Cisco UCS B420 M4 Blade Server
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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

<p>| | | | | | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drive bay 1</td>
<td>8</td>
<td>Power button and LED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Drive bay 2</td>
<td>9</td>
<td>Network link status button</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Drive bay 3</td>
<td>10</td>
<td>Blade health LED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Drive bay 4</td>
<td>11</td>
<td>Local console connector¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Left blade ejector handle</td>
<td>12</td>
<td>Reset button access</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Asset pull handle</td>
<td>13</td>
<td>Beaconing LED and button</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(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)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Right blade ejector handle</td>
<td>14</td>
<td>Ejector thumbscrew</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Capability/Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade server chassis</td>
<td>The full-width UCS B420 M4 Blade Server mounts in a Cisco UCS 5100 series blade server chassis</td>
</tr>
<tr>
<td>CPU</td>
<td>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.</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® C610 chipset</td>
</tr>
<tr>
<td>Memory</td>
<td>48 total slots for registered ECC DIMMs</td>
</tr>
<tr>
<td>I/O</td>
<td>Three configurable adapter slots:</td>
</tr>
<tr>
<td></td>
<td>- One slot supports the Cisco VIC 1340/1240 adapter only.</td>
</tr>
<tr>
<td></td>
<td>- Two additional slots support Cisco adapters and Cisco UCS Storage Accelerator adapters.</td>
</tr>
<tr>
<td>Storage controller</td>
<td>- Diskless system (no drive bays or RAID controller), or</td>
</tr>
<tr>
<td></td>
<td>- Optional Cisco FlexStorage 12G SAS RAID controller options, offering:</td>
</tr>
<tr>
<td></td>
<td>- SAS/SATA/HDD/SSD support</td>
</tr>
<tr>
<td></td>
<td>- RAID support: 0, 1, 10 or</td>
</tr>
<tr>
<td></td>
<td>- RAID 0, 1, 10, 5, 6 with optional 2 GB flash-backed write cache</td>
</tr>
<tr>
<td>Storage devices</td>
<td>Either two or four hot-plug 2.5” SFF drive bays</td>
</tr>
<tr>
<td></td>
<td>One internal USB 3.0 port</td>
</tr>
<tr>
<td></td>
<td>Two Cisco Flexible Flash secure digital card slots</td>
</tr>
<tr>
<td>Interfaces</td>
<td>Front panel</td>
</tr>
<tr>
<td></td>
<td>- One console connector</td>
</tr>
<tr>
<td></td>
<td>(see CHOOSE LOCAL KVM I/O CABLE* (OPTIONAL) on page 37)</td>
</tr>
</tbody>
</table>
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:
ISO Download:
http://www.cisco.com/cisco/software/navigator.html

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Table 1 Capabilities and Features (continued)

<table>
<thead>
<tr>
<th>Capability/Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video</td>
<td>The Cisco Integrated Management Controller (CIMC) provides video using the Matrox G200e video/graphics controller:</td>
</tr>
<tr>
<td></td>
<td>- Integrated 2D graphics core with hardware acceleration</td>
</tr>
<tr>
<td></td>
<td>- DDR2/3 memory interface supports up to 512 MB of addressable memory (8 MB is allocated by default to video memory)</td>
</tr>
<tr>
<td></td>
<td>- Supports display resolutions up to 1920 x 1200 16bpp @ 60Hz</td>
</tr>
<tr>
<td></td>
<td>- High-speed integrated 24-bit RAMDAC</td>
</tr>
<tr>
<td></td>
<td>- Single lane PCI-Express host interface running at Gen 1 speed</td>
</tr>
<tr>
<td>Power subsystem</td>
<td>Integrated in the Cisco UCS 5100 series blade server chassis</td>
</tr>
<tr>
<td>Fans</td>
<td>Integrated in the Cisco UCS 5100 series blade server chassis</td>
</tr>
<tr>
<td>Integrated management processor</td>
<td>The built-in Cisco Integrated Management Controller (CIMC) GUI or CLI interface enables you to monitor the server inventory, health, and system event logs.</td>
</tr>
<tr>
<td>Cisco UCS Diagnostics for Cisco UCS B-Series Blade Servers</td>
<td>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.</td>
</tr>
</tbody>
</table>

See the following links for more information:
User Guide:
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, page 8
- STEP 2 CHOOSE CPU(S), page 9
- STEP 3 CHOOSE MEMORY, page 11
- STEP 5 CHOOSE HARD DISK DRIVES or SOLID-STATE DRIVES (OPTIONAL), page 19
- STEP 6 CHOOSE ADAPTERS, page 21
- STEP 7 ORDER A TRUSTED PLATFORM MODULE (OPTIONAL), page 25
- STEP 8 ORDER CISCO FLEXIBLE FLASH SECURE DIGITAL CARDS, page 26
- STEP 9 ORDER INTERNAL USB 3.0 DRIVE (OPTIONAL), page 27
- STEP 10 CHOOSE OPERATING SYSTEM AND VALUE-ADDED SOFTWARE, page 28
- STEP 11 CHOOSE OPERATING SYSTEM MEDIA KIT (OPTIONAL), page 31
- STEP 12 CHOOSE SERVICE and SUPPORT LEVEL, page 32
- STEP 13 CHOOSE LOCAL KVM I/O CABLE* (OPTIONAL), page 37
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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCSB-B420-M4</td>
<td>UCS B420 M4 Blade Server with no CPU, memory, HDD, SSD, or adapter cards</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>Intel Number</th>
<th>Clock Freq (GHz)</th>
<th>Power (W)</th>
<th>Cache Size (MB)</th>
<th>Cores</th>
<th>QPI</th>
<th>Highest DDR4 DIMM Clock Support (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCS-CPU-E5-4669E</td>
<td>E5-4669 v4</td>
<td>2.20</td>
<td>135</td>
<td>55</td>
<td>22</td>
<td>9.6</td>
<td>2400</td>
</tr>
<tr>
<td>UCS-CPU-E5-4667E</td>
<td>E5-4667 v4</td>
<td>2.20</td>
<td>135</td>
<td>45</td>
<td>18</td>
<td>9.6</td>
<td>2400</td>
</tr>
<tr>
<td>UCS-CPU-E5-4660E</td>
<td>E5-4660 V4</td>
<td>2.2</td>
<td>120</td>
<td>40</td>
<td>16</td>
<td>9.6</td>
<td>2400</td>
</tr>
<tr>
<td>UCS-CPU-E5-4650E</td>
<td>E5-4650 V4</td>
<td>2.2</td>
<td>105</td>
<td>35</td>
<td>14</td>
<td>9.6</td>
<td>2400</td>
</tr>
<tr>
<td>UCS-CPU-E5-4655E</td>
<td>E5-4655 V4</td>
<td>2.5</td>
<td>135</td>
<td>30</td>
<td>8</td>
<td>9.6</td>
<td>2400</td>
</tr>
<tr>
<td>UCS-CPU-E5-4640E</td>
<td>E5-4640 V4</td>
<td>2.1</td>
<td>105</td>
<td>30</td>
<td>12</td>
<td>8.0</td>
<td>2133</td>
</tr>
<tr>
<td>UCS-CPU-E5-4627E1</td>
<td>E5-4627 V4</td>
<td>2.6</td>
<td>135</td>
<td>25</td>
<td>10</td>
<td>8.0</td>
<td>2400</td>
</tr>
<tr>
<td>UCS-CPU-E5-4620E</td>
<td>E5-4620 V4</td>
<td>2.1</td>
<td>105</td>
<td>25</td>
<td>10</td>
<td>8.0</td>
<td>2133</td>
</tr>
<tr>
<td>UCS-CPU-E5-4610E</td>
<td>E5-4610 V4</td>
<td>1.8</td>
<td>105</td>
<td>25</td>
<td>10</td>
<td>6.4</td>
<td>1866</td>
</tr>
</tbody>
</table>

