



## **Cisco UCS Site Preparation Guide**

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## Preface

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This preface includes the following sections:

- [Audience, page vii](#)
- [Conventions, page vii](#)
- [Related Cisco UCS Documentation, page ix](#)
- [Obtaining Documentation and Submitting a Service Request, page ix](#)

## Audience

This guide is intended primarily for data center administrators with responsibilities and expertise in one or more of the following:

- Server administration
- Storage administration
- Network administration
- Network security

## Conventions

| Text Type       | Indication   |
|-----------------|--|
| GUI elements    | GUI elements such as tab titles, area names, and field labels appear in <b>this font</b> .<br>Main titles such as window, dialog box, and wizard titles appear in <b>this font</b> . |
| Document titles | Document titles appear in <i>this font</i> .   |
| TUI elements    | In a Text-based User Interface, text the system displays appears in <i>this font</i> .   |
| System output   | Terminal sessions and information that the system displays appear in <i>this font</i> .  |

| Text Type    | Indication  |
|--------------|---|
| CLI commands | CLI command keywords appear in <b>this font</b> .<br>Variables in a CLI command appear in <i>this font</i> .                |
| [ ]          | Elements in square brackets are optional.   |
| {x   y   z}  | Required alternative keywords are grouped in braces and separated by vertical bars.   |
| [x   y   z]  | Optional alternative keywords are grouped in brackets and separated by vertical bars.                                       |
| string       | A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks. |
| < >          | Nonprinting characters such as passwords are in angle brackets.   |
| [ ]          | Default responses to system prompts are in square brackets.   |
| !, #         | An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.                   |

**Note**

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

**Tip**

Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

**Caution**

Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

**Timesaver**

Means *the described action saves time*. You can save time by performing the action described in the paragraph.



**Warning****IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

## Related Cisco UCS Documentation

**Documentation Roadmaps**

For a complete list of all B-Series documentation, see the *Cisco UCS B-Series Servers Documentation Roadmap* available at the following URL: <http://www.cisco.com/go/unifiedcomputing/b-series-doc>.

For a complete list of all C-Series documentation, see the *Cisco UCS C-Series Servers Documentation Roadmap* available at the following URL: <http://www.cisco.com/go/unifiedcomputing/c-series-doc>.

**Other Documentation Resources**

An ISO file containing all B and C-Series documents is available at the following URL: <http://www.cisco.com/cisco/software/type.html?mdfid=283853163&flowid=25821>. From this page, click **Unified Computing System (UCS) Documentation Roadmap Bundle**.

The ISO file is updated after every major documentation release.

Follow [Cisco UCS Docs on Twitter](#) to receive document update notifications.

## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly [What's New in Cisco Product Documentation](#), which also lists all new and revised Cisco technical documentation.

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

Follow [Cisco UCS Docs on Twitter](#) to receive document update notifications.





# Overview

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This chapter includes the following sections:

- [Cisco UCS, page 1](#)
- [Cisco UCS 5108 Blade Server Chassis, page 1](#)
- [Cisco UCS 6100 Fabric Interconnect Series, page 3](#)
- [Cisco UCS 6200 Fabric Interconnect Series, page 4](#)

## Cisco UCS

Cisco Unified Computing System (Cisco UCS) is a next-generation data center platform that unites computing, network, storage access, and virtualization services into a cohesive system that reduces the total cost of ownership (TCO) and increases business agility. This system integrates a low-latency, lossless 10-Gigabit Ethernet unified network fabric with enterprise-class, x86-architecture servers. It is an integrated, scalable, multi-chassis platform in which all resources participate in a unified management domain.

System Management is performed using Cisco UCS Manager. For configuration information, see the *Configuration Guide* for the version of Cisco UCS Central that you are using. The configuration guides are available at the following URL: [http://www.cisco.com/en/US/products/ps12502/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps12502/products_installation_and_configuration_guides_list.html)

## Cisco UCS 5108 Blade Server Chassis

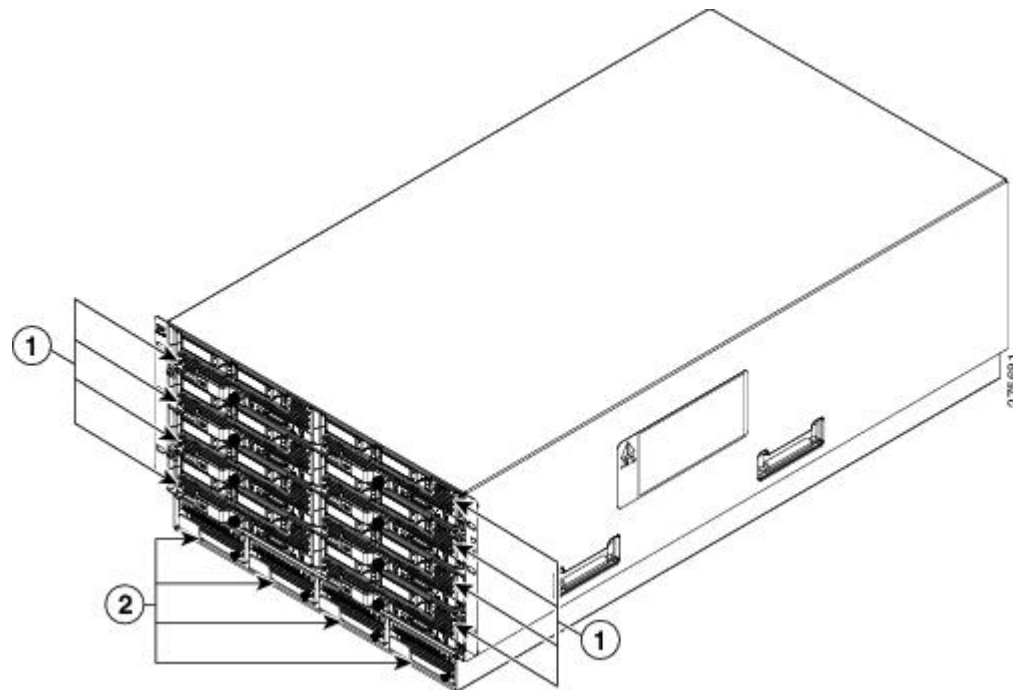
The Cisco UCS 5108 Blade Server Chassis includes the following components:

- Cisco UCS 5108 Blade Server Chassis
- Cisco UCS 2100 and 2200 Series Fabric Extenders—Up to two Fabric Extenders (FEXes), each FEX provides four or eight ports of 10-Gigabit Ethernet, Cisco Data Center Ethernet, and Fibre Channel over Ethernet (FCoE)
- SFP+ transceiver choices that include copper and fiber optic
- Power supply units—Up to four 2500 W hot-swappable power supply units (AC and DC available)

- Fan modules—Eight hot-swappable fan modules
- Cisco UCS Blade Servers —Up to eight half-wide blade servers or four full-width blade servers, each holding RAID capable hard drives

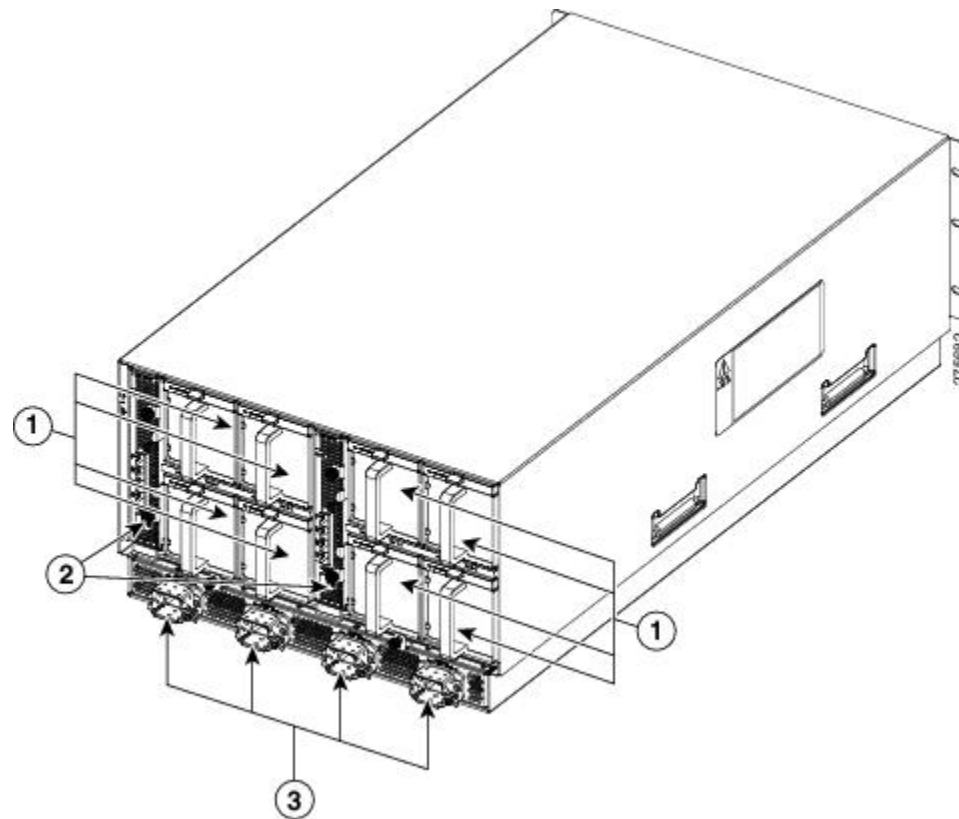
For specific instructions to install the blade server chassis and blades, see the [Cisco UCS 5108 Server Chassis Hardware Installation Guide](#).

**Figure 1: Cisco UCS 5108 Blade Server Chassis (Front View)**



|   |                        |   |                          |
|---|------------------------|---|--------------------------|
| 1 | Blade server (up to 8) | 2 | Power supplies (up to 4) |
|---|------------------------|---|--------------------------|

**Figure 2: Cisco UCS 5108 Blade Server Chassis (Rear View)**



|          |                            |          |  |
|----------|----------------------------|----------|--|
| <b>1</b> | Fan modules (8)            | <b>3</b> | Power supply AC connectors (up to 4)<br>DC chassis available but not shown |
| <b>2</b> | Fabric Extenders (up to 2) |          |  |

## Cisco UCS 6100 Fabric Interconnect Series

The Cisco UCS 6100 Series Fabric Interconnect consists of the following components:

- UCS 6100 series Fabric Interconnect (20 port and 40 port models available)
- Uplink expansion module—Can use any of the following four modules:
  - N10-E0080 with eight Fibre Channel ports
  - N10-E0600 with six 10-Gbps Ethernet ports
  - N10-E0440 with four 10-Gbps Ethernet ports and four Fibre Channel ports

- N10-E0060 provides 6 8/4/2/1 G Fibre Channel uplink connections

- Power supply units—Up to two hot-swappable power supply units
- Fan modules—Two hot-swappable modules

For information about installing the fabric interconnect, see the [Cisco UCS 6100 Series Fabric Interconnect Hardware Installation Guide](#). For translations of the warnings in those guides, see the [Regulatory Compliance and Safety Information for the Cisco Unified Computing System](#).

## Cisco UCS 6200 Fabric Interconnect Series

The Cisco UCS 6200 Series Fabric Interconnect consists of the following components:

- UCS 6200 Series Fabric Interconnect
- Expansion module—Can use the following module:
  - 16-port 10Gb Unified Port Expansion Module (UCS-FI-E16UP)
- Power supply units—Up to two hot-swappable power supply units, AC and DC versions available
- Fan modules—Two hot-swappable modules

For information about installing the fabric interconnect, see the [Cisco UCS 6200 Series Fabric Interconnect Hardware Installation Guide](#). For translations of the warnings in those guides, see the [Regulatory Compliance and Safety Information for the Cisco Unified Computing System](#) document.



## Preparing the Site

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This chapter includes the following sections:

- [Environmental Considerations, page 5](#)
- [Temperature, page 6](#)
- [Humidity, page 7](#)
- [Altitude, page 7](#)
- [Dust and Particles, page 7](#)
- [Corrosion, page 7](#)
- [Electromagnetic and Radio Frequency Interference, page 7](#)
- [Grounding, page 8](#)
- [Power Source, page 8](#)
- [Rack Requirements, page 9](#)

## Environmental Considerations

Environmental factors can adversely affect the performance and life span of your Cisco UCS equipment. Cisco UCS equipment requires a dry, clean, well-ventilated, and air-conditioned environment. To ensure normal operation, you must maintain ambient airflow. If the airflow is blocked or restricted, or if the intake air is too warm, an overtemperature condition can occur and the environmental monitor on the blade servers or fabric interconnects will shut down to protect their components.

