Cisco UCS B420 M4 Blade Server

CONTENTS

OVERVIEW

Designed for demanding virtualization and database workloads, the UCS B420 M4 combines a large memory footprint with four-socket scalability, leveraging the Intel® Xeon® processor E5-4600 v3 and v4 product family. The UCS B420 M4 supports 2133-MHz and 2400-MHz DDR4 memory and utilizes UCS Virtual Interface Card (VIC) technology to achieve up to 160 Gb aggregate I/O bandwidth, all in a dense, full-width blade form factor. The UCS B420 M4 maintains memory performance even as capacity grows, and the large power envelope of the UCS 5108 Blade Server Chassis means the UCS B420 can handle up to 3 TB of memory without compromise to CPU speed or core count. Up to four UCS B420 M4 Blade Servers can be installed in the UCS 5108 Blade Server Chassis.

The UCS B420 M4 Blade Server is centrally managed using Cisco UCS Manager. Cisco UCSM provides a single management interface for all hardware and software components of a UCS domain. Cisco UCSM manages up to 160 servers, using Single Connect Technology to consolidate network, storage, and management traffic. With Cisco UCS Central, management can be extended globally to thousands of servers in multiple domains.

Figure 1   Cisco UCS B420 M4 Blade Server

DETAILED VIEWS

Blade Server Front View

Figure 2 is a detailed front view of the Cisco UCS B420 M4 Blade Server.

Figure 2   Blade Server Front View
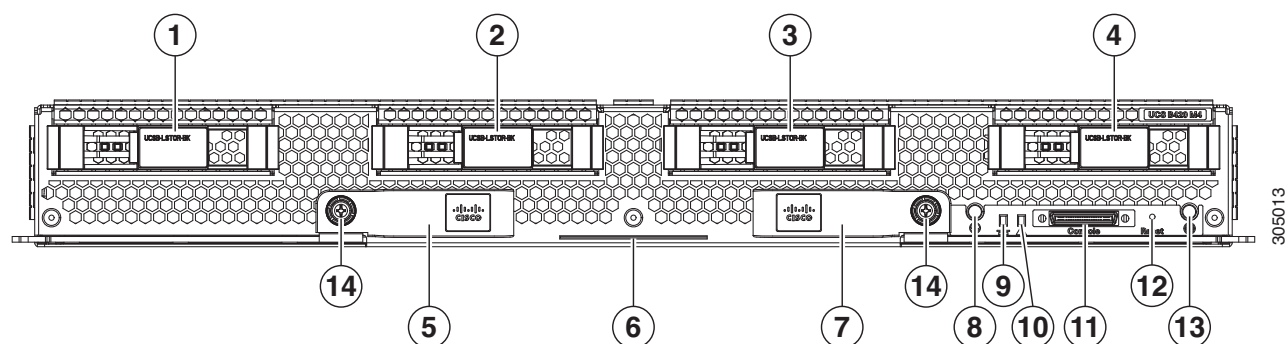
1	Drive bay 1	8	Power button and LED
2	Drive bay 2	9	Network link status button
3	Drive bay 3	10	Blade health LED
4	Drive bay 4	11	Local console connector[1]
5	Left blade ejector handle	12	Reset button access
6	Asset pull handle (a blank asset tag is provided on which you can add your own label or sticker or you can use a marker to write your asset information on the tag)	13	Beaconing LED and button
7	Right blade ejector handle	14	Ejector thumbscrew

Notes

1. For information about the KVM local I/O cable that plugs into the console connector (a cable is included with every Cisco UCS 5100 Series blade server chassis accessory kit), see *CHOOSE LOCAL KVM I/O CABLE* (OPTIONAL) on page 37*.

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*.

> NOTE: The B420 M4 blade server requires UCS Manager (UCSM) to operate as part of the UCS system.
>
> ■ The B420 M4 with E5-4600 v3 requires blade firmware 2.2(5d) or later.
>
> ■ The B420 M4 with E5-4600 v4 requires blade firmware 2.2(8a) or later.

Table 1   Capabilities and Features

Capability/Feature	Description
Blade server chassis	The full-width UCS B420 M4 Blade Server mounts in a Cisco UCS 5100 series blade server chassis
CPU	Up to four Intel® E5-4600 v3 or v4 series processor family CPUs. 2- and 4-CPU configurations are supported on the UCS B420 M4.
Chipset	Intel® C610 chipset
Memory	48 total slots for registered ECC DIMMs
I/O	Three configurable adapter slots: ■ One slot supports the Cisco VIC 1340/1240 adapter only. ■ Two additional slots support Cisco adapters and Cisco UCS Storage Accelerator adapters.

Storage controller	■ Diskless system (no drive bays or RAID controller), or
	
	■ Optional Cisco FlexStorage 12G SAS RAID controller options, offering:
	
	  • SAS/SATA/HDD/SSD support
	
	  • RAID support: 0, 1, 10 or
	
	  • RAID 0, 1, 10, 5, 6 with optional 2 GB flash-backed write cache

Storage devices	Either two or four hot-plug 2.5" SFF drive bays One internal USB 3.0 port Two Cisco Flexible Flash secure digital card slots
Interfaces	Front panel ■ One console connector (see *CHOOSE LOCAL KVM I/O CABLE* (OPTIONAL) on page 37*)

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: ■ Integrated 2D graphics core with hardware acceleration ■ DDR2/3 memory interface supports up to 512 MB of addressable memory (8 MB is allocated by default to video memory) ■ Supports display resolutions up to 1920 x 1200 16bpp @ 60Hz ■ High-speed integrated 24-bit RAMDAC ■ Single lane PCI-Express host interface running at Gen 1 speed
Power subsystem	Integrated in the Cisco UCS 5100 series blade server chassis
Fans	Integrated in the Cisco UCS 5100 series blade server 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.
Cisco UCS Diagnostics for Cisco UCS B-Series Blade Servers	The Cisco UCS Blade Server Diagnostics tool for Cisco UCS Blade Servers enables you to verify the health of the hardware components on your servers. The diagnostics tool provides a variety of tests to exercise and stress the various hardware subsystems on the Cisco UCS Blade Servers, such as memory and CPU. You can use the tool to run a sanity check on the state of your Cisco UCS Blade Servers after you fix or replace a hardware component. You can also use this tool to run comprehensive burn-in tests before you deploy a new Cisco UCS Blade Server in your production environment. See the following links for more information: User Guide: *http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/sw/ucs_diagnostics/b_UCS_Blade_Server_Diagnostics_User_Guide.html* ISO Download: *http://www.cisco.com/cisco/software/navigator.html*

CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS B420 M4 Blade Server:

STEP 1   VERIFY SERVER SKU

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

Table 2   PID of the Base UCS B420 M4 Blade Server

Product ID (PID)	Description
UCSB-B420-M4	UCS B420 M4 Blade Server with no CPU, memory, HDD, SSD, or adapter cards

The base Cisco UCS B420 M4 blade server does not include the following components. They must be selected during product ordering:

■ CPUs

■ Memory

■ Disk drives

■ Cisco adapters (such as the VIC 1340, VIC 1240, VIC 1380, VIC 1280, and Port Expander)

■ Cisco UCS Storage Accelerators

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

STEP 2 CHOOSE CPU(S)

The standard CPU features are:

■ Intel Xeon processor E5-4600 v3 or v4 series processor family CPUs

■ Core counts of up to 18 for v3 CPUs and 22 for v4 CPUs

■ Cache sizes of up to 45 MB for v3 CPUs and 55 MB for v4 CPUs

Select CPUs

The supported Intel Xeon E5-4600 v3 and v4 series CPUs on the UCS B420 M4 are listed in *Table 3*.

Table 3 Supported Intel CPUs: E5-4600 v3 and v4 Series Processor Family CPUs

Product ID (PID)	Intel Number	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	QPI	Highest DDR4 DIMM Clock Support (MHz)
Intel Xeon E5-4600 v4							
UCS-CPU-E5-4669E	E5-4669 v4	2.20	135	55	22	9.6	2400
UCS-CPU-E5-4667E	E5-4667 v4	2.20	135	45	18	9.6	2400
UCS-CPU-E5-4660E	E5-4660 V4	2.2	120	40	16	9.6	2400
UCS-CPU-E5-4650E	E5-4650 V4	2.2	105	35	14	9.6	2400
UCS-CPU-E5-4655E	E5-4655 V4	2.5	135	30	8	9.6	2400
UCS-CPU-E5-4640E	E5-4640 V4	2.1	105	30	12	8.0	2133
UCS-CPU-E5-4627E[1]	E5-4627 V4	2.6	135	25	10	8.0	2400
UCS-CPU-E5-4620E	E5-4620 V4	2.1	105	25	10	8.0	2133
UCS-CPU-E5-4610E	E5-4610 V4	1.8	105	25	10	6.4	1866
Intel Xeon E5-4600 v3							
UCS-CPU-E5-4669D	E5-4669 v3	2.10	135	45	18	9.6	2133
UCS-CPU-E5-4667D	E5-4667 v3	2.00	135	40	16	9.6	2133
UCS-CPU-E5-4660D	E5-4660 v3	2.10	120	35	14	9.6	2133
UCS-CPU-E5-4655D	E5-4655 v3	2.90	135	30	6	9.6	2133
UCS-CPU-E5-4650D	E5-4650 v3	2.10	105	30	12	9.6	2133
UCS-CPU-E5-4640D	E5-4640 v3	1.90	105	30	12	8.0	1866
UCS-CPU-E5-4627D[2]	E5-4627 v3	2.60	135	25	10	8.0	2133
UCS-CPU-E5-4620D	E5-4620 v3	2.00	105	25	10	8.0	1866
UCS-CPU-E5-4610D	E5-4610 v3	1.70	105	25	10	6.4	1600

Notes

1. The UCS-CPU-E5-4627E CPU does not support Hyper-Threading technology.
2. The UCS-CPU-E5-4627D CPU does not support Hyper-Threading technology.

Supported Configurations

(1) Two-CPU Configuration

■ Choose two identical CPUs from any one of the rows of *Table 3*. CPUs 1 and 2 will be populated.

(2) Four-CPU Configuration

■ Choose four identical CPUs from any one of the rows of *Table 3*.

Notes

■ The system will run at the lowest CPU or DIMM clock speed.

■ System speed is also dependent on how many DIMMs are populated per channel.

■ For 2-CPU systems, only 24 DIMM slots are functional (channels A - H).

■ See *Table 12 on page 23* for supported adapter combinations in 2-CPU systems.

■ For 4-CPU systems, all 48 DIMM slots are functional.

STEP 3   CHOOSE MEMORY

The standard memory features are:

■ DIMMs

— DDR4 ECC registered DIMMs (RDIMMs), through silicon via RDIMMs (TSV-RDIMMs), or load-reduced DIMMs (LRDIMMs)

— Clock speed: 2133 MHz or 2400 MHz

— Ranks per DIMM: up to 8

— Operational voltage: 1.2 V

■ Memory is organized with four memory channels per CPU, with up to three DIMMs per channel (DPC), as shown in *Figure 3*.

Figure 3   UCS B420 M4 Memory Organization
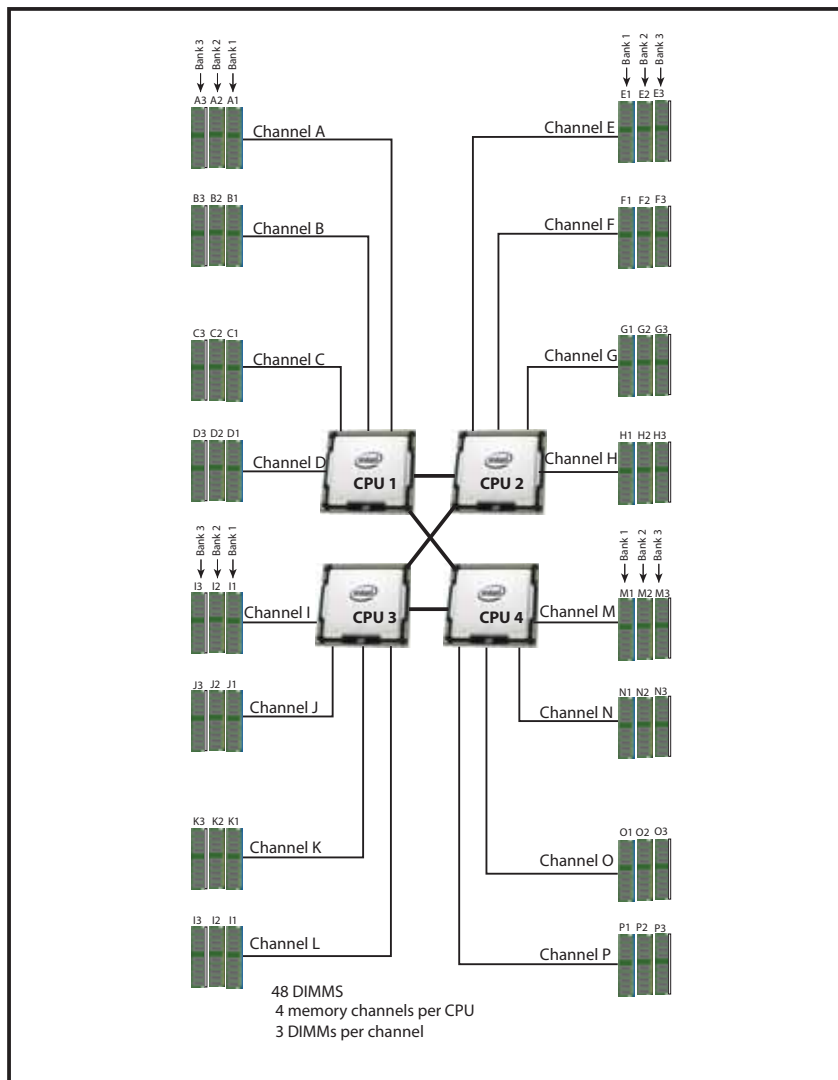
Choose DIMMs and Memory Mirroring

Select the memory configuration and whether or not you want the memory mirroring option. The supported memory DIMMs and the mirroring option are listed in *Table 4*.

When memory mirroring is enabled, the memory subsystem simultaneously writes identical data to two adjacent channels. If a memory read from one of the channels returns incorrect data due to an uncorrectable memory error, the system automatically retrieves the data from the other channel. A transient or soft error in one channel does not affect the mirrored data, and operation continues unless there is a simultaneous error in exactly the same location on a DIMM and its mirrored DIMM. Memory mirroring reduces the amount of memory available to the operating system by 50% because only one of the two populated channels provides data.

Table 4   Supported DDR4 DIMMs and Memory Mirroring Option

Product ID (PID)	PID Description	Voltage	Ranks /DIMM
2400-MHz DIMM Options			
UCS-ML-1X644RV-A	64 GB DDR4-2400-MHz LRDIMM/PC4-19200 x4	1.2 V	4
UCS-ML-1X324RV-A	32GB DDR4-2400-MHz LRDIMM/PC4-19200 x4	1.2 V	4
UCS-MR-1X322RV-A	32GB DDR4-2400-MHz RDIMM/PC4-19200 x4	1.2 V	2
UCS-MR-1X322RVA-S	32GB DDR4-2400-MHz RDIMM/PC4-19200/x4 (Samsung)	1.2 V	2
UCS-MR-1X161RV-A	16GB DDR4-2400-MHz RDIMM/PC4-19200 x4	1.2 V	1
2133-MHz DIMM Options			
UCS-MR-1X648RU-A	64GB DDR4-2133-MHz TSV-RDIMM/PC4-17000/x4	1.2 V	8
UCS-MR-1X322RU-A	32GB DDR4-2133-MHz RDIMM/PC4-17000/x4	1.2 V	2
UCS-MR-1X162RU-A	16GB DDR4-2133-MHz RDIMM/PC4-17000/x4	1.2 V	2
UCS-MR-1X081RU-A	8GB DDR4-2133-MHz RDIMM/PC4-17000/x4	1.2 V	1
Memory Mirroring Option			
N01-MMIRROR	Memory mirroring option		

Notes

■ DIMM configuration rules:

— The minimum configuration is 1 DIMM per CPU

— The order in which DIMMs must be installed in a channel is Bank 1 (blue socket), then Bank 2 (black socket), then Bank 3 (white socket).

— You cannot mix DIMM capacities within a bank

- — You can mix DIMM capacities within a channel
- — 64GB TSV-RDIMMs cannot be mixed with any other DIMMs
- — You cannot mix RDIMMs with LRDIMMs

- To optimize memory performance:

  - — Configure DIMMs identically for each CPU
  - — Fill banks equally across the CPU. See DIMM population guidelines in *Table 27 on page 41*, *Table 28 on page 42*, and *Table 29 on page 42*.
  - — Populate less than 3 DPC

- For systems shipping with E5-4600 v3 series processor family CPUs, DIMM speeds are as shown in *Table 5*, *Table 6*, and *Table 7*.

Table 5   DIMM Speeds for 2133-MHz E5-4600 v3 Series CPUs

DPC	DIMM Type		
	64 GB (TSV)	16/32 GB (DR)	8 GB (SR)
1DPC	2133	2133	2133
2DPC	2133	2133	2133
3 DPC	1600	1866	1600

Table 6   DIMM Speeds for 1866-MHz E5-4600 v3 Series CPUs

DPC	DIMM Type		
	64 GB (TSV)	16/32 GB (DR)	8 GB (SR)
1DPC	1866	1866	1866
2DPC	1866	1866	1866
3 DPC	1333	1600	1333

Table 7   DIMM Speeds for 1600-MHz E5-4600 v3 Series CPUs

DPC	DIMM Type		
	64 GB (TSV)	16/32 GB (DR)	8 GB (SR)
1DPC	1600	1600	1600

Table 7   DIMM Speeds for 1600-MHz E5-4600 v3 Series CPUs *(continued)*

2DPC	1600	1600	1600
3 DPC	1066	1333	1066

For systems shipping with E5-4600 v4 series processor family CPUs, DIMM speeds are as shown in *Table 8*.

Table 8   DIMM Speeds for E5-4600 v4 Series CPUs

DIMM and CPU Frequencies	DIMMs per Channel	LRDIMM speed (quad rank x4) 64 GB 1.2 V	RDIMM speed (dual rank x4) 32 GB 1.2 V	LRDIMM speed (quad rank x4) 32 GB 1.2 V	LRDIMM speed (single rank x4) 16 GB 1.2 V
DIMM FREQ - 2400 CPU FREQ - 2400	1 DPC	2400	2400	2400	2400
	2 DPC	2400	2400	2400	2400
	3 DPC	2133	1866	2133	2133
DIMM FREQ - 2133 CPU FREQ - 2400	1 DPC	NA	2133	2133	2133
	2 DPC	NA	2133	2133	2133
	3 DPC	NA	1866	1866	1866
DIMM FREQ - 2400 CPU FREQ - 2133	1 DPC	2133	2133	2133	2133
	2 DPC	2133	2133	2133	2133
	3 DPC	1866	1866	1866	1866
DIMM FREQ - 2133 CPU FREQ - 2133	1 DPC	NA	2133	2133	2133
	2 DPC	NA	2133	2133	2133
	3 DPC	NA	1866	1866	1866
DIMM FREQ - 2400 CPU FREQ - 1866	1 DPC	1866	1866	1866	1866
	2 DPC	1866	1866	1866	1866
	3 DPC	1866	1600	1866	1600

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Table 8   DIMM Speeds for E5-4600 v4 Series CPUs *(continued)*

DIMM and CPU Frequencies	DIMMs per Channel	LRDIMM speed (quad rank x4) 64 GB 1.2 V	RDIMM speed (dual rank x4) 32 GB 1.2 V	LRDIMM speed (quad rank x4) 32 GB 1.2 V	LRDIMM speed (single rank x4) 16 GB 1.2 V
DIMM FREQ - 2133 CPU FREQ - 1866	1 DPC	NA	1866	1866	1866
	2 DPC	NA	1866	1866	1866
	3 DPC	NA	1600	1866	1600

For more information regarding memory, see *DIMM and CPU Layout on page 40*.