Notes

1. The UCS-CPU-E5-4627E 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

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

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

<table>
<thead>
<tr>
<th>DPC</th>
<th>DIMM Type</th>
<th>64 GB (TSV)</th>
<th>16/32 GB (DR)</th>
<th>8 GB (SR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1DPC</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
<td></td>
</tr>
<tr>
<td>2DPC</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
<td></td>
</tr>
<tr>
<td>3DPC</td>
<td>1600</td>
<td>1866</td>
<td>1600</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>DPC</th>
<th>DIMM Type</th>
<th>64 GB (TSV)</th>
<th>16/32 GB (DR)</th>
<th>8 GB (SR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1DPC</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td></td>
</tr>
<tr>
<td>2DPC</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td></td>
</tr>
<tr>
<td>3DPC</td>
<td>1333</td>
<td>1600</td>
<td>1333</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>DPC</th>
<th>DIMM Type</th>
<th>64 GB (TSV)</th>
<th>16/32 GB (DR)</th>
<th>8 GB (SR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1DPC</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
<td></td>
</tr>
<tr>
<td>2DPC</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
<td></td>
</tr>
</tbody>
</table>
Table 7  DIMM Speeds for 1600-MHz E5-4600 v3 Series CPUs (continued)

<table>
<thead>
<tr>
<th>DIMM and CPU Frequencies</th>
<th>DIMMs per Channel</th>
<th>LRDIMM speed (quad rank x4) 64 GB 1.2 V</th>
<th>RDIMM speed (dual rank x4) 32 GB 1.2 V</th>
<th>LRDIMM speed (quad rank x4) 32 GB 1.2 V</th>
<th>LRDIMM speed (single rank x4) 16 GB 1.2 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMM FREQ - 2400</td>
<td>1 DPC</td>
<td>2400</td>
<td>2400</td>
<td>2400</td>
<td>2400</td>
</tr>
<tr>
<td>2 DPC</td>
<td>2400</td>
<td>2400</td>
<td>2400</td>
<td>2400</td>
<td></td>
</tr>
<tr>
<td>3 DPC</td>
<td>2133</td>
<td>1866</td>
<td>2133</td>
<td>2133</td>
<td></td>
</tr>
<tr>
<td>DIMM FREQ - 2133</td>
<td>1 DPC</td>
<td>NA</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
</tr>
<tr>
<td>2 DPC</td>
<td>NA</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
<td></td>
</tr>
<tr>
<td>3 DPC</td>
<td>NA</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td></td>
</tr>
<tr>
<td>DIMM FREQ - 2400</td>
<td>1 DPC</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
</tr>
<tr>
<td>2 DPC</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
<td></td>
</tr>
<tr>
<td>3 DPC</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td></td>
</tr>
<tr>
<td>DIMM FREQ - 2133</td>
<td>1 DPC</td>
<td>NA</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
</tr>
<tr>
<td>2 DPC</td>
<td>NA</td>
<td>2133</td>
<td>2133</td>
<td>2133</td>
<td></td>
</tr>
<tr>
<td>3 DPC</td>
<td>NA</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td></td>
</tr>
<tr>
<td>DIMM FREQ - 2400</td>
<td>1 DPC</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
</tr>
<tr>
<td>2 DPC</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
<td></td>
</tr>
<tr>
<td>3 DPC</td>
<td>1866</td>
<td>1600</td>
<td>1866</td>
<td>1600</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>DIMM and CPU Frequencies</th>
<th>DIMMs per Channel</th>
<th>LRDIMM speed (quad rank x4) 64 GB 1.2 V</th>
<th>RDIMM speed (dual rank x4) 32 GB 1.2 V</th>
<th>LRDIMM speed (quad rank x4) 32 GB 1.2 V</th>
<th>LRDIMM speed (single rank x4) 16 GB 1.2 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMM FREQ - 2133 CPU FREQ - 1866</td>
<td>1 DPC</td>
<td>NA</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
</tr>
<tr>
<td></td>
<td>2 DPC</td>
<td>NA</td>
<td>1866</td>
<td>1866</td>
<td>1866</td>
</tr>
<tr>
<td></td>
<td>3 DPC</td>
<td>NA</td>
<td>1600</td>
<td>1866</td>
<td>1600</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCSB-MRAID12G</td>
<td>Cisco FlexStorage 12G SAS RAID controller with drive bays</td>
</tr>
<tr>
<td>UCSB-MRAID12G-HE</td>
<td>Cisco FlexStorage 12G SAS RAID controller with 2 GB flash-backed write cache and drive bays</td>
</tr>
<tr>
<td>UCSB-LSTOR-PT</td>
<td>Passthrough module with drive bays</td>
</tr>
<tr>
<td>UCSB-LSTOR-BK</td>
<td>Cisco FlexStorage blanking panel w/o controller, w/o drive bays</td>
</tr>
</tbody>
</table>

