Technical Specifications

This appendix includes the following sections:

Environmental Specifications for the Cisco UCS Equipment

Table 1: Environmental Specifications for the Cisco UCS 5108 Blade Chassis

Description	Cisco UCS 5108 Blade Chassis
Operating Temperature	
0 to 10,000 feet (0 to 3000 m) Above 10,000 feet (3,000 m)	50 to 95°F (10 to 35°C) Subtract 1°C (1.8°F) for each 1000 feet above 10,000 feet
Nonoperating Temperature	
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[1])	83 dBA at normal operating conditions

1 Based on ISO 3744.

Table 2: Environmental Specifications for the Cisco UCS 6100 Series or UCS 6200 Series Fabric Interconnect

Description	Cisco UCS 6100 Fabric Interconnect
Operating Temperature	
0 to 10,000 feet (0 to 3000 m) Above 10,000 feet (3,000 m)	50 to 95°F (10 to 35°C) Subtract 1°C (1.8°F) for each 1000 feet above 10,000 feet
Nonoperating Temperature	
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 [2])	68 dBA at normal operating conditions

2 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 3: 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 4: 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 5: 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) [3]	1 to 8
B230 Blade Server	18.0 lbs (8.16 kg)$_6$	1 to 8
B250 Blade Server	25 lbs (11.34 kg)$_6$	1 to 4
B440 Blade Server	34.5 lbs (15.65 kg)$_6$	1 to 4

Component	Weight per Unit	Quantity
B22 M3 Blade Server	13.5 lbs (6.1 kg)[6]	1 to 8
B200 M3 Blade Server	15.0 lbs (6.8 kg)[6]	1 to 8
B420 M3 Blade Server	34.5 lbs (15.65 kg)[6]	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

[3] The system weight listed here is an estimate for a fully configured system and will vary depending on peripheral devices installed.

Table 6: 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 7: AC-input Gold Power Supply (N20-PAC5-2500W) Specifications

Description	Specification
AC-input voltage	Voltage Range 100-120 VAC, 200-240 VAC nominal (range: 90-132 VAC, 180-264 VAC)

Description	Specification
AC-input frequency	50 to 60 Hz nominal (range: 47 to 63 Hz)
Maximum AC-input current	12.5 A @ 100 VAC 6.0 A @208 VAC
Maximum input VA	1250 VA at 100 VAC
Maximum output power per power supply	800 W @ 100-120 VAC 1050 W @ 200-240 VAC
Maximum inrush current	15 A (sub cycle duration)
Maximum hold up time	12 ms @ 770 W
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency Rating	Climate Savers Platinum Efficiency (80Plus Platinum Certified
Form Factor	RSP2 (C-Series 1U and C3x60 Storage Server)
Input connector	IEC320 C14

Table 8: 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

Description	Specification
Power supply output voltage	12 VDC @ 208 A
Power supply standby voltage	3.3 VDC @ 5A
Efficiency Rating	Climate Savers Platinum
Efficiency (80 Plus Platinum Certified)	20% 50% 100% 90% 94% 91%
Input connector	IEC320 C20

Table 9: DC-Input Power Supply (UCSB-PSU-2500DC48) Specifications

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

Table 10: HVDC-Input Platinum Power Supply (UCSB-PSU-2500HVDC) Specifications

Item	Specification
DC-input voltage	200 to 380 VDC nominal (Range: 180 to 400 VDC)
Maximum DC-input current	15.5 Amps @ 200 VDC
Maximum output power	2500 W
Maximum inrush current	35 A
Efficiency rating	Climate Savers Platinum
Efficiency (80 Plus Platinum Certified)	10% 20% 50% 100% 93.5% 94.9% 95% 93%
Power supply output voltage	12 VDC
Maximum holdup time	12 ms 2500 W
Input connector	IEC320 C20

Table 11: AC-input Dual Voltage Platinum Power Supply (UCSB-PSU-2500ACDV) Specifications

Description	Specification
AC-input voltage	200 to 240 VAC nominal (Range: 180 to 264 VAC) 100 to 120 VAC nominal (Range: 90 to 127 VAC) supported only with the UCS 6324 Fabric Interconnect
AC-input frequency	50 and 60 Hz nominal (Range: 47 to 63 Hz)
AC-input current	< 15 Amps @ 200 VAC
Maximum Input VA	2790 VA @ 200 VAC
Maximum output power per power supply	2500 W @ 200 to 240 VAC 1300 W @ 100 to 120 VAC
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)	10% 20% 50% 100% 93.5% 94.9 % 95% 93%
Input connector	IEC320 C20

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.

For information about supported power cords, see the Cisco UCS 5108 Server Chassis Installation Guide.

Power Specifications for the Cisco UCS 6100 Fabric Interconnects

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

Table 12: 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)
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 13: 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

For information about supported power cords and plugs, see the Cisco UCS 6100 Series Fabric Interconnect Hardware Installation Guide.

Power Specifications for the Cisco UCS 6200 Fabric Interconnects

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

Table 14: 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 15: 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: http://eshop.phoenixcontact.de/phoenix/treeViewClick.do?UID=1975697
Output holdup time	4 ms
RoHS compliance	Yes
Hot swappable	Yes
Heat dissipation	2497 BTU/hr (750 W)

For information about supported power cords and plugs, see the Cisco UCS 6200 Series Fabric Interconnect Hardware Installation Guide.

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

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 1: Cable Management