Cisco UCS C220 M4 NEBS Server Service Note

This document is a supplement to the *Cisco UCS C220 M4 Server Installation and Service Guide*. This document describes the differences between the Cisco UCS C220 M4 Server and the network equipment building system- (NEBS-) compliant Cisco UCS C220 M4 NEBS Server. This document contains the following sections:

Features Specific to the Cisco UCS C220 M4 NEBS Server

When installing or servicing the Cisco UCS C220 M4 NEBS server, you can use the *Cisco UCS C220 M4 Server Installation and Service Guide*, but note the following exceptions and rules that are specific to the NEBS server.

This section contains the following topics:

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NEBS Compliance

The Cisco UCS C220 M4 NEBS Server has been certified for the following levels of NEBS compliance:

- The DC-power version of the server is certified for NEBS Level 3 compliance.
- The AC-power version of the server is certified for NEBS Level 1 compliance.

Power Supplies

The Cisco UCS C220 M4 NEBS server can use either AC or DC power supplies.

770 W AC Power Supply

The NEBS server can use one or two 770 W AC power supplies (Cisco PID UCSC-PSU1-770W=).

- The server is certified for NEBS Level 1 compliance when using this AC power supply.
- These power supplies are hot-swappable with 1+1 redundancy when two power supplies are present.
- See Power Supply Specifications, page 5, for information about these power supplies.
- See the *Cisco UCS C220 M4 Server Installation and Service Guide*, Chapter 3, for information about replacing a power supply.

1050 W DC Power Supply

The NEBS server can use one or two 1050 W, –48 VDC power supplies (Cisco PID UCSC-PSUV2-1050DC=).

- The server is certified for NEBS Level 3 compliance when using this DC power supply.
- These power supplies are hot-swappable with 1+1 redundancy when two power supplies are present.
- See Power Supply Specifications, page 5, for information about these power supplies.

Installation Grounding

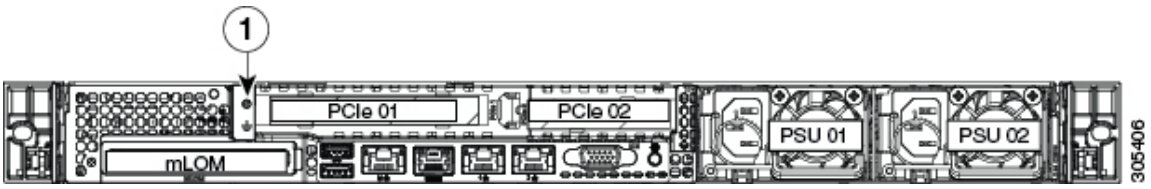
The 770 W AC power supplies have internal grounding and so no additional grounding is required when the supported AC power cords are used.

When using the 1050 W DC power supply, additional grounding of the server chassis to the earth ground of the rack is available. A single screw hole for use with your grounding lug and grounding wire is supplied on the chassis rear panel.

Note You must provide your own screw with lock-washer, grounding lug, and grounding wire. The recommended lug is Panduit LCD10-14AF-L or equivalent. The grounding point on the chassis is sized for a single #10-32 screw. A lock-washer is required to secure the lug to the chassis. The grounding lug must fit a #10-32 screw and 14 AWG wire. The grounding cable that you provide must be 14 AWG (2 mm), minimum 60° C wire, or as permitted by the local code.

See Figure 1-1 for the location of the grounding lug screw-hole on the chassis rear panel.

Figure 1-1 Cisco UCS C220 M4 NEBS Server Rear Panel (AC Power Supply Version)



1	#10-32 screw hole for grounding lug		

Installing a DC Power Supply

Warning **A readily accessible two-poled disconnect device must be incorporated in the fixed wiring. Statement 1022**

Warning **This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations. Statement 1045**

Warning **When installing or replacing the unit, the ground connection must always be made first and disconnected last. Statement 1046**

Warning **Installation of the equipment must comply with local and national electrical codes. Statement 1074**

Warning **Hazardous voltage or energy may be present on DC power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place. Statement 1075**

Installing a 1050 W DC Power Supply, UCSC-PSU2-1050DC

If you are using the 1050 W DC power supply, you connect power using a 3-wire cable with a keyed connector that plugs into a fixed power-input socket on the power supply.

Caution Before beginning this wiring procedure, turn off the DC power source from your facility's circuit breaker to avoid electric shock hazard.

Step 1 Turn off the DC power source from your facility's circuit breaker to avoid electric shock hazard.