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 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

RAID Controller (integrated in drive bay)

Disk Drive

Blanking Panels

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

(a) Server with four drive bays  (b) Server with no drive bays

Blanking Panels

Blanking Panel
Supported Configurations

(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 configuring 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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
<th>Drive Type</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HDDs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Gbps Drives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCS-HD600G15K12G</td>
<td>600 GB 12G SAS 15K RPM SFF HDD</td>
<td>SAS</td>
<td>600 GB</td>
</tr>
<tr>
<td>UCS-HD450G15K12G</td>
<td>450 GB 12G SAS 15K RPM SFF HDD</td>
<td>SAS</td>
<td>450 GB</td>
</tr>
<tr>
<td>UCS-HD300G15K12G</td>
<td>300 GB 12G SAS 15K RPM SFF HDD</td>
<td>SAS</td>
<td>300 GB</td>
</tr>
<tr>
<td>UCS-HD12TB10K12G</td>
<td>1.2 TB 12G SAS 10K RPM SFF HDD</td>
<td>SAS</td>
<td>1.2 TB</td>
</tr>
<tr>
<td>UCS-HD900G10K12G</td>
<td>900 GB 12G SAS 10K RPM SFF HDD</td>
<td>SAS</td>
<td>900 GB</td>
</tr>
<tr>
<td>UCS-HD600G10K12G</td>
<td>600 GB 12G SAS 10K RPM SFF HDD</td>
<td>SAS</td>
<td>600 GB</td>
</tr>
<tr>
<td>UCS-HD300G10K12G</td>
<td>300 GB 12G SAS 10K RPM SFF HDD</td>
<td>SAS</td>
<td>300 GB</td>
</tr>
<tr>
<td><strong>SSDs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enterprise Performance SSDs (High endurance, supports up to 10X or 3X DWPD (drive writes per day))</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAS SSDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCS-SD16TB12S4-EP</td>
<td>1.6 TB 2.5 inch Enterprise Performance 12G SAS SSD (10X endurance)</td>
<td>SAS</td>
<td>1.6 TB</td>
</tr>
<tr>
<td>UCS-SD800G12S4-EP</td>
<td>800 GB 2.5 inch Enterprise Performance 12G SAS SSD (10X endurance)</td>
<td>SAS</td>
<td>800 GB</td>
</tr>
<tr>
<td>UCS-SD400G12S4-EP</td>
<td>400 GB 2.5 inch Enterprise Performance 12G SAS SSD (10X endurance)</td>
<td>SAS</td>
<td>400 GB</td>
</tr>
<tr>
<td>UCS-SD400GH3-EP</td>
<td>400GB 2.5 inch Enterprise performance 12G SAS SSD (3X DWPD)</td>
<td>SAS</td>
<td>400 GB</td>
</tr>
<tr>
<td>UCS-SD800GH3-EP</td>
<td>800GB 2.5 inch Enterprise performance 12G SAS SSD (3X DWPD)</td>
<td>SAS</td>
<td>800 GB</td>
</tr>
<tr>
<td>UCS-SD16TH3-EP</td>
<td>1.6TB 2.5 inch Enterprise performance 12G SAS SSD (3X DWPD)</td>
<td>SAS</td>
<td>1.6 TB</td>
</tr>
<tr>
<td>UCS-SD32TH3-EP</td>
<td>3.2TB 2.5 inch Enterprise performance 12G SAS SSD (3X DWPD)</td>
<td>SAS</td>
<td>3.2 TB</td>
</tr>
</tbody>
</table>
Table 10  Supported Hot Plug Drives (continued)

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
<th>Drive Type</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATA SSDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCS-SD480GIS3-EP</td>
<td>480GB 2.5in Enterprise performance 6G SATA SSD(3X endurance)</td>
<td>SATA</td>
<td>480 GB</td>
</tr>
<tr>
<td>UCS-SD960GIS3-EP</td>
<td>960GB 2.5in Enterprise performance 6G SATA SSD(3X endurance)</td>
<td>SATA</td>
<td>960 GB</td>
</tr>
<tr>
<td>UCS-SD19TIS3-EP</td>
<td>1.9TB 2.5in Enterprise performance 6G SATA SSD(3X endurance)</td>
<td>SATA</td>
<td>1.9 TB</td>
</tr>
<tr>
<td>Enterprise Value SATA SSDs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCS-SD19TBKS5-EV</td>
<td>1.9 TB 2.5 inch Enterprise Value 6G SATA SSD (1 FWPD)(PM863)</td>
<td>SATA</td>
<td>1.9 TB</td>
</tr>
<tr>
<td>UCS-SD16TBKS4-EV</td>
<td>1.6 TB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3510)</td>
<td>SATA</td>
<td>1.6 TB</td>
</tr>
<tr>
<td>UCS-SD480GBK5S-EV</td>
<td>480 GB 2.5 in Enterprise Value 6G SATA SSD (1FWPD) (PM86)</td>
<td>SATA</td>
<td>480 GB</td>
</tr>
<tr>
<td>UCS-SD480GBK5S4-EV</td>
<td>480 GB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3510)</td>
<td>SATA</td>
<td>480 GB</td>
</tr>
<tr>
<td>UCS-SD240GBK5S4-EV</td>
<td>240 GB 2.5 inch Enterprise Value 6G SATA SSD</td>
<td>SATA</td>
<td>240 GB</td>
</tr>
<tr>
<td>UCS-SD120GBK5S4-EV</td>
<td>120 GB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3510)</td>
<td>SATA</td>
<td>120 GB</td>
</tr>
<tr>
<td>UCS-SD480GBK5S4-EV</td>
<td>480GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)</td>
<td>SATA</td>
<td>480 GB</td>
</tr>
<tr>
<td>UCS-SD960GBK5S6-EV</td>
<td>960GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)</td>
<td>SATA</td>
<td>960 GB</td>
</tr>
<tr>
<td>UCS-SD38TBS5S6-EV</td>
<td>3.8TB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)</td>
<td>SATA</td>
<td>3.8 TB</td>
</tr>
<tr>
<td>UCS-SD120GBK5S4-EV</td>
<td>120GB 2.5 inch Enterprise Value 6G SATA SSD</td>
<td>SATA</td>
<td>120 GB</td>
</tr>
<tr>
<td>UCS-SD240GBK5S4-EV</td>
<td>240GB 2.5 inch Enterprise Value 6G SATA SSD</td>
<td>SATA</td>
<td>240 GB</td>
</tr>
<tr>
<td>UCS-SD480GBK5S4-EV</td>
<td>480GB 2.5 inch Enterprise Value 6G SATA SSD</td>
<td>SATA</td>
<td>480 GB</td>
</tr>
</tbody>
</table>

**NOTE:** Cisco uses solid state drives (SSDs) from a number of vendors. All solid state drives (SSDs) are subject to physical write limits and have varying maximum usage limitation specifications set by the manufacturer. Cisco will not replace any solid state drives (SSDs) that have exceeded any maximum usage specifications set by Cisco or the manufacturer, as determined solely by Cisco.

