Sun Netra 6000 Modular System

Installation Guide

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Contents

Using This Documentation

This guide provides detailed information about installing and setting up Oracle's Sun Netra 6000 AC and DC modular systems for the first time. This guide is written for system installers and administrators who are familiar with rackmounting systems and installing computer hardware. This document is available online in the Sun Netra 6000 Modular System HTML Document Collection and as an individual PDF file.

Note – This guide provides instructions for the AC and DC models of the modular system. Most of the topics apply to both models unless otherwise noted. Illustrations show one model or the other and might not match your equipment exactly.

Product Notes

For late-breaking information and known issues about this product, refer to the product notes at:

`http://www.oracle.com/goto/SN6000/docs`

Related Documentation

Documentation	Links
All Oracle products	http://www.oracle.com/documentation
Sun Netra 6000 modular system	http://www.oracle.com/goto/SN6000/docs
Oracle NEBS-certified systems	lhttp://www.oracle.com/goto/NEBS-CERTIFIED-SYSTEMS/docs
Oracle ILOM	http://www.oracle.com/goto/ILOM/docs
Oracle Solaris 11 OS	http://www.oracle.com/goto/Solaris11/docs
Oracle Solaris 10 OS	http://www.oracle.com/goto/Solaris10/docs
Oracle VM Server for SPARC	http://www.oracle.com/goto/VM-SPARC/docs
Oracle VTS	http://www.oracle.com/goto/VTS/docs

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Preparing Your Site Before the System Arrives

The following topics provide specifications and recommendations for preparing your site before the system arrives.

Note – For safety and compliance information, refer to the *Sun Netra 6000 Modular System Safety and Compliance Manual* and the *Important Safety Information for Sun Hardware Systems*.

Steps	Description	Links
1.	Understand the components that make up the modular system.	"Modular System Overview" on page 2
2.	Determine the configuration of your modular system.	"Modular System Overview" on page 2
3.	Determine the type and number of cabinets you need and where to place them.	"Supported Racks" on page 6 "Location Restrictions for DC Models" on page 6 "Aisle Clearance for Service" on page 7 "Airflow Requirements" on page 16
4.	Determine the electrical requirements for your modular system configuration.	"AC Power Requirements" on page 8 "Determining DC Power Requirements" on page 10
5.	Determine the temperature and humidity limits for reliable performance.	"Environmental Requirements" on page 14
6.	Assess the thermal load and air conditioning requirements.	"Environmental Requirements" on page 14
7.	Review the modular system acoustic noise specifications.	"Acoustic Noise Emissions" on page 17
8.	Assess your site for shipment receiving and transport to the data center.	"Weight and Size Specifications for Moving and Lifting" on page 18
9.	Use weight specifications to plan your installation method.	"Weight and Size Specifications for Moving and Lifting" on page 18

Related Information

- "Connectivity Choices" on page 57
- "Powering On the Modular System" on page 65
- "Installing the Chassis Into Your Rack" on page 27

Modular System Overview

The modular system is a NEBS-compliant, rackmountable chassis that accommodates a variety of compute components such as blade servers (server modules), disk blades (storage modules), PCI EMs, and NEMs. Components can be configured to interact or to operate as separate entities.

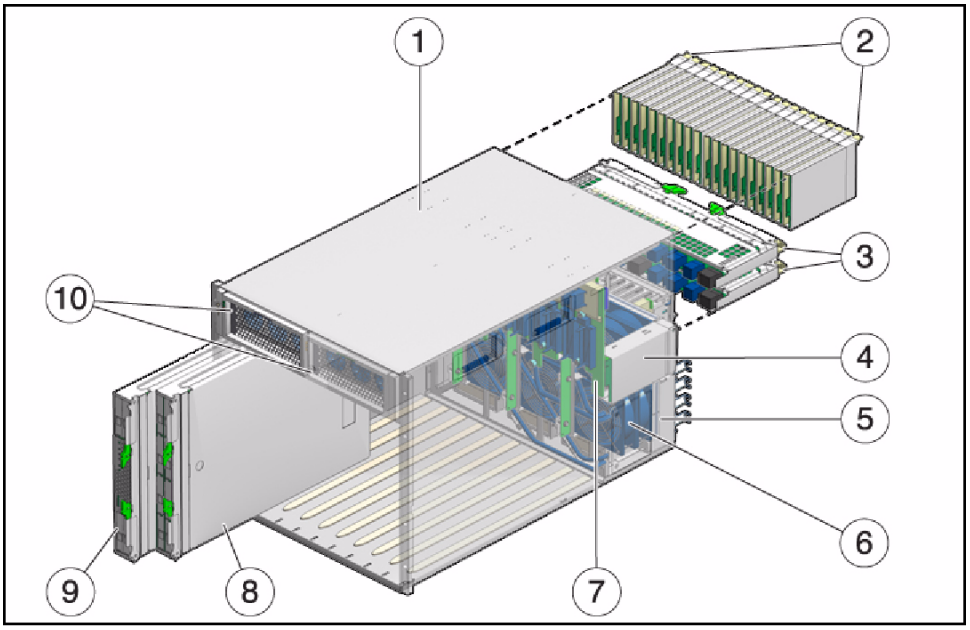
The modular system supports mixing and matching of components. You can install server modules that are based on SPARC processors along with server modules based on Intel processors.

