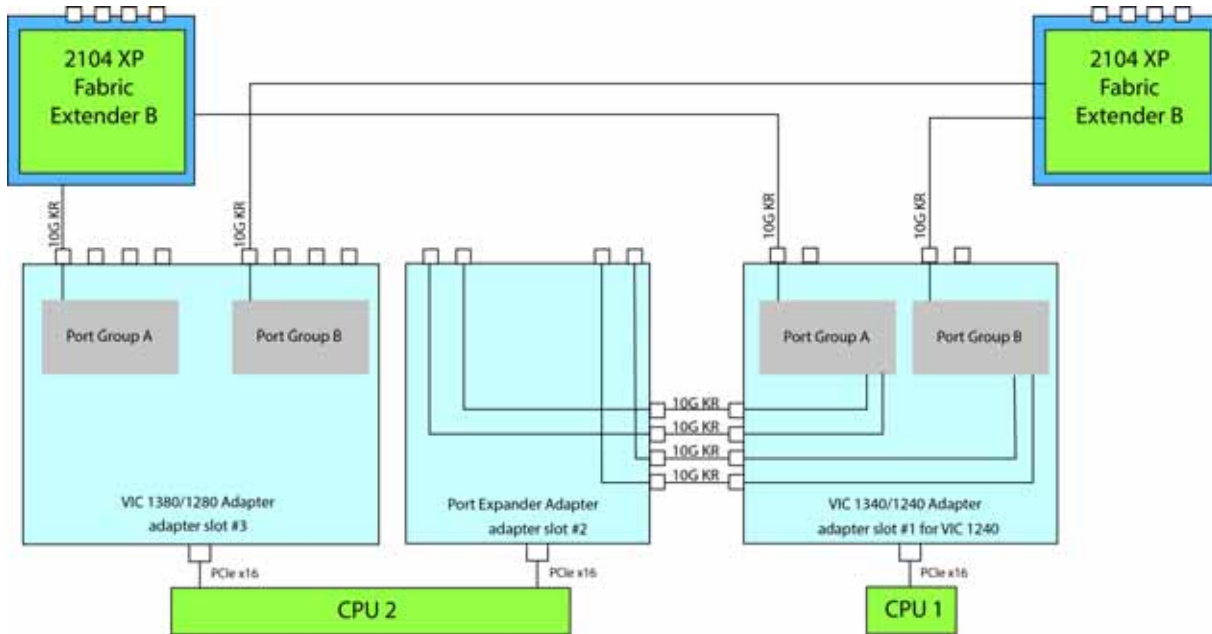


In *Figure 21*, two ports from the VIC 1340/1240 are connected, one to each Fabric Extender. A Cisco UCS Storage Accelerator adapter is installed in slot 2, but provides no network connectivity. The VIC 1380/1280 installed in adapter slot 3 connects two ports, one to each of the Fabric Extenders. The result is 20 Gb of bandwidth to each Fabric Extender.