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:

Choose an Adapter

The supported mezzanine adapters in the UCS B420 M4 are listed in Table 11.

Table 11  Supported Mezzanine Adapters

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCSB-MLOM-40G-03</td>
<td>Cisco UCS VIC 1340 modular LOM for blade servers</td>
<td>Adapter 1</td>
</tr>
<tr>
<td>UCSB-VIC-M83-8P</td>
<td>Cisco UCS VIC 1380 mezzanine adapter</td>
<td>Adapter 1</td>
</tr>
<tr>
<td>UCSB-MLOM-40G-01</td>
<td>Cisco UCS VIC 1240 modular LOM for blade servers</td>
<td>Adapter 3</td>
</tr>
<tr>
<td>UCS-VIC-M82-8P</td>
<td>Cisco UCS VIC 1280 mezzanine adapter</td>
<td>Adapter 3</td>
</tr>
</tbody>
</table>

**Port Expander Card for VIC Option**

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
<th>Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCSB-MLOM-PT-01</td>
<td>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.</td>
<td>Adapter 2</td>
</tr>
</tbody>
</table>

**PCle/NVMe**

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCSB-F-H-5607</td>
<td>UCS Blade PCle/NVMe Storage Mezz 560GB High Endurance</td>
</tr>
<tr>
<td>UCSB-F-H-32003</td>
<td>UCS Blade PCle/NVMe Storage Mezz 3200GB Medium Endurance</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Adapter Configurations</th>
<th>Fabric Extenders Aggregate Bandwidth (Gb/s)</th>
<th>Fabric Interconnects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fabric Extenders Aggregate Bandwidth (Gb/s)</td>
<td></td>
</tr>
<tr>
<td>VIC 1340 Combinations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>not populated</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>no support</td>
</tr>
<tr>
<td></td>
<td>2 x 62xx or 2 x 63xx</td>
<td></td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Port Expander Card</td>
<td>not populated</td>
</tr>
<tr>
<td></td>
<td>80²</td>
<td>80²</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>no support</td>
</tr>
<tr>
<td></td>
<td>2 x 62xx or 2 x 63xx</td>
<td></td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>VIC 1380</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>no support</td>
</tr>
<tr>
<td></td>
<td>2 x 62xx or 2 x 63xx</td>
<td></td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Port Expander Card</td>
<td>VIC 1380</td>
</tr>
<tr>
<td></td>
<td>160²</td>
<td>160¹</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>no support</td>
</tr>
<tr>
<td></td>
<td>2 x 62xx or 2 x 63xx</td>
<td></td>
</tr>
<tr>
<td>not populated</td>
<td>not populated</td>
<td>VIC 1380</td>
</tr>
<tr>
<td></td>
<td>80³</td>
<td>80³</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>no support</td>
</tr>
<tr>
<td></td>
<td>2 x 62xx or 2 x 63xx</td>
<td></td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Cisco UCS Storage Accelerator (Fusion-io)</td>
<td>not populated</td>
</tr>
<tr>
<td></td>
<td>80³</td>
<td>80³</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>no support</td>
</tr>
<tr>
<td></td>
<td>2 x 62xx or 2 x 63xx</td>
<td></td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>Cisco UCS Storage Accelerator (Fusion-io)</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>no support</td>
</tr>
<tr>
<td></td>
<td>2 x 62xx or 2 x 63xx</td>
<td></td>
</tr>
</tbody>
</table>

**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) |
| VIC 1240 Combinations  | 80³                                        | 80³                  |
|                        | 40                                         | 40                   |

Notes

1. 2304XP is only supported with B420 M4 v4 CPUs starting with UCSM 3.1(2)
### Table 13  Supported Adapter Combinations for 2 CPUs Installed

<table>
<thead>
<tr>
<th>Adapter Configurations</th>
<th>Fabric Extenders Aggregate Bandwidth</th>
<th>Fabric Interconnects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 x 2304²</td>
<td>2 x 2208XP</td>
</tr>
<tr>
<td>Adapter Slot 1</td>
<td>Adapter Slot 2¹</td>
<td>Adapter Slot 3</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>not populated</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Port Expander Card</td>
<td></td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Port Expander Card</td>
<td>VIC 1380</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>VIC 1380</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>Cisco UCS Storage Accelerator (Fusion-io)</td>
</tr>
<tr>
<td>VIC 1240</td>
<td>not populated</td>
<td>not populated</td>
</tr>
<tr>
<td>VIC 1240</td>
<td>not populated</td>
<td>VIC 1280</td>
</tr>
<tr>
<td>VIC 1240</td>
<td>Port Expander Card</td>
<td>not populated</td>
</tr>
</tbody>
</table>

**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.
**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>
<thead>
<tr>
<th>Table 14</th>
<th>Trusted Platform Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product ID (PID)</td>
<td>PID Description</td>
</tr>
<tr>
<td>UCSX-TPM2-001</td>
<td>Trusted Platform Module for UCS (SPI-based)</td>
</tr>
</tbody>
</table>