Supported Configurations

(1) **Without memory mirroring:**

■ Select from 1 to 12 DIMMs per CPU (note that there are 12 DIMM slots per CPU). There must be at least 1 DIMM per CPU.

(2) **With memory mirroring:**

■ Select 4 DIMMs per CPU (installed in bank 1), 8 DIMMs per CPU (installed in banks 1, 2), or 12 DIMMs per CPU (installed in banks 1, 2, 3).

STEP 4 CHOOSE RAID CONTROLLER AND DISK DRIVE BAYS

The UCS B420 M4 can be ordered with or without the Cisco FlexStorage RAID controller with disk drive bays (local storage subsystem).

There is no RAID or local storage controller or drive bays included (embedded) with the B420 M4 server. Therefore, the Cisco FlexStorage RAID controller with drive bays must be purchased in order to support any (1, 2, 3, or 4) local hard disk drives (HDDs) or solid state drives (SSDs). The Cisco FlexStorage RAID controller option includes drive bays one and two, and supports RAID 0,1,10. An optional passthrough module includes drive bays three and four.

For servers that do not need any local HDDs or SSDs (for example, for booting from SAN), you can order the server without the Cisco FlexStorage RAID controller with disk drive bays; however be sure to keep Cisco FlexStorage blanking panels installed to maintain proper cooling airflow.

The ordering information is listed in *Table 11*.

Table 9 Card Cage and RAID Ordering Options

Product ID (PID)	PID Description
UCSB-MRAID12G[1]	Cisco FlexStorage 12G SAS RAID controller with drive bays
UCSB-MRAID12G-HE[2, 3, 4]	Cisco FlexStorage 12G SAS RAID controller with 2 GB flash-backed write cache and drive bays
UCSB-LSTOR-PT	Passthrough module with drive bays
UCSB-LSTOR-BK	Cisco FlexStorage blanking panel w/o controller, w/o drive bays

Notes

1. The UCSB-MRAID-12G RAID controller runs iMegaRAID, which has a lower-capability software stack, provides RAID 0/1 levels, and has no support for caching. Note that you cannot upgrade from this RAID controller to the to UCSB-MRAID12G-HE RAID controller.
2. The UCSB-MRAID12G-HE RAID controller runs a MegaRAID fully-featured software stack, has access to cache, and is recommended for VSAN. Its queue depth is much higher than that of the UCSB-MRAID-12G. Supports RAID 0/1/5/6 levels. Note that you cannot upgrade to this RAID controller from the UCSB-MRAID-12G controller
3. The B420 M4 with the UCSB-MRAID12G-HE requires UCSM 2.2(6) or later
4. The flash-backed write cache provides RAID controller cache protection using NAND flash memory and a supercapacitor. In the event of a power or server failure, cached data is automatically transferred from the RAID controller DRAM write cache to flash. Once power is restored, the data in the NAND flash is copied back into the DRAM write cache until it can be flushed to the disk drives.

See *Figure 4 on page 17* for a top view of the B420 M4 server with and without the Cisco FlexStorage SAS RAID controller and drive bays. See *Figure 5 on page 17* for a front view of these configurations. When no drive bays are installed, blanking panels must be installed.

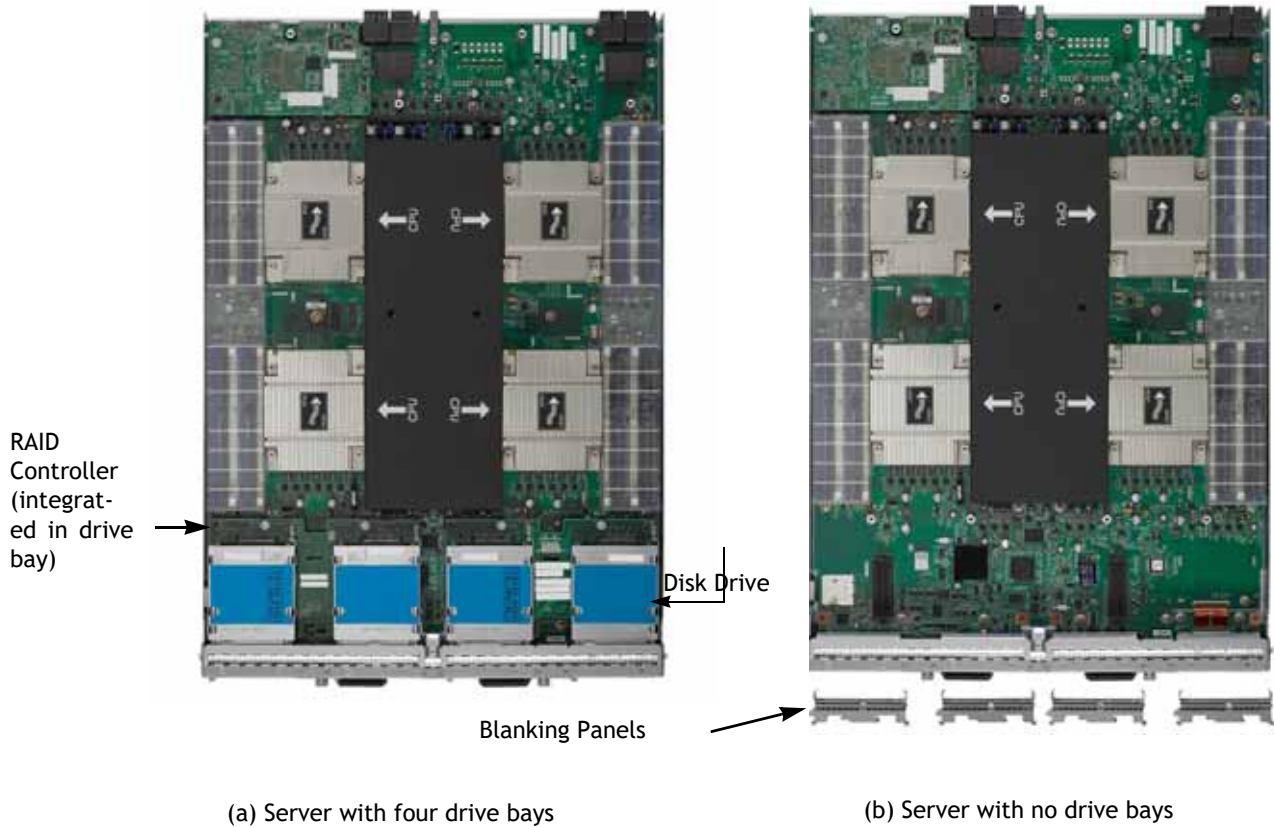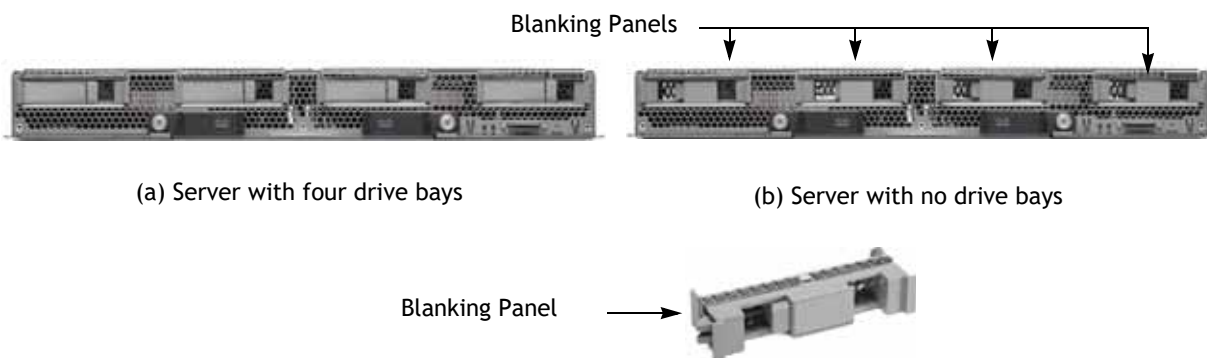**Figure 4** UCS B420 M4 With and Without Drive Bays (Top View)

(a) Server with four drive bays

(b) Server with no drive bays

Figure 5 UCS B420 M4 With and Without Drive Bays (Front View)

(a) Server with four drive bays

(b) Server with no drive bays

Supported Configurations[1]

(1) Four Drive Bays with RAID 0, 1, 10

■ Choose the following:

— One UCSB-MRAID12G. This provides two drive bays installed on the left side of the blade server (viewed from the front). The RAID controller is integrated in the drive bays and provides RAID 0,1,10.

— One UCSB-LSTOR-PT. This provides two drive bays installed on the right side of the blade server (viewed from the front) and includes a passthrough connector that allows the drives to be managed from the UCSB-MRAID12G RAID controller (RAID 0,1,10).

(2) Four Drive Bays with RAID 0, 1, 10, 5, 6

■ Choose the following:

— One UCSB-MRAID12G-HE. This provides two drive bays installed on the left side of the blade server (viewed from the front). The RAID controller includes a 2 GB flash-backed write cache (FBWC)[2] for higher performance, is integrated in the drive bays, and provides RAID 0, 1,10, 5, 6, 50, 60.

— One UCSB-LSTOR-PT. This provides two drive bays installed on the right side of the blade server (viewed from the front) and includes a passthrough connector that allows the drives to be managed from the UCSB-MRAID12G-HE RAID controller (RAID 0, 1,10, 5, 6).

(3) Two Drive Bays with RAID 0, 1, 10

■ Choose the following:

— One UCSB-MRAID12G. This provides two drive bays installed on the left side of the blade server (viewed from the front). The RAID controller is integrated in the drive bays and provides RAID 0,1,10. The two right-hand bays are fitted with blanking panels to maintain proper cooling airflow.

(4) Two Drive Bays with RAID 0, 1, 10, 5, 6

■ Choose the following:

— One UCSB-MRAID12G-HE. This provides two drive bays installed on the left side of the blade server (viewed from the front). The RAID controller includes a 2 GB flash-backed write cache for higher performance, is integrated in the drive bays and provides RAID 0, 1,10, 5, 6. The two right-hand bays are fitted with blanking panels to maintain proper cooling airflow.

(5) No Drive Bays

■ System is installed with blanking panels.

Notes

1. Any empty drive bays must be fitted with blanking panels to maintain proper cooling airflow.

2. The flash-backed write cache provides RAID controller cache protection using NAND flash memory and a supercapacitor. In the event of a power or server failure, cached data is automatically transferred from the RAID controller DRAM write cache to flash. Once power is restored, the data in the NAND flash is copied back into the DRAM write cache until it can be flushed to the disk drives.

STEP 5   CHOOSE HARD DISK DRIVES or SOLID-STATE DRIVES (OPTIONAL)

The UCS B420 M4 can be ordered with or without drives. If you ordered one of the RAID controller with drive bay options in *CHOOSE RAID CONTROLLER AND DISK DRIVE BAYS on page 16* (UCSB-MRAID12G or UCSB-MRAID12G-HE for drive bays one and two, and optionally UCSB-LSTOR-PT for drive bays three and four), you can order drives listed in this section. The B420 M4 provides up to four hot plug 2.5" SFF drive bays.

Choose Drives

The supported drives in the UCS B420 M4 are listed in *Table 10*.

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

Table 10 Supported Hot Plug Drives

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
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 10 Supported Hot Plug Drives *(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-SD16TBKS4-EV	1.6 TB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3510)	SATA	1.6 TB
UCS-SD960GBKS4-EV	960 GB 2.5 inch Enterprise Value 6G SATA SSD	SATA	960 GB
UCS-SD480GBKSS-EV	480 GB 2.5 in Enterprise Value 6G SATA SSD (1FWPD) (PM86)	SATA	480 GB
UCS-SD480GBKS4-EV	480 GB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3510)	SATA	480 GB
UCS-SD240GBKS4-EV	240 GB 2.5 inch Enterprise Value 6G SATA SSD	SATA	240 GB
UCS-SD120GBKS4-EV	120 GB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3510)	SATA	120 GB
UCS-SD480GBIS6-EV	480GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)	SATA	480 GB
UCS-SD960GBIS6-EV	960GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)	SATA	960 GB
UCS-SD38TBIS6-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)	SATA	3.8 TB
UCS-SD480GIS3-EP	480GB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600)	SATA	480 GB
UCS-SD960GIS3-EP	960GB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600)	SATA	960 GB
UCS-SD19TIS3-EP	1.9TB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600)	SATA	1.9 TB

Supported Configurations

■ Select up to 4 of the drives listed in *Table 10*. This is dependent on the number of drive bays selected in *CHOOSE RAID CONTROLLER AND DISK DRIVE BAYS on page 16*.

Notes

■ When creating a RAID volume, mixing different capacity drives causes the system to use the lowest-capacity drive.

■ Mixing of drive types is supported, but performance may be impacted.

■ Multiple RAID volumes are supported. RAID volumes should use the same media type.

STEP 6   CHOOSE ADAPTERS

The adapter offerings are:

■   Cisco Virtual Interface Cards (VICs)

Cisco developed 1300 Series and 1200 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 160 Gbs total I/O throughput to the server, for example:

•   VIC 1240 supports 4 x 10 Gbs Unified I/O ports, Port Expander supports 4 x 10 Gbs Unified I/O ports, and VIC 1280 supports 8 x 10 Gbs Unified ports, for a total of 160 Gbs (see *Figure 26 on page 56*).

•   VIC 1340 supports dual 4 x 10 Gbs Unified I/O ports, Port Expander enables additional ports on the VIC 1340 to create either dual 4 x 10 Gbs or dual native 40G Unified I/O ports, and VIC 1380 supports 8 x 10 Gbs Unified ports, for a total of 160 Gbs (see *Figure 26 on page 56*).

—   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.

Table 11 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 the UCS B420 M4 are listed in *Table 11*.

Table 11 Supported Mezzanine Adapters

Product ID (PID)	PID Description	Connector
Virtual Interface Cards (VICs)		
UCSB-MLOM-40G-03	Cisco UCS VIC 1340 modular LOM for blade servers	Adapter 1
UCSB-VIC-M83-8P	Cisco UCS VIC 1380 mezzanine adapter	Adapter 3
UCSB-MLOM-40G-01	Cisco UCS VIC 1240 modular LOM for blade servers	Adapter 1
UCS-VIC-M82-8P	Cisco UCS VIC 1280 mezzanine adapter	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 8 x 10 GbE or a dual native 40G interface for the VIC 1340.	Adapter 2
Cisco Storage Accelerators[1, 2]		
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

Notes

1. Fusion io storage accelerators must be identical if you choose two of them.
2. As of UCSM version 2.2(4b), the Cisco UCS Storage Accelerators are capable of providing additional ports for increased bandwidth if placed in adapter slot 2, similar to the Cisco UCS Port Expander Card for VIC.

Supported Configurations

Table 12 on page 23 and *Table 13 on page 24* shows the supported adapter combinations. The configuration rules are summarized as follows:

■ You must select at least one VIC.

■ 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 can select up to two Storage Acceleration adapters.

Select an adapter combination according to *Table 12* or *Table 13 on page 24*.

> **NOTE:** CPU1 controls adapter slot 1, CPU 2 controls adapter slot 3, and CPU 4 controls adapter slot 2.

Table 12 Supported Adapter Combinations for 4 CPUs Installed

Adapter Configurations			Fabric Extenders Aggregate Bandwidth (Gb/s)				Fabric Interconnects
Adapter Slot 1	Adapter Slot 2	Adapter Slot 3	2 x 2304[1]	2 x 2208XP	2 x 2204XP	2 x 2104XP	
VIC 1340 Combinations							
VIC 1340	not populated	not populated	40	40	20	no support	2 x 62xx or 2 x 63xx
VIC 1340	Port Expander Card	not populated	80[2]	80[2]	40	no support	2 x 62xx or 2 x 63xx
VIC 1340	not populated	VIC 1380	120	120	60	no support	2 x 62xx or 2 x 63xx
VIC 1340	Port Expander Card	VIC 1380	160[2]	160[1]	80	no support	2 x 62xx or 2 x 63xx
not populated	not populated	VIC 1380	80[3]	80[1]	40	no support	2 x 62xx or 2 x 63xx
VIC 1340	Cisco UCS Storage Accelerator (Fusion-io)	not populated	80[3]	80[4]	40	no support	2 x 62xx or 2 x 63xx
VIC 1340	not populated	Cisco UCS Storage Accelerator (Fusion-io)	40	40	20	no support	2 x 62xx or 2 x 63xx
Note: for the configuration in the following row, slots 2 and 3 must have identical types of storage cards.							
VIC 1340	Cisco UCS Storage Accelerator (Fusion-io)	Cisco UCS Storage Accelerator (Fusion-io)	80[3]	80[3]	40	40	2 x 62xx or 2 x 63xx
VIC 1240 Combinations							
VIC 1240	not populated	not populated	40	40	20	20	2 x 61xx or 2 x 62xx or 2 x 63xx
VIC 1240	Port Expander Card	not populated	80	80	40	no support	2 x 62xx or 2 x 63xx
VIC 1240	not populated	VIC 1280	120	120	60	40	2 x 61xx or 2 x 62xx or 2 x 63xx
VIC 1240	Port Expander Card	VIC 1280	160	160	80	no support	2 x 62xx or 2 x 63xx

Notes

1. 2304XP is only supported with B420 M4 v4 CPUs starting with UCSM 3.1(2)

2. Dual 40G via 4x10 port-channel configuration.
3. Dual native 40G Interface
4. If running 2.2(4b) or greater and equipped with either storage accelerator SKU UCSB-F-FIO-1300MP or UCSB-F-FIO-1600MS, then there is a dual 40G 4x10 port-channel interface for the 2208 or a dual native 40G interface for the 2304. Otherwise, the bandwidth is 20G (2x10G port-channel) per FI.

Table 13 Supported Adapter Combinations for 2 CPUs Installed

Adapter Configurations			Fabric Extenders Aggregate Bandwidth				Fabric Interconnects
Adapter Slot 1	Adapter Slot 2[1]	Adapter Slot 3	2 x 2304[2]	2 x 2208XP	2 x 2204XP	2 x 2104XP	
VIC 1340	not populated	not populated	40	40	20	no support	2 x 62xx or 2 x 63xx
VIC 1340	Port Expander Card	not populated	80[3]	80[3]	40	no support	2 x 62xx or 2 x 63xx
VIC 1340	Port Expander Card	VIC 1380	160	160[2]	80	no support	2 x 62xx or 2 x 63xx
VIC 1340	not populated	VIC 1380	120[4]	120	60	no support	2 x 62xx or 2 x 63xx
VIC 1340	not populated	Cisco UCS Storage Accelerator (Fusion-io)	40[4]	40[5]	20	no support	2 x 62xx or 2 x 63xx
VIC 1240	not populated	not populated	40	40	20	20	2 x 61xx or 2 x 62xx or 2 x 63xx
VIC 1240	not populated	VIC 1280	120	120	60	40	2 x 61xx or 2 x 62xx or 2 x 63xx
VIC 1240	Port Expander Card	not populated	80	80	40	no support	2 x 62xx or 2 x 63xx

Notes
1. Adapter slot 2 is not available except for the Port Expander card.
2. 2304XP is only supported with B420 M4 v4 CPUs starting with UCSM 3.1(2)
3. Dual 40G via 4x10 port-channel configuration
4. Dual native 40G interface
5. If running 2.2(4b) or greater and equipped with either storage accelerator SKU UCSB-F-FIO-1300MP or UCSB-F-FIO-1600MS, then there is a dual 40G 4x10 port-channel interface for the 2208 or a dual native 40G interface for the 2304. Otherwise, the bandwidth is 20G (2x10G port-channel) per FI.

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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-TPM2-001	Trusted Platform Module for UCS (SPI-based)
UCSX-TPM2-002	Trusted Platform Module 2.0 for UCS servers

NOTE: TPM installation is supported after-factory. However, a TPM installs with a one-way screw and cannot be replaced, upgraded, or moved to another server. If a server with a TPM is returned, the replacement server must be ordered with a new TPM. If there is no existing TPM in the server, you can install TPM 2.0. You must first upgrade to UCS firmware that supports Intel E5-4600 v4 CPUs, which is Cisco UCS Manager Release 2.2(8) and later or Release 3.1(2) and later (because Cisco aligned support for TPM 2.0 with these CPUs).