**Figure 21**    VIC 1340/1240, Cisco UCS SA in adapter slot 2, and VIC 1380/1280 in adapter slot 3
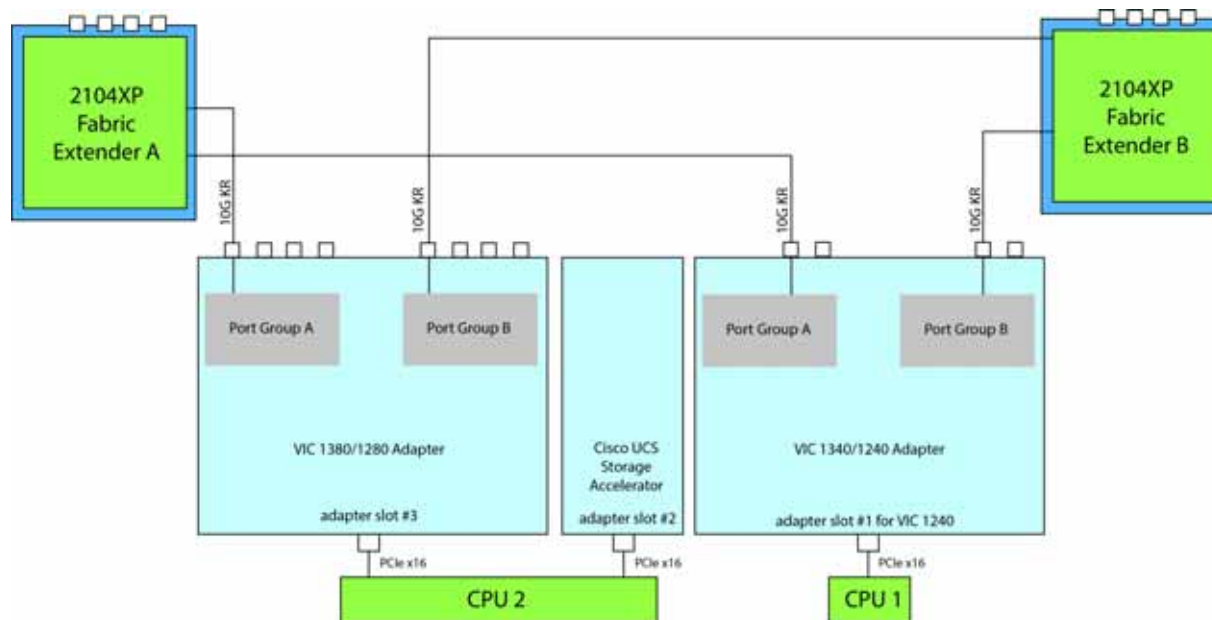
In *Figure 22*, two ports from the VIC 1340/1240 are connected, one to each Fabric Extender. Adapter slot 2 is empty. The VIC 1380/1280 installed in adapter slot 3 connects two ports, one to each of the Fabric Extenders. The result is 20 Gb of bandwidth to each Fabric Extender.