**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>
<thead>
<tr>
<th>Table 15</th>
<th>Trusted Platform Module Support Matrix by Intel CPU Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel CPU</td>
<td>TPM Version</td>
</tr>
<tr>
<td>Intel E5-4600 v3</td>
<td>TPM 1.2</td>
</tr>
<tr>
<td></td>
<td>TPM 2.0</td>
</tr>
<tr>
<td>Intel E5-4600 v4</td>
<td>TPM 1.2</td>
</tr>
<tr>
<td></td>
<td>TPM 2.0</td>
</tr>
</tbody>
</table>
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>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCS-SD-128G</td>
<td>128 GB SD Card for UCS servers</td>
</tr>
<tr>
<td>UCS-SD-64G-S</td>
<td>64 GB SD Card for UCS servers</td>
</tr>
<tr>
<td>UCS-SD-32G-S</td>
<td>32 GB SD Card for UCS servers</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCS-USBFLASHB-16GB</td>
<td>UCS Servers 16 GB Flash USB Drive</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>PID Description</th>
<th>Product ID (PID)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco One</td>
<td></td>
</tr>
<tr>
<td>C1F2PUCSK9</td>
<td>Cisco ONE Foundation Perpetual UCS</td>
</tr>
<tr>
<td>C1A1PUCSK9</td>
<td>Cisco ONE Enterprise Cloud Perpetual UCS</td>
</tr>
<tr>
<td>C1UCS-OPT-OUT</td>
<td>Cisco One Data Center Compute Opt Out Option</td>
</tr>
<tr>
<td>Energy Management (JouleX)</td>
<td></td>
</tr>
<tr>
<td>CEM-DC-PER</td>
<td>Perpetual License Key for Cisco Energy Management for DC</td>
</tr>
<tr>
<td>UCS Director</td>
<td></td>
</tr>
<tr>
<td>CUIC-PHY-SERV-BM-U</td>
<td>Cisco UCS Director Resource Lic - 1 Phy Sevr node bare metal</td>
</tr>
<tr>
<td>CUIC-PHY-SERV-U</td>
<td>Cisco UCS Director Resource Lic - One physical Server node</td>
</tr>
<tr>
<td>CUIC-TERM</td>
<td>Acceptance of Cisco UCS Director License Terms</td>
</tr>
<tr>
<td>UCS Performance Manager</td>
<td></td>
</tr>
<tr>
<td>UCS-PM-IE</td>
<td>UCS Performance Manager</td>
</tr>
<tr>
<td>UCS-PM-EE</td>
<td>UCS Performance Manager Express</td>
</tr>
<tr>
<td>EVAL-UCS-PM-IE</td>
<td>UCS Performance Manager - 90 days evaluation</td>
</tr>
<tr>
<td>EVAL-UCS-PM-EE</td>
<td>UCS Performance Manager Express - 90 days evaluation</td>
</tr>
<tr>
<td>Nexus 1000V for Hyper-V and vSphere</td>
<td></td>
</tr>
<tr>
<td>N1K-VSG-UCS-BUN</td>
<td>Nexus 1000V Adv Edition for vSphere Paper License Qty 1</td>
</tr>
<tr>
<td>IMC Supervisor</td>
<td></td>
</tr>
<tr>
<td>CIMC-SUP-B10</td>
<td>IMC Supervisor- Branch Mgt SW for C &amp; E-Series up to 1K Svrs</td>
</tr>
<tr>
<td>CIMC-SUP-B02</td>
<td>IMC Supervisor- Branch Mgt SW for C &amp; E-Series up to 250 Svrs</td>
</tr>
<tr>
<td>UCS Multi-Domain Manager</td>
<td></td>
</tr>
<tr>
<td>UCS-MDMGR-100S</td>
<td>UCS Multi-Domain Manager (Central) Per Server License (100+)</td>
</tr>
<tr>
<td>UCS-MDMGR-50S</td>
<td>UCS Multi-Domain Manager (Central) Per Server License (50+)</td>
</tr>
<tr>
<td>UCS-MDMGR-1S</td>
<td>UCS Multi-Domain Manager (Central) Per Server License</td>
</tr>
<tr>
<td>UCS-MDMGR-10S</td>
<td>UCS Multi-Domain Manager (Central) Per Server License (10+)</td>
</tr>
<tr>
<td>UCS-MDMGR-1DMN</td>
<td>UCS Multi-Domain Manager (Central) Per Domain License</td>
</tr>
<tr>
<td>VMware vCenter</td>
<td></td>
</tr>
<tr>
<td>VMW-VCS-STD-1A</td>
<td>VMware vCenter 6 Server Standard, 1 yr support required</td>
</tr>
<tr>
<td>VMW-VCS-STD-3A</td>
<td>VMware vCenter 6 Server Standard, 3 yr support required</td>
</tr>
<tr>
<td>VMW-VCS-STD-5A</td>
<td>VMware vCenter 6 Server Standard, 5 yr support required</td>
</tr>
<tr>
<td>VMW-VCS-FND-1A</td>
<td>VMware vCenter 6 Server Foundation (3 Host), 1 yr supp reqd</td>
</tr>
<tr>
<td>VMW-VCS-FND-3A</td>
<td>VMware vCenter 6 Server Foundation (3 Host), 3 yr supp reqd</td>
</tr>
<tr>
<td>VMW-VCS-FND-5A</td>
<td>VMware vCenter 6 Server Foundation (3 Host), 5 yr supp reqd</td>
</tr>
</tbody>
</table>
### Table 18 OSs and Value-Added Software (continued)