.

Table 15   Trusted Platform Module \ Support Matrix by Intel CPU Version

Intel CPU	TPM Version	TPM Version
Intel E5-4600 v3	TPM 1.2	Release 2.2(5)
	TPM 2.0	Release 2.2(8) or Release 3.1(2)
Intel E5-4600 v4	TPM 1.2	Release 2.2(8) or Release 3.1(2)
	TPM 2.0	Release 2.2(8) or Release 3.1(2)

STEP 8   ORDER CISCO FLEXIBLE FLASH SECURE DIGITAL CARDS

Dual SDHC flash card sockets are provided on the front left side of the server. Mirroring of two SDHC cards is supported.

The SDHC card ordering information is listed in *Table 16*.

Table 16   PIDs for Secure Digital Card(s)

Product ID (PID)	PID Description
UCS-SD-128G	128 GB SD Card for UCS servers
UCS-SD-64G-S	64 GB SD Card for UCS servers
UCS-SD-32G-S	32 GB SD Card for UCS servers

Supported Configurations

(1) Select one or two Cisco Flexible Flash secure digital cards

■   Select up to two 32, 64, or 128 GB SD cards

(2) Do not mix SD cards

STEP 9   ORDER INTERNAL USB 3.0 DRIVE (OPTIONAL)

You can order one optional internal USB 3.0 drive. The USB drive ordering information is listed in *Table 17*.

Table 17   USB 3.0 Drive

Product ID (PID)	PID Description
UCS-USBFLSHB-16GB	UCS Servers 16 GB Flash USB Drive

STEP 10 CHOOSE OPERATING SYSTEM AND VALUE-ADDED SOFTWARE

Several software programs are available. Select as desired from *Table 18*.

Table 18 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

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Table 18 OSs and Value-Added Software *(continued)*

PID Description	Product ID (PID)
Microsoft Windows Server	
MSWS-12-ST2S	Windows Server 2012 Standard (2 CPU/2 VMs)
MSWS-12-DC2S	Windows Server 2012 Datacenter (2 CPU/Unlimited VMs)
MSWS-12-ST2S-NS	Windows Server 2012 Standard (2 CPU/2 VMs) No Cisco Svc
MSWS-12-DC2S-NS	Windows Server 2012 Datacenter (2 CPU/Unlim VM) No Cisco Svc
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
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
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

Table 18 OSs and Value-Added Software *(continued)*

PID Description	Product ID (PID)
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

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STEP 11 CHOOSE OPERATING SYSTEM MEDIA KIT (OPTIONAL)

Choose the optional operating system media listed in *Table 19*.

Table 19   OS Media

Product ID (PID)	PID Description
RHEL-6	RHEL 6 Recovery Media Only (Multilingual)
SLES-11	SLES 11 media only (multilingual)
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 12 CHOOSE SERVICE and SUPPORT LEVEL

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

Unified Computing Warranty, No Contract

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

■ Three-year parts coverage.

■ Next business day (NBD) onsite parts replacement eight hours a day, five days a week.

■ 90-day software warranty on media.

■ Ongoing downloads of BIOS, drivers, and firmware updates.

■ UCSM updates for systems with Unified Computing System Manager. These updates include minor enhancements and bug fixes that are designed to maintain the compliance of UCSM with published specifications, release notes, and industry standards.

SMARTnet for UCS

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

For UCS blade servers, there is Smart Call Home, which provides proactive, embedded diagnostics and real-time alerts. For systems that include Unified Computing System Manager, the support service includes downloads of UCSM upgrades. The Cisco SMARTnet for UCS Service includes flexible hardware replacement options, including replacement in as little as two hours. There is also access to Cisco's extensive online technical resources to help maintain optimal efficiency and uptime of the unified computing environment. You can choose a desired service listed in *Table 20*.

Table 20   Cisco SMARTnet for UCS Service

Product ID (PID)	On Site?	Description
CON-PREM-B420M4	Yes	ONSITE 24X7X2 UCS B420 M4 Blade Server
CON-OSP-B420M4	Yes	ONSITE 24X7X4 UCS B420 M4 Blade Server
CON-OSE-B420M4	Yes	ONSITE 8X5X4 UCS B420 M4 Blade Server
CON-OS-B420M4	Yes	ONSITE 8X5XNBD UCS B420 M4 Blade Server
CON-S2P-B420M4	No	SMARTNET 24X7X2 UCS B420 M4 Blade Server
CON-SNTP-B420M4	No	SMARTNET 24X7X4 UCS B420 M4 Blade Server
CON-SNTE-B420M4	No	SMARTNET 8X5X4 UCS B420 M4 Blade Server
CON-SNT-B420M4	No	SMARTNET 8X5XNBD UCS B420 M4 Blade Server

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 21*.

Table 21   SMARTnet for UCS Hardware Only Service

Product ID (PID)	Service Level GSP	On Site?	Description
CON-UCW7-B420M4	UCW7	Yes	UC PLUS 24X7X4OS UCS B420 M4 Blade Server
CON-UCW5-B420M4	UCW5	Yes	UC PLUS 8X5XNBDOS UCS B420 M4 Blade Server

Unified Computing Partner Support Service

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

■ Expand their service portfolios to support the most complex network environments

■ Lower delivery costs

■ Deliver services that increase customer loyalty

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

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

www.cisco.com/go/partnerucssupport

The two Partner Unified Computing Support Options include:

■ Partner Support Service for UCS

■ Partner Support Service for UCS Hardware Only

Partner Support Service for UCS provides hardware and software support, including triage support for third party software, backed by Cisco technical resources and level three support. See *Table 22*.

Table 22   Partner Support Service for UCS

Product ID (PID)	Service Level GSP	On Site?	Description
CON-PSJ1-B420M4	PSJ1	No	UCS SUPP PSS 8X5XNBD UCS B420 M4 Blade Server
CON-PSJ2-B420M4	PSJ2	No	UCS SUPP PSS 8X5X4 UCS B420 M4 Blade Server
CON-PSJ3-B420M4	PSJ3	No	UCS SUPP PSS 24X7X4 UCS B420 M4 Blade Server
CON-PSJ4-B420M4	PSJ4	No	UCS SUPP PSS 24X7X2 UCS B420 M4 Blade Server

Partner Support Service for UCS Hardware Only provides customers with replacement parts in as little as two hours. See *Table 23*.

Table 23   Partner Support Service for UCS (Hardware Only)

Product ID (PID)	Service Level GSP	On Site?	Description
CON-PSW2-B420M4	PSW2	No	UCS W PL PSS 8X5X4 UCS B420 M4 Blade Server
CON-PSW3-B420M4	PSW3	No	UCS W PL PSS 24X7X4 UCS B420 M4 Blade Server
CON-PSW4-B420M4	PSW4	No	UCS W PL PSS 24X7X2 UCS B420 M4 Blade Server

Unified Computing Combined Support Service

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

■ Optimize the uptime, performance, and efficiency of your UCS

■ Protect your vital business applications by rapidly identifying and addressing issues

■ Strengthen in-house expertise through knowledge transfer and mentoring

■ Improve operational efficiency by allowing UCS experts to augment your internal staff resources

■ Enhance business agility by diagnosing potential issues before they affect your operations

You can choose a service listed in *Table 24*.

Table 24   UCS Computing Combined Support Service

Product ID (PID)	Service Level GSP	On Site?	Description
CON-NCF2-B420M4	NCF2	No	CMB SPT SVC 24X7X2 UCS B420 M4 Blade Server
CON-NCF2P-B420M4	NCF2P	Yes	CMB SPT SVC 24X7X2OS UCS B420 M4 Blade Server
CON-NCF4P-B420M4	NCF4P	Yes	CMB SPT SVC 24X7X4OS UCS B420 M4 Blade Server
CON-NCF4S-B420M4	NCF4S	Yes	CMB SPT SVC 8X5X4OS UCS B420 M4 Blade Server
CON-NCFCS-B420M4	NCFCS	Yes	CMB SPT SVC 8X5XNBDOS UCS B420 M4 Blade Server
CON-NCFE-B420M4	NCFE	No	CMB SPT SVC 8X5X4 UCS B420 M4 Blade Server
CON-NCFP-B420M4	NCFP	No	CMB SPT SVC 24X7X4 UCS B420 M4 Blade Server
CON-NCFT-B420M4	NCFT	No	CMB SPT SVC 8X5XNBD UCS B420 M4 Blade Server

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 25*.

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

Table 25 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-B420M4
		UCSD7	8x5xNBD Onsite	CON-UCSD5-B420M4
SMARTnet for UCS HW ONLY+Drive Retention	UCS HW+DR	UCWD7	24x7x4 Onsite	CON-UCWD7-B420M4
		UCWD5	8x5xNBD Onsite	CON-UCWD5-B420M4

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

STEP 13 CHOOSE LOCAL KVM I/O CABLE* (OPTIONAL)

The local KVM I/O cable ships with every UCS 5100 Series blade chassis accessory kit. The cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB 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.

The local KVM I/O cable ordering information is listed in *Table 26*.

Table 26   Local KVM I/O Cable

Product ID (PID)	PID Description
N20-BKVM=	Local KVM I/O cable for UCS servers console port

Figure 6   Local KVM I/O Cable
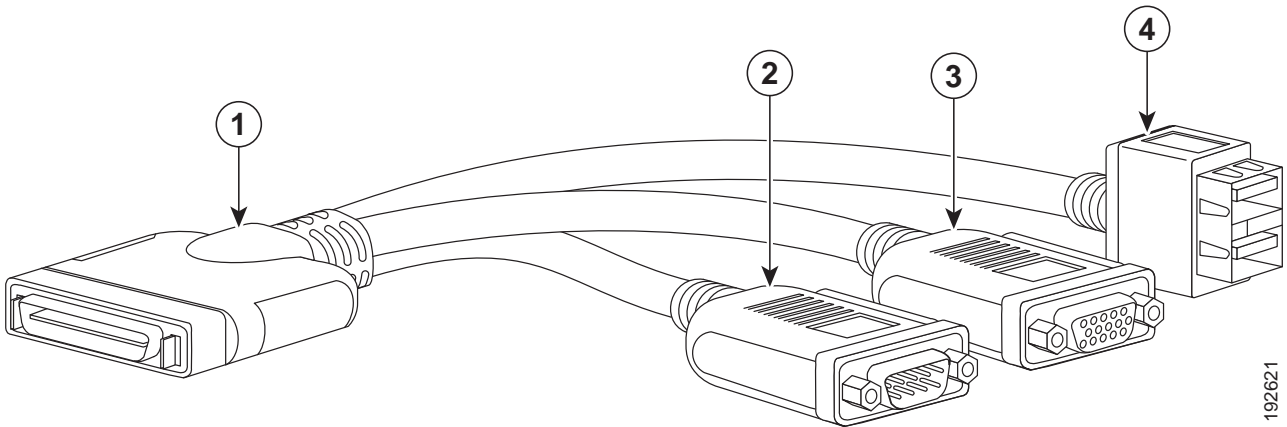
1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB connector (for a mouse and keyboard)

NOTE: *The blade chassis ships with the local KVM I/O cable.

SUPPLEMENTAL MATERIAL

System Board

A top view of the UCS B420 M4 system board is shown in *Figure 7*.

Figure 7   UCS B420 M4 System Board
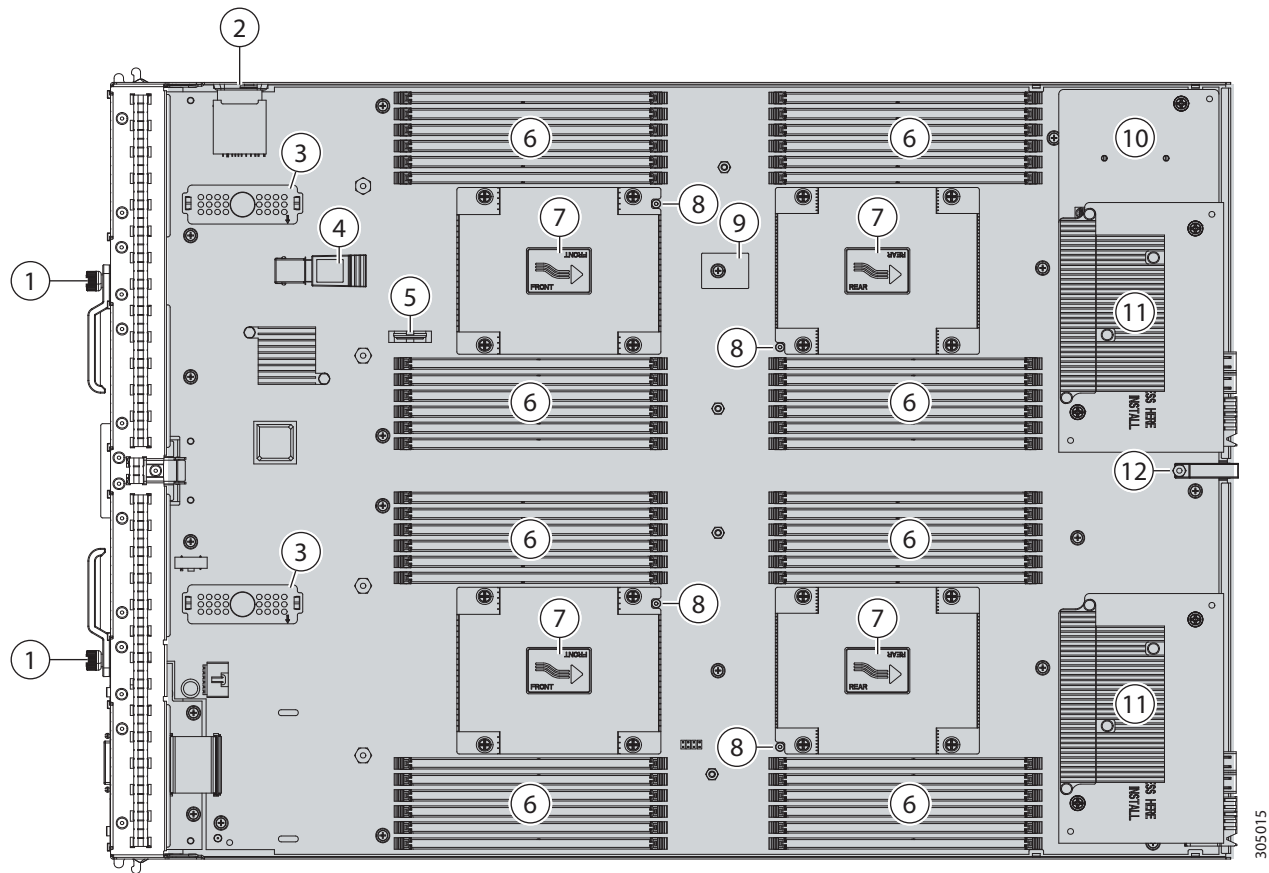
1	Ejector thumbscrew	7	Heat sink and CPU (underneath)
2	SD card slots	8	CPU heat sink install guide pins
3	Modular storage subsystem connector	9	Trusted Platform Module (TPM)
4	USB memory	10	Adapter 1 slot supports the Cisco VIC 1340/1240 adapter only

5	CMOS battery	11	Adapter cards: ■ Adapter 2 is the slot on the left (when facing the server) and partially covers Adapter 1 ■ Adapter 3 is the slot on the right (facing the server)
6	DIMM slots	12	Diagnostic button

DIMM and CPU Layout

Memory is organized as shown in *Figure 8*.

Figure 8   UCS B420 M4 Memory Organization

48 DIMMS
4 memory channels per CPU
3 DIMMs per channel
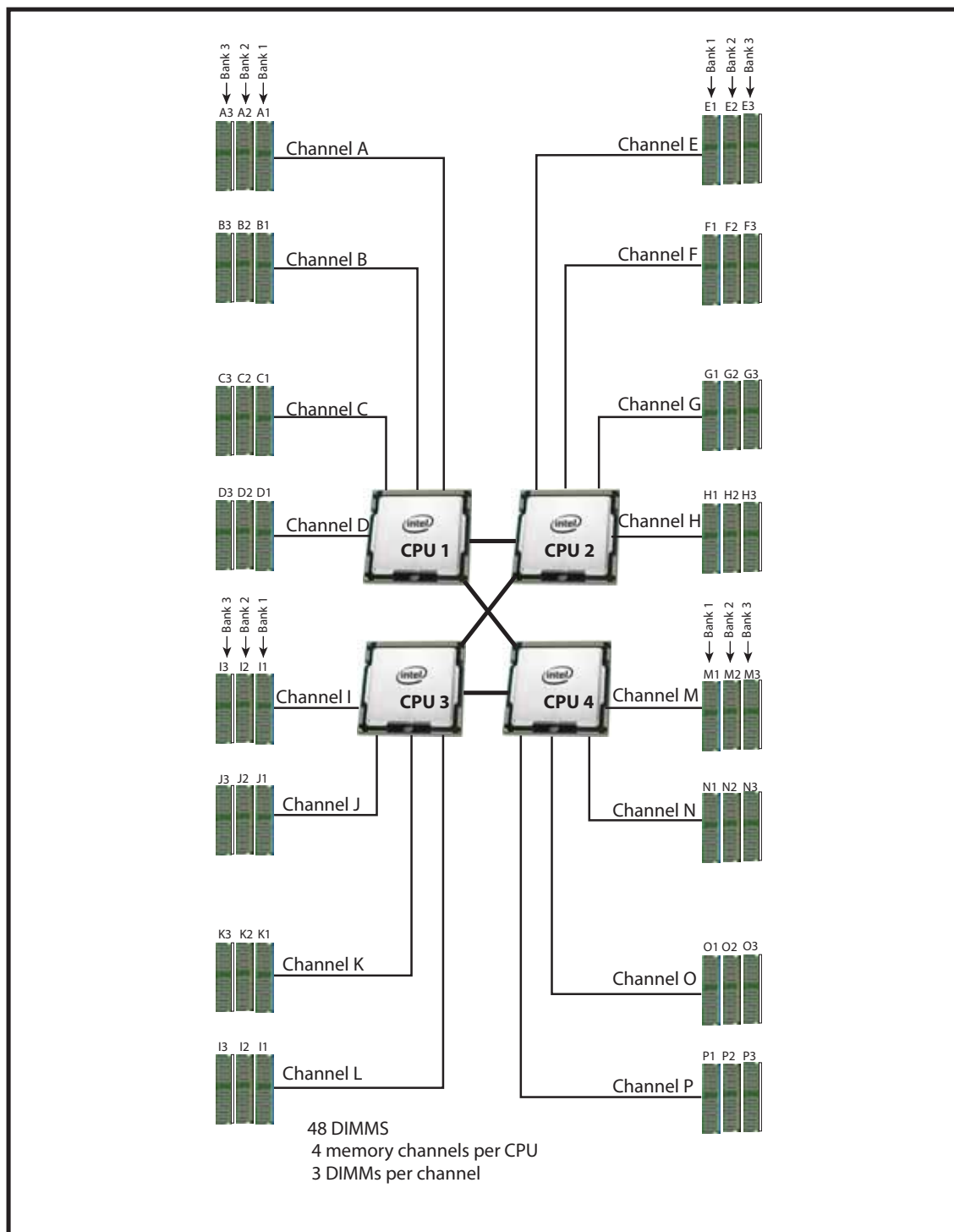
Each CPU controls four memory channels and 12 DIMM slots, as follows:

- CPU1: Channels A, B, C, and D
    - Bank 1 - A1, B1, C1, and D1 (blue DIMM slots)
    - Bank 2 - A2, B2, C2, and D2 (black DIMM slots)
    - Bank 3 - A3, B3, C3, and D3 (white DIMM slots)
- CPU2: Channels E, F, G, and H
    - Bank 1 - E1, F1, G1, and H1 (blue DIMM slots)
    - Bank 2 - E2, F2, G2, and H2 (black DIMM slots)
    - Bank 3 - E3, F3, G3, and H3 (white DIMM slots)
- CPU3: Channels I, J, K, and L
    - Bank 1 - I1, J1, K1, and L1 (blue DIMM slots)
    - Bank 2 - I2, J2, K2, and L2 (black DIMM slots)
    - Bank 3 - I3, J3, K3, and L3 (white DIMM slots)
- CPU4: Channels M, N, O, and P
    - Bank 1 - M1, N1, O1, and P1 (blue DIMM slots)
    - Bank 2 - M2, N2, O2, and P2 (black DIMM slots)
    - Bank 3 - M3, N3, O3, and P3 (white DIMM slots)

DIMM Population Order

Populate the DIMMs for a CPU according to *Table 27*.