**Figure 22    VIC 1340/1240 and VIC 1380/1280 (adapter slot 2 empty)**
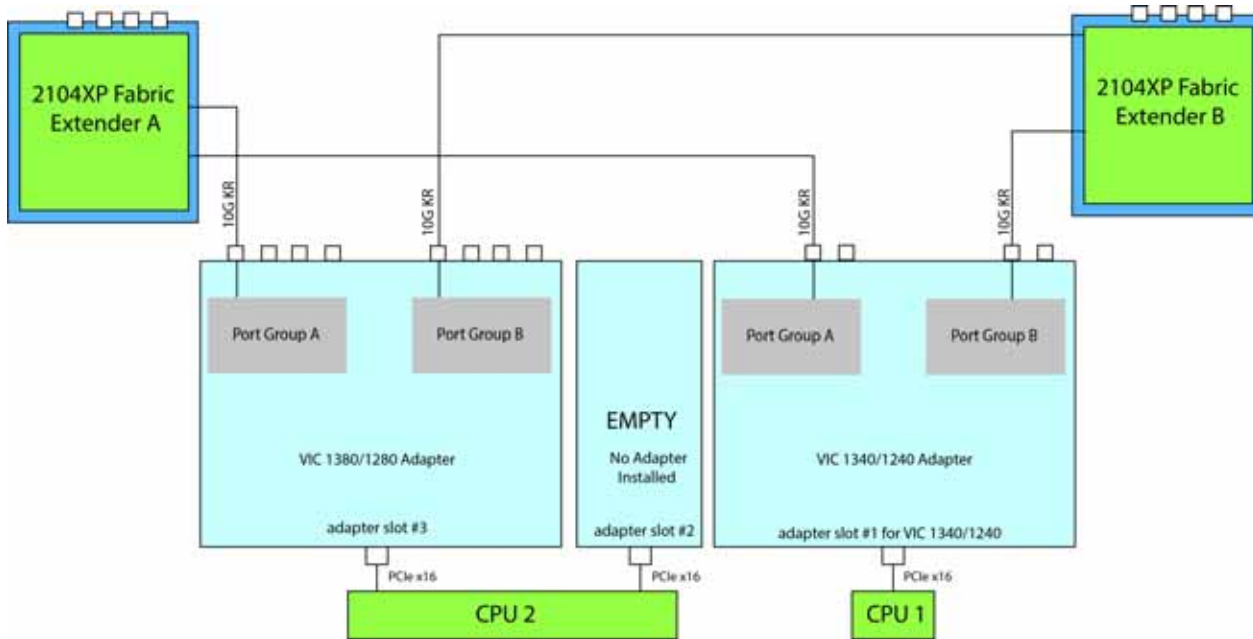


In *Figure 23*, no VIC 1340/1240 is installed. A Cisco UCS Storage Accelerator adapter is installed in slot 2, but provides no network connectivity. The VIC 1380/1280 installed in adapter slot 3 connects two ports, one to each of the Fabric Extenders. The result is 10 Gb of bandwidth to each Fabric Extender.

**Figure 23    No VIC 1340/1240 installed, UCS Storage Accelerator in slot 2 and VIC 1380/1280 in slot 3**

In *Figure 24*, no VIC 1340/1240 is installed. Adapter slot 2 is also not occupied. The VIC 1380/1280 installed in adapter slot 3 connects two ports, one to each Fabric Extender. The result is 10 Gb of bandwidth to each Fabric Extender.

Figure 24　　No VIC 1340/1240 installed, no adapter installed in slot 2, and VIC 1380/1280 in slot 3
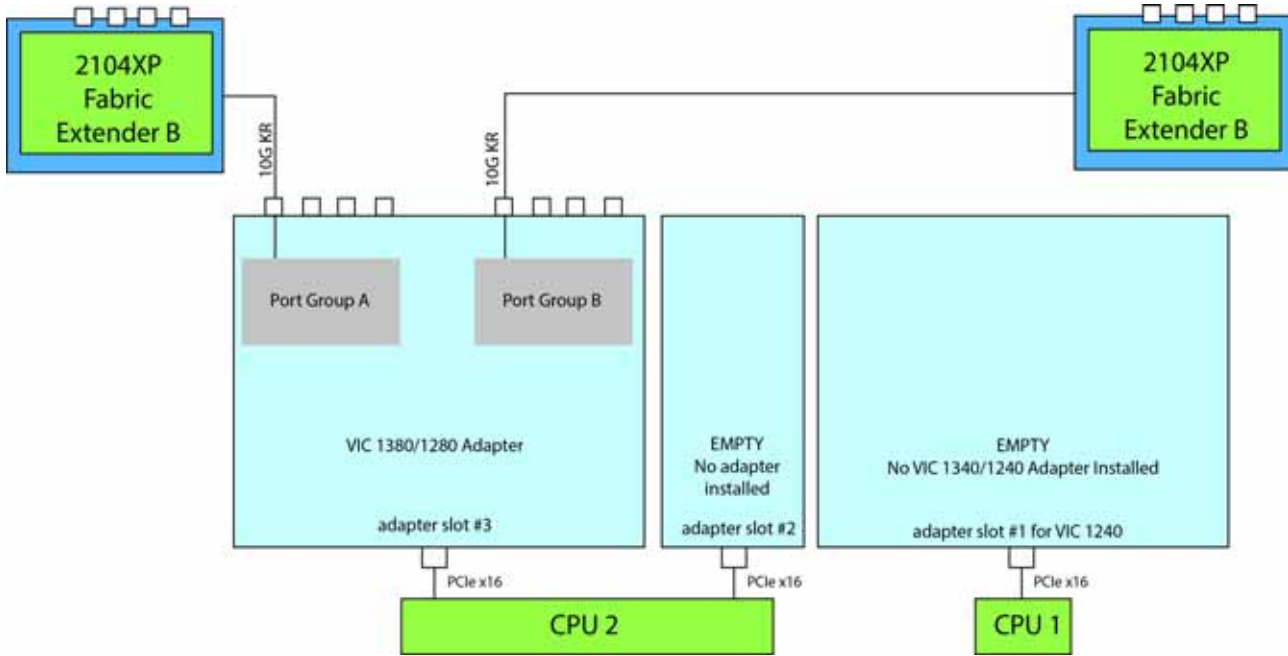