<table>
<thead>
<tr>
<th>PID Description</th>
<th>Product ID (PID)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Microsoft Windows Server</strong></td>
<td></td>
</tr>
<tr>
<td>MSWS-12-ST2S</td>
<td>Windows Server 2012 Standard (2 CPU/2 VMs)</td>
</tr>
<tr>
<td>MSWS-12-DC2S</td>
<td>Windows Server 2012 Datacenter (2 CPU/Unlim VM)</td>
</tr>
<tr>
<td>MSWS-12-ST2S-NS</td>
<td>Windows Server 2012 Standard (2 CPU/2 VMs) No Cisco SVC</td>
</tr>
<tr>
<td>MSWS-12-DC2S-NS</td>
<td>Windows Server 2012 Datacenter (2 CPU/Unlim VM) No Cisco SVC</td>
</tr>
<tr>
<td>MSWS-12R2-ST2S</td>
<td>Windows Server 2012 R2 Standard (2 CPU/2 VMs)</td>
</tr>
<tr>
<td>MSWS-12R2-DC2S</td>
<td>Windows Server 2012 R2 Datacenter (2 CPU/Unlim VM)</td>
</tr>
<tr>
<td>MSWS-12R2-ST2S-NS</td>
<td>Windows Server 2012 R2 Standard (2 CPU/2 VMs) No Cisco SVC</td>
</tr>
<tr>
<td>MSWS-12R2-DC2S-NS</td>
<td>Windows Server 2012 R2 Datacenter (2 CPU/Unlim VM) No Cisco SVC</td>
</tr>
<tr>
<td><strong>Red Hat</strong></td>
<td></td>
</tr>
<tr>
<td>RHEL-2S2V-3A</td>
<td>Red Hat Enterprise Linux (1-2 CPU, 1-2 VN); 3-Yr Support Req</td>
</tr>
<tr>
<td>RHEL-2S2V-1A</td>
<td>Red Hat Enterprise Linux (1-2 CPU, 1-2 VN); 1-Yr Support Req</td>
</tr>
<tr>
<td><strong>VMware</strong></td>
<td></td>
</tr>
<tr>
<td>VMW-VSP-EPL-5A</td>
<td>VMware vSphere 6 Ent Plus (1 CPU), 5-yr, Support Required</td>
</tr>
<tr>
<td>VMW-VSP-STD-3A</td>
<td>VMware vSphere 6 Standard (1 CPU), 3-yr, Support Required</td>
</tr>
<tr>
<td>VMW-VSP-STD-1A</td>
<td>VMware vSphere 6 Standard (1 CPU), 1-yr, Support Required</td>
</tr>
<tr>
<td>VMW-VSP-EPL-3A</td>
<td>VMware vSphere 6 Ent Plus (1 CPU), 3-yr, Support Required</td>
</tr>
<tr>
<td>VMW-VSP-EPL-1A</td>
<td>VMware vSphere 6 Ent Plus (1 CPU), 1-yr, Support Required</td>
</tr>
<tr>
<td>VMW-VSP-STD-5A</td>
<td>VMware vSphere 6 Standard (1 CPU), 5-yr, Support Required</td>
</tr>
<tr>
<td><strong>SLES SAP</strong></td>
<td></td>
</tr>
<tr>
<td>SLES-SAP-2S2V-1S</td>
<td>SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 1-Yr SnS</td>
</tr>
<tr>
<td>SLES-SAP-2SU1-1S</td>
<td>SLES for SAP Apps (1-2 CPU, Unl VM); Priority 1-Yr SnS</td>
</tr>
<tr>
<td>SLES-SAP-2S2V-3S</td>
<td>SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 3-Yr SnS</td>
</tr>
<tr>
<td>SLES-SAP-2SU1-3S</td>
<td>SLES for SAP Apps (1-2 CPU, Unl VM); Priority 3-Yr SnS</td>
</tr>
<tr>
<td>SLES-SAP-2S2V-5S</td>
<td>SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 5-Yr SnS</td>
</tr>
<tr>
<td>SLES-SAP-2SU1-5S</td>
<td>SLES for SAP Apps (1-2 CPU, Unl VM); Priority 5-Yr SnS</td>
</tr>
<tr>
<td>SLES-SAP-2S2V-5A</td>
<td>SLES for SAP Apps (1-2 CPU, 1-2 VM); 5-Yr Support Req</td>
</tr>
<tr>
<td>SLES-SAP-2SU1-3A</td>
<td>SLES for SAP Apps (1-2 CPU, Unl VM); 3-Yr Support Req</td>
</tr>
<tr>
<td>SLES-SAP-2S2V-3A</td>
<td>SLES for SAP Apps (1-2 CPU, 1-2 VM); 3-Yr Support Req</td>
</tr>
<tr>
<td>SLES-SAP-2SU1-5A</td>
<td>SLES for SAP Apps (1-2 CPU, Unl VM); 5-Yr Support Req</td>
</tr>
<tr>
<td>SLES-SAP-2S2V-1A</td>
<td>SLES for SAP Apps (1-2 CPU, 1-2 VM); 1-Yr Support Req</td>
</tr>
<tr>
<td>SLES-SAP-2SU1-1A</td>
<td>SLES for SAP Apps (1-2 CPU, Unl VM); 1-Yr Support Req</td>
</tr>
<tr>
<td><strong>SUSE</strong></td>
<td></td>
</tr>
<tr>
<td>SLES-2S2V-1A</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, 1-2 VM); 1-Yr Support Req</td>
</tr>
<tr>
<td>SLES-2SU1-1A</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, Unl VM); 1-Yr Support Req</td>
</tr>
<tr>
<td>SLES-2S2V-3A</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, 1-2 VM); 3-Yr Support Req</td>
</tr>
<tr>
<td>SLES-2SU1-3A</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, Unl VM); 3-Yr Support Req</td>
</tr>
</tbody>
</table>
### Table 18  OSs and Value-Added Software (*continued*)

<table>
<thead>
<tr>
<th>PID Description</th>
<th>Product ID (PID)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLES-2S2V-5A</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, 1-2 VM); 5-Yr Support Req</td>
</tr>
<tr>
<td>SLES-2SUV-5A</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, Unl VM); 5-Yr Support Req</td>
</tr>
<tr>
<td>SLES-2S2V-1S</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, 1-2 VM); Prio 1-Yr Sns</td>
</tr>
<tr>
<td>SLES-2SUV-1S</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, Unl VM); Prio 1-Yr Sns</td>
</tr>
<tr>
<td>SLES-2S2V-3S</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, 1-2 VM); Prio 3-Yr Sns</td>
</tr>
<tr>
<td>SLES-2SUV-3S</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, Unl VM); Prio 3-Yr Sns</td>
</tr>
<tr>
<td>SLES-2S2V-5S</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, 1-2 VM); Prio 5-Yr Sns</td>
</tr>
<tr>
<td>SLES-2SUV-5S</td>
<td>SUSE Linux Enterprise Svr (1-2 CPU, Unl VM); Prio 5-Yr Sns</td>
</tr>
<tr>
<td>SLES-2S-HA-1S</td>
<td>SUSE Linux High Availability Ext (1-2 CPU); 1yr Sns</td>
</tr>
<tr>
<td>SLES-2S-HA-3S</td>
<td>SUSE Linux High Availability Ext (1-2 CPU); 3yr Sns</td>
</tr>
<tr>
<td>SLES-2S-HA-5S</td>
<td>SUSE Linux High Availability Ext (1-2 CPU); 5yr Sns</td>
</tr>
<tr>
<td>SLES-2S-GC-1S</td>
<td>SUSE Linux GEO Clustering for HA (1-2 CPU); 1yr Sns</td>
</tr>
<tr>
<td>SLES-2S-GC-3S</td>
<td>SUSE Linux GEO Clustering for HA (1-2 CPU); 3yr Sns</td>
</tr>
<tr>
<td>SLES-2S-GC-5S</td>
<td>SUSE Linux GEO Clustering for HA (1-2 CPU); 5yr Sns</td>
</tr>
</tbody>
</table>
STEP 11 CHOOSE OPERATING SYSTEM MEDIA KIT (OPTIONAL)