For stability and safety, it is always best to place the heavier equipment below lighter equipment in racks. With the Cisco UCS equipment, install the Cisco UCS 5108 Blade Server Chassis Series low in the rack and place the Fabric Interconnect above the blade server.

If your site has hot and cold aisles, align the rack air intake at the front to a cold aisle and exhaust at the rear to a hot aisle. Also, make sure that you do not install the Cisco UCS equipment so that it takes in warm exhaust air flow from other equipment.

# Temperature

Temperature extremes can cause the Cisco UCS equipment to operate at reduced efficiency and cause a variety of problems, including early degradation, failure of chips, and failure of equipment. In addition, extreme temperature fluctuations can cause CPUs to become loose in their sockets. The Cisco UCS equipment should operate in an environment that provides an inlet air temperature not colder than 50°F (10°C) nor hotter than 95°F (35°C). If sensors on a CPU reach 179.6°F (82°C), the system will take that CPU offline.

To control the equipment temperature, you must make sure that the equipment has adequate airflow. The Cisco UCS equipment requires front-to-back airflow, which requires at least 36.0 inches (91.4 cm) of clearance in front for adequate airflow and component replacement, and at least 16 inches (40.6 cm) of clearance at the chassis rear. These distances do not include the rack front and rear doors provided that the doors are perforated to a minimum of 65% open, and assumes a traditional hot-aisle cold-aisle cooling plan for the room (the installation clearance may still be useful in rooms with other cooling plans). The Cisco R Series Racks are an ideal choice of rack. To assure that cooling air flows as designed, always use blanking panels for unused power supply or server bays. Always use blanking panels to fill empty front panel RU spaces in the rack. Using blanking panels ensures proper airflow and prevents hot air recirculation in the rack. Using a rack without blanking panels results in improper cooling that can lead to thermal warnings or even thermal damage.

Adequate ventilation is particularly important if you are operating a Cisco UCS system at high altitudes. Make sure that all slots and openings on the chassis remain unobstructed, especially the fan vents. Clean the installation site at regular intervals to avoid buildup of dust and debris, which can cause a system to overheat.

If the Cisco UCS Series systems are exposed to abnormally cold temperatures, allow a 2-hour warm-up period to bring it up to a normal operating temperature before you turn the equipment on.



## Caution

If you do not allow a 2-hour warm-up period when temperatures are abnormally cold, you can damage the internal components.

Heat generated by the Cisco UCS system can vary depending on many factors, but maximums to plan for are listed in this table.

**Table 1: System Heat Dissipation**

| Component  | Maximum BTU per hour |
|--|----------------------|
| Cisco UCS 6120XP Fabric Interconnect                                 | 1534                 |
| Cisco UCS 6140XP Fabric Interconnect                                 | 2561                 |
| Cisco UCS 6248 UP Fabric Interconnect                                | 1998                 |
| Cisco UCS 6296 UP Fabric Interconnect                                | 3163                 |
| Cisco UCS 5108 Blade Server Chassis (fans, power supplies, midplane) | 1364                 |
| Each Cisco UCS half width blade server <sup>1</sup>                  | 1350 (approximate)   |
| Each Cisco UCS full width blade server <sup>1</sup>                  | 2700 (approximate)   |



<sup>1</sup> Heat dissipation for blade servers varies from model to model, refer to the installation and service note for the blade servers in your system. Refer to [http://www.cisco.com/en/US/products/ps10280/prod\\_installation\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps10280/prod_installation_guides_list.html)

## Humidity

High humidity can cause moisture to seep into the Cisco UCS equipment. Moisture can cause corrosion of internal components and degradation of electrical resistance, thermal conductivity, and physical strength. The Cisco UCS equipment is rated to operate at 10 to 90 percent relative humidity.

Buildings in which the climate is controlled by air-conditioning in the warmer months and by heat during the colder months usually maintain an acceptable level of humidity for the equipment. However, if the Cisco UCS equipment is located in an unusually humid location, you should use a dehumidifier to maintain the humidity within an acceptable range.

## Altitude

If you operate the Cisco UCS equipment at a high altitude (low pressure), the efficiency of forced convection cooling is reduced and can result in electrical problems. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or to perform at a reduced efficiency. The Cisco UCS equipment is rated to operate at altitudes from 0 to 10,000 feet (0 to 3,000 m). Above 10,000 feet (3000 m), the equipment can operate but the maximum temperature decreases 1°C for every additional 1000 feet (300 m) of elevation above 10000 feet (3000 m). You can store the equipment at altitudes of –1,000 to 30,000 feet (–305 to 9,144 meters).

## Dust and Particles

Exhaust fans cool power supplies and system fan trays cool equipment by drawing in air and exhausting air out through various openings in the chassis. However, fans also ingest dust and other particles, causing contaminant buildup in the equipment and increased internal chassis temperature. A clean operating environment can greatly reduce the negative effects of dust and other particles, which act as insulators and interfere with the mechanical components in the equipment.

## Corrosion

The corrosion of equipment connectors is a gradual process that can eventually lead to intermittent failures of electrical circuits. The oil from your fingers or prolonged exposure to high temperature or humidity can corrode the gold-plated edge connectors and pin connectors on various components in the Cisco UCS equipment. To prevent corrosion, avoid touching contacts on modules and protect the equipment from extreme temperatures and moist, salty environments.

## Electromagnetic and Radio Frequency Interference

To reduce the possibility of EMI and RFI, follow these guidelines:

- Cover all open expansion slots with a metal filler.

- Always use shielded cables with metal connector shells for attaching peripherals to the equipment.

**Note**

To predict and prevent strong EMI, you might need to consult experts in radio frequency interference (RFI).

## Grounding

The Cisco UCS equipment is sensitive to variations in voltage supplied by the power source. Overvoltage, under voltage, and transients (or spikes) can erase data from the memory or cause components to fail. To protect against these types of problems, you should always make sure that the racks that hold the blade server chassis and fabric interconnects are grounded. When the racks are grounded, the Cisco UCS equipment installed in them are automatically grounded. Refer to the instructions specific to your rack for grounding steps.

## Power Source

You should use dedicated power circuits (rather than sharing circuits with other heavy electrical equipment). For input-source redundancy, it is recommend that you use two dedicated power sources, each of which powers half of the power supply units in the blade server chassis and fabric interconnects. The circuits used for the Cisco UCS 5108 Blade Server Chassis must be rated for 20A, 200 to 250 VAC or up to 62 A @ -48 VDC input. The circuits used for the Cisco UCS 6100 Series Fabric Interconnect must be rated for 15A and 100-240 VAC. The circuits used for the Cisco UCS 6200 Series Fabric Interconnect must be rated for 15A and 100-240 VAC or 62 A @ -72 VDC. The receptacles for these circuits should be within 6 feet (1.8 m) of each power supply unit when it is installed in the equipment. Be sure that there is a DC shutoff switch close to the rack holding the equipment using DC power.

We recommend that you use a UPS to protect the UCS System. Using an unprotected supply exposes you to a risk of a system failure due to input supply voltage variations or failures.

## Power Budget

Actual power use will vary depending on the applications used as well as the number and type of servers in your system. The best way to prevent problems in service is to plan for system maximums rather than actual or typical usage. The number of power supplies required depends on the level of redundancy as well as the number of server blades. The power supply configuration in Cisco UCS Manager supports non-redundant, N + 1 redundant, and grid redundant configurations.

Each single slot blade server is budgeted for 550 W at maximum use. Each dual slot blade server is budgeted 1100 W at maximum use. The chassis (including fabric extenders, fans, and power supplies) is budgeted for 600 W. Each power supply can supply 2500 W. With 7 or less populated blade slots, add a 550 W cushion for a budget calculation.

To determine the number of power supplies needed for a given configuration, you may also refer the [Cisco UCS Power Calculator](#).

For example:

- Five B200 blade servers (5 @ 550 W each + 600 W for the system +550 W cushion) would require 3900 W.
- In nonredundant mode two power supplies are needed, and any additional power supplies present are disabled by Cisco UCS Manager and noted as spares. If power to one of the two supplies in this nonredundant system is lost, the whole chassis will power down. A spare power supply that is present in a nonredundant configuration but not online will not come online instantaneously in the event of a power supply loss, so the spare does not function the same as the +1 supply in an N+1 configuration.
- In N+1 redundant mode, three supplies are needed for this example. The power supply that is inserted into the chassis last will be the +1 supply. If power to one of the three supplies is lost, the +1 supply will immediately cut in and the system will continue to function without interruption. If power to two of the three supplies is lost, the system will shut down blade servers starting at the top of the chassis and working downward until the power demands can be met by the available supplies.
- In grid redundant mode, four power supplies are needed for this example. If power to one of the four supplies is lost, the system will continue to function without interruption. If power to two supplies on the same grid is lost, the system will switch over to the other grid and continue to function without interruption. If power is only available to one of the four power supplies, the system will shut down blade servers starting at the top of the chassis and working downward until the power demands can be met by the available supplies.

See the “Configuring System-Related Policies” chapter in the Cisco UCS Manager configuration guides to configure the power policy you want to use on your system.

## Rack Requirements

### General Requirements for Racks

The Cisco UCS 5108 Blade Server Chassis and Fabric Interconnects were designed for a standard 19-inch (48.26 cm) rack (see specification EIA-310-D) that has a minimum depth of 29 inches (73.66 cm) and a maximum of 35” from front rail to rear rail. The Cisco R Series Racks are an ideal choice of rack.

If your server rack includes closing front and rear doors, the doors must have at least a 65 percent perforated area evenly distributed from top to bottom to permit adequate airflow.

**Note**

In a 29-inch (73.66 cm) rack, the blade server chassis will extend 3 inches (7.62 cm) outside the rear of the rack.

The mounting rails and mounting kits used for the Cisco UCS components require square holes in the vertical mounting racks. Racks with round threaded holes do not work with the Cisco UCS 5108 mounting rails and mounting kits.

To confirm that your chosen rack will allow clearance to service the Cisco UCS equipment, see the following table.

**Table 2: Rack Clearance Requirements**

| Rack Side | Clearance Requirement  |
|-----------|--|
| Front     | 36 inches (91.44 cm) plus additional clearance, if needed, for the mechanical lift used to move Cisco UCS equipment. |
| Rear      | 16 inches (40.64 cm) from the back side of the rack or chassis, whichever is furthest to the rear.                   |
| Sides     | N/A (no accessible parts)  |

## Rack Space

This table lists the physical specifications for the unpacked Cisco UCS equipment. A rack providing 42 RU of vertical installation space is recommended, but not required. The Cisco R Series Racks are an ideal choice of rack.

**Table 3: Dimensions for the Unpacked Cisco UCS Equipment**

| Chassis                               | Width                 | Depth                 | Height                       |
|---------------------------------------|-----------------------|-----------------------|------------------------------|
| Cisco UCS 5108 Blade Server Chassis   | 17.5 inches (44.5 cm) | 32.0 inches (81.2 cm) | 10.5 inches (26.7 cm) (6 RU) |
| Cisco UCS 6120XP Fabric Interconnect  | 17.3 inches (43.9 cm) | 30.0 inches (76.2 cm) | 1.72 inches (4.4 cm) (1 RU)  |
| Cisco UCS 6140XP Fabric Interconnect  | 17.3 inches (43.9 cm) | 30.0 inches (76.2 cm) | 3.44 inches (8.8 cm) (2 RU)  |
| Cisco UCS 6248UP Fabric Interconnect  | 17.3 inches (43.9 cm) | 29.5 inches (74.9 cm) | 1.72 inches (4.4 cm) (1 RU)  |
| Cisco UCS 6296 UP Fabric Interconnect | 17.3 inches (43.9 cm) | 29.5 inches (74.9 cm) | 3.44 inches (8.8 cm) (2 RU)  |

## Rack Distance

A pair of UCS Fabric Interconnects can manage and provide connectivity for up to 20 Cisco UCS 5108 chassis (depending on the Cisco UCS Manager version, see the Cisco [UCS Manager release notes](#)) for more information. Ideally, all Cisco UCS 5108 chassis and UCS Fabric Interconnects will be in the same rack or in adjacent racks. In those situations, Twinax copper transceivers are ideal.