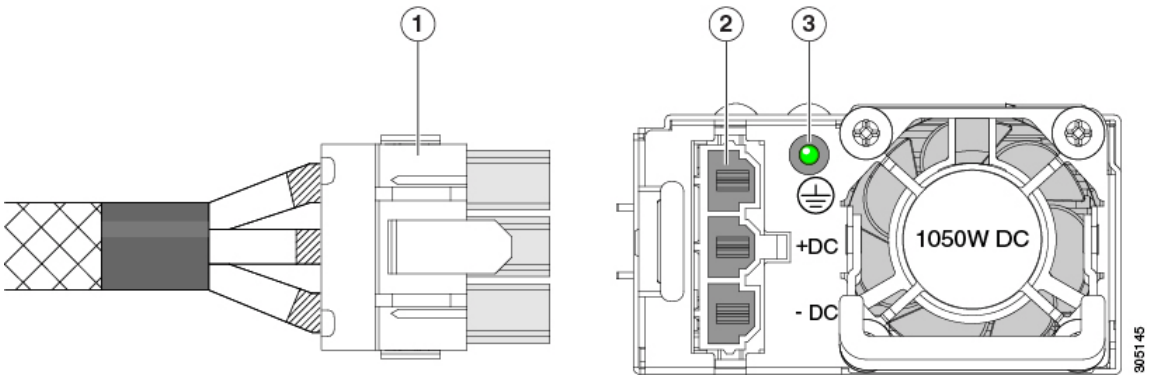
Step 2 Wire the supplied 3-wire connector cable (CAB-48DC-40A-8AWG) to your facility's DC power source.

Note The supplied connector cable contains 8 AWG gauge wires. The recommended facility wire gauge is 8 AWG. The minimum facility wire gauge is 10 AWG.

Step 3 Plug the supplied connector cable into the power input socket on the power supply. The connector is keyed to the socket so that the polarity is aligned correctly.

Step 4 Return power from your facility's DC power source at the circuit breaker.

Figure 1-2 1050 W, –48 VDC Power Supply Connector



1	Keyed cable connector (CAB-48DC-40A-8AWG)	**3**	Power supply status LED
2	Keyed DC input socket		

NEBS Server Component Support

This NEBS server uses the small form-factor drives, eight-drive version of the Cisco UCS C220 M4 server. For the list of supported components in the NEBS version of the server and their ordering PIDs, refer to the Cisco UCS C220 M4 SFF Rack Server Specification Sheet.

Power Supply Specifications

This section contains the following topics:

Power Supply LED (AC and DC)

The supported power supplies have a single power supply status LED. See Table 1 for an explanation of the LED states.

Table 1 Power Supply LED, Definition of States

LED Name	State
Power supply status LED	**AC power supply (UCSC-PSU1-770W):** • Off—No AC input (12 V main power off, 12 V standby power off). • Green, blinking—12 V main power off; 12 V standby power on. • Green, solid—12 V main power on; 12 V standby power on. • Amber, blinking—Warning threshold detected but 12 V main power on. • Amber, solid—Critical error detected; 12 V main power off (for example, over-current, over-voltage, or over-temperature failure). **DC power supply (UCSC-PSUV2-1050DC):** • Off—No DC input (12 V main power off, 12 V standby power off). • Green, blinking—12 V main power off; 12 V standby power on. • Green, solid—12 V main power on; 12 V standby power on. • Amber, blinking—Warning threshold detected but 12 V main power on. • Amber, solid—Critical error detected; 12 V main power off (for example, over-current, over-voltage, or over-temperature failure).

770 W AC Power Supply Specifications

Table 2 lists the specifications for each 770 W AC power supply (Cisco PID UCSC-PSU1-770W=).

Table 2 770 W AC Power Supply Specifications

Description	Specification
AC input voltage	Nominal range: 100–120 VAC, 200–240 VAC (Range: 90–132 VAC, 180–264 VAC)
AC input frequency	Nominal range: 50 to 60Hz (Range: 47–63 Hz)
Maximum AC input current	9.5 A at 100 VAC 4.5 A at 208 VAC
Maximum input volt-amperes	950 VA at 100 VAC
Maximum output power per PSU	770 W
Maximum inrush current	15 A (sub-cycle duration)
Maximum hold-up time	12 ms at 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
Input connector	IEC320 C14

1050 W DC Power Supply Specifications

Table 3 lists the specifications for each 1050 W DC power supply (Cisco PID UCSC-PSU2V2-1050DC=).