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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHEL-6</td>
<td>RHEL 6 Recovery Media Only (Multilingual)</td>
</tr>
<tr>
<td>SLES-11</td>
<td>SLES 11 media only (multilingual)</td>
</tr>
<tr>
<td>MSWS-12-ST2S-RM</td>
<td>Windows Server 2012 Standard (2 CPU/2 VMs) Recovery Media</td>
</tr>
<tr>
<td>MSWS-12-DC2S-RM</td>
<td>Windows Server 2012 Datacenter (2 CPU/Unlimited VM) Rec Media</td>
</tr>
<tr>
<td>MSWS-12R2-ST2S-RM</td>
<td>Windows Server 2012 R2 Standard (2 CPU/2 VMs) Recovery Media</td>
</tr>
<tr>
<td>MSWS-12R2-DC2S-RM</td>
<td>Windows Server 2012 R2 Dacacen(2 CPU/Unlimited VM) Rec Media</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>On Site?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON-PREM-B420M4</td>
<td>Yes</td>
<td>ONSITE 24X7X2 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-OSP-B420M4</td>
<td>Yes</td>
<td>ONSITE 24X7X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-OSE-B420M4</td>
<td>Yes</td>
<td>ONSITE 8X5X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-OS-B420M4</td>
<td>Yes</td>
<td>ONSITE 8X5XNBD UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-S2P-B420M4</td>
<td>No</td>
<td>SMARTNET 24X7X2 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-SNTP-B420M4</td>
<td>No</td>
<td>SMARTNET 24X7X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-SNTE-B420M4</td>
<td>No</td>
<td>SMARTNET 8X5X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-SNT-B420M4</td>
<td>No</td>
<td>SMARTNET 8X5XNBD UCS B420 M4 Blade Server</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>Service Level GSP</th>
<th>On Site?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON-UCW7-B420M4</td>
<td>UCW7</td>
<td>Yes</td>
<td>UC PLUS 24X7X4OS UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-UCW5-B420M4</td>
<td>UCW5</td>
<td>Yes</td>
<td>UC PLUS 8X5XNBDOS UCS B420 M4 Blade Server</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>Service Level</th>
<th>On Site?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON-PSJ1-B420M4</td>
<td>PSJ1</td>
<td>No</td>
<td>UCS SUPP PSS 8X5XNBD UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-PSJ2-B420M4</td>
<td>PSJ2</td>
<td>No</td>
<td>UCS SUPP PSS 8X5X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-PSJ3-B420M4</td>
<td>PSJ3</td>
<td>No</td>
<td>UCS SUPP PSS 24X7X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-PSJ4-B420M4</td>
<td>PSJ4</td>
<td>No</td>
<td>UCS SUPP PSS 24X7X2 UCS B420 M4 Blade Server</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>Service Level</th>
<th>On Site?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON-PSW2-B420M4</td>
<td>PSW2</td>
<td>No</td>
<td>UCS W PL PSS 8X5X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-PSW3-B420M4</td>
<td>PSW3</td>
<td>No</td>
<td>UCS W PL PSS 24X7X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-PSW4-B420M4</td>
<td>PSW4</td>
<td>No</td>
<td>UCS W PL PSS 24X7X2 UCS B420 M4 Blade Server</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>Service Level</th>
<th>On Site?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CON-NCF2-B420M4</td>
<td>NCF2</td>
<td>No</td>
<td>CMB SPT SVC 24X7X2 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-NCF2P-B420M4</td>
<td>NCF2P</td>
<td>Yes</td>
<td>CMB SPT SVC 24X7X2OS UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-NCF4P-B420M4</td>
<td>NCF4P</td>
<td>Yes</td>
<td>CMB SPT SVC 24X7X4OS UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-NCF4S-B420M4</td>
<td>NCF4S</td>
<td>Yes</td>
<td>CMB SPT SVC 8X5X4OS UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-NCFCs-B420M4</td>
<td>NCFCS</td>
<td>Yes</td>
<td>CMB SPT SVC 8X5XNBDOS UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-NCFE-B420M4</td>
<td>NCFE</td>
<td>No</td>
<td>CMB SPT SVC 8X5X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-NCFP-B420M4</td>
<td>NCFP</td>
<td>No</td>
<td>CMB SPT SVC 24X7X4 UCS B420 M4 Blade Server</td>
</tr>
<tr>
<td>CON-NCFT-B420M4</td>
<td>NCFT</td>
<td>No</td>
<td>CMB SPT SVC 8X5XNBD UCS B420 M4 Blade Server</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Service Program Name</th>
<th>Service Level GSP</th>
<th>Service Level</th>
<th>Product ID (PID)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMARTnet for UCS Service with Drive Retention</td>
<td>UCS DR</td>
<td>UCSD7</td>
<td>24x7x4 Onsite</td>
<td>CON-UCSD7-B420M4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UCSD7</td>
<td>8x5xNBD Onsite</td>
<td>CON-UCSD5-B420M4</td>
</tr>
<tr>
<td>SMARTnet for UCS HW ONLY+Drive Retention</td>
<td>UCS HW+DR</td>
<td>UCWD7</td>
<td>24x7x4 Onsite</td>
<td>CON-UCWD7-B420M4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UCWD5</td>
<td>8x5xNBD Onsite</td>
<td>CON-UCWD5-B420M4</td>
</tr>
</tbody>
</table>

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


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

**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>
<thead>
<tr>
<th>Product ID (PID)</th>
<th>PID Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N20-BKVM*</td>
<td>Local KVM I/O cable for UCS servers console port</td>
</tr>
</tbody>
</table>

*NOTE:*

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

[Table 26 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

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ejector thumbscrew</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>SD card slots</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Modular storage subsystem connector</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>USB memory</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>CMOS battery</td>
<td>Adapter cards:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Adapter 2 is the slot on the left (when facing the server) and partially covers Adapter 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ Adapter 3 is the slot on the right (facing the server)</td>
</tr>
<tr>
<td></td>
<td>DIMM slots</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DIMM and CPU Layout

Memory is organized as shown in Figure 8.