**Table 4: Supported SFP+ 10 Gb Ethernet Twinax Copper Transceivers**

| Model            | Description                                 |
|------------------|---|
| SFP-H10GB-CU1M   | 10-Gb Ethernet—copper SFP+ (1 m, 3.28 ft.)  |
| SFP-H10GB-CU3M   | 10-Gb Ethernet—copper SFP+ (3 m, 9.84 ft.)  |
| SFP-H10GB-CU5M   | 10-Gb Ethernet—copper SFP+ (5 m, 16.4 ft.)  |
| SFP-H10GB-ACU7M  | 10-Gb Ethernet—copper SFP+ (7 m, 22.9 ft.)  |
| SFP-H10GB-ACU10M | 10-Gb Ethernet—copper SFP+ (10 m, 32.8 ft.) |

If distances greater than 10 meters (32.8 feet) must be spanned, the Fabric Extender supports the substitution of the copper SFP+ by optical SFP+ transceivers.

**Table 5: Supported Optical SFP+ Transceivers**

| Model                   | Description                                       |
|-------------------------|---|
| SFP-10G-SR              | Short-range optical SFP+ (up to 300 m / 984 feet) |
| SFP-10G-LR <sup>2</sup> | Long-range optical SFP+ (up to 10 km / 6.2 miles) |
| FET-10G                 | Short-range optical SFP+ (up to 100 m / 328 feet) |

- <sup>2</sup> While the SFP-10G-LR is supported by both the fabric interconnect and FEX, the maximum distance will introduce latency issues that will affect overall performance. The effective maximum distance for this application is 300 m.

Documentation for these transceivers is in the [Cisco SFP and SFP+ Transceiver Module Installation Notes](#).

For a Fibre Channel connection between the Chassis and fabric interconnect expansion module, the following transceivers may be used:

**Table 6: Supported Fibre Channel Transceivers**

| Model                       | Description  |
|-----------------------------|--|
| DS-SFP-FC4G-SW              | 4 Gbps Fibre Channel SFP (up to 300 m / 984 feet)  |
| DS-SFP-FC8G-SW              | 8 Gbps Fibre Channel SFP (up to 150 m / 492 feet)  |
| DS-SFP-FC4G-LW <sup>3</sup> | 4 Gbps Fibre Channel SFP (up to 10 km / 6.2 miles) |
| DS-SFP-FC8G-LW1             | 8 Gbps Fibre Channel SFP (up to 10 km / 6.2 miles) |

- <sup>3</sup> While the SFP is supported by both the fabric interconnect and FEX, the maximum distance will introduce latency issues that will affect overall performance. The effective maximum distance for this application is 300 m.

Each fabric interconnect can also support a limited number of 1-GB connections using the following models of SFP connector (this requires Cisco UCS Manager 1.4(1) or later):

**Table 7: Supported 1 Gb SFP Transceivers**

| Model                 | Description                                      |
|-----------------------|--|
| GLC-T (V03 or higher) | Short-range copper SFP (up to 300 m / 984 feet)  |
| GLC-SX-MM             | Short-range optical SFP (up to 300 m / 984 feet) |
| GLC-LH-SM             | Long-range optical SFP (550 m / 1804 feet)       |



## Technical Specifications

This appendix includes the following sections:

- [Environmental Specifications for the Cisco UCS Equipment, page 13](#)
- [Physical Specifications for the Cisco UCS Equipment, page 14](#)
- [Power Specifications, page 16](#)
- [Blade Server Chassis and Fabric Interconnect Clearances, page 39](#)
- [Facility Cooling Requirements, page 39](#)
- [Chassis Airflow, page 39](#)

## Environmental Specifications for the Cisco UCS Equipment

**Table 8: Environmental Specifications for the Cisco UCS 5108 Blade Chassis**

| Description                              | Cisco UCS 5108 Blade Chassis                              |
|--|---|
| <b>Operating Temperature</b>             |   |
| 0 to 10,000 feet (0 to 3000 m)           | 50 to 95°F (10 to 35°C)                                   |
| Above 10,000 feet (3,000 m)              | Subtract 1°C (1.8°F) for each 1000 feet above 10,000 feet |
| <b>Nonoperating Temperature</b>          |   |
| 0 to 40,000 feet (0 to 12,190 m)         | –40 to 149°F (–40 to 65°C)                                |
| Relative humidity (noncondensing)        | 10 to 90%   |
| Noise (Sound power levels <sup>4</sup> ) | 83 dBA at normal operating conditions                     |

<sup>4</sup> Based on ISO 3744.

**Table 9: Environmental Specifications for the Cisco UCS 6100 Series or UCS 6200 Series Fabric Interconnect**

| Description                                 | Cisco UCS 6100 Fabric Interconnect                        |
|---|---|
| <b>Operating Temperature</b>                |   |
| 0 to 10,000 feet (0 to 3000 m)              | 50 to 95°F (10 to 35°C)                                   |
| Above 10,000 feet (3,000 m)                 | Subtract 1°C (1.8°F) for each 1000 feet above 10,000 feet |
| <b>Nonoperating Temperature</b>             |   |
| 0 to 40,000 feet (0 to 12,190 m)            | –40 to 149°F (–40 to 65°C)                                |
| Relative humidity (noncondensing)           | 10 to 90%   |
| Noise (Sound pressure levels <sup>5</sup> ) | 68 dBA at normal operating conditions                     |

<sup>5</sup> Based on ISO 7779.

## Physical Specifications for the Cisco UCS Equipment

The Cisco UCS 5108 Blade Server Chassis ships in a package that includes the following components:

- One blade chassis
- Up to eight half-width or four full-width blade servers
- Up to two fabric extenders
- Eight fan modules
- Up to four AC or DC power supply units
- Accessory kit
- Blanking panels for any chassis slots not filled with blade servers, fabric extenders, or power supply units

The Cisco UCS 6100 Series Fabric Interconnect ships in a package that includes the following components:

- One fabric interconnect chassis
- One expansion module
- Up to two power supply units
- Two fan modules
- Accessory kit
- Blanking panels for any power supply slot not filled

The Cisco UCS 6200 Series Fabric Interconnect ships in a package that includes the following components:

- One fabric interconnect chassis



- One expansion module
- Up to two power supply units
- Two fan modules
- Accessory kit
- Blanking panels for any power supply slot not filled

**Table 10: Dimensions and Weight for the Cisco UCS Shipping Packages**

| Chassis                             | Width               | Depth                  | Height                | Weight                    |
|-------------------------------------|---------------------|------------------------|-----------------------|---------------------------|
| Cisco UCS 5108 Blade Server Chassis | 25 inches (63.5 cm) | 40.0 inches (101.6 cm) | 33.5 inches (85.1 cm) | Up to 300 lbs. (136.1 kg) |
| Cisco UCS 6120 Fabric Interconnect  | 24 inches (61.0 cm) | 40.0 inches (101.6 cm) | 9.0 inches (22.9 cm)  | Up to 40 lbs. (18.1 kg)   |
| Cisco UCS 6248 Fabric Interconnect  | 24 inches (61.0 cm) | 40.0 inches (101.6 cm) | 9.0 inches (22.9 cm)  | Up to 40 lbs. (18.1 kg)   |

**Table 11: Dimensions for the Unpacked Cisco UCS Equipment**

| Chassis                             | Width                 | Depth                 | Height                       |
|-------------------------------------|-----------------------|-----------------------|------------------------------|
| Cisco UCS 5108 Blade Server Chassis | 17.5 inches (44.5 cm) | 32.0 inches (81.2 cm) | 10.5 inches (26.7 cm) (6 RU) |
| Cisco UCS 6120 Fabric Interconnect  | 17.3 inches (43.9 cm) | 30.0 inches (76.2 cm) | 1.72 inches (4.4 cm) (1 RU)  |
| Cisco UCS 6248 Fabric Interconnect  | 17.3 inches (43.9 cm) | 29.5 inches (74.9 cm) | 1.72 inches (4.4 cm) (1 RU)  |

**Table 12: Weights and Quantities for the Cisco UCS 5108 Blade Server Chassis Components**

| Component         | Weight per Unit                  | Quantity |
|-------------------|----------------------------------|----------|
| Chassis (empty)   | 90 lbs. (40.8 kg)                | 1        |
| B200 Blade Server | 13.5 lbs (6.1 kg) <sup>6</sup>   | 1 to 8   |
| B230 Blade Server | 18.0 lbs (8.16 kg) <sub>6</sub>  | 1 to 8   |
| B250 Blade Server | 25 lbs (11.34 kg) <sub>6</sub>   | 1 to 4   |
| B440 Blade Server | 34.5 lbs (15.65 kg) <sub>6</sub> | 1 to 4   |

| Component               | Weight per Unit                  | Quantity           |
|-------------------------|----------------------------------|--------------------|
| B22 M3 Blade Server     | 13.5 lbs (6.1 kg) <sub>6</sub>   | 1 to 8             |
| B200 M3 Blade Server    | 15.0 lbs (6.8 kg) <sub>6</sub>   | 1 to 8             |
| B420 M3 Blade Server    | 34.5 lbs (15.65 kg) <sub>6</sub> | 1 to 4             |
| Fabric Extender         | 2.5 lbs. (1.1 kg)                | 1 or 2             |
| Power distribution unit | 5 lbs. (2.3 kg)                  | 1                  |
| Fan module              | 1.8 lbs. (0.8 kg)                | 8                  |
| Hard disk drive module  | 0.8 lbs. (0.4 kg)                | 2 per blade server |
| Power supply unit       | 7 lbs. (3.2 kg)                  | 1 to 4             |

<sup>6</sup> The system weight listed here is an estimate for a fully configured system and will vary depending on peripheral devices installed.

**Table 13: Weights for the Cisco UCS Fabric Interconnects**

| Component   | Weight per Unit    |
|---|--------------------|
| Cisco UCS 6120XP with two power supplies and one expansion module installed             | 35 lbs. (15.9 kg)  |
| Cisco UCS 6140XP with two power supplies and two expansion modules installed            | 50 lbs. (22.68 kg) |
| Cisco UCS 6248 UP with two power supplies and one expansion module installed            | 32 lbs. (14.51 kg) |
| Cisco UCS 6296 UP with two power supplies, three expansion module, and four fan modules | 50 lb (22.67 kg)   |

## Power Specifications

### Specifications for the Cisco UCS 5108 Blade Server Chassis Power Supply Units

**Table 14: AC-input Gold Power Supply (N20-PAC5-2500W) Specifications**

| Description                  | Specification                                  |
|------------------------------|--|
| Minimum Software requirement | UCS Software Release 1.0(1)                    |
| AC-input voltage             | 200 to 240 VAC nominal (Range: 180 to 264 VAC) |

| Description                           | Specification  |        |        |     |      |        |        |        |        |
|---------------------------------------|--|--------|--------|-----|------|--------|--------|--------|--------|
| AC-input frequency                    | 50 to 60 Hz nominal (Range: 47 to 63 Hz)   |        |        |     |      |        |        |        |        |
| AC-input current                      | 15.5 A @ 200 VAC   |        |        |     |      |        |        |        |        |
| Maximum Input VA                      | 2790 VA @ 200 VAC  |        |        |     |      |        |        |        |        |
| Maximum output power per power supply | 2500 W @ 200 to 240 VAC (up to four power supplies)  |        |        |     |      |        |        |        |        |
| Maximum inrush current                | 35 A < sub cycle duration  |        |        |     |      |        |        |        |        |
| Maximum Heat Output                   | 8525 BTU   |        |        |     |      |        |        |        |        |
| Maximum hold up time                  | 12 ms  |        |        |     |      |        |        |        |        |
| Power supply output voltage           | 12 VDC   |        |        |     |      |        |        |        |        |
| Efficiency Rating                     | Climate Savers Gold  |        |        |     |      |        |        |        |        |
| Efficiency (80Plus Gold Certified)    | <table><tr><td>10%</td><td>20%</td><td>50%</td><td>100%</td></tr><tr><td>88.61%</td><td>91.64%</td><td>92.21%</td><td>90.97%</td></tr></table> | 10%    | 20%    | 50% | 100% | 88.61% | 91.64% | 92.21% | 90.97% |
| 10%                                   | 20%  | 50%    | 100%   |     |      |        |        |        |        |
| 88.61%                                | 91.64%   | 92.21% | 90.97% |     |      |        |        |        |        |
| Input connector                       | IEC320 C20   |        |        |     |      |        |        |        |        |

**Table 15: AC-input Platinum Power Supply (UCSB-PSU-2500ACPL) Specifications**

| Description                           | Specification                                  |
|---------------------------------------|--|
| Minimum Software requirement          | UCS Software Release 2.0(2)                    |
| AC-input voltage                      | 200 to 240 VAC nominal (Range: 180 to 264 VAC) |
| AC-input frequency                    | 50 and 60 Hz nominal (Range: 47 to 63 Hz)      |
| AC-input current                      | < 16 Amps @ 200 VAC                            |
| Maximum Input VA                      | 2790 VA @ 200 VAC                              |
| Maximum output power per power supply | 2500 W (up to four power supplies)             |
| Maximum inrush current                | 35 A (sub cycle duration)                      |
| Maximum Heat Output                   | 8530 BTU                                       |
| Maximum hold up time                  | 12 ms @ 2500 W                                 |
| Power supply output voltage           | 12 VDC @ 208 A                                 |

| Description                             | Specification                           |
|---|---|
| Power supply standby voltage            | 3.3 VDC @ 5A                            |
| Efficiency Rating                       | Climate Savers Platinum                 |
| Efficiency (80 Plus Platinum Certified) | 20%    50%    100%<br>90%    94%    91% |
| Input connector                         | IEC320 C20                              |

**Table 16: DC-Input Power Supply (N20-DC-2500) Specifications**

| Item                         | Specification  |
|------------------------------|--|
| Minimum software requirement | Cisco UCS Software Release 2.0(1)  |
| DC-input voltage             | –48 to –60 VDC   |
| DC-input current             | 62 A maximum @ –48 VDC input   |
| Output power                 | 2500 W   |
| Current draw at min voltage  | 62 A   |
| Current draw at max voltage  | 50 A   |
| Maximum KVA rating           | 2.5  |
| DC input terminal block      | Accepts Panduit LCD4-14AF-L or equivalent barrel-type lug terminals with 90-degree angle, two-hole tongue, which accommodates 1/0 AWG size copper wire. The connector tongue width is 0.82 in, the stud hole spacing is 5/8 in, and the hole size is 1/4 in. |
| Output holdup time           | 8 ms   |
| Max heat dissipation         | 8525 BTUs/hr   |

DC wiring must meet your local codes and regulations, we recommend using a licensed local electrician to install the DC wiring needed.