Table 27   DIMM Population Order per CPU

DIMMs per CPU	Populate CPU 1 Slots	Populate CPU 2 Slots	Populate CPU 3 Slots	Populate CPU 4 Slots
1	A1	E1	I1	M1
2	A1, B1	E1, F1	I1, J1	M1, N1
3	A1, B1, C1	E1, F1, G1	I1, J1, K1	M1, N1, O1
4	A1, B1, C1, D1	E1, F1, G1, H1	I1, J1, K1, L1	M1, N1, O1, P1
5	Not recommended for performance reasons			
6	A1, B1, C1, A2, B2, C2	E1, F1, G1, E2, F2, G2	I1, J1, K1, I2, J2, K2	M1, N1, O1, M2, N2, O2
7	Not recommended for performance reasons			

Table 27   DIMM Population Order per CPU *(continued)*

DIMMs per CPU	Populate CPU 1 Slots	Populate CPU 2 Slots	Populate CPU 3 Slots	Populate CPU 4 Slots
8	A1, B1, C1, D1, A2, B2, C2, D2	E1, F1, G1, H1, E2, F2, G2, H2	I1, J1, K1, L1, I2, J2, K2, L2	M1, N1, O1, P1, M2, N2, O2, P2
9	A1, B1, C1, A2, B2, C2, A3, B3, C3	E1, F1, G1, E2, F2, G2, E3, F3, G3	I1, J1, K1, I2, J2, K2, I3, J3, K3	M1, N1, O1, M2, N2, O2, M3, N3, O3
10	Not recommended for performance reasons			
11	Not recommended for performance reasons			
12	A1, B1, C1, D1, A2, B2, C2, D2, A3, B3, C3, D3	E1, F1, G1, H1, E2, F2, G2, H2, E3, F3, G3, H3	I1, J1, K1, L1, I2, J2, K2, L2, I3, J3, K3, L3	M1, N1, O1, P1, M2, N2, O2, P2, M3, N3, O3, P3

A quick reference for the recommended DIMM population order is shown in *Table 28* and *Table 29*. CPU 1 DIMM population order is shown as an example. Pick the number of DIMMs in the table you wish to populate, then, starting with A1, populate down Bank 1, then down Bank 2, then down Bank 3 until you reach the number you picked. If you picked 8 DIMMs, for example, use *Table 28* and populate DIMMs in A1, B1, C1, D1, A2, B2, C2, and D2. If you picked 6 DIMMs, for example, use *Table 29* and populate DIMMs in A1, B1, C1, A2, B2, and C2, leaving D1 and D2 empty.

Table 28   DIMM Population Quick Reference for CPU 1 (for 1, 2, 4, 7, 8, 10, 11, or 12 DIMMS)

CPU Channel	Bank 1	Bank 2	Bank 3
A	1	5	9
B	2	6	10[1]
C	3	7[1]	11[1]
D	4	8	12

Notes
  1. Not recommended for performance reasons

Table 29   DIMM Population Quick Reference for CPU 1 (for 3, 5, 6, or 9 DIMMS)

CPU Channel	Bank 1	Bank 2	Bank 3
A	1	4	7
B	2	5[1]	8
C	3	6	9
D	empty	empty	empty

Notes
  1. Not recommended for performance reasons

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DIMM Physical Layout

The overall DIMM and CPU physical layout is shown in *Figure 9*.

Figure 9   DIMM and CPU Layout
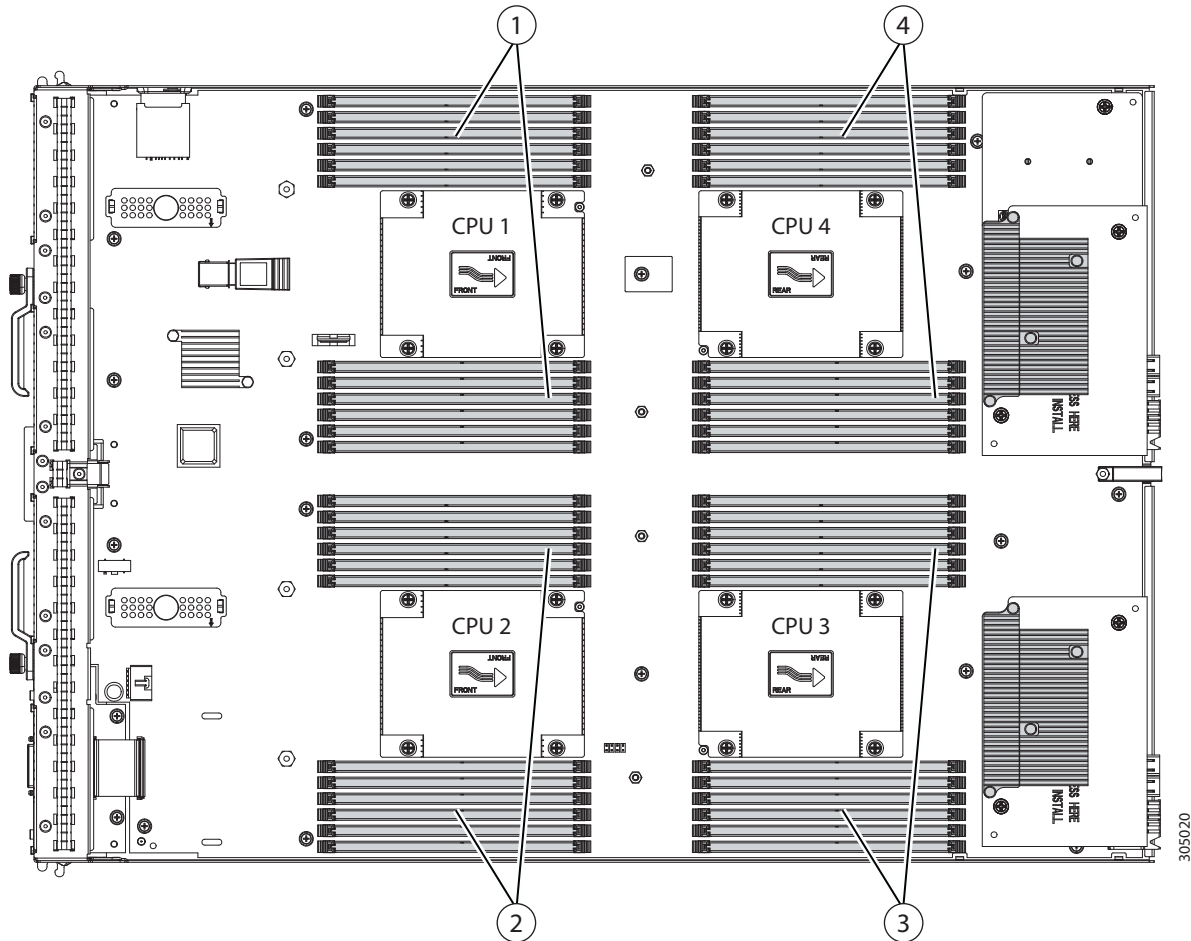
1	Channel A - D DIMMs for CPU 1	3	Channel I - L DIMMs for CPU 3
2	Channel E - H DIMMs for CPU 2	4	Channels M - P DIMMs for CPU 4

Figure 10 shows how channels are physically laid out on the blade server. The DIMM slots are contiguous to their associated CPU.

Figure 10   Physical Representation of DIMMs and CPUs
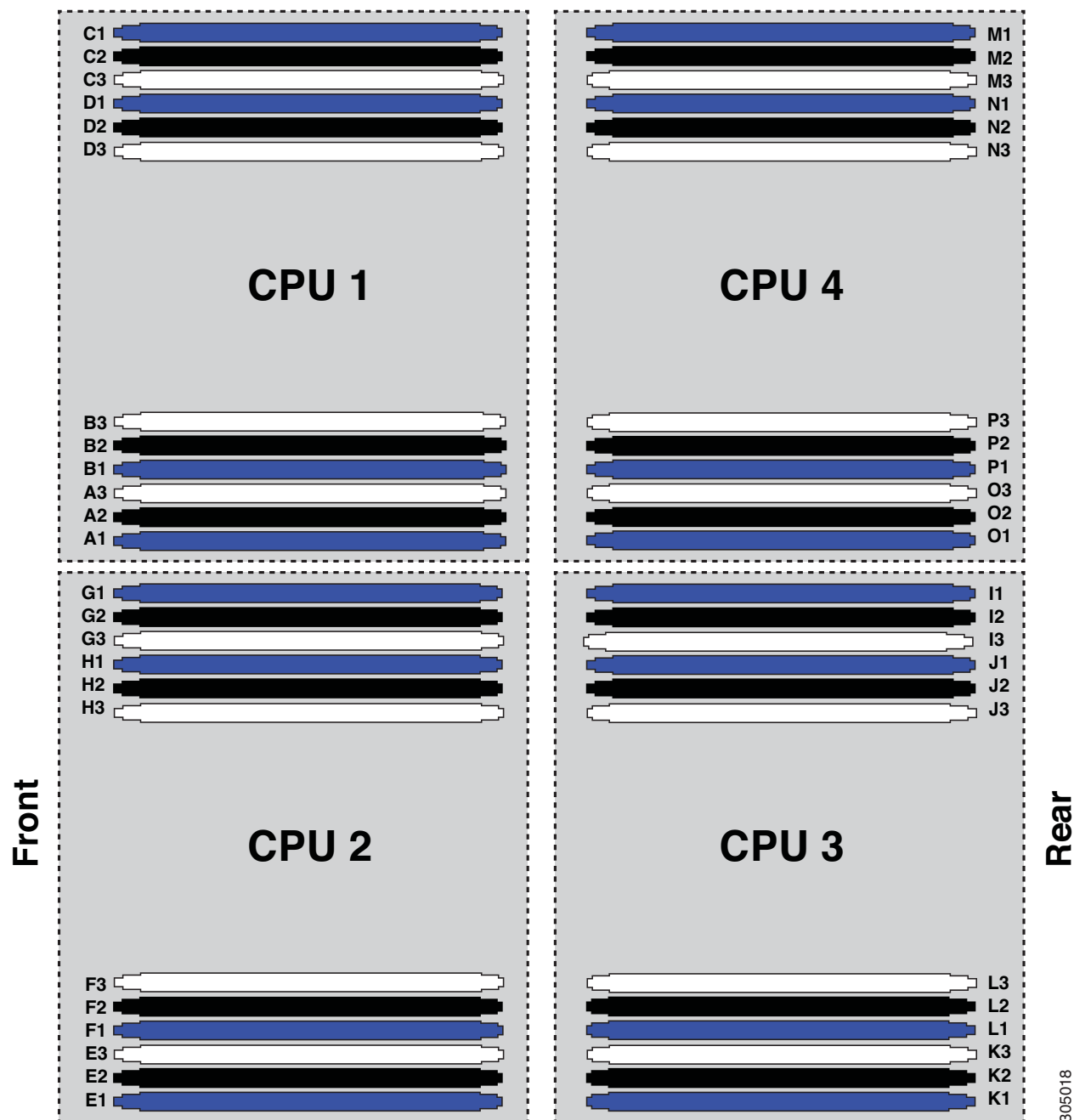
Network Connectivity

This section shows how the supported adapter card configurations for the B420 M4 connect to the Fabric Extender modules in the 5108 blade server chassis.

There are three configurable adapter slots on the B420 M4. One slot supports only the VIC 1340/1240 adapter, and two additional slots accommodate Cisco adapters, as well as Cisco UCS Storage Accelerator adapters. *Table 12 on page 23* and *Table 13 on page 24* show supported adapter configurations. You must install at least one VIC adapter in one of the three adapter slots.

Maximum bandwidth is a function of the Fabric Extender, the adapter, and the adapter slot, as shown in *Table 30*.

Table 30   Maximum Bandwidth Using Dual Fabric Extenders (FEXs)

FEX Model	Maximum Bandwidth Using Dual FEXs	Example Configuration to Achieve Maximum Bandwidth
2304/2208XP	160 Gb	Adapter 1 = VIC 1340/1240 (40 Gb) Adapter 2 = Port Expander (40 Gb) Adapter 3 = VIC 1380/1280 (80 Gb) See *Figure 26 on page 56*
2204XP	80 Gb	Adapter 1 = VIC 1340/1240 (20 Gb) Adapter 2 = Port Expander (20 Gb) Adapter 3 = VIC 1380/1280 (40 Gb) See *Figure 34 on page 61*

Figure 11 shows the configuration for maximum bandwidth, where the following ports are routed to 8-port Fabric Extender Modules A and B inside the 5108 blade server chassis:

■ 4 x 10 Gb KR ports from the VIC 1340/1240 adapter

■ 4 x 10 Gb KR ports from the Port Expander

■ 8 x 10 Gb KR ports from the VIC 1380/1280 adapter

■ 4 x 10 Gb from a Cisco Storage Accelerator when placed in adapter slot 2, similar to the Cisco UCS Port Expander Card for VIC. Requires UCSM 2.2(4b) or later.

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

NOTE: In *Figure 11*, note that CPU4 controls adapter slot 2. In the case where a Port Expander is installed in this slot, CPU4 is not needed. However, in the case where a Storage Accelerator is installed in the slot, CPU4 must be installed.

Figure 11   UCS B420 M4 Connections to the Fabric Extenders
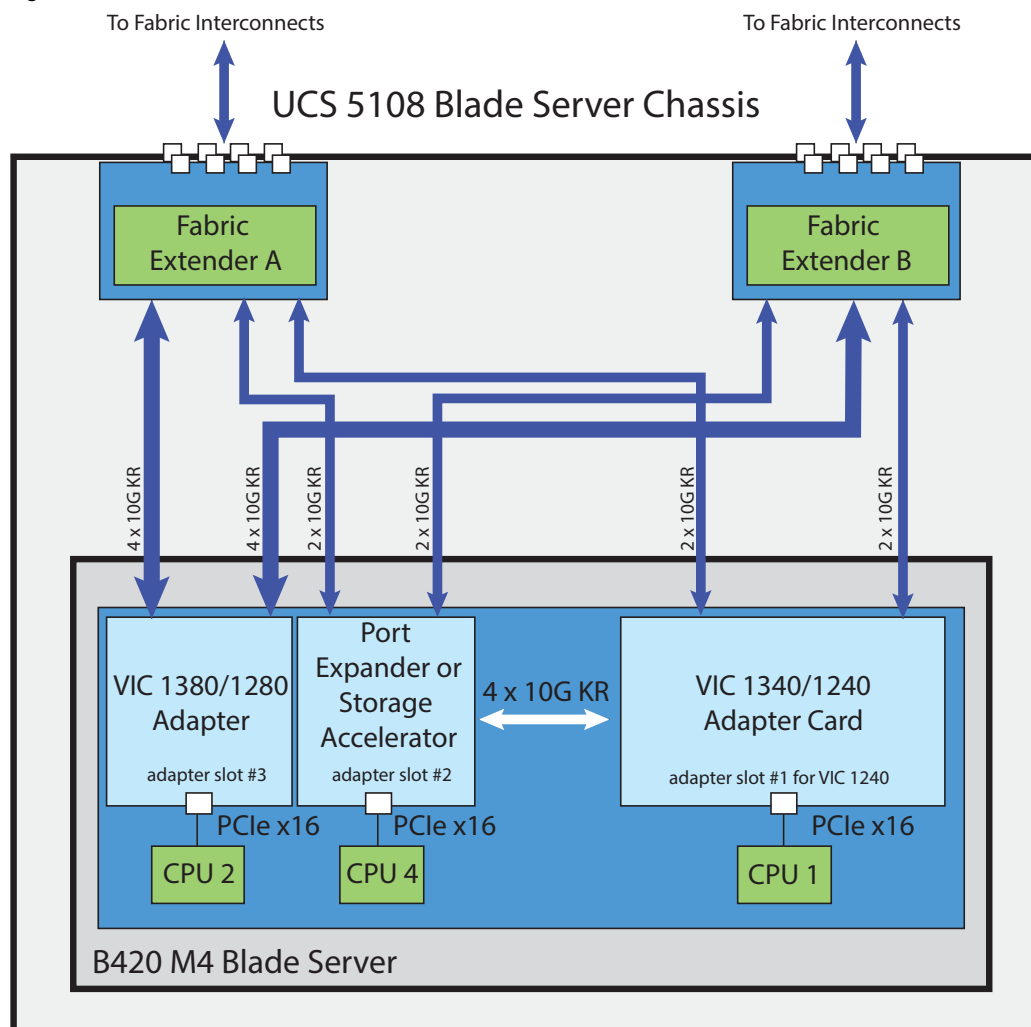
VIC 1340/1240 and Port Expander

Adapter slot 1 is dedicated to the VIC 1340 or VIC 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 or 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 10 Gb network interfaces to each Fabric Extender (depending on the Fabric Extender installed), as represented in *Figure 12*.

Figure 12   VIC 1340/1240 Connectivity
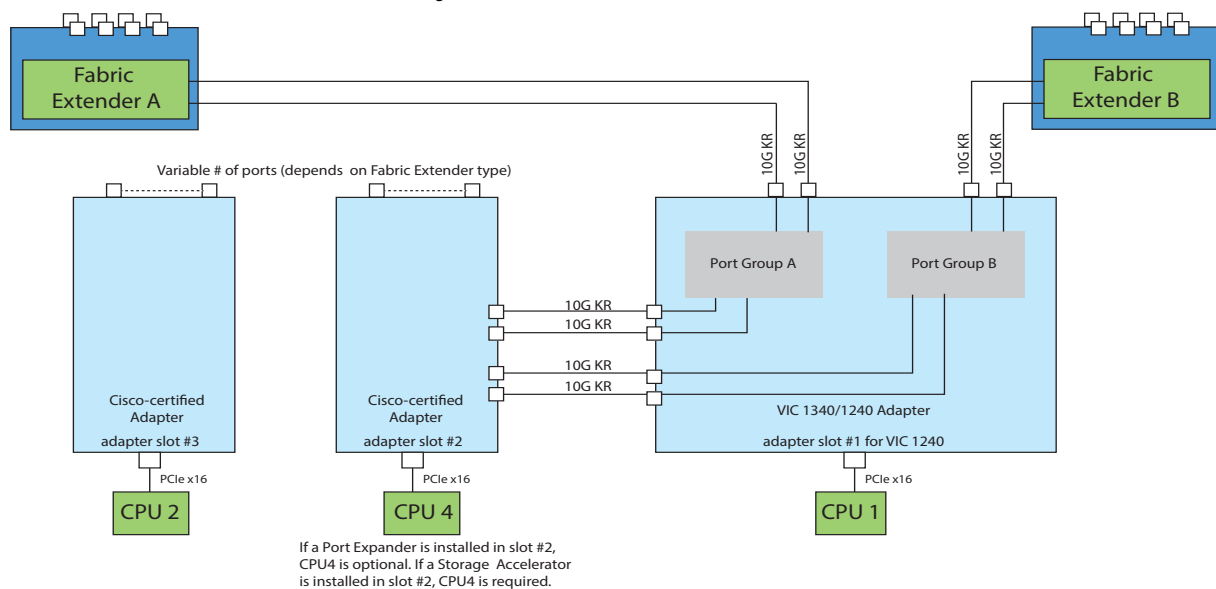
Connectivity Using the Cisco UCS 2304 Fabric Extender

The connectivity options shown in *Figure 13 on page 49* through *Figure 22 on page 53* are summarized in *Table 31*.