Table 3 1050 W DC Power Supply Specifications

Description	Specification
DC input voltage range	Nominal range: –48 to –60 VDC nominal (Range: –40 to –72 VDC)
Maximum DC input current	32 A at –40 VDC
Maximum input W	1234 W
Maximum output power per PSU	1050 W on 12 VDC main power 36 W on 12 VDC standby power
Maximum inrush current	35 A (sub-cycle duration)
Maximum hold-up time	5 ms at 100% load (1050 W main and 36 W standby)
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	≥ 92% at 50% load
Form factor	RSP2
Input connector	Fixed 3-wire block

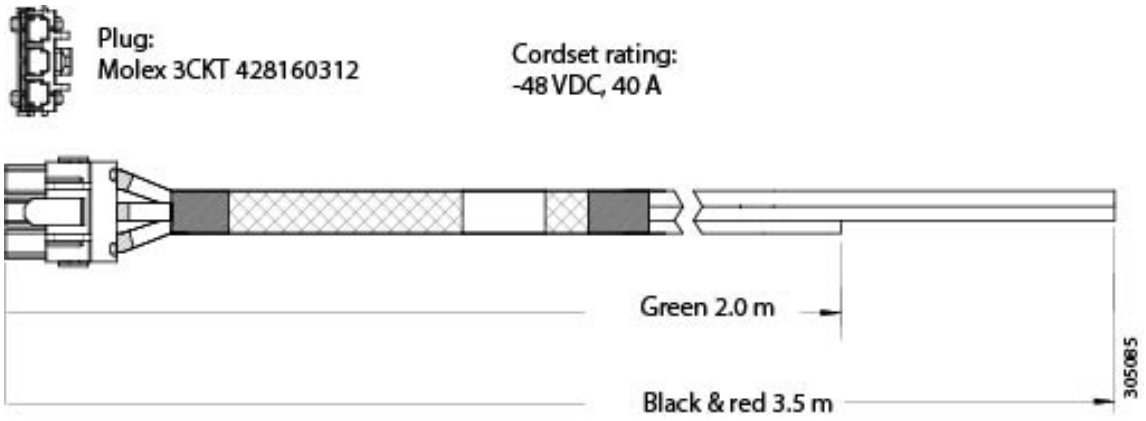
DC Power Cord

Table 1-2 describes the supported DC power cord. For the list of AC power cords supported with the server, see the *Cisco UCS C220 M4 Server Installation and Service Guide.*

Table 1-2 Supported Power Cords for the Server

Description	Length		Power Cord Reference Illustration
	Feet	Meters	
CAB-48DC-40A-8AWG Power cord, -48 VDC 40 A, Three-socket Mini-Fit connector to three-wire pigtail 8 AWG	11.7	3.5	Figure 1-3

Figure 1-3 CAB-48DC-40A-8AWG, DC Power Cord (3.5 m)



NEBS GR-1089 Installation Caution and Rules

The following information is derived from the NEBS GR-1089 specification, *Electromagnetic Compatibility and Electrical Safety—Generic Criteria for Network Telecommunications*.

This content also appears in the *Regulatory Compliance and Safety Information For Cisco UCS C-Series Servers*.

Caution The intrabuilding ports (Ethernet and serial) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of the equipment or subassembly must not be metallically connected to interfaces that connect to the outside plant (OSP) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

- The Cisco Unified Computing System (UCS) has AC power ports that are intended for deployments where an external Surge Protective Device (SPD) is utilized at the AC power service equipment (see the definition in National Electric Code).
- The Cisco UCS is designed for a Common Bonding Network (CBN) installation.
- The Cisco UCS can be installed in network telecommunication facilities or locations where the National Electric Code applies.
- An electrical conducting path shall exist between the product chassis and the metal surface of the enclosure or rack in which it is mounted or to a grounding conductor. Electrical continuity shall be provided by using thread-forming type mounting screws that remove any paint or nonconductive coatings and establish a metal-to-metal contact. Any paint or other nonconductive coatings shall be removed on the surfaces between the mounting hardware and the enclosure or rack. The surfaces shall be cleaned and an antioxidant applied before installation.
- The DC return connection to this system should remain isolated from the system frame and chassis (DC-I).
- The nominal DC operating voltage is –48 VDC.
- The intrabuilding RJ-45 Ethernet ports of the equipment or subassembly must use shielded intrabuilding cabling or wiring that is grounded at both ends.

Related Documentation

This document is intended to be a supplement for the *Cisco UCS C220 M4 Server Installation and Service Guide*. The documentation set for the Cisco Unified Computing System (UCS) C-Series rack-mount servers is also described in the roadmap document at the following link:

Cisco UCS C-Series Documentation Roadmap

This document is to be used in conjunction with the documents listed in the "Related Documentation" section.