To determine the number of power supply units needed for the blade server, remember that each single slot server is budgeted a max 550 W and each full width server is budgeted a max 1100 W. For a more detailed estimate, contact Cisco Sales.

## Supported AC Power Cords and Plugs

The AC power connectors on the blade server chassis PDU use an IEC 320 C20 socket. Each chassis power supply has a separate power cord. The power cord that you use to connect the blade server power supply units to an AC power source will have an IEC 320 C19 plug on one end and on the other end one that conforms to the AC power outlet specifications for your country. See the following table to determine which cord to order for your blade server chassis power supply units. When you determine which power cord you need to order, you can verify that its plugs conform to the power outlets for your facility by clicking on its reference link.

The jumper power cords, for use in racks, are available as an optional alternative to the standard power cords. The optional jumper power cords have an IEC C19 connector (such as a Cisco RP Series PDU) on the end that plugs into the chassis' PDU and an IEC C20 connector on the end that plugs into an IEC C19 outlet receptacle. For more information, contact your Cisco Systems representative.



### Note

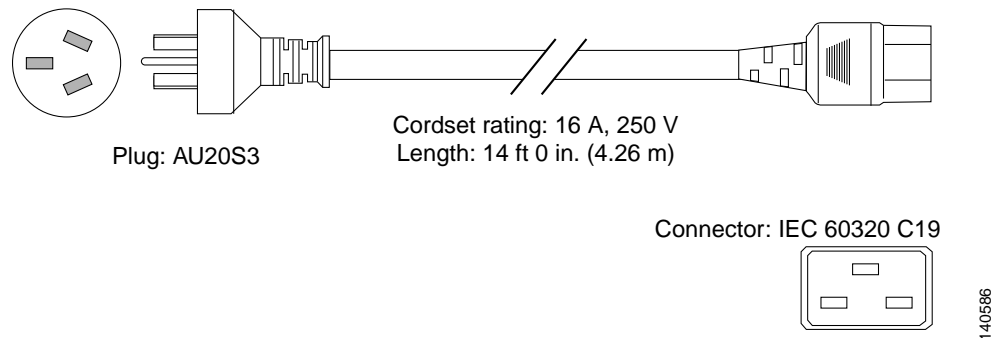
Only the regular power cords or jumper power cords provided with the chassis are supported.