Table 31 Supported Adapter Combinations Using the 2304 FEX[1]

Adapter Slot 1	Adapter Slot 2	Adapter Slot 3	Total Available Bandwidth
			2 x 2304
VIC 1340/1240	Not populated	Not populated	40 Gb *Figure 13 on page 49*
VIC 1340	Port Expander Card[2]	Not populated	80 Gb *Figure 14 on page 49*
VIC 1340	Not populated	VIC 1380	120 Gb *Figure 15 on page 50*
VIC 1240	Port Expander Card	VIC 1280	160 Gb *Figure 16 on page 50*
VIC 1340	Port Expander Card[2]	VIC 1380	160 Gb *Figure 17 on page 51*
Not populated	Not populated	VIC 1280	80 Gb *Figure 18 on page 51*
Not populated	Not populated	VIC 1380	80 Gb *Figure 19 on page 52*
VIC 1340	Cisco UCS Storage Accelerator[3]	Not populated	80 Gb *Figure 20 on page 52*
VIC 1340	not populated	Cisco UCS Storage Accelerator	40 Gb *Figure 21 on page 53*
VIC 1340[4]	Cisco UCS Storage Accelerator[3]	Cisco UCS Storage Accelerator	80 Gb *Figure 22 on page 53*

Notes

1. Not all combinations are supported in 2-CPU configurations (see *Table 12 on page 23*). In addition, 2304XP is only supported with B420 M4 v4 CPUs starting with UCSM 3.1(2).
2. Dual 40G native interface (for VIC 1340).
3. If running 2.2(4b) or greater and equipped with either storage accelerator SKU UCSB-F-FIO-1300MP or UCSB-F-FIO-1600MS, then dual native 40G interface. Otherwise, the bandwidth is 20G (2x10G port-channel) per FI.
4. This combination requires that both Storage Accelerators be identical.

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In *Figure 13*, two ports from the VIC 1340/1240 adapter are channeled to 2304 Fabric Extender A and two are channeled to 2304 Fabric Extender B. The result is 20 Gb of bandwidth to each Fabric Extender.

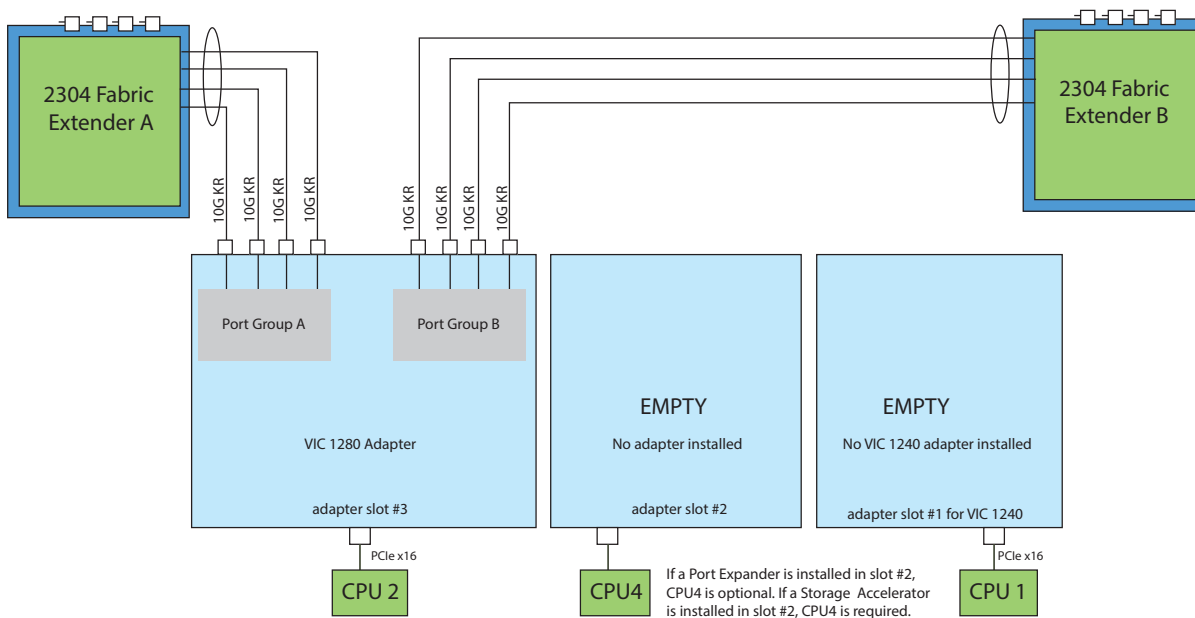Figure 13   VIC 1340/1240 (adapter slots 2 and 3 empty)
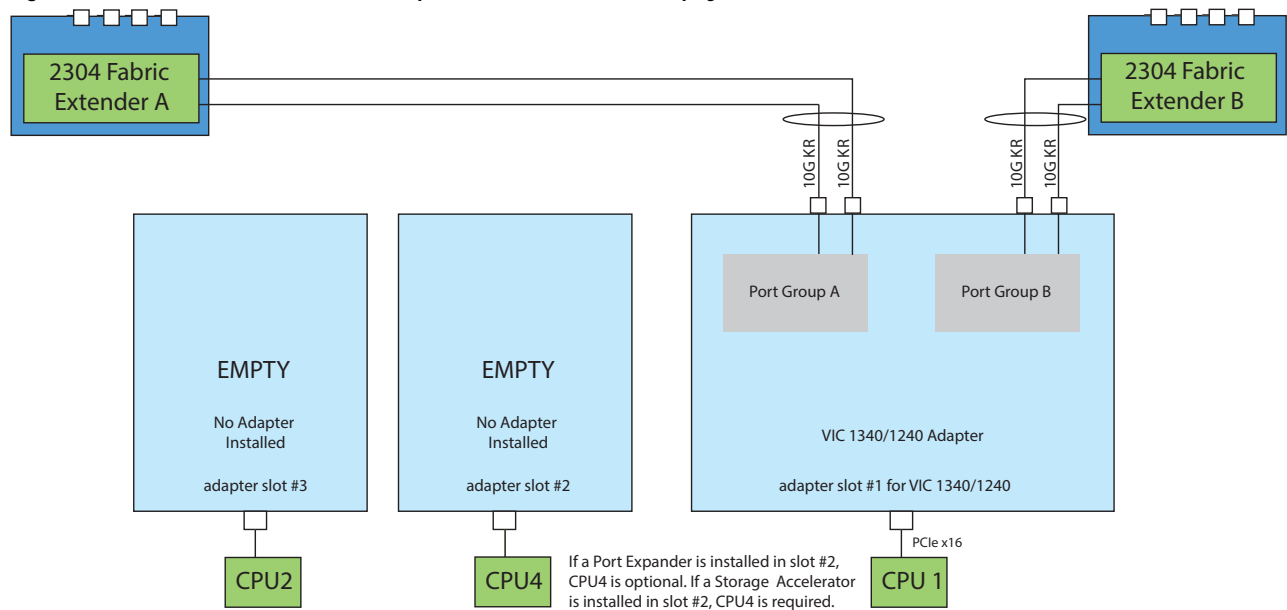
In *Figure 14*, two ports from the VIC 1340 are connected to the 2304 Fabric Extender A and two are connected to 2304 Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device to provide two additional ports to each of the port groups and thus create a native 40G interface to each of the Fabric Extenders. Adapter slot 3 is empty. The result is 40 Gb of bandwidth to each Fabric Extender.

Figure 14   VIC 1340 and Port Expander in Adapter Slot 2 (adapter slot 3 empty)
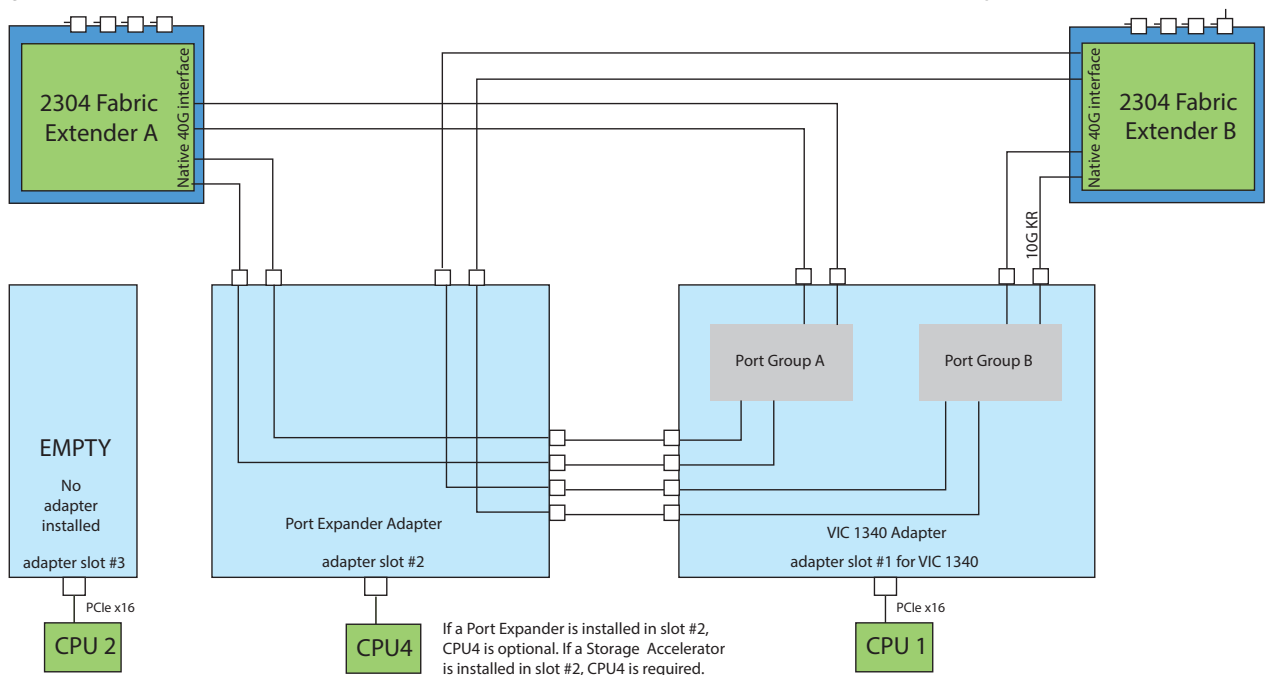
In *Figure 15*, two ports from the VIC 1340 are channeled to 2304 Fabric Extender A and two are channeled to 2304 Fabric Extender B. Adapter slot 2 is empty. The VIC 1380 installed in adapter slot 3 connects four ports from a native 40G interface to each of the Fabric Extenders. The result is 60 Gb of bandwidth to each Fabric Extender.

Figure 15   VIC 1340 and VIC 1380 (adapter slot 2 empty)
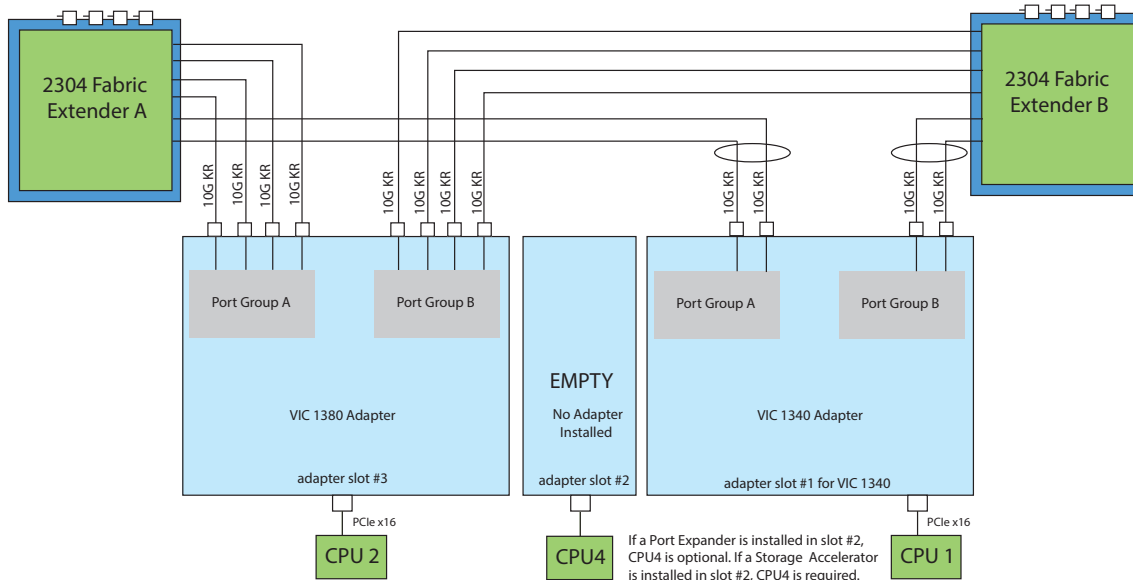
In *Figure 16*, two ports from the VIC 1240 are channeled to 2304 Fabric Extender A and two are channeled to 2304 Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device, channeling two ports to each of the Fabric Extenders. In addition, the VIC 1280 channels four ports to each Fabric Extender. The result is 80 Gb of bandwidth to each Fabric Extender.

Figure 16   VIC 1240, Port Expander in Adapter Slot 2, and VIC 1280 in Adapter Slot 3

Cisco UCS B420 M4 Blade Server
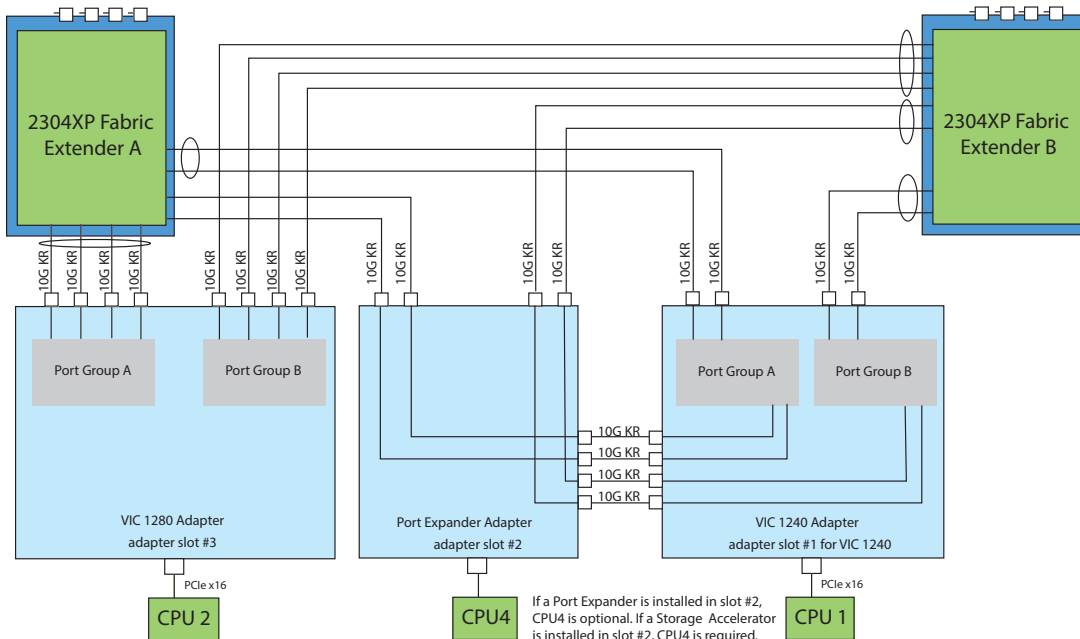
In *Figure 17*, two ports from the VIC 1340 are connected to 2304 Fabric Extender A and two are connected to 2304 Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device to provide additional ports to each of the port groups and thus create a native 40G interface to each of the Fabric Extenders. In addition, the VIC 1380 connects four ports to each Fabric Extender. The result is 80 Gb of bandwidth to each Fabric Extender.

Figure 17   VIC 1340, Port Expander in Adapter Slot 2, and VIC 1380 in Adapter Slot 3
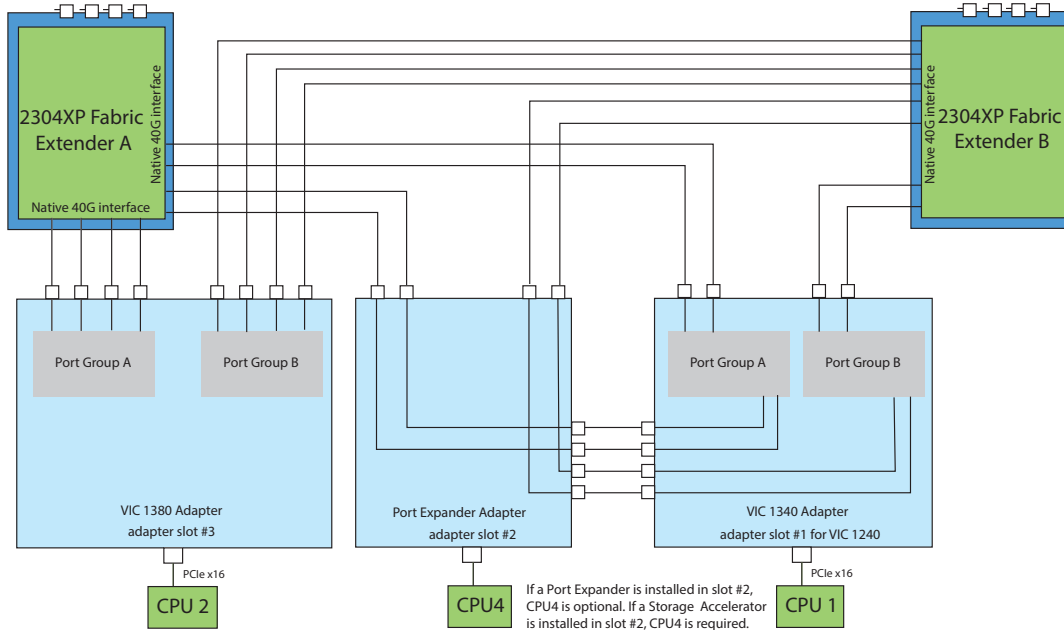
In *Figure 18*, four ports from the VIC 1280 are channeled to 2304 Fabric Extender A and four are channeled to 2304 Fabric Extender B. The VIC 1240 slot is empty and adapter slot 2 is empty. The result is 40 Gb of bandwidth to each Fabric Extender.

Figure 18   VIC 1280 (VIC 1340 slot empty and adapter slot 2 empty)

In *Figure 19,* four ports from the VIC 1380 are connected to 2304 Fabric Extender A and four are connected to 2304 Fabric Extender B. The VIC 1340 slot is empty and adapter slot 2 is empty. A native 40G interface is connected to each of the Fabric Extenders. The result is 40 Gb of bandwidth to each Fabric Extender.