Figure 8   UCS B420 M4 Memory Organization
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**

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

<table>
<thead>
<tr>
<th>CPU Channel</th>
<th>Bank 1</th>
<th>Bank 2</th>
<th>Bank 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>6</td>
<td>10(^1)</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>7(^1)</td>
<td>11(^1)</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>

Notes
1. Not recommended for performance reasons

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

<table>
<thead>
<tr>
<th>CPU Channel</th>
<th>Bank 1</th>
<th>Bank 2</th>
<th>Bank 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>5(^1)</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>empty</td>
<td>empty</td>
<td>empty</td>
</tr>
</tbody>
</table>

Notes
1. Not recommended for performance reasons
DIMM Physical Layout

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

Figure 9   DIMM and CPU Layout

<table>
<thead>
<tr>
<th>Channel</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Channel A - D DIMMs for CPU 1</td>
</tr>
<tr>
<td>2</td>
<td>Channel E - H DIMMs for CPU 2</td>
</tr>
<tr>
<td>3</td>
<td>Channel I - L DIMMs for CPU 3</td>
</tr>
<tr>
<td>4</td>
<td>Channels M - P DIMMs for CPU 4</td>
</tr>
</tbody>
</table>
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)

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

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

UCS 5108 Blade Server Chassis

To Fabric Interconnects

Fabric Extender A

Fabric Extender B

4 x 10G KR

2 x 10G KR

2 x 10G KR

2 x 10G KR

B420 M4 Blade Server

VIC 1380/1280 Adapter
adapter slot #3

PCIe x16

CPU 2

Port Expander or Storage Accelerator
adapter slot #2

PCIe x16

CPU 4

VIC 1340/1240 Adapter Card
adapter slot #1 for VIC 1240

PCIe x16

CPU 1

4 x 10G KR

Cisco UCS B420 M4 Blade Server
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

<table>
<thead>
<tr>
<th>Adapter Slot 1</th>
<th>Adapter Slot 2</th>
<th>Adapter Slot 3</th>
<th>Total Available Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIC 1340/1240</td>
<td>Not populated</td>
<td>Not populated</td>
<td>40 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Port Expander Card²</td>
<td>Not populated</td>
<td>80 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Not populated</td>
<td>VIC 1380</td>
<td>120 Gb</td>
</tr>
<tr>
<td>VIC 1240</td>
<td>Port Expander Card</td>
<td>VIC 1280</td>
<td>160 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Port Expander Card²</td>
<td>VIC 1380</td>
<td>160 Gb</td>
</tr>
<tr>
<td>Not populated</td>
<td>Not populated</td>
<td>VIC 1280</td>
<td>80 Gb</td>
</tr>
<tr>
<td>Not populated</td>
<td>Not populated</td>
<td>VIC 1380</td>
<td>80 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Cisco UCS Storage Accelerator³</td>
<td>Not populated</td>
<td>80 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>Cisco UCS Storage Accelerator</td>
<td>40 Gb</td>
</tr>
<tr>
<td>VIC 1340⁴</td>
<td>Cisco UCS Storage Accelerator³</td>
<td>Cisco UCS Storage Accelerator</td>
<td>80 Gb</td>
</tr>
</tbody>
</table>

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.
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
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)**
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 FEX1

<table>
<thead>
<tr>
<th>Adapter Slot 1</th>
<th>Adapter Slot 2</th>
<th>Adapter Slot 3</th>
<th>Total Available Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIC 1340/1240</td>
<td>Not populated</td>
<td>Not populated</td>
<td>2 x 2208 XP</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Port Expander Card2</td>
<td>Not populated</td>
<td>40 Gb</td>
</tr>
<tr>
<td>VIC 1340/1240</td>
<td>Not populated</td>
<td>VIC 1380/1280</td>
<td>80 Gb</td>
</tr>
<tr>
<td>VIC 1340/1240</td>
<td>Port Expander Card</td>
<td>VIC 1380/1280</td>
<td>120 Gb</td>
</tr>
<tr>
<td>Not populated</td>
<td>Not populated</td>
<td>VIC 1380</td>
<td>80 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Cisco UCS Storage Accelerator3</td>
<td>Not populated</td>
<td>80 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>Cisco UCS Storage Accelerator</td>
<td>40 Gb</td>
</tr>
<tr>
<td>VIC 1340d</td>
<td>Cisco UCS Storage Accelerator3</td>
<td>Cisco UCS Storage Accelerator</td>
<td>80 Gb</td>
</tr>
</tbody>
</table>

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. 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 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)
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

<table>
<thead>
<tr>
<th>Adapter Slot 1</th>
<th>Adapter Slot 2</th>
<th>Adapter Slot 3</th>
<th>Total Available Bandwidth</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIC 1340/1240</td>
<td>Not populated</td>
<td>Not populated</td>
<td>20 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Port Expander Card</td>
<td>Not populated</td>
<td>40 Gb</td>
</tr>
<tr>
<td>VIC 1340/1240</td>
<td>Not populated</td>
<td>VIC 1380/1280</td>
<td>60 Gb</td>
</tr>
<tr>
<td>VIC 1340/1240</td>
<td>Port Expander Card</td>
<td>VIC 1380/1280</td>
<td>80 Gb</td>
</tr>
<tr>
<td>Not populated</td>
<td>Not populated</td>
<td>VIC 1380</td>
<td>40 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Cisco UCS Storage Accelerator</td>
<td>Not populated</td>
<td>40 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>not populated</td>
<td>Cisco UCS Storage Accelerator</td>
<td>20 Gb</td>
</tr>
<tr>
<td>VIC 1340</td>
<td>Cisco UCS Storage Accelerator²</td>
<td>Cisco UCS Storage Accelerator</td>
<td>40 Gb</td>
</tr>
</tbody>
</table>

**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

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

Power Specifications

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

http://ucspowercalc.cisco.com