### Australia and New Zealand

Power Cord Part Number—CAB-AC-16A-AUS

Cord Set Rating—16A, 250 VAC

**Figure 3: CAB-AC-16A-AUS Power Cord for the Cisco UCS 5108 Blade Server Chassis**

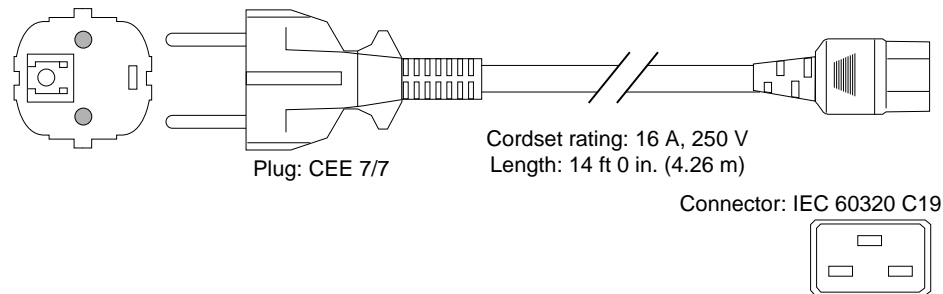


### Continental Europe

Power Cord Part Number—CAB-AC-2500W-EU

Cord Set Rating—16A, 250 VAC

**Figure 4: CAB-AC-2500W-EU Power Cord for the UCS 5108 Blade Server Chassis**



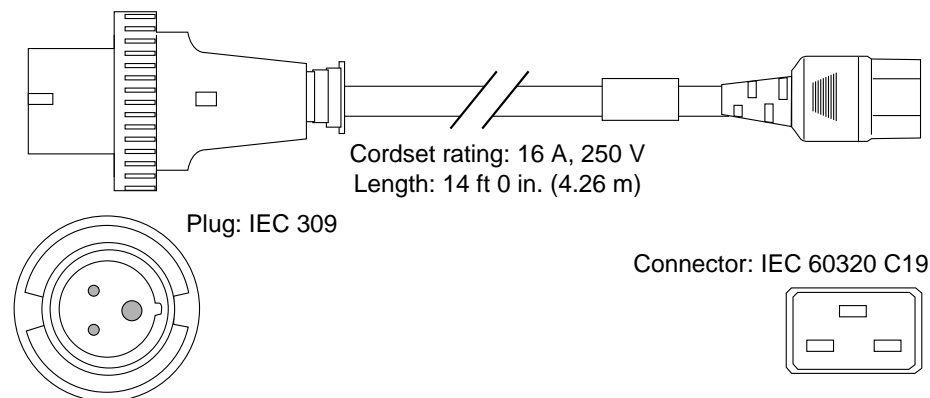
113360

## International

Power Cord Part Number—CAB-AC-2500W-INT

Cord Set Rating—16A, 250 VAC

**Figure 5: CAB-AC-2500W-INT Power Cord for the UCS 5108 Blade Server Chassis**



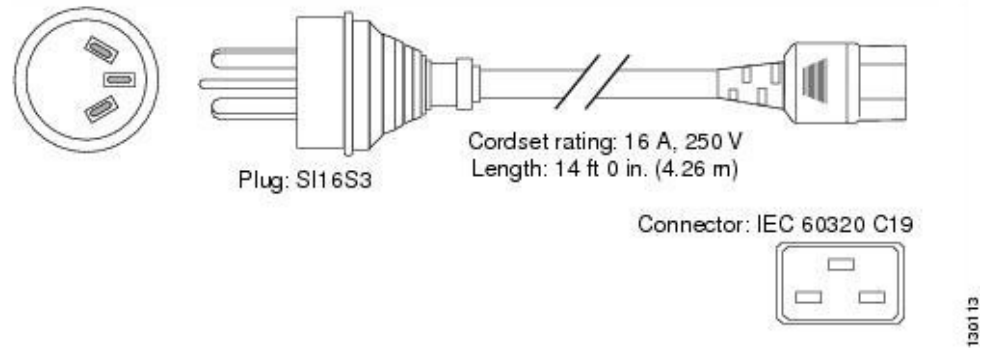
113361

## Israel

Power Cord Part Number—CAB-AC-2500W-ISRL

Cord Set Rating—16A, 250 VAC

**Figure 6: CAB-AC-2500W-ISRL Power Cord for the UCS 5108 Blade Server Chassis**



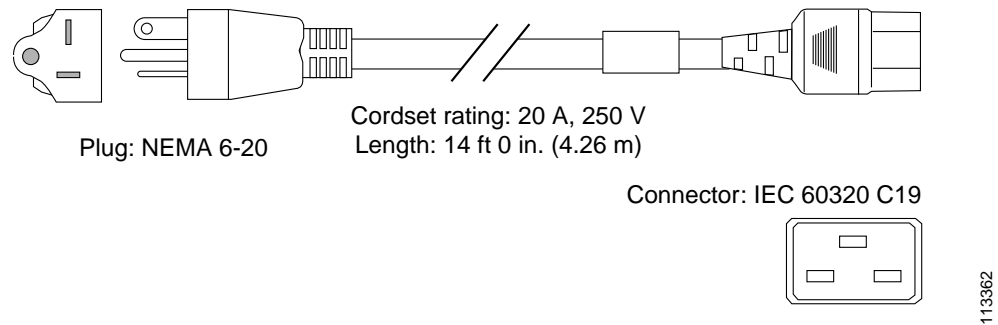
## Japan and North America

### Non-Locking 200 to 240 VAC operation

Power Cord Part Number—CAB-AC-2500W-US1

Cord Set Rating—16A, 250 VAC

**Figure 7: CAB-AC-2500W-US1 Power Cord for the UCS 5108 Blade Server Chassis**

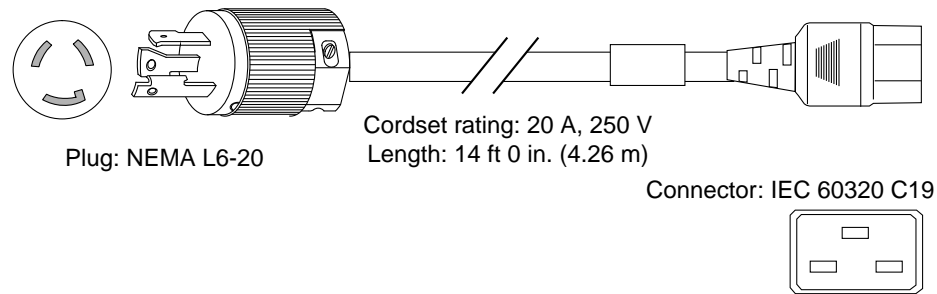


### Locking 200 to 240 VAC Operation

Power Cord Part Number—CAB-AC-C6K-TWLK

Cord Set Rating—16A, 250 VAC

**Figure 8: CAB-AC-C6K-TWLK Power Cord for the UCS 5108 Blade Server Chassis**



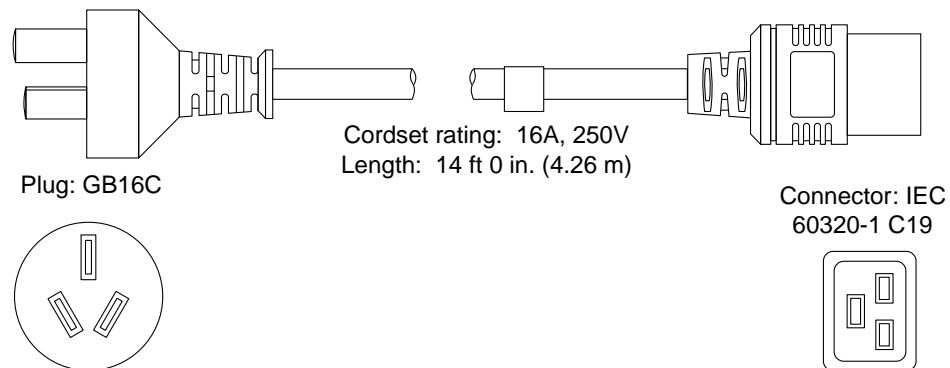
113363

## Peoples Republic of China

Power Cord Part Number—CAB-AC-16A-CH

Cord Set Rating—16A, 250 VAC

**Figure 9: CAB-AC-16A-CH Power Cord for the Cisco UCS 5108 Blade Server Chassis**



126792

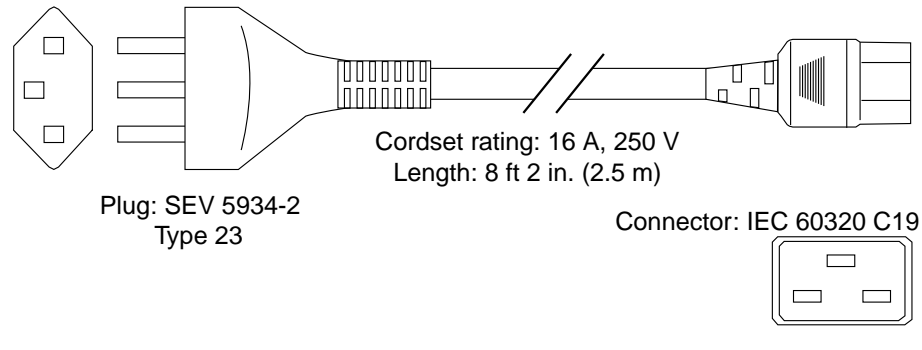
## Switzerland

Power Cord Part Number—CAB-ACS-16



Cord Set Rating—16A, 250 VAC

**Figure 10: CAB-ACS-16 Power Cord for the UCS 5108 Blade Server Chassis**

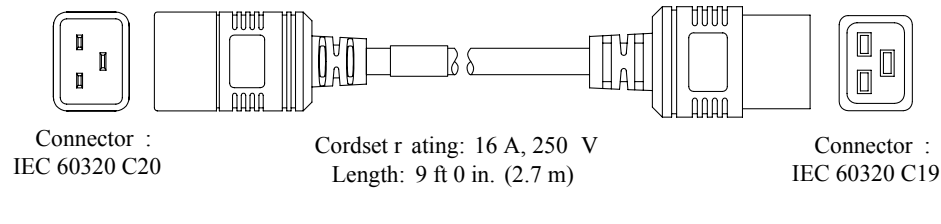


### Power Distribution Unit (PDU)

Power Cord Part Number—CAB-C19-CBN

Cord Set Rating—Not applicable

**Figure 11: CAB-C19-CBN Power Cord for the UCS 5108 Blade Server Chassis**



## Power Specifications for the Cisco UCS 6100 Fabric Interconnects

One power supply is required for basic operation, two power supplies provides redundancy.

**Table 17: Power Specifications for the Cisco UCS 6120XP Power Supply Units**

| Description                           | Specification                            |
|---------------------------------------|--|
| AC-input voltage                      | 90 to 264 VAC                            |
| AC-input frequency                    | 50 to 60 Hz nominal (Range: 47 to 63 Hz) |
| AC-input current                      | 7.5 Amps @ 90 VAC                        |
| Maximum Input VA                      | 675 VA @ 90 VAC                          |
| Maximum output power per power supply | 550 W @ 12 V (up to two power supplies)  |

| Description                 | Specification            |
|-----------------------------|--------------------------|
| Maximum inrush current      | 35 A <sub cycle duration |
| Maximum Heat Output         | 1876 BTU/hr              |
| Maximum hold up time        | 12 ms                    |
| Power supply output voltage | 12 VDC                   |

**Table 18: Power Specifications for the Cisco UCS 6140XP Power Supply Units**

| Description                           | Specification                             |
|---------------------------------------|---|
| AC-input voltage                      | 90 to 264 VAC                             |
| AC-input frequency                    | 50 to 60 Hz nominal (Range: 47 to 63 Hz)  |
| AC-input current                      | 9.2 Amps @ 90 VAC                         |
| Maximum Input VA                      | 828 VA @ 90 VAC                           |
| Maximum output power per power supply | 750 W @ 12 VDC (up to two power supplies) |
| Maximum inrush current                | 35 A <sub cycle duration                  |
| Maximum Heat Output                   | 2561 BTU/hr                               |
| Maximum hold up time                  | 12 ms                                     |
| Power supply output voltage           | 12 VDC                                    |

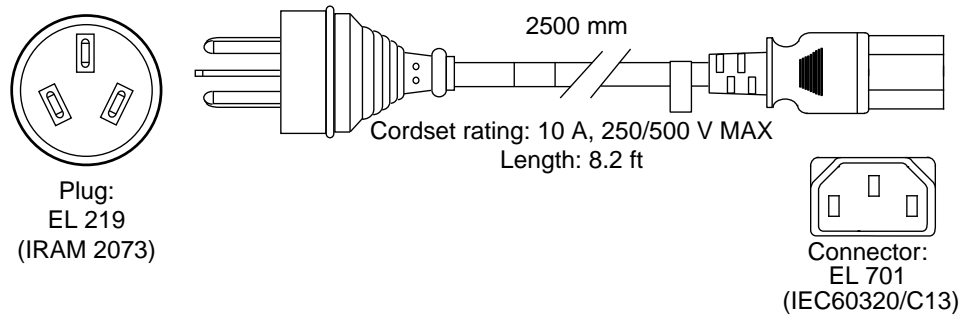
## Supported AC Power Cords and Plugs

The AC power supply connector on the UCS 6100 series fabric interconnect chassis is an IEC 320 C13 socket. The power cable that you use to connect the fabric interconnect power supply units to an AC power outlet will have an IEC 320 C14 plug on one end and a plug on the other end that conforms to the AC power outlet specifications for your country. To determine which cable to order for your fabric interconnect power supply units, see the table below. When you determine which power cord you need to order, you can verify that its plugs conform to the power outlets for your facility by clicking on its reference link.

**Argentina**

Power Cord Part Number—SFS-250V-10A-AR

Cord Set Rating—10A, 250 VAC

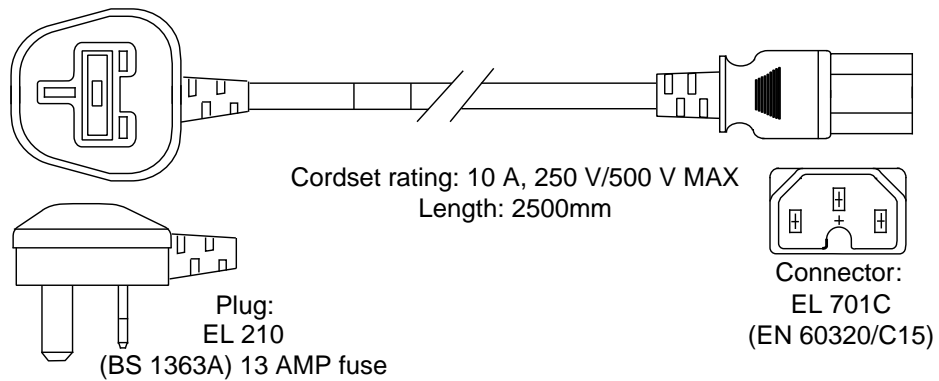
**Figure 12: SFS-250V-10A-AR Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

186571

**Australia and New Zealand**

Power Cord Part Number—CAB-9K10A-AU

Cord Set Rating—10A, 250 VAC

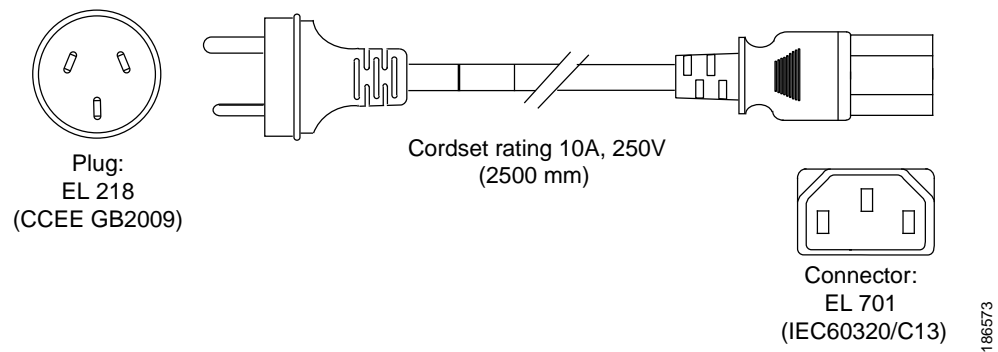
**Figure 13: CAB-9K10A-AU Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

186580

**Peoples Republic of China**

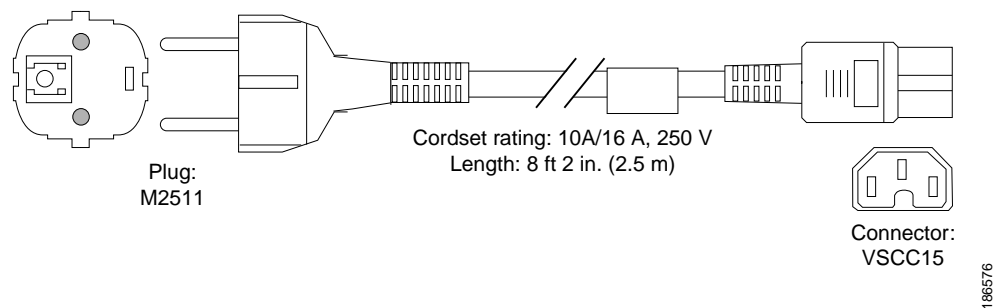
Power Cord Part Number—SFS-250V-10A-CN

Cord Set Rating—10A, 250 VAC

**Figure 14: SFS-250V-10A-CN Power Cord for the Cisco UCS 6100 Series Fabric Interconnect****Continental Europe**

Power Cord Part Number—CAB-9K10A-EU

Cord Set Rating—10A, 250 VAC

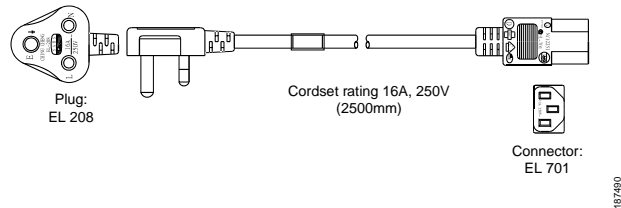
**Figure 15: CAB-9K10A-EU Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