Figure 19   VIC 1380 (VIC 1340 slot empty and adapter slot 2 empty)
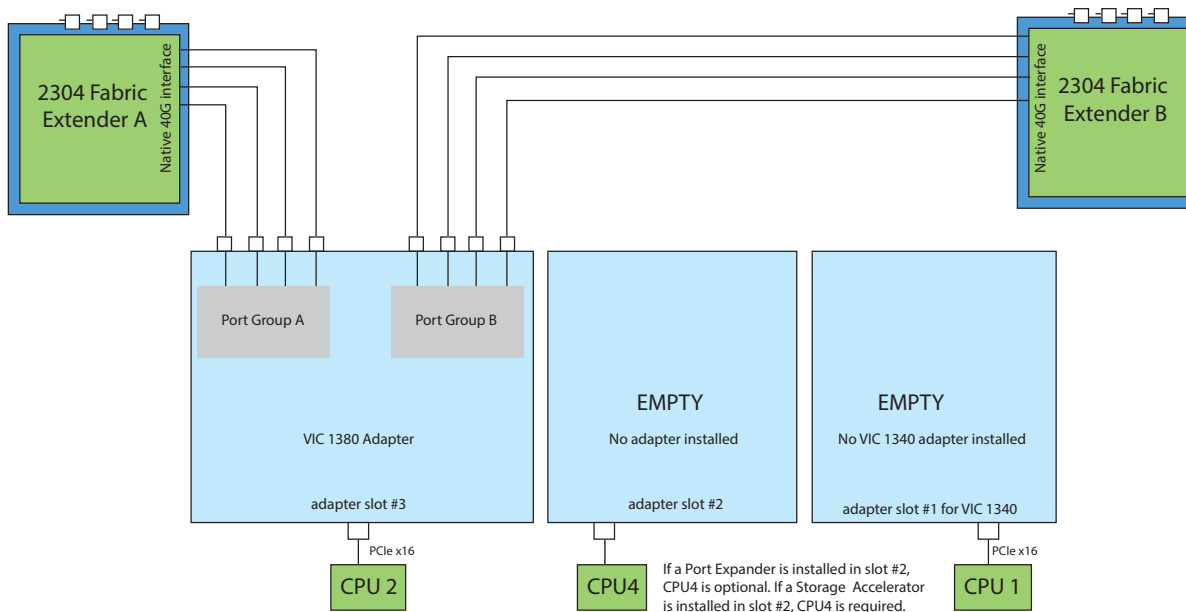
In *Figure 20* (supported on 4-CPU configurations), the Storage Accelerator installed in adapter slot 2 also has the port expander capability to increase the overall network I/O to the server. It acts as a pass-through device to provide two additional ports to each of the port groups and thus create a native 40G interface to each of the Fabric Extenders. The result is 40 Gb of bandwidth to each Fabric Extender. This configuration requires 4 CPUs.

Figure 20   VIC 1340 (Cisco UCS Storage Accelerator in slot 2 and adapter slot 3 empty)


Cisco UCS B420 M4 Blade Server
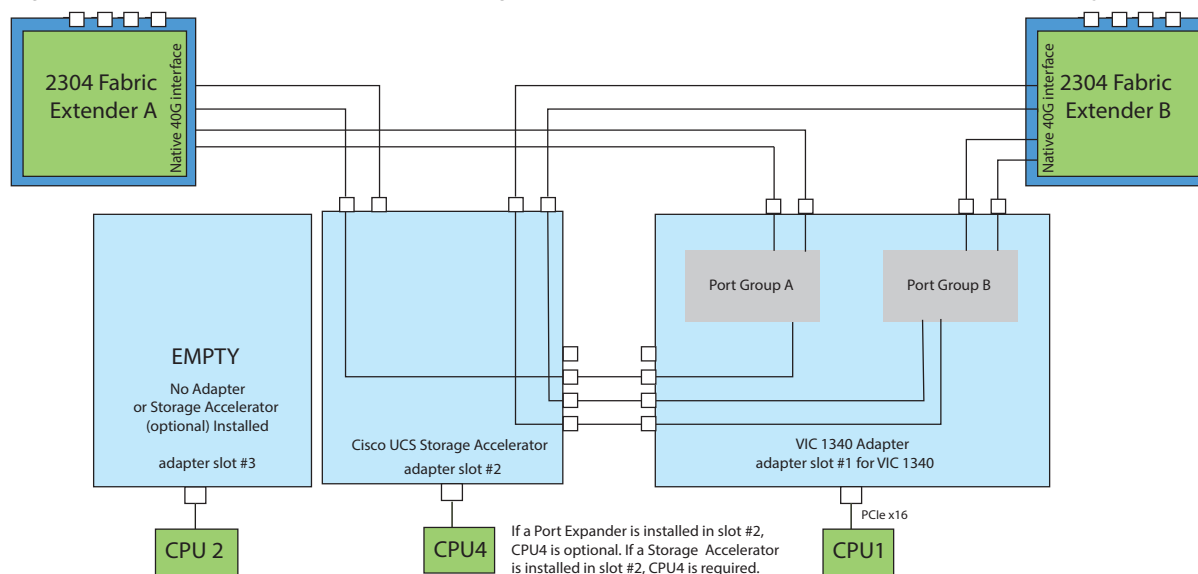
In *Figure 21* (supported on 2-CPU configurations), two ports from the VIC 1340 adapter are channeled to 2304 Fabric Extender A and two are channeled to 2304 Fabric Extender B. The result is 20 Gb of bandwidth to each Fabric Extender. The storage accelerator in slot 3 provides no network connectivity.

Figure 21   VIC 1340 (Cisco UCS Storage Accelerator in slot 3 and adapter slot 2 empty)
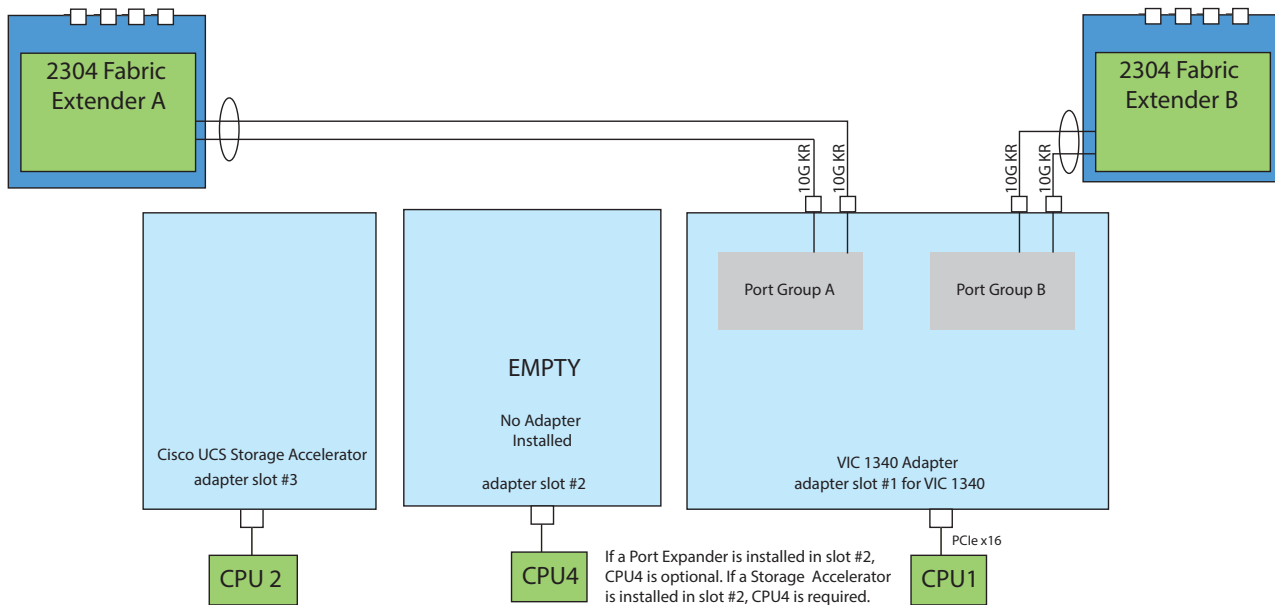
In *Figure 22*, the Storage Accelerator installed in adapter slot 2 also has the port expander capability to increase the overall network I/O to the server. It acts as a pass-through device to provide two additional ports to each of the port groups and thus create a native 40G interface to each of the Fabric Extenders. The result is 40 Gb of bandwidth to each Fabric Extender. Two *identical* Cisco UCS Storage Accelerator adapters are installed in slots 2 and 3, but the one in slot 3 provides no network connectivity. This configuration requires 4 CPUs.

Figure 22   VIC 1340 (Cisco UCS Storage Accelerator in slots 2 and 3)
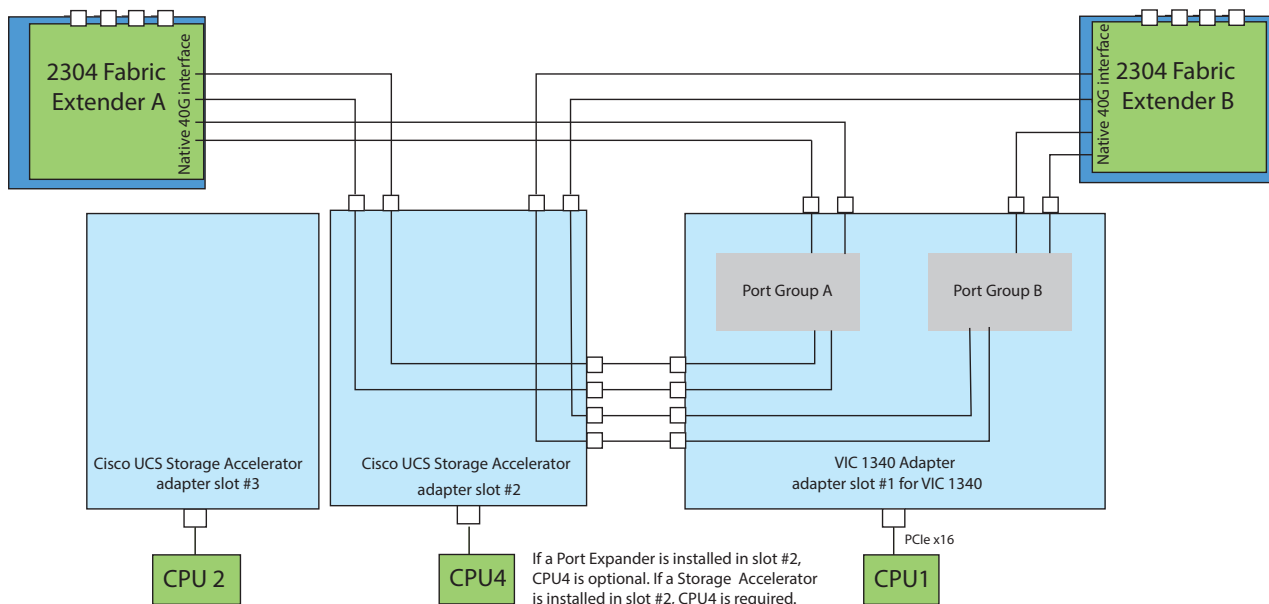
Connectivity Using the Cisco UCS 2208XP Fabric Extender

The connectivity options shown in *Figure 23 on page 55* through *Figure 30 on page 58* are summarized in *Table 32*.

Table 32 Supported Adapter Combinations Using the 2208XP FEX[1]

Adapter Slot 1	Adapter Slot 2	Adapter Slot 3	Total Available Bandwidth
			2 x 2208 XP
VIC 1340/1240	Not populated	Not populated	40 Gb *Figure 23 on page 55*
VIC 1340	Port Expander Card[2]	Not populated	80 Gb *Figure 24 on page 55*
VIC 1340/1240	Not populated	VIC 1380/1280	120 Gb *Figure 25 on page 56*
VIC 1340/1240	Port Expander Card	VIC 1380/1280	160 Gb *Figure 26 on page 56*
Not populated	Not populated	VIC 1380	80 Gb *Figure 27 on page 57*
VIC 1340	Cisco UCS Storage Accelerator[3]	Not populated	80 Gb *Figure 28 on page 57*
VIC 1340	not populated	Cisco UCS Storage Accelerator	40 Gb *Figure 29 on page 58*
VIC 1340[4]	Cisco UCS Storage Accelerator[3]	Cisco UCS Storage Accelerator	80 Gb *Figure 30 on page 58*

Notes

1. Not all combinations are supported in 2-CPU configurations (see *Table 12 on page 23*)
2. Dual 40G via 4x10 port-channel
3. f running 2.2(4b) or greater and equipped with either storage accelerator SKU UCSB-F-FIO-1300MP or UCSB-F-FIO-1600MS, then dual 40G via 4x10 port-channel. Otherwise, the bandwidth is 20G (2x10G port-channel) per FI.
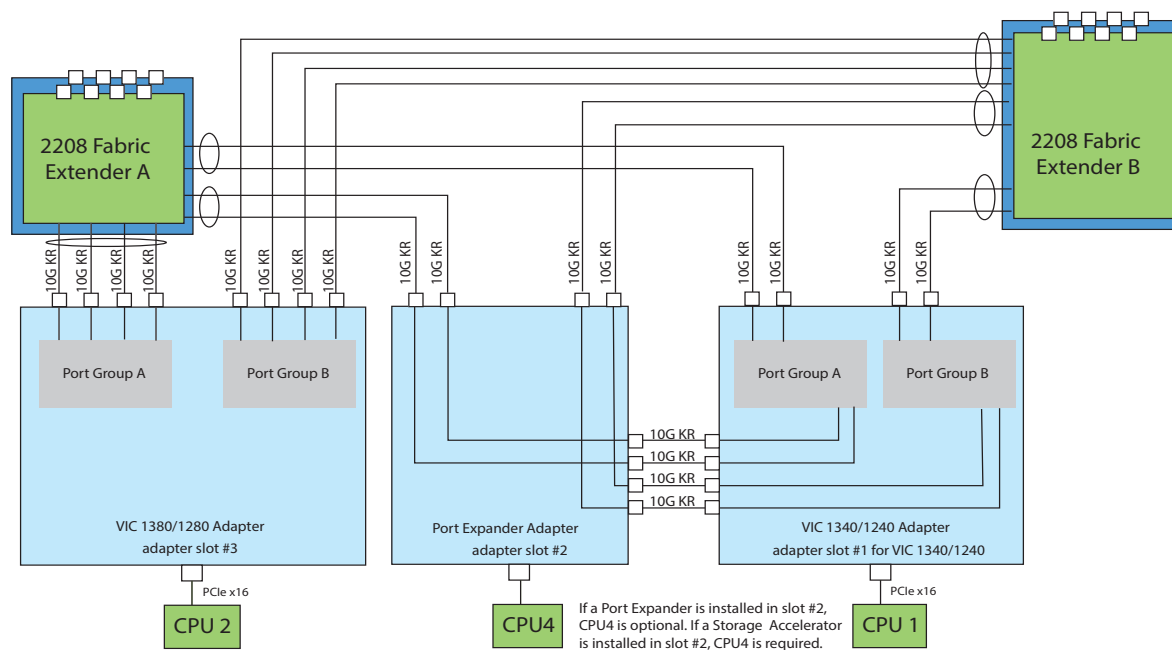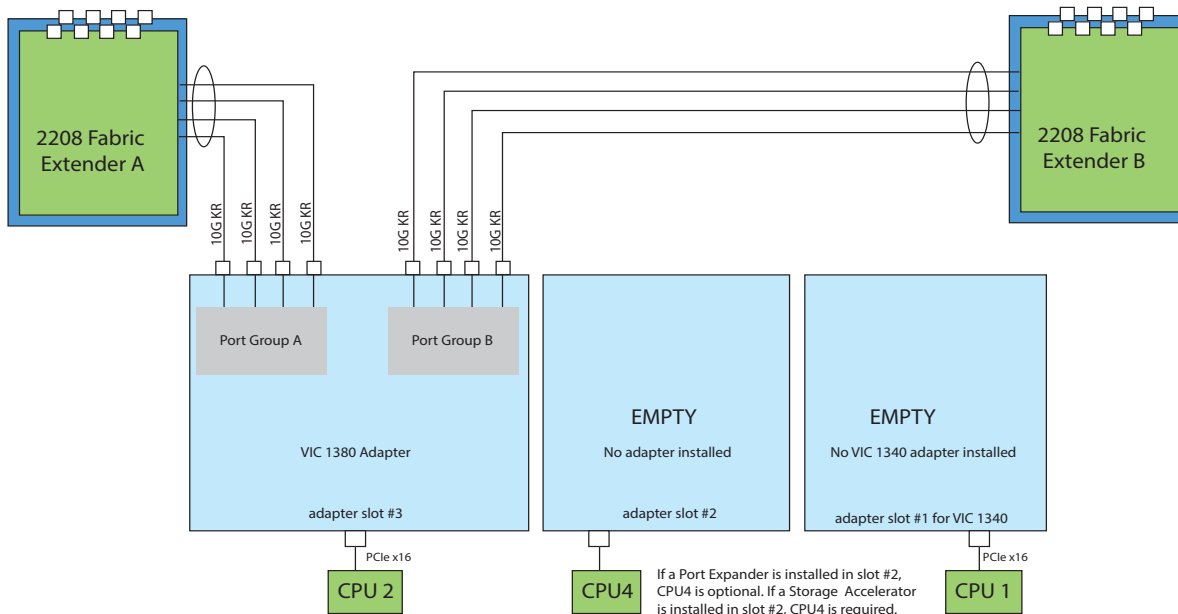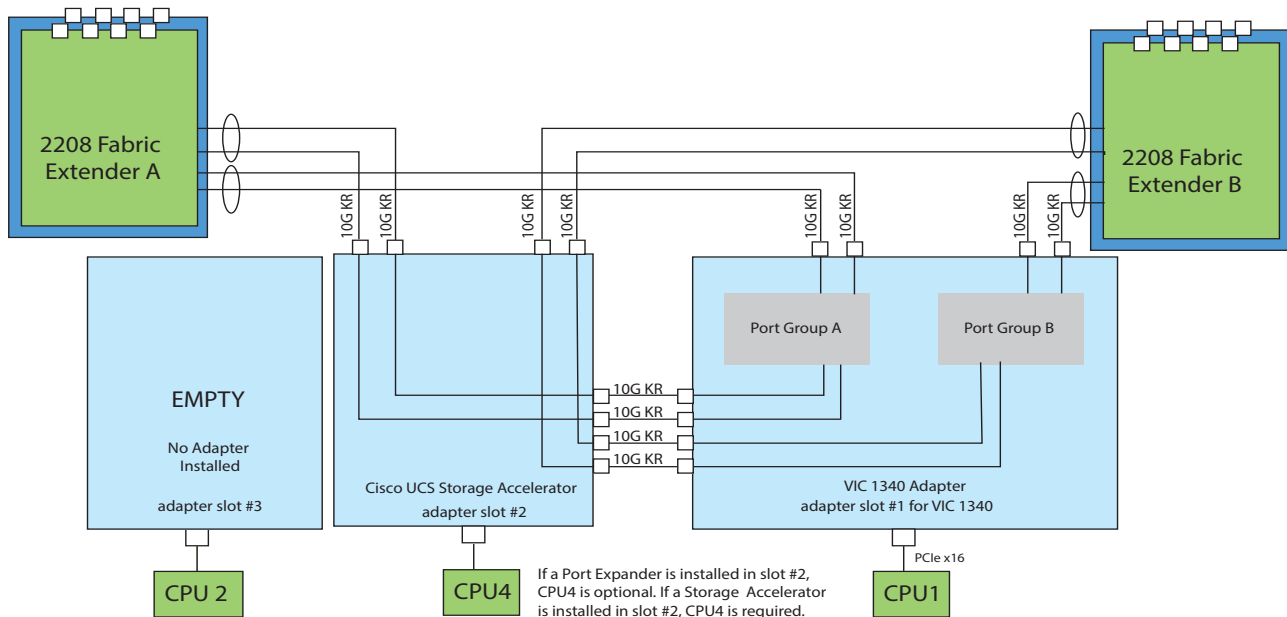4. This combination requires that both Storage Accelerators be identical.

In *Figure 23*, two ports from the VIC 1340/1240 adapter are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The result is 20 Gb of bandwidth to each Fabric Extender.