In *Figure 25*, one port from the VIC 1340/1240 is connected to Fabric Extender A and one is connected to Fabric Extender B. The Port Expander Card installed in adapter slot 2 has no role in this case. A Cisco UCS storage accelerator is installed in slot 3, but provides no network connectivity. The result is 10 Gb of bandwidth to each Fabric Extender.

Figure 25　　VIC 1340/1240 and Port Expander in Adapter Slot 2 with UCS storage accelerator in slot 3
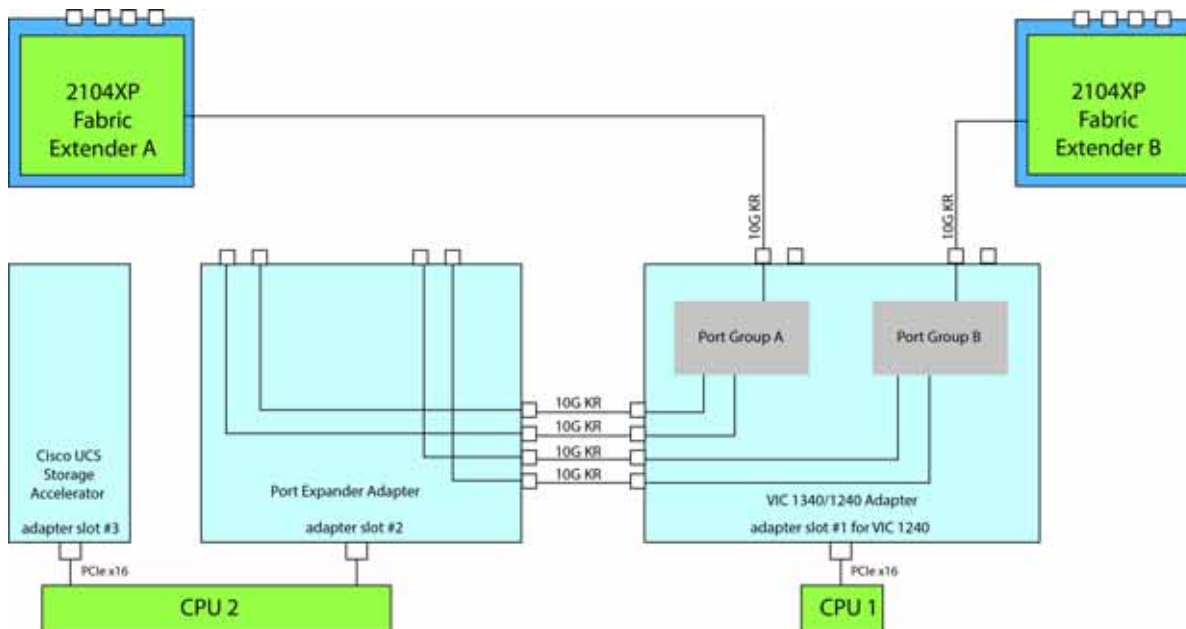
In *Figure 26*, one port from the VIC 1340/1240 is connected to Fabric Extender A and one is connected to Fabric Extender B. The Port Expander Card installed in adapter slot 2 has no role in this case. Adapter slot 3 is empty. The result is 10 Gb of bandwidth to each Fabric Extender.