### India, South Africa, and United Arab Emirates

Power Cord Part Number—SFS-250V-10A-ID

Cord Set Rating—16A, 250 VAC

**Figure 16: SFS-250V-10A-ID Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

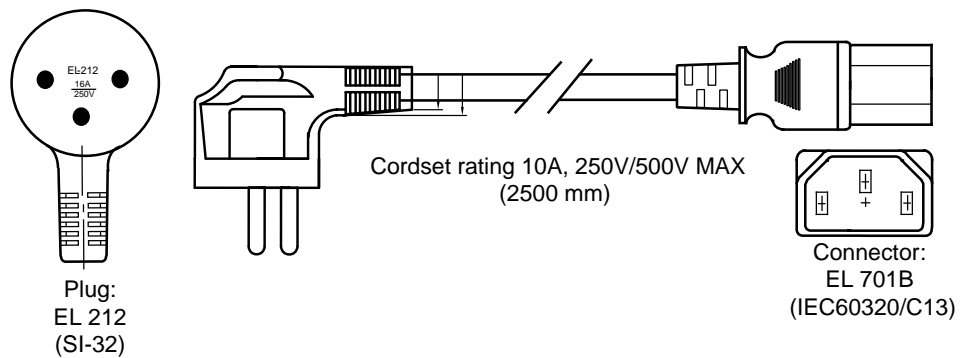


### Israel

Power Cord Part Number—SFS-250V-10A-IS

Cord Set Rating—10A, 250 VAC

**Figure 17: SFS-250V-10A-IS Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

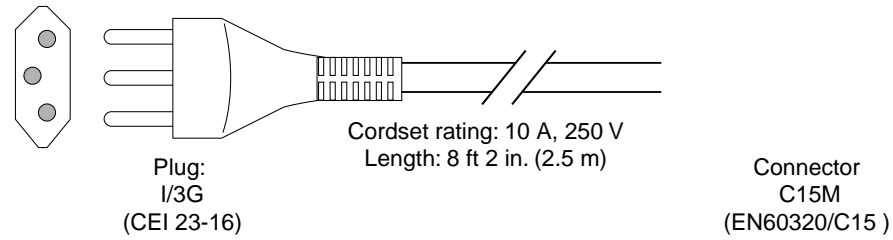


**Italy**

Power Cord Part Number—CAB-9K10A-IT

Cord Set Rating—10A, 250 VAC

**Figure 18: CAB-9K10A-IT Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**



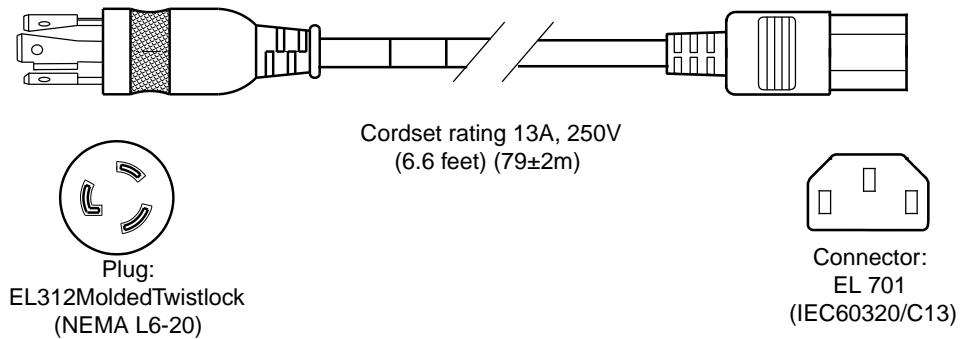
186575

## North America

Power Cord Part Number—CAB-AC-250V/13A

Cord Set Rating—13A, 250 VAC

**Figure 19: CAB-AC-250V/13A Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

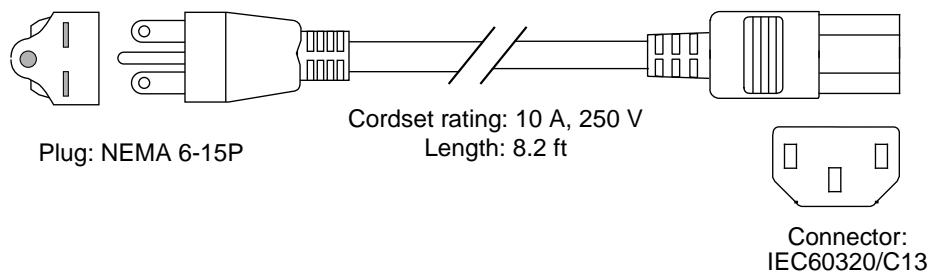


186568

Power Cord Part Number—CAB-N5K6A-NA

Cord Set Rating—13A, 250 VAC

**Figure 20: CAB-N5K6A-NA Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

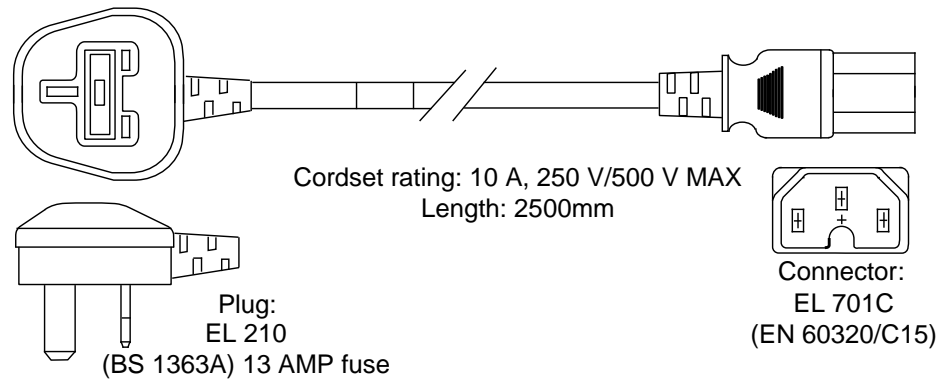


186570

**Switzerland**

Power Cord Part Number—CAB-9K10A-SW

Cord Set Rating—10A, 250 VAC

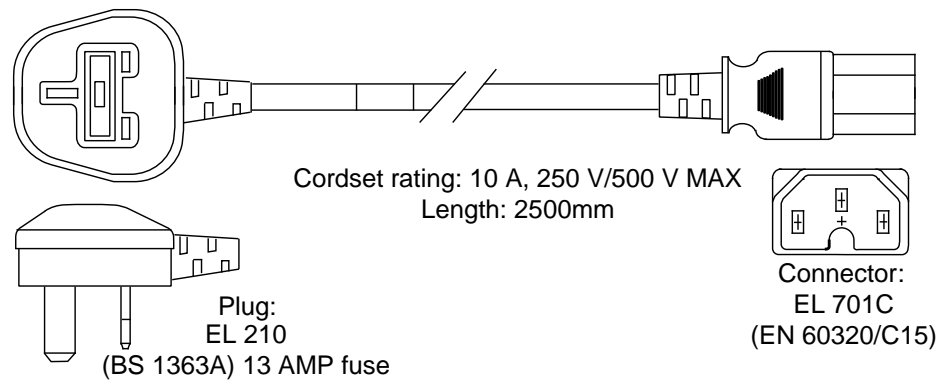
**Figure 21: CAB-9K10A-SW Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

186580

**United Kingdom**

Power Cord Part Number—CAB-9K10A-UK

Cord Set Rating—10A, 250 VAC

**Figure 22: CAB-9K10A-UK Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**

186580

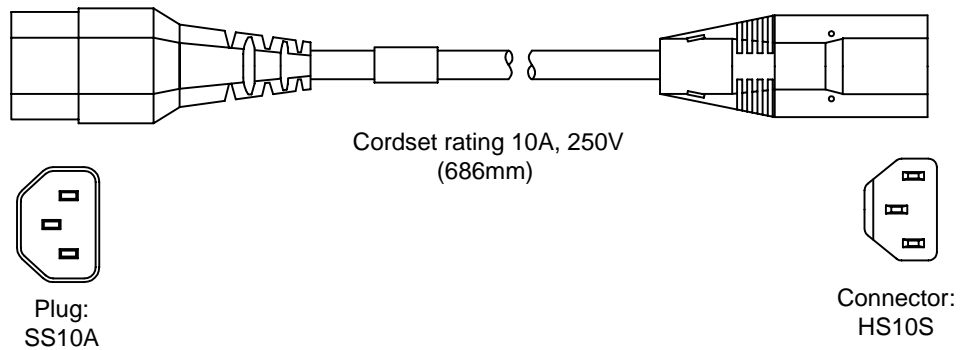


**Cabinet Jumper Power Cord**

Power Cord Part Number—CAB-C13-C14-JMPR

Cord Set Rating—13A, 250 VAC

**Figure 23: CAB-C13-C14-JMPR Power Cord for the Cisco UCS 6100 Series Fabric Interconnect**



## Power Specifications for the Cisco UCS 6200 Fabric Interconnects

One power supply is required for basic operation, having two power supplies provides redundancy.

**Table 19: Specifications for the Cisco UCS 6248UP AC Power Supply(UCS-PSU-6248UP-AC=)**

| AC Power Supply Properties | Cisco UCS 6248UP fabric interconnect |
|----------------------------|--------------------------------------|
| Maximum output power       | 750 W                                |
| Input voltage              | 90 to 264 VAC                        |
| Frequency                  | 50 to 60 Hz                          |
| Efficiency                 | 87 to 92% (50 to 100% load)          |
| RoHS compliance            | Yes                                  |
| Hot swappable              | Yes                                  |
| Heat dissipation           | 2497 BTU/hr (600 W)                  |

One power supply is required for basic operation, having two power supplies provides redundancy.

**Table 20: Specifications for the Cisco UCS 6248UP DC Power Supply(UCS-PSU-6248UP-DC=)**

| DC Power Supply Properties      | Cisco UCS 6248UP fabric interconnect  |
|---------------------------------|---|
| Maximum output power            | 750 W   |
| Input voltage                   | -40 to -72 VDC  |
| DC-input current at max voltage | 25 A maximum @ -40 VDC input  |
| Efficiency                      | 88 to 92% (50 to 100% load)   |
| Maximum input KVA rating        | 820   |
| DC input terminal block         | If a replacement DC connector is needed, a Phoenix Contact part number PC 5/ 2-STF-7,62, order number 1975697 or direct equivalent. Connector information is available at:<br><a href="http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=1975697">http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=1975697</a> |
| Output holdup time              | 4 ms  |
| RoHS compliance                 | Yes   |
| Hot swappable                   | Yes   |
| Heat dissipation                | 2497 BTU/hr (750 W)   |

## Supported AC Power Cords and Plugs

Each power supply has a separate power cord. Standard power cords or jumper power cords are available for connection to a power distribution unit having IEC 60320 C13 outlet receptacles. The jumper power cords, for use in cabinets, are available as an optional alternative to the standard power cords.

The standard power cords have an IEC C13 connector on the end that plugs into the power supplies. The optional jumper power cords have an IEC C13 connector on the end that plugs into the power supplies, and an IEC C14 connector on the end that plugs into an IEC C13 outlet receptacle.



### Note

Only the regular power cords or jumper power cords provided with the chassis are supported.

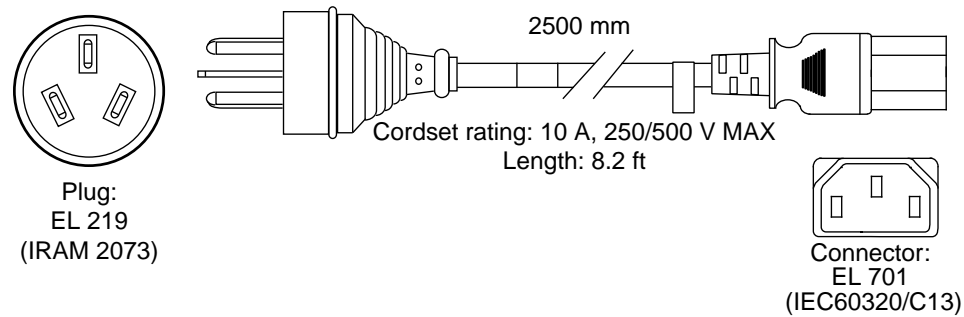
## Argentina

Power Cord—SFS-250V-10A-AR

Plug—250 VAC 10 A IRAM 2073

Length—8.2 feet / 2.5 meters

**Figure 24: SFS-250V-10A-AR**



186571

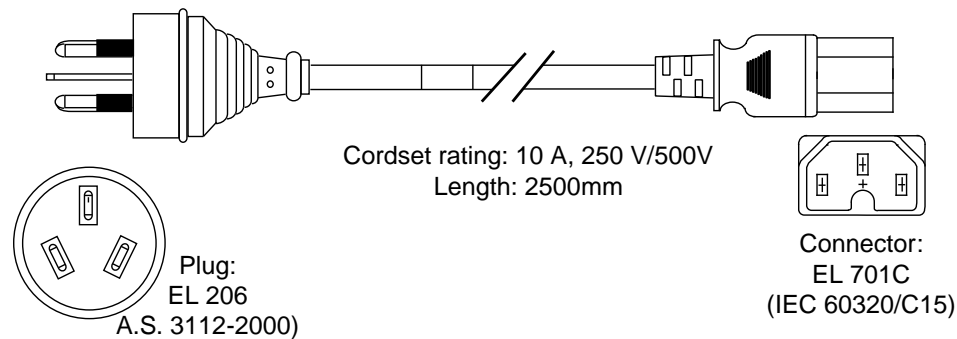
### Australia and New Zealand

Power Cord—CAB-9K10A-AU

Plug—250 VAC 10 A 3112

Length—8.2 feet / 2.5 meters

**Figure 25: CAB-9K10A-AU**



186581

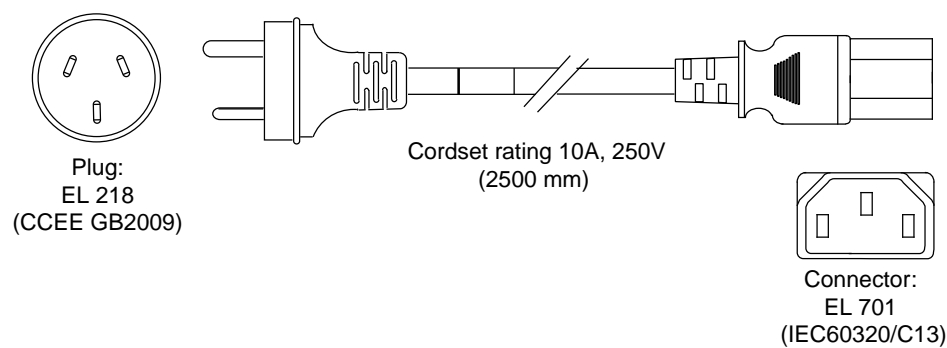
### Peoples Republic of China

Power Cord—SFS-250V-10A-CN

Plug—250 VAC 10 A GB 2009

Length—8.2 feet / 2.5 meters

**Figure 26: SFS-250V-10A-CN**



186573

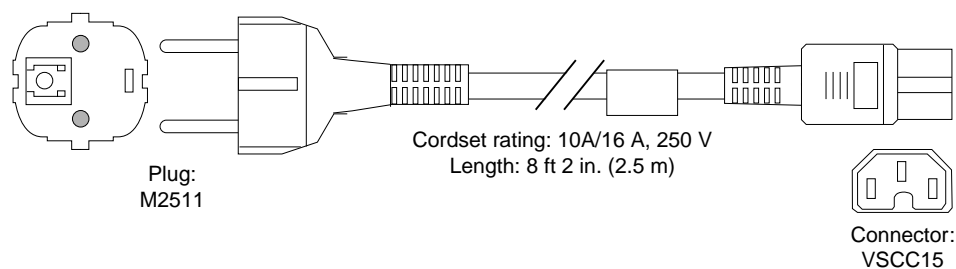
## Europe

Power Cord—CAB-9K10A-EU

Plug—250 VAC 10 A M 2511

Length—8.2 feet / 2.5 meters

**Figure 27: CAB-9K10A-EU**



186576

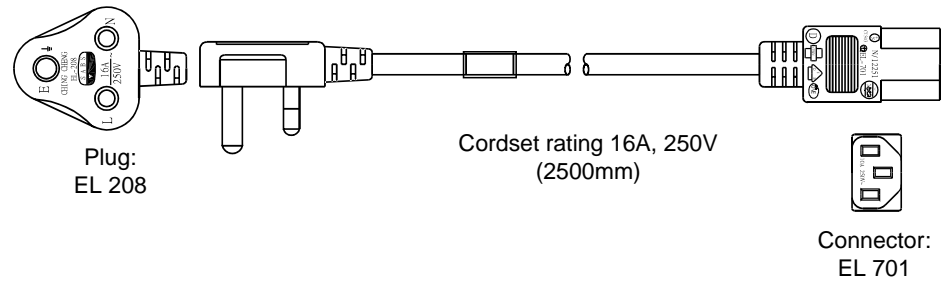
## India, South Africa, and United Arab Emirates