Figure 23   VIC 1340/1240 (adapter slots 2 and 3 empty)
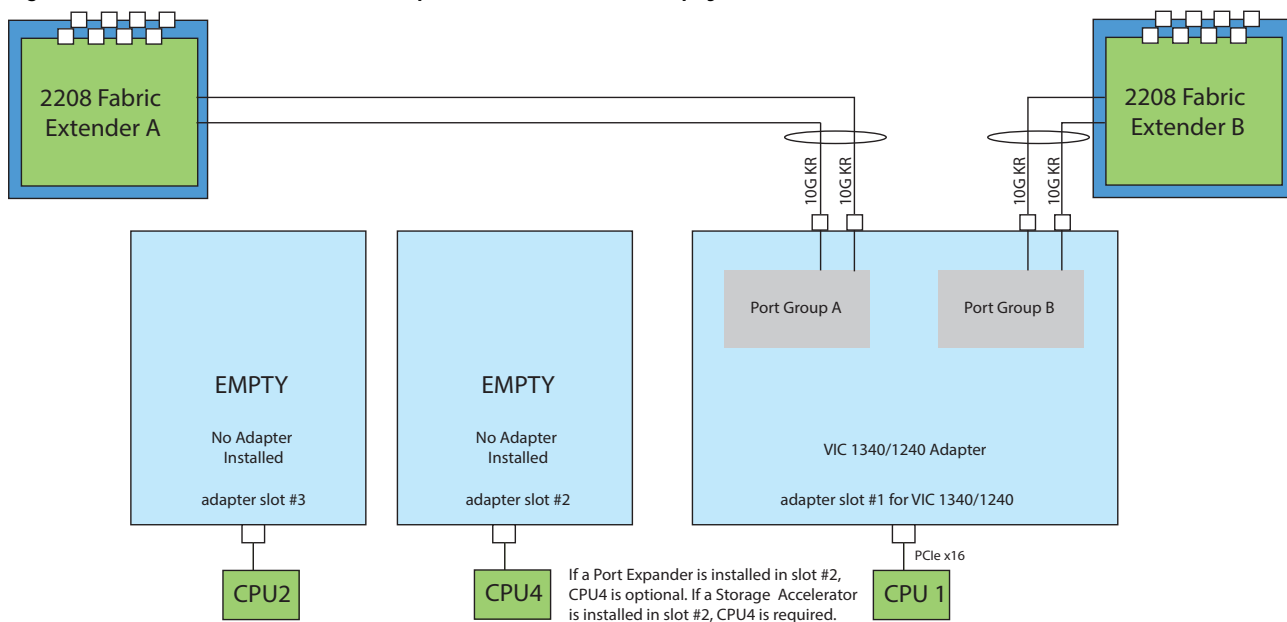
In *Figure 24*, two ports from the VIC 1340 are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device, channeling two ports to each of the Fabric Extenders. Adapter slot 3 is empty. The result is 40 Gb of bandwidth to each Fabric Extender.

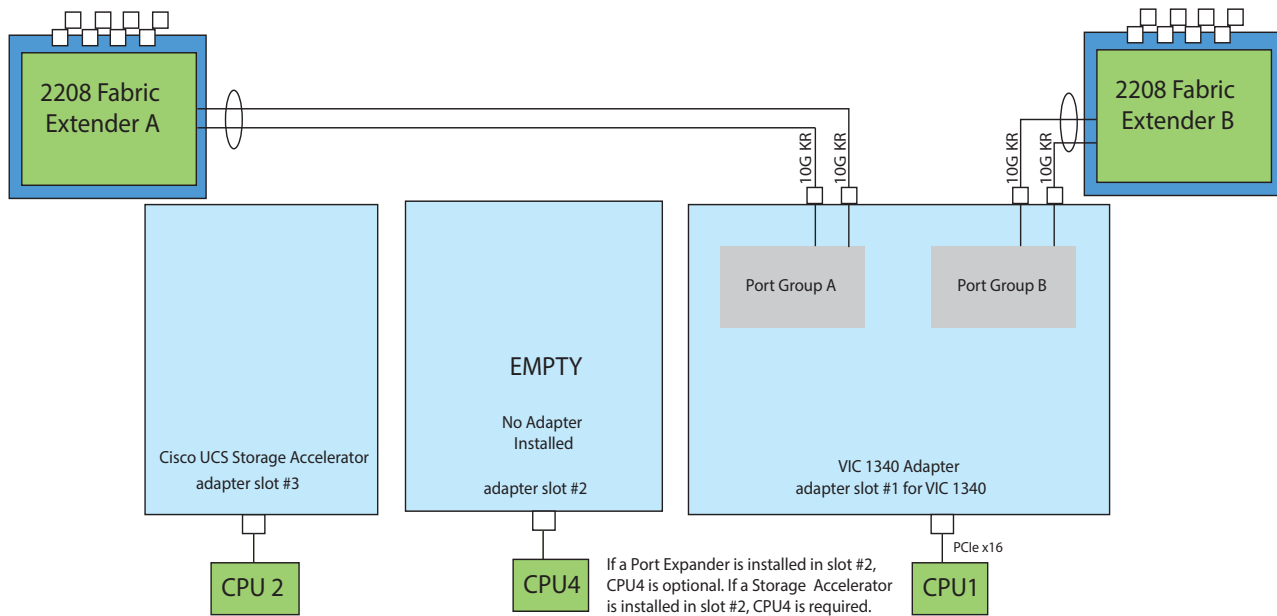Figure 24   VIC 1340 and Port Expander in Adapter Slot 2 (adapter slot 3 empty)
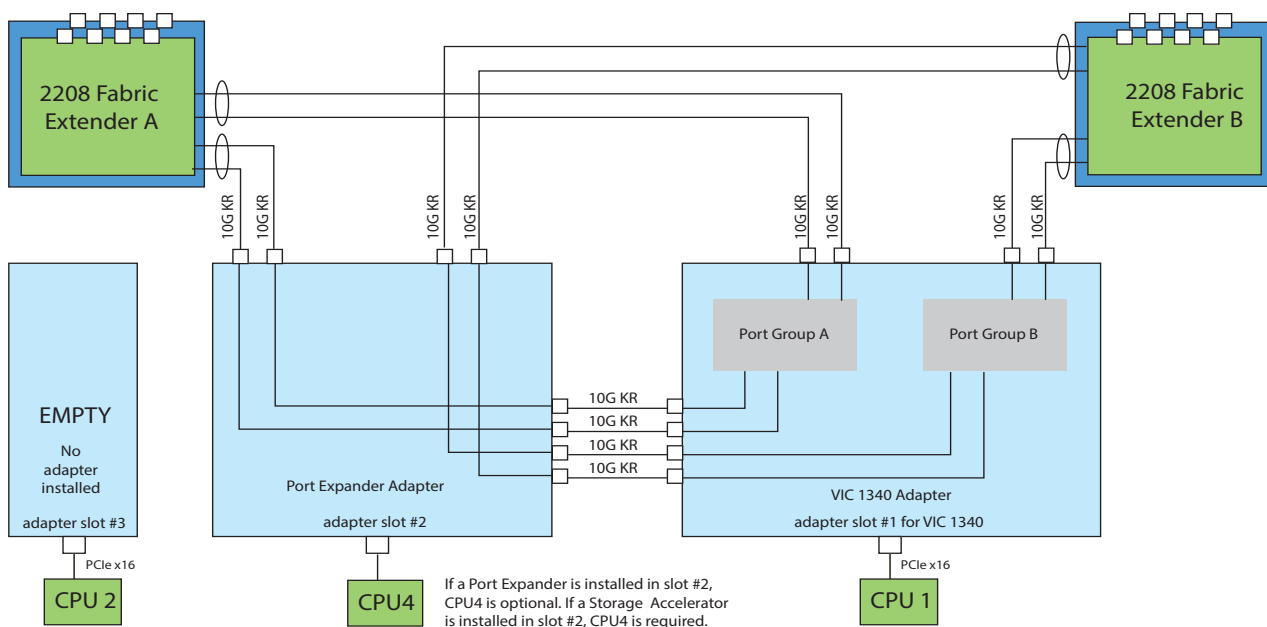
In *Figure 25*, two ports from the VIC 1340/1240 are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. Adapter slot 2 is empty. The VIC 1380/1280 installed in adapter slot 3 channels four ports to each of the Fabric Extenders. The result is 60 Gb of bandwidth to each Fabric Extender.

Figure 25   VIC 1340/1240 and VIC 1380/1280 (adapter slot 2 empty)
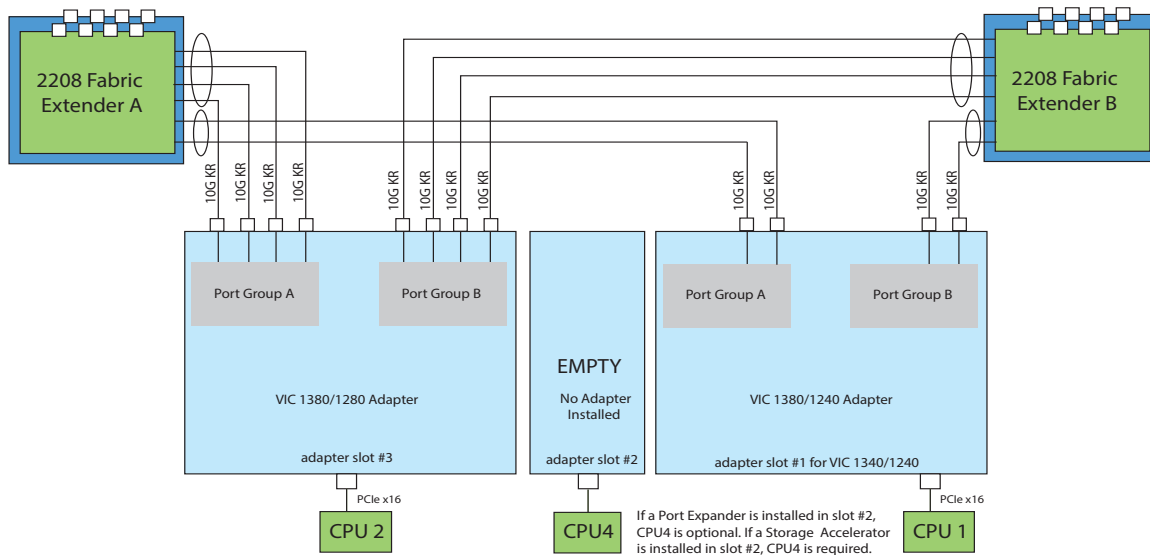
In *Figure 26*, two ports from the VIC 1340/1240 are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device, channeling two ports to each of the Fabric Extenders. In addition, the VIC 1380/1280 channels four ports to each Fabric Extender. The result is 80 Gb of bandwidth to each Fabric Extender.

Figure 26   VIC 1340/1240, Port Expander in Adapter Slot 2, and VIC 1380/1280 in Adapter Slot 3

In *Figure 27*, four ports from the VIC 1380 are channeled to 2208XP Fabric Extender A and four are channeled to 2208XP Fabric Extender B. The VIC 1340 slot is empty and adapter slot 2 is empty. The result is 40 Gb of bandwidth to each Fabric Extender.

Figure 27   VIC 1380 (VIC 1340 slot empty and adapter slot 2 empty)

In *Figure 28* (supported on 4-CPU configurations), the Storage Accelerator installed in adapter slot 2 acts as a pass-through device, channeling two ports to each of the Fabric Extenders. In addition, two ports from the VIC 1340 adapter are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The result is 40 Gb of bandwidth to each Fabric Extender. This configuration requires 4 CPUs.

Figure 28   VIC 1340 (Cisco UCS Storage Accelerator in slot 2 and adapter slot 3 empty)

In *Figure 29* (supported on 2-CPU configurations), two ports from the VIC 1340 adapter are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The result is 20 Gb of bandwidth to each Fabric Extender. The storage accelerator in slot 3 provides no network connectivity.

Figure 29   VIC 1340 (Cisco UCS Storage Accelerator in slot 3 and adapter slot 2 empty)

In *Figure 30*, the Storage Accelerator installed in adapter slot 2 acts as a pass-through device, channeling two ports to each of the Fabric Extenders. In addition, two ports from the VIC 1340 adapter are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The result is 40 Gb of bandwidth to each Fabric Extender. Two *identical* Cisco UCS Storage Accelerator adapters are installed in slots 2 and 3, but the one in slot 3 provides no network connectivity. This configuration requires 4 CPUs.

Figure 30   VIC 1340 (Cisco UCS Storage Accelerator in slots 2 and 3)

Cisco UCS B420 M4 Blade Server
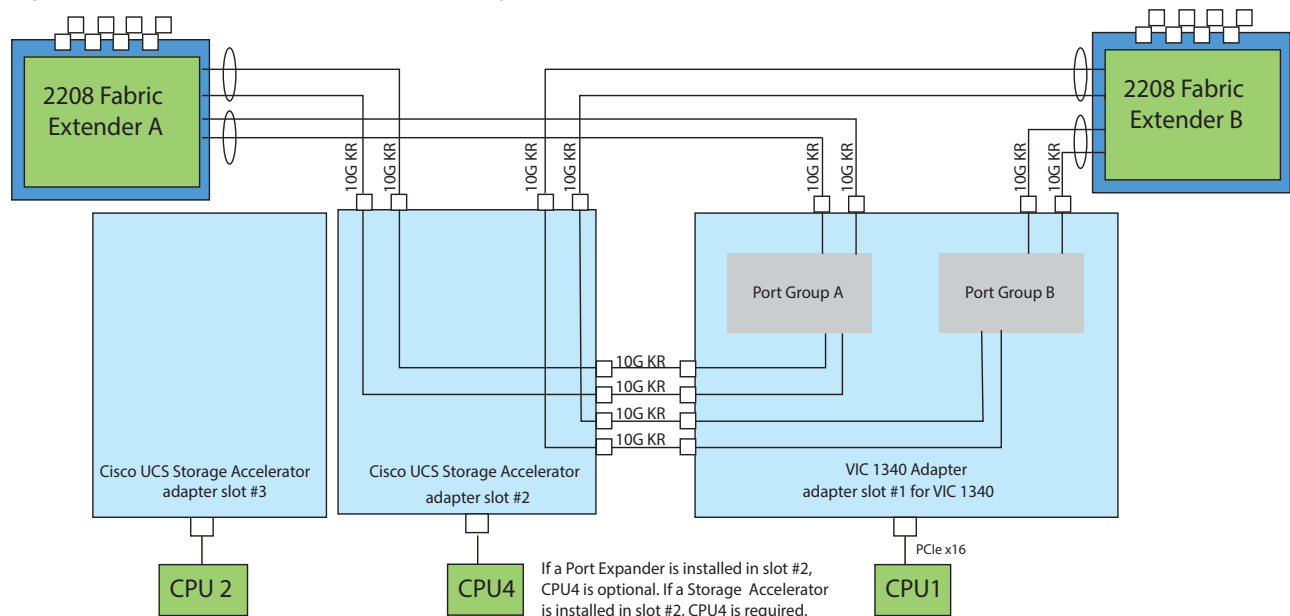
Connectivity using the Cisco UCS 2204XP Fabric Extender

The connectivity options shown in *Figure 31 on page 60* through *Figure 38 on page 63* are shown in *Table 33*.

Table 33 Supported Adapter Combinations Using the 2204XP[1]

Adapter Slot 1	Adapter Slot 2	Adapter Slot 3	Total Available Bandwidth
			2 x 2204 XP
VIC 1340/1240	Not populated	Not populated	20 Gb *Figure 31 on page 60*
VIC 1340	Port Expander Card	Not populated	40 Gb *Figure 32 on page 60*
VIC 1340/1240	Not populated	VIC 1380/1280	60 Gb *Figure 33 on page 61*
VIC 1340/1240	Port Expander Card	VIC 1380/1280	80 Gb *Figure 34 on page 61*
Not populated	Not populated	VIC 1380	40 Gb *Figure 35 on page 62*
VIC 1340	Cisco UCS Storage Accelerator	Not populated	40 Gb *Figure 36 on page 62*
VIC 1340	not populated	Cisco UCS Storage Accelerator	20 Gb *Figure 37 on page 63*
VIC 1340	Cisco UCS Storage Accelerator[2]	Cisco UCS Storage Accelerator	40 Gb *Figure 38 on page 63*

Notes

1. Not all combinations are supported in 2-CPU configurations (see *Table 12 on page 23*)
2. This combination requires that both Storage Accelerators be identical.

In *Figure 31*, one port from the VIC 1340/1240 is channeled to 2204XP Fabric Extender A and one is channeled to 2204XP Fabric Extender B. The result is 10 Gb of bandwidth to each Fabric Extender.