**Figure 26     VIC 1340/1240 and Port Expander in Adapter Slot 2 (adapter 3 empty)**
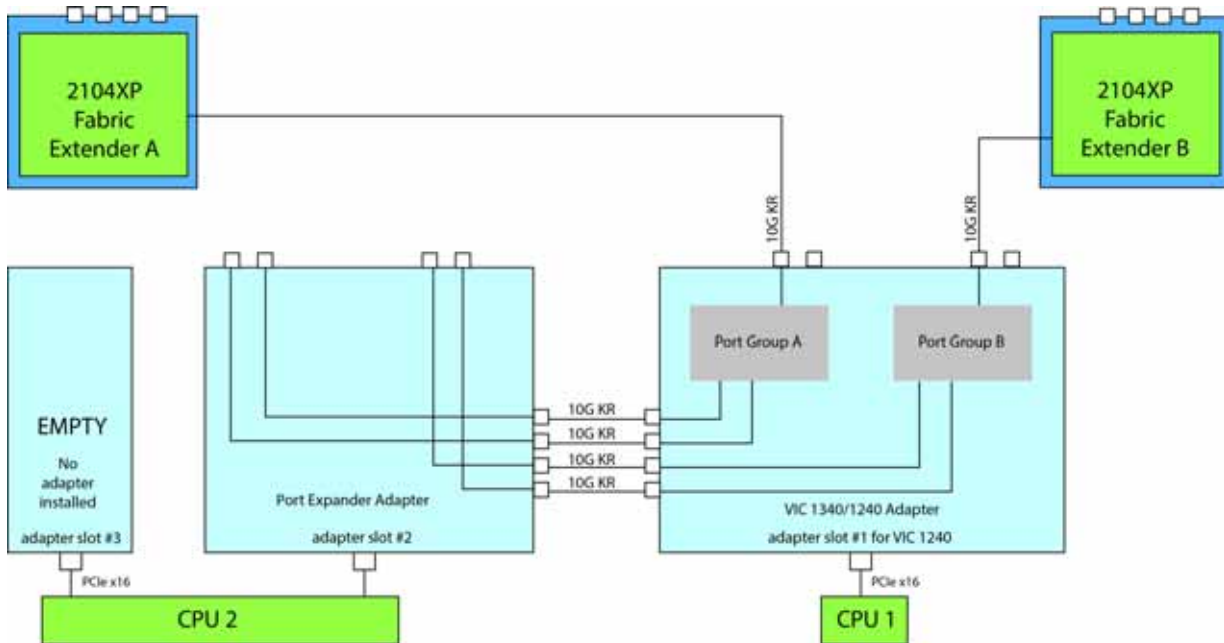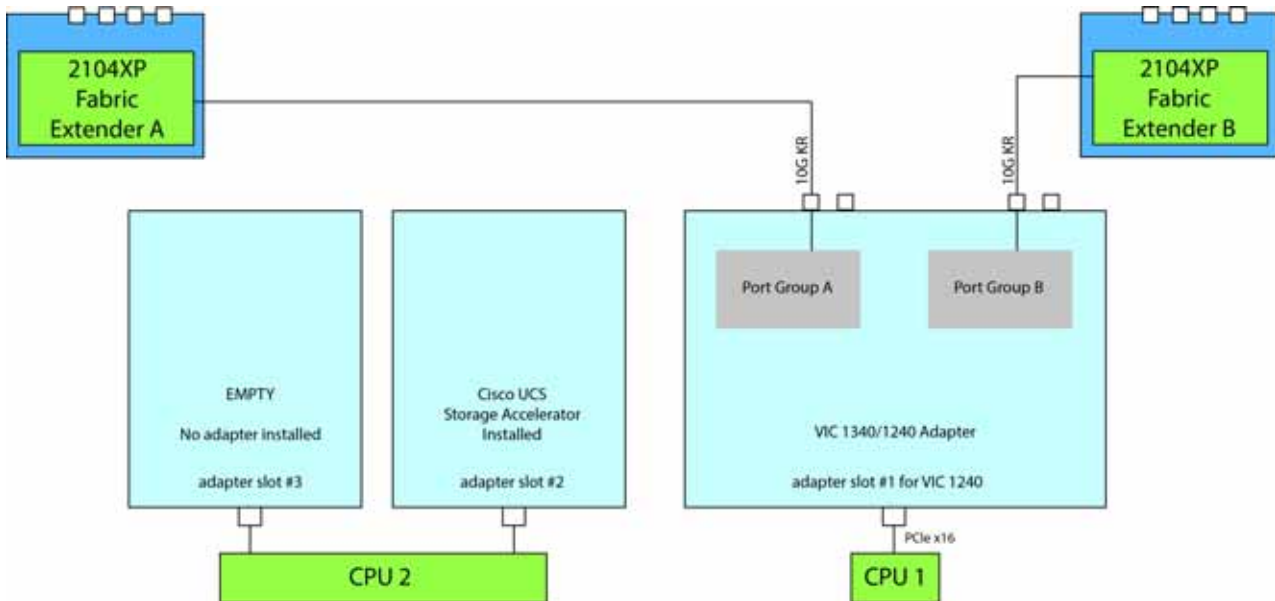