Power Cord—SFS-250V-10A-ID

Plug—250 VAC 16A EL-208

Length—8.2 feet / 2.5 meters

**Figure 28: SFS-250V-10A-ID**



187490

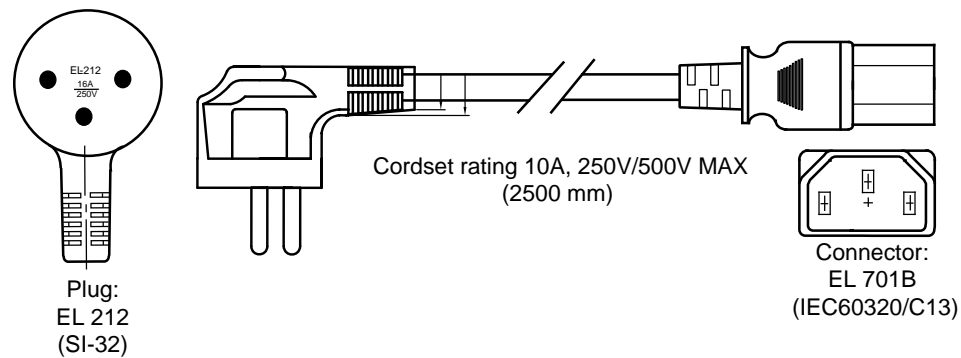
## Israel

Power Cord—SFS-250V-10A-IS

Plug—250 VAC 10 A SI32

Length—8.2 feet / 2.5 meters

**Figure 29: SFS-250V-10A-IS**



186574

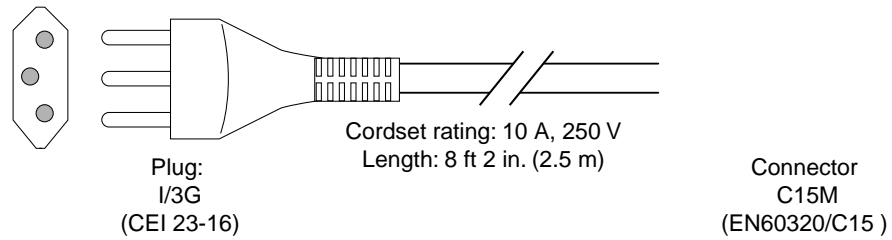
## Italy

Power Cord—CAB-9K10A-IT

Plug—250 VAC 10 A CEI 23-16

Length—8.2 feet / 2.5 meters

**Figure 30: CAB-9K10A-IT**



186575

## North America

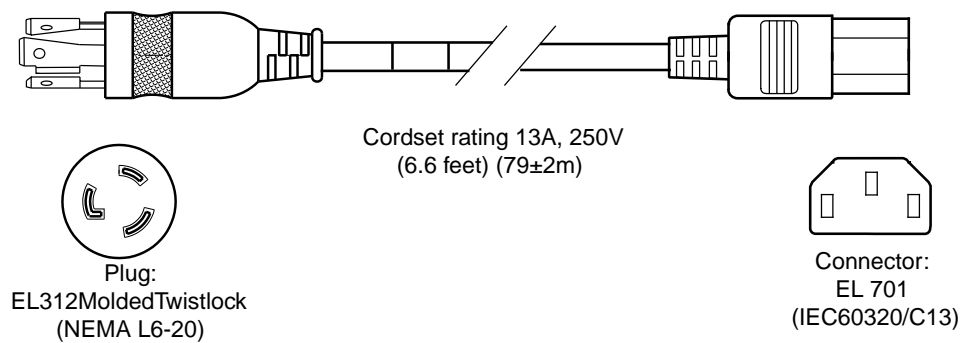
### **CAB-AC-250V/13A**

Power Cord—CAB-AC-250V/13A

Plug—250 VAC 13 A IEC60320

Length—6.6 feet / 2.0 meters

**Figure 31: CAB-AC-250V/13A**



186568

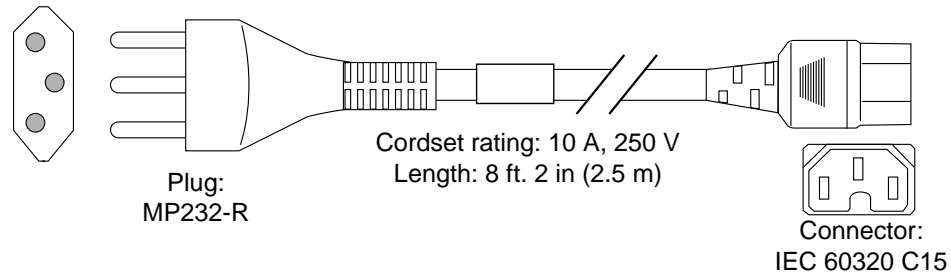
### **CAB-N5K6A-NA**

Power Cord—CAB-N5K6A-NA

Plug—250 VAC 13 A NEMA 6-15

Length—8.2 feet / 2.5 meters

**Figure 32: CAB-N5K6A-NA**



186578

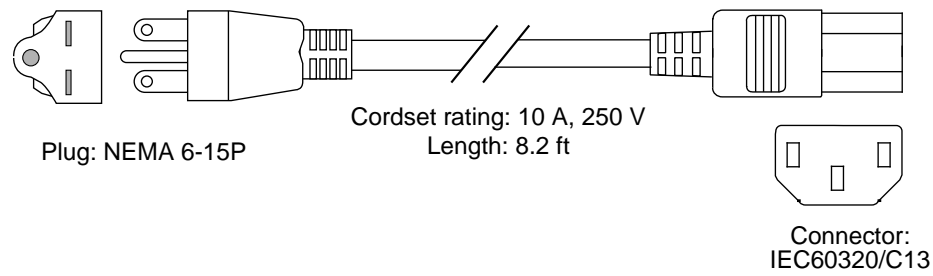
## Switzerland

Power Cord—CAB-9K10A-SW

Plug—250 VAC 10 A MP232

Length—8.2 feet / 2.5 meters

**Figure 33: CAB-9K10A-SW**



186570

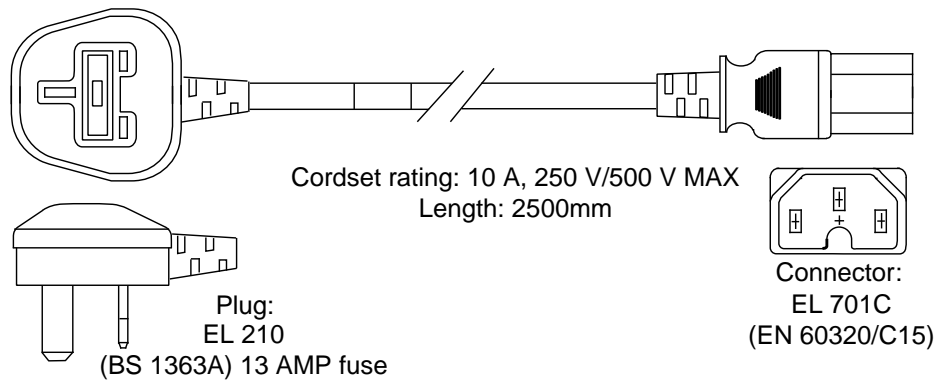
## United Kingdom

Power Cord—CAB-9K10A-UK

Plug—250 VAC 10 A BS1363 (13 A fuse)

Length—8.2 feet / 2.5 meters

**Figure 34: CAB-9K10A-UK**



186580

### Cabinet Jumper Power Cord

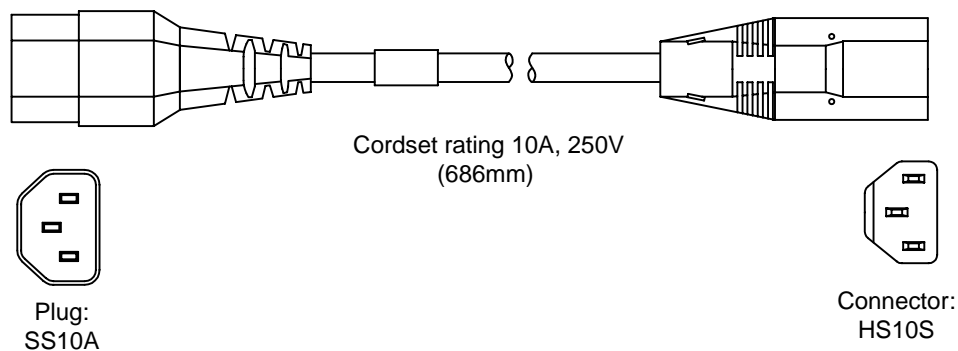
Power Cord—CAB-C13-C14-JMPR

Plug— 250 VAC 13 A, C13-C14 Connectors

Length—2.2 feet / 0.7 meters

The following figure shows the plug connector on the optional jumper power cord for the Cisco UCS 6200 Series Fabric Interconnect. The plug plugs in to the Cisco UCS 6200 Series Fabric Interconnect power supply, while the connector plugs into the receptacle of a power distribution unit for a cabinet.

**Figure 35: CAB-C13-C14-JMPR, Jumper Power Cord**



186569

## Power Supply Configuration Modes

You can configure power modes to either use the combined power provided by the installed power supply units or to provide power redundancy when there is a power outage.

The power supplies are all operated in parallel output. You should connect two separate input sources (grids) to have the highest level of availability (grid redundancy). The system will operate on two power supplies



(2+2 redundancy) for the Cisco UCS 5108 blade server chassis and one power supply (1+1 redundancy) for the Cisco UCS 6100 Series Fabric Interconnect. More detail is at:

- [http://www.cisco.com/en/US/docs/unified\\_computing/ucs/hw/chassis/install/overview.html#wp1245307](http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/chassis/install/overview.html#wp1245307)

## Blade Server Chassis and Fabric Interconnect Clearances

You must provide adequate clearance for installing the chassis, replacing modules, and allowing airflow to and from the equipment. The blade server chassis and fabric interconnect require at least 36.0 inches (91.4 cm) of clearance in front to replace a blade or a fabric interconnect. They also require at least 16 inches (40.6 cm) of clearance in back of the equipment to install and replace their components. No side clearance is required because there are no components to replace on the sides of the chassis. No clearance or empty rack units are required between the equipment.

**Note**

If you need more space for the mechanical lift, include the additional space with the clearance for the front of the chassis.

For the blade server chassis and fabric interconnect, the clearances for installation and replacement of components is adequate for the cooling airflow. Side clearance is not needed for installation, replacement, or airflow.