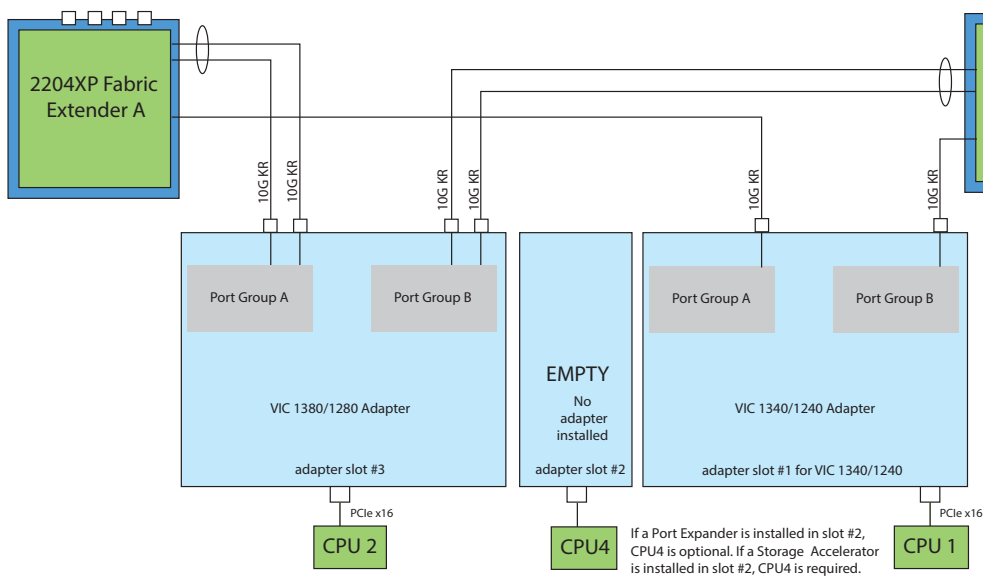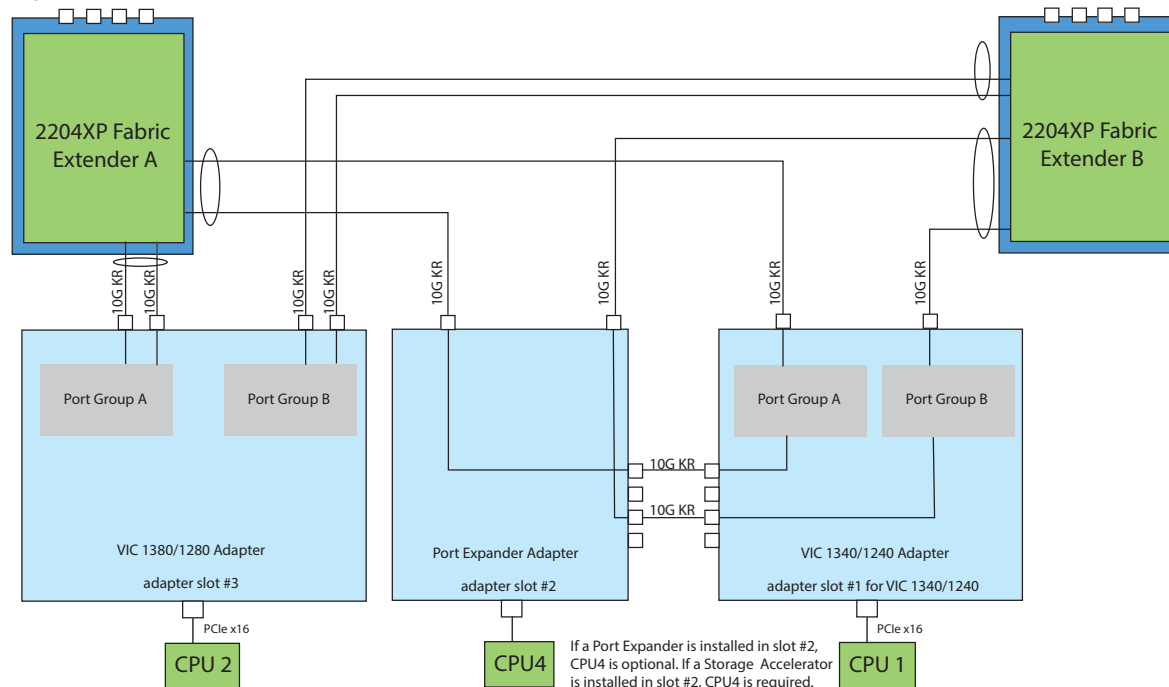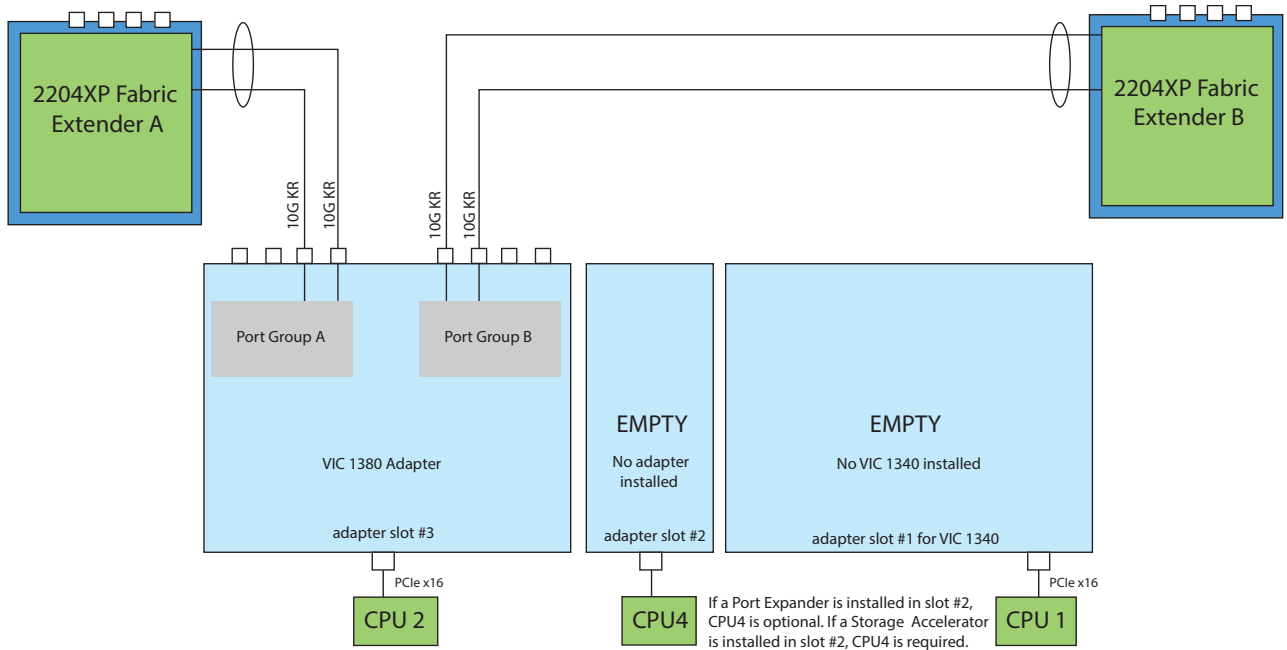**Figure 31   VIC 1340/1240 (adapter slots 2 and 3 empty)**
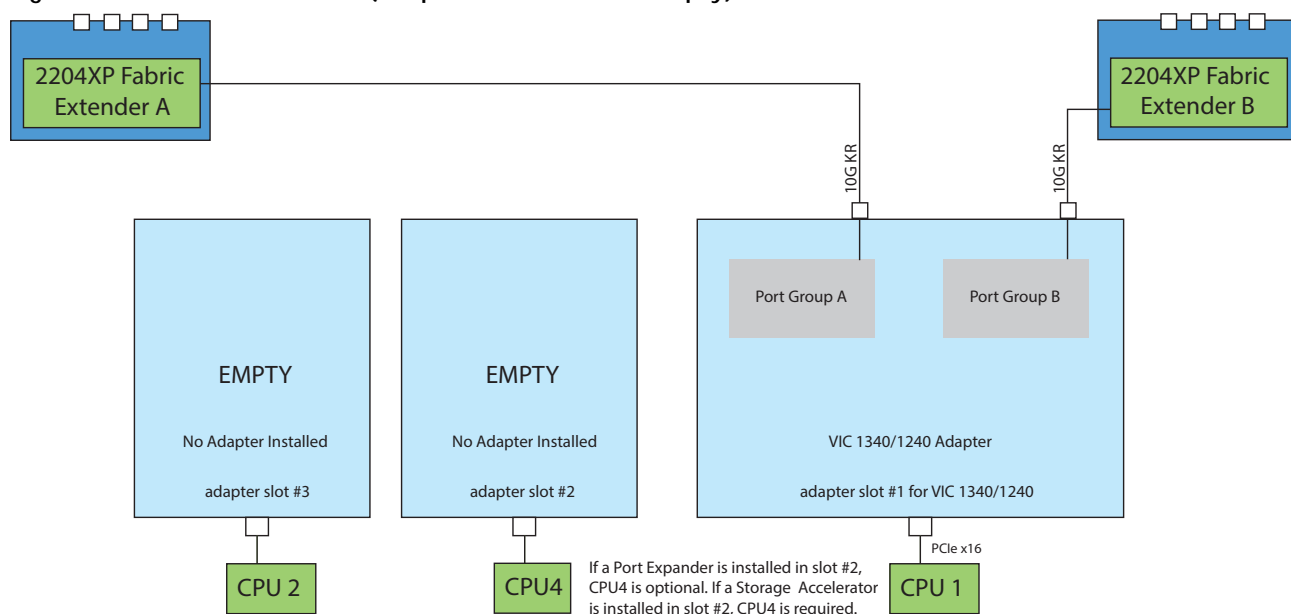
In *Figure 32*, one port from the VIC 1340 is channeled to 2204XP Fabric Extender A and one is channeled to 2204XP Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device, channeling one port to each of the Fabric Extenders. Adapter slot 3 is empty. The result is 20 Gb of bandwidth to each Fabric Extender.

Figure 32   VIC 1340 and Port Expander in Adapter Slot 2 (adapter slot 3 empty)
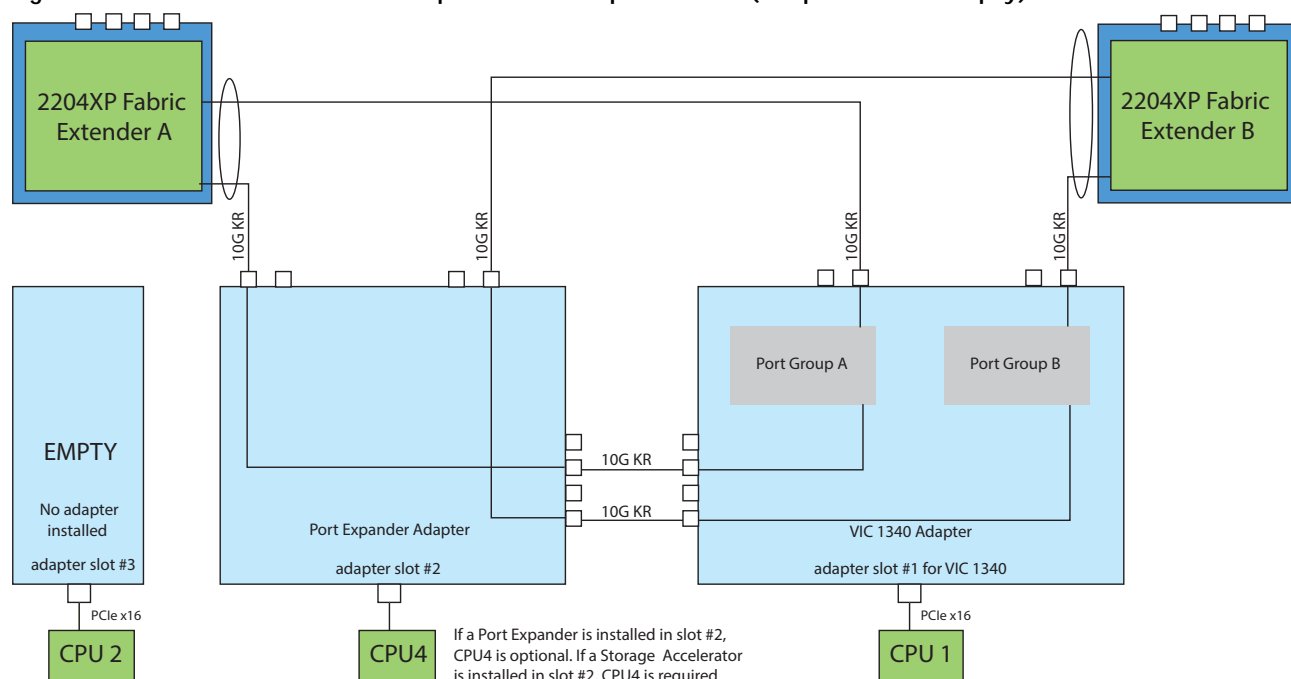
In *Figure 33*, one port from the VIC 1340/1240 is channeled to 2204XP Fabric Extender A and one is channeled to 2204XP Fabric Extender B. Adapter slot 2 is empty. The VIC 1380/1280 installed in adapter slot 3 channels two ports to each of the Fabric Extenders. The result is 30 Gb of bandwidth to each Fabric Extender.

Figure 33   VIC 1340/1240 and VIC 1380/1280 (adapter slot 2 empty)
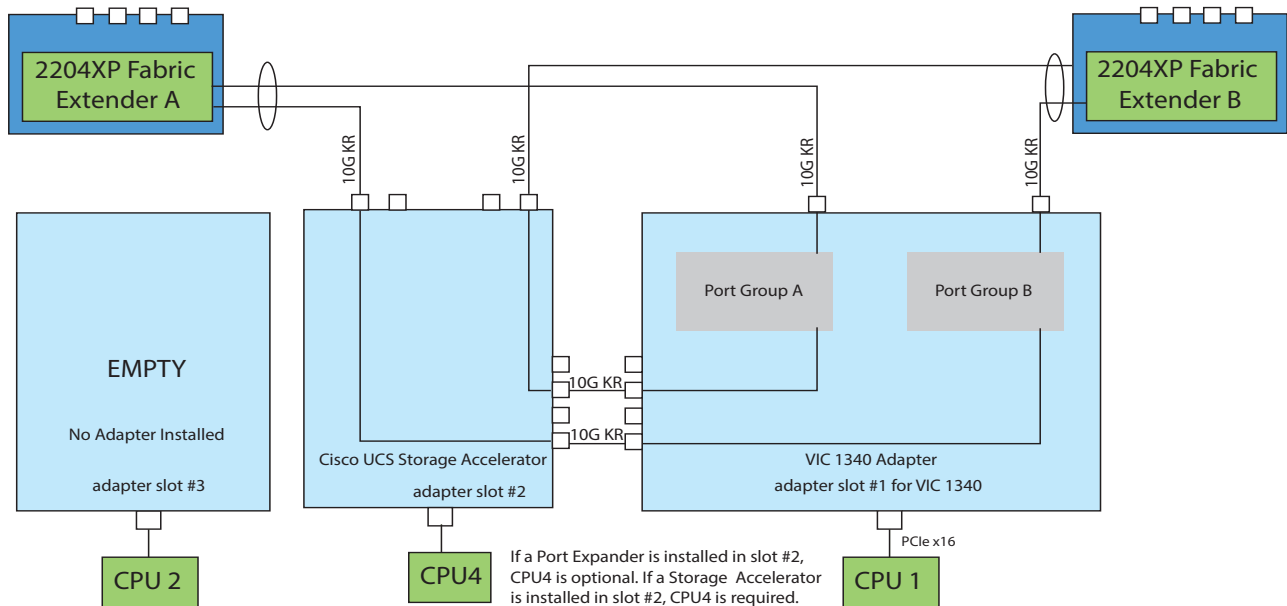

In *Figure 34*, one port from the VIC 1340/1240 is channeled to 2204XP Fabric Extender A and one is channeled to 2204XP Fabric Extender B. The Port Expander Card installed in adapter slot 2 acts as a pass-through device, channeling one port to each of the Fabric Extenders. In addition, the VIC 1380/1280 channels two ports to each Fabric Extender. The result is 40 Gb of bandwidth to each Fabric Extender.

Figure 34   VIC 1340/1240, Port Expander and VIC 1380/1280

In *Figure 35*, two ports from the VIC 1380 are channeled to 2204XP Fabric Extender A and two are channeled to 2204XP Fabric Extender B. The VIC 1340 slot is empty and adapter slot 2 is empty. The result is 20 Gb of bandwidth to each Fabric Extender.

Figure 35   VIC 1380 in Adapter Slot 3 (VIC 1340 slot empty and adapter slot 2 empty)
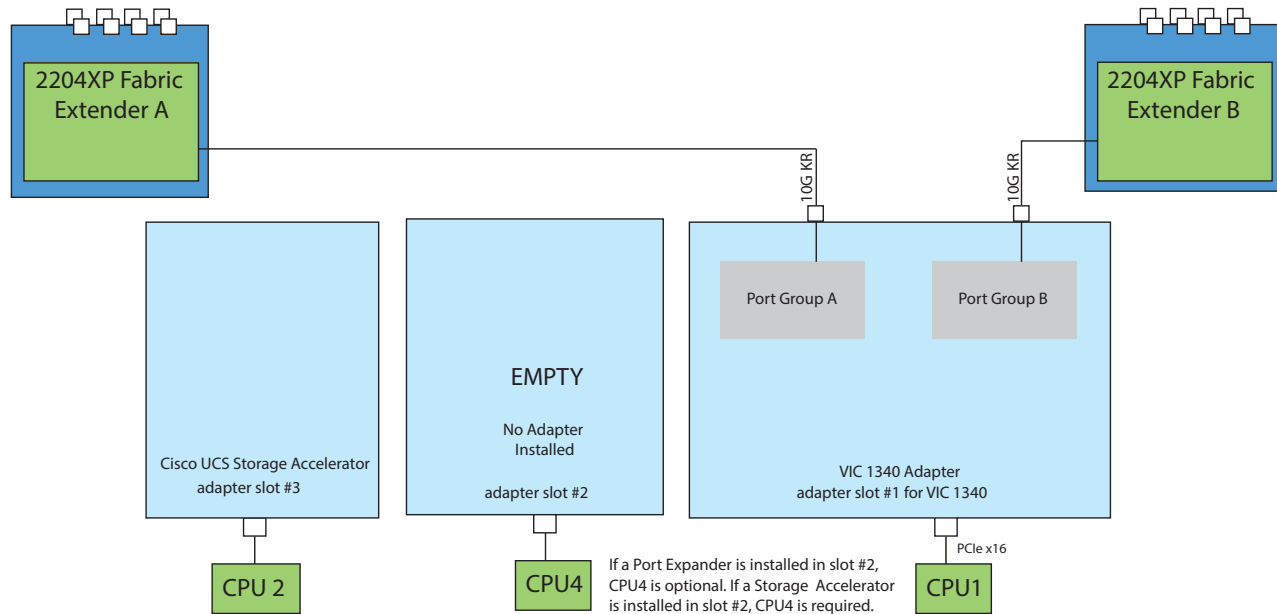

In *Figure 36*, the Storage Accelerator installed in adapter slot 2 acts as a pass-through device, channeling one port to each of the Fabric Extenders. In addition, one port from the VIC 1340 is channeled to 2204XP Fabric Extender A and one is channeled to 2204XP Fabric Extender B. The result is 20 Gb of bandwidth to each Fabric Extender. This configuration requires 4 CPUs.

Figure 36   VIC 1340 (Cisco UCS Storage Accelerator in slot 2, slot 3 empty)

In *Figure 37*, one port from the VIC 1340 adapter is connected to 2204XP Fabric Extender A and one is connected to 2204XP Fabric Extender B. The result is 10 Gb of bandwidth to each Fabric Extender. The storage accelerator in slot 3 provides no network connectivity.

Figure 37   VIC 1340 (Cisco UCS Storage Accelerator in slot 3 and adapter slot 2 empty)

In *Figure 38*, the Storage Accelerator installed in adapter slot 2 acts as a pass-through device, channeling one port to each of the Fabric Extenders. In addition, one port from the VIC 1340 is channeled to 2204XP Fabric Extender A and one is channeled to 2204XP Fabric Extender B. The result is 20 Gb of bandwidth to each Fabric Extender. Two *identical* Cisco UCS Storage Accelerator adapters are installed in slots 2 and 3, but the one in slot 3 provides no network connectivity. This configuration requires 4 CPUs.

Figure 38   VIC 1340/1240 (Cisco UCS Storage Accelerator in slots 2 and 3)
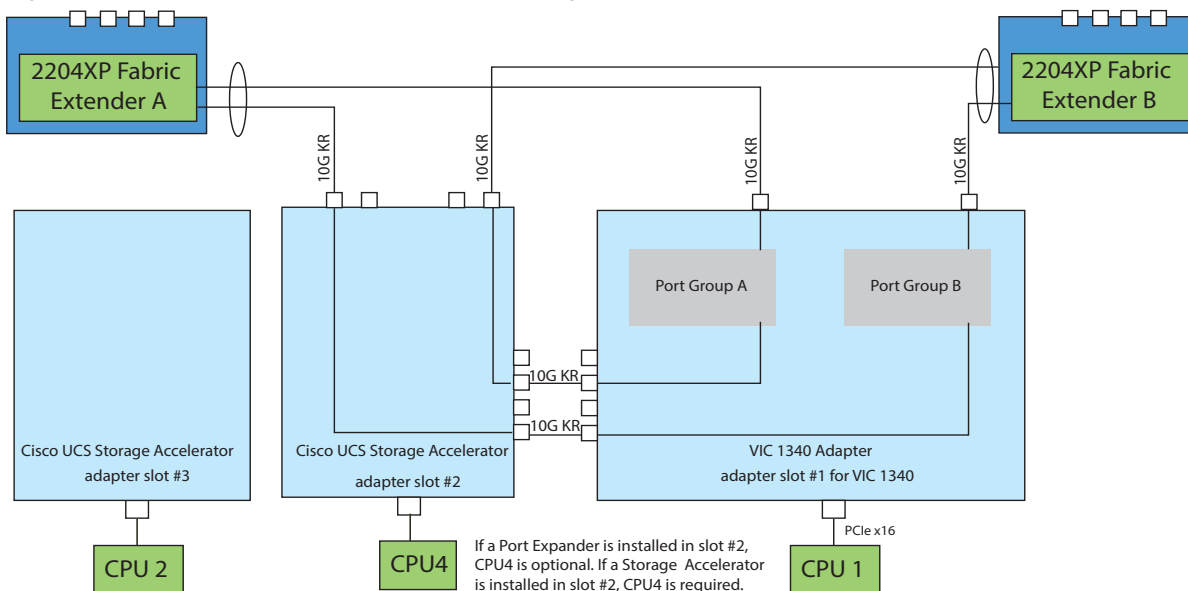
TECHNICAL SPECIFICATIONS

Dimensions and Weight

Table 34 UCS B420 M4 Dimensions and Weight

Parameter	Value
Height	1.95 in. (50 mm)
Width	16.5 in.(419 mm)
Depth	24.4 in. (620 mm)
Weight	■ Base server weight = 17.780 lb (8.1 kg) ■ Minimally configured server with 2 CPUs, 2 heatsinks, 2 RDIMMs, 1 Mezz, 4 HDD blank) = 21.098 lb (9.57 kg) ■ Minimally configured server with 2 CPUs, 2 heatsinks, 2 LRDIMMs, 1 Mezz, 4 HDD blank) = 21.206 lb (9.62 kg) ■ Fully configured server with 4 CPU, 4 heatsinks, 48 RDIMMs, 3 Mezz, 2 RAID, 4 HDD) = 30.704 lb (13.93 kg) ■ Fully configured server with 4 CPU, 4 heatsinks, 48 LRDIMMs, 3 Mezz, 2 RAID, 4 HDD) = 33.296 lb (15.10 kg)

Power Specifications

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

http://ucspowercalc.cisco.com

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Cisco UCS B420 M4 Blade Server