In *Figure 27*, two ports from the VIC 1340/1240 adapter are connected, one to each Fabric Extender. UCS storage accelerators are installed in adapter slots 2 and 3, but provide no network connectivity. The result is 10 Gb of bandwidth to each Fabric Extender.

**Figure 27     VIC 1340/1240 with UCS storage accelerators installed in adapter slots 2 and 3**



**Cisco UCS B460 M4 Blade Server (with Intel® Xeon E7 v2 CPU)**
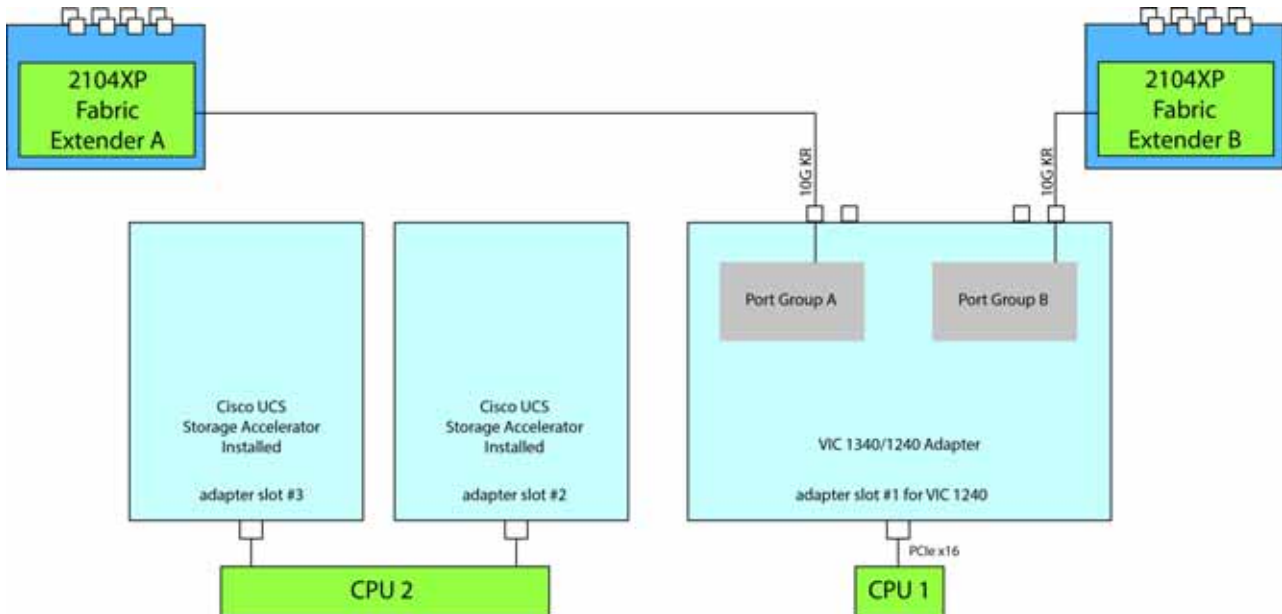
In *Figure 28*, two ports from the VIC 1340/1240 adapter are connected, one to each Fabric Extender. A UCS storage accelerator is installed in adapter slot 2 but provides no network connectivity and slot 3 is empty. The result is 10 Gb of bandwidth to each Fabric Extender.