## Facility Cooling Requirements

The Cisco UCS components dissipate considerable power and generate considerable heat. The major components require the following heat dissipation:

- Cisco UCS 6120XP Fabric Interconnect dissipates up to 1534 BTUs per hour
- Cisco UCS 6140XP Fabric Interconnect dissipates up to 2561 BTUs per hour
- Cisco UCS 6248 UP Fabric Interconnect dissipates up to 1998 BTUs per hour
- Cisco UCS 6296 UP Fabric Interconnect dissipates up to 3163 BTUs per hour
- Cisco UCS 5108 Blade Server Chassis dissipates up to 1364 BTUs per hour
- Each half width Blade Server dissipates approximately 1350 BTUs per hour
- Each full width Blade Server dissipates approximately 2700 BTUs per hour

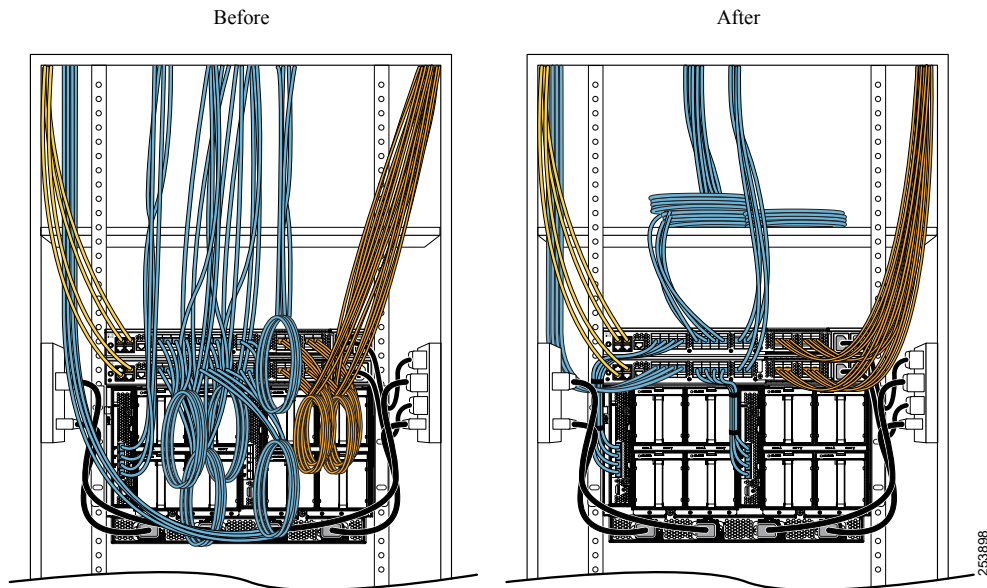
## Chassis Airflow

The Cisco UCS 5108 chassis and the Cisco UCS Fabric Interconnects each use front-to-back airflow for cooling, and both components are designed to work in a hot-aisle/cold-aisle environment.

Cable management can be an important factor in preventing overheating issues. In the figure below, the "before" illustration shows cables blocking the rear of the chassis, and preventing the fans from exhausting warm air from the chassis. This situation causes failed DIMMs in the blade servers, and seemingly random

server shutdowns when internal temperatures exceed specification. Use cable ties and other wiring practices to keep the rear of the chassis unobstructed as shown in the "after" illustration.

**Figure 36: Cable Management**





# Site Preparation and Maintenance Records

This appendix includes the following sections:

- [Contact and Site Information Checklist, page 41](#)
- [Environmental Checklist, page 43](#)
- [Power Checklist, page 43](#)
- [LAN Connectivity Checklist, page 44](#)
- [SAN Connectivity Checklist, page 45](#)
- [Port Connection Record, page 45](#)

## Contact and Site Information Checklist

Planning the location and layout of your equipment rack is essential for successful equipment operation, ventilation, and accessibility.

This table lists the site planning tasks that we recommend that you complete before you install the Cisco UCS equipment. Your completion of each task ensures a successful installation.

**Table 21: Site Identification and Contact Checklist**

| Planning Activity     | Verification Time and Date |
|-----------------------|----------------------------|
| Customer name         |                            |
| Site location/name    |                            |
| Site address          |                            |
| Site shipping address |                            |

| Planning Activity   | Verification Time and Date  |
|---|---|
| <b>Site/installation contact</b>  | Name<br>Title<br>Telephone<br>Mobile telephone<br>Off-hours telephone<br>FAX<br>Pager<br>E-mail |
| <b>Technical contact (if different from above contact)</b>  | Name<br>Title<br>Telephone<br>Mobile telephone<br>Off-hours telephone<br>FAX<br>Pager<br>E-mail |
| <b>What are the hours of operation?</b>   |   |
| <b>Are there any unique building and room access procedures?</b><br>For example, "Visiting personnel must request access 48 hours in advance, must have photo ID bearing company name, and must be escorted by Customer personnel." |   |
| <b>Is this a union shop?</b><br><b>List any special requirements?</b><br>For example, "Must install or apply power during weekend."   | Yes No<br>What are the requirements?  |
| <b>Are there any special security or safety procedures?</b><br>For example, "Must wear safety glasses" or "Must wear safety shoes and hard hat."  | What are the special procedures?  |
| <b>What is the location of the rack where the system will be installed?</b>   | Floor:<br>Room:<br>Location in room:  |

# Environmental Checklist

Use this checklist to record environmental information for the installation site.

**Table 22: Environmental Checklist**

|  |   |
|--|---|
| Is there sufficient air flow for cooling the system?   | Yes No                                    |
| What type of floor covering is used?   | Hard surface Other (describe)             |
| Is the floor covering antistatic?  | Yes No                                    |
| Will the floor need to be protected during installation?   | Yes No                                    |
| Is there enough space in the rack to store this system? (at least 14 RU)   | Yes No                                    |
| Will cables be routed under the floor or overhead?   | Under the floor Overhead Other (describe) |
| Is there sufficient space for equipment or rack access from the front and rear when it is in its final position?                   | Yes No                                    |
| What is the agreed upon plan to rectify any outstanding environmental points? Include any notes needed by the implementation team. |   |

# Power Checklist

Use this checklist to record information about the power setup and requirements.

**Table 23: Power Checklist**

|   |  |                  |
|---|--|------------------|
| 1 | <b>Is the correct AC or DC power source available for the blade server chassis?</b> <ul style="list-style-type: none"> <li>Are there one to four power drops provided to power each power supply unit (one power drop per power supply unit)?</li> </ul> | Yes No<br>Yes No |
| 2 | <b>Is the correct AC or DC power source available for the fabric interconnect?</b> <ul style="list-style-type: none"> <li>Are two power drops provided to power both power supply units?</li> </ul>  | Yes No<br>Yes No |

|   |   |  |
|---|---|--|
| 3 | Have the appropriate power cables been ordered for the server chassis?  | Yes No   |
| 4 | Have the appropriate power cables been ordered for the fabric interconnect power supply units?  | Yes No   |
| 5 | Are the power receptacles positioned so that all of the power cables can connect the server chassis and fabric interconnects to AC power? | Yes No<br>How far are the receptacles from the power supply units? |
| 6 | Any restrictions as to when you can power up the Cisco equipment?   | Yes No<br>Details:   |
| 7 | Has a DC shutoff switch with appropriate ratings been ordered for all required DC circuits?   | Yes No<br>Details:   |
| 8 | What is the agreed upon plan to rectify the outstanding power issues? Include any notes needed by the implementation team.                |  |

## LAN Connectivity Checklist

Use this checklist to record information about LAN connectivity.

**Table 24: LAN Connectivity Checklist**

|   |  |  |
|---|--|--|
| 1 | <b>Network switch for the UCS system to connect to.</b><br><b>Note</b> 10 Gbps Ethernet connection is required.  |  |
| 2 | <b>Are the required 10 Gbps Ethernet optics available on the customer upstream network equipment to connect to the UCS system?</b><br>(For example: "X2 optics on Catalyst 6000" or "SFP+ optics on Cisco Nexus 7000") | Yes No<br>If yes, state the model or type. |
| 3 | <b>Are cables available to connect the UCS Fabric Interconnect to the upstream 10 Gbps Ethernet network ports?</b><br>(For example, "SMF")   | Yes No<br>If yes, state the type.          |
| 4 | <b>What is the agreed upon plan to rectify the outstanding LAN connectivity issues?</b> Include any notes needed by the implementation team.   |  |

# SAN Connectivity Checklist

**Table 25: SAN Connectivity Checklist**

|   |  |  |
|---|--|--|
| 1 | <b>SAN switch that the UCS system will connect to.</b>   | Make and model:<br>Software version:   |
| 2 | <b>SAN array that the UCS system will connect to.</b>  | SAN array:<br>Software version:  |
| 3 | <b>Are the required optics available on the customer's SAN switch to provide FC connectivity to the UCS Fabric Interconnect?</b>                                       | Yes No   |
| 4 | <b>Are the required cables available to connect the customer's SAN switch to the UCS system?</b><br><br>For example, "UCS Fabric Interconnect FC optic is SFP-10G-SR." | Yes No<br><br>If yes, what are the length, type (fiber or copper), and quantity? |
| 5 | <b>What is the agreed upon plan to rectify the outstanding SAN connectivity issues? Include any notes needed by the implementation team.</b>                           |  |

## Port Connection Record

Use this checklist to record information about the cabling between fabric interconnects and chassis'.

Table 26: Fabric Interconnect Port Connection Record

| Fabric Interconnect A or B |      | Connected to |      |      |                      |                    |                  |
|----------------------------|------|--------------|------|------|----------------------|--------------------|------------------|
| Slot                       | Port | Chassis      | I/OM | Port | LAN or SAN Pin Group | Port Channel Group | Connection Notes |
| 1                          | 1    |              |      |      |                      |                    |                  |
|                            | 2    |              |      |      |                      |                    |                  |
|                            | 3    |              |      |      |                      |                    |                  |
|                            | 4    |              |      |      |                      |                    |                  |
|                            | 5    |              |      |      |                      |                    |                  |
|                            | 6    |              |      |      |                      |                    |                  |
|                            | 7    |              |      |      |                      |                    |                  |
|                            | 8    |              |      |      |                      |                    |                  |
|                            | 9    |              |      |      |                      |                    |                  |
|                            | 10   |              |      |      |                      |                    |                  |
|                            | 11   |              |      |      |                      |                    |                  |
|                            | 12   |              |      |      |                      |                    |                  |
|                            | 13   |              |      |      |                      |                    |                  |
|                            | 14   |              |      |      |                      |                    |                  |
|                            | 15   |              |      |      |                      |                    |                  |
|                            | 16   |              |      |      |                      |                    |                  |
|                            | 17   |              |      |      |                      |                    |                  |
|                            | 18   |              |      |      |                      |                    |                  |
|                            | 19   |              |      |      |                      |                    |                  |
|                            | 20   |              |      |      |                      |                    |                  |
|                            | 21   |              |      |      |                      |                    |                  |
|                            |      |              |      |      |                      |                    |                  |



| Fabric Interconnect A or B |      | Connected to |      |      |                      |                    |                  |
|----------------------------|------|--------------|------|------|----------------------|--------------------|------------------|
| Slot                       | Port | Chassis      | I/OM | Port | LAN or SAN Pin Group | Port Channel Group | Connection Notes |
|                            | 22   |              |      |      |                      |                    |                  |
|                            | 23   |              |      |      |                      |                    |                  |
|                            | 24   |              |      |      |                      |                    |                  |
|                            | 25   |              |      |      |                      |                    |                  |
|                            | 26   |              |      |      |                      |                    |                  |
|                            | 27   |              |      |      |                      |                    |                  |
|                            | 28   |              |      |      |                      |                    |                  |
|                            | 29   |              |      |      |                      |                    |                  |
|                            | 30   |              |      |      |                      |                    |                  |
|                            | 31   |              |      |      |                      |                    |                  |
|                            | 32   |              |      |      |                      |                    |                  |

| Fabric Interconnect A or B |      | Connected to |      |      |                      |                    |                  |
|----------------------------|------|--------------|------|------|----------------------|--------------------|------------------|
| Slot                       | Port | Chassis      | I/OM | Port | LAN or SAN Pin Group | Port Channel Group | Connection Notes |
| 2                          | 1    |              |      |      |                      |                    |                  |
|                            | 2    |              |      |      |                      |                    |                  |
|                            | 3    |              |      |      |                      |                    |                  |
|                            | 4    |              |      |      |                      |                    |                  |
|                            | 5    |              |      |      |                      |                    |                  |
|                            | 6    |              |      |      |                      |                    |                  |
|                            | 7    |              |      |      |                      |                    |                  |
|                            | 8    |              |      |      |                      |                    |                  |
|                            | 9    |              |      |      |                      |                    |                  |
|                            | 10   |              |      |      |                      |                    |                  |
|                            | 11   |              |      |      |                      |                    |                  |
|                            | 12   |              |      |      |                      |                    |                  |
|                            | 13   |              |      |      |                      |                    |                  |
|                            | 14   |              |      |      |                      |                    |                  |
|                            | 15   |              |      |      |                      |                    |                  |
|                            | 16   |              |      |      |                      |                    |                  |