**Figure 28    VIC 1340/1240 with UCS storage accelerator installed in adapter slot 2 and slot 3 empty**



In *Figure 29*, two ports from the VIC 1340/1240 adapter are connected, one to each to Fabric Extender. Adapter slots 2 and 3 are empty. The result is 10 Gb of bandwidth to each Fabric Extender.

**Figure 29    VIC 1340/1240 (adapter slots 2 and 3 empty)**
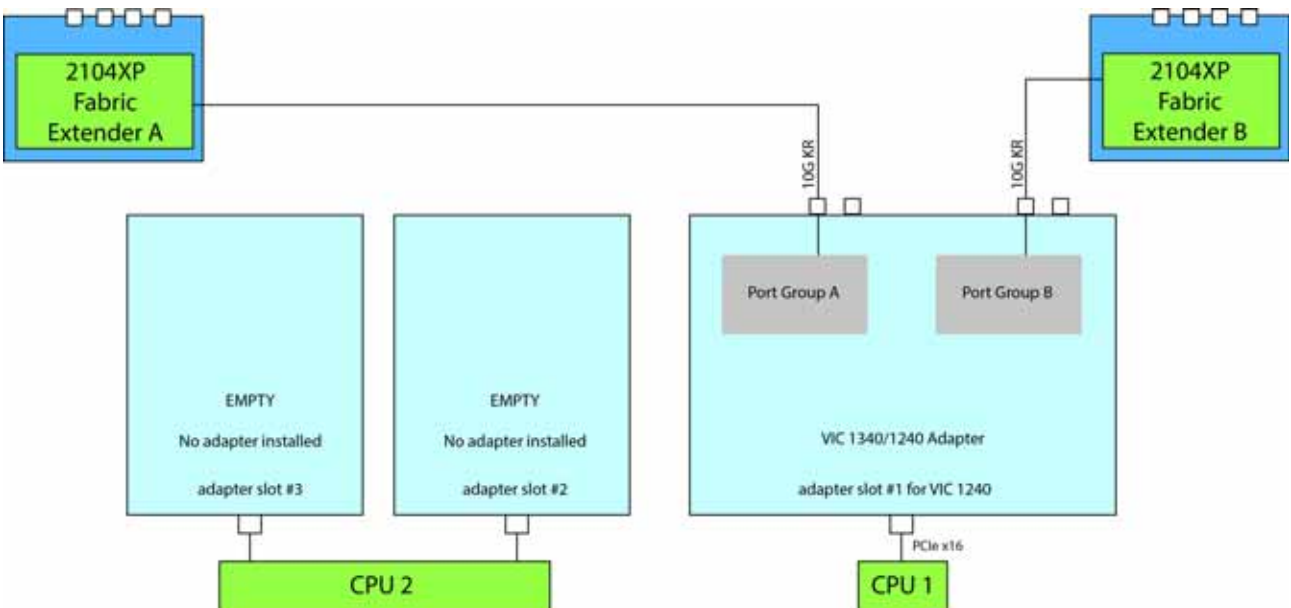
# TECHNICAL SPECIFICATIONS

## Dimensions and Weight

**Table 32  UCS B460 M4 Dimensions and Weight[1]**

| Parameter | Value |
|-----------|-------|
| Height | 4.04 in. (102.6 mm) |
| Width | 17.20 in.(436.9 mm) |
| Depth | 25.5 in. (647.7 mm) |
| Weight | 66.14 lbs (30 kg)[*] |

Notes . . .

   1. The system weight given here is an estimate for a fully configured system and will vary depending on the number of CPUs, memory DIMMs, and other optional items.

## Power Specifications

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

http://ucspowercalc.cisco.com.

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       **Cisco UCS B460 M4 Blade Server (with Intel® Xeon E7 v2 CPU)**