Each server module runs an independent operating system, and operating systems can be mixed and matched.

When the configuration of components is complete, the chassis and components become an integrated modular system.

There are two modular system models:

- AC model – 10U, AC-powered system (shown in top diagram)
- DC model– 11U, DC-powered system (shown in bottom diagram)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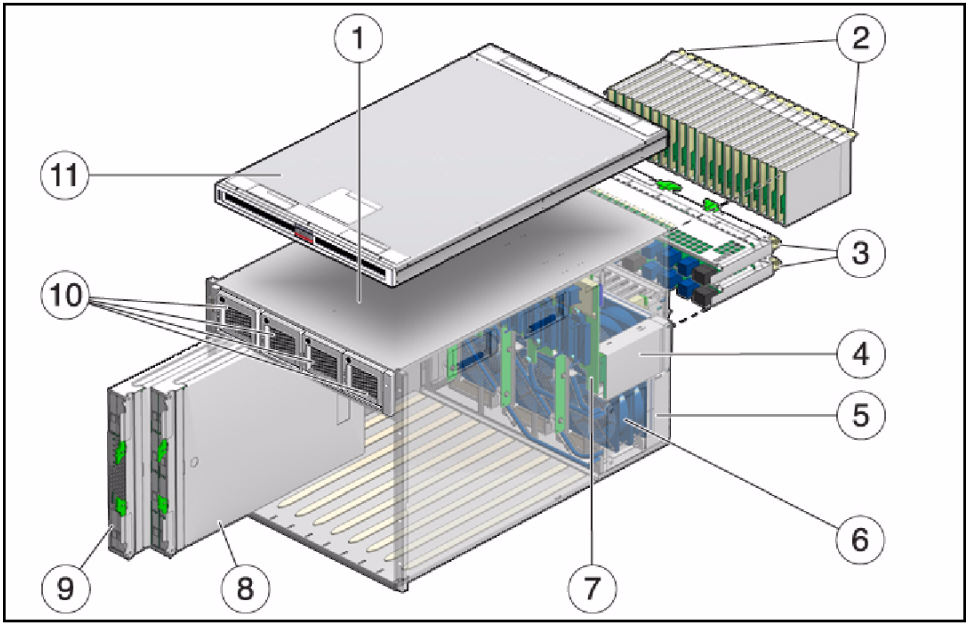
1
2
11
3
10
4
5
6
9
8
7

No.	Name	Description
1	Modular system chassis	AC model is 10U high, up to four supported in a 42U rack. DC model is 11U high, up to three supported in a 42U rack. Both models provide the following: • 10 vertical slots (front) for installation of server and storage modules • Hot-swappable power supplies (AC has two. DC has four) • CMM (rear) • 20 vertical slots (rear) for PCI EMs • 2 horizontal slots (rear) for NEMs • 8 hot-swappable fan modules (rear) • System status indicators (front and rear) • Midplane (internal) that interconnects components through industry-standard PCIe, SAS, SATA, and Ethernet protocols
2	PCI EMs	Up to 20 supported in the chassis. PCI EMs are based on the PCI Express industry-standard form factor and offer I/O features such as Gigabit Ethernet, Fibre Channel, and InfiniBand (supported I/O features differ, based on the server modules installed). Each server module can be associated with up to 2 PCI EMs.
3	NEMs	Up to 2 supported in the chassis. Each NEM connects to all 10 server and storage module slots. NEMs provide 10/100/1000 Ethernet, SAS connectivity to storage modules, and 10GbE Ethernet ports. **Note -** Most NEM functions, other than the 10/100/1000 Ethernet port, require a matching REM or FEM mounted on the server module motherboard before the server module can use that function.
4	Chassis management module (CMM)	A service processor for monitoring and managing components in the chassis. The CMM is preinstalled with Oracle ILOM software. **Note -** Each server module has its own service processor that operates independently of the CMM. Storage modules do not have a service processor. The CMM provides a limited set of commands for managing storage modules.
5	Power receptacles	• AC model – 4 power receptacles with power cord retention clips. • DC model – Blank panel.
6	Fan modules	6 redundant fan modules installed in the rear of the chassis.
7	Midplane	Inside the chassis, the midplane interconnects all the modular system components. The midplane supports industry-standard protocols such as PCIe, SAS, SATA, and Gigabit Ethernet.
8	Storage modules	Provide additional storage capacity to the modular system. The total number of supported storage modules depends on the model purchased. Refer to the storage module documentation for details. **Note -** Sometimes storage modules are referred to as *disk blades* or *disk modules*.

No.	Name	Description
9	Server modules	Up to 10 supported in the chassis. Server modules provide the following: • Motherboard with an UltraSPARC or Intel processor, and industry standard FB-DIMMs • SP that runs the Oracle ILOM software • Hard drives • Support for the addition of REMs • Support for the addition of FEMs that are needed when certain NEMs are installed in the chassis Each server module is independent, so both SPARC and Intel server modules can be installed, each having its own operating system (Oracle Solaris OS, Linux, based on what is supported for the server module). **Note -** Sometimes server modules are referred to as *blade servers*.
10	Power supply modules	• AC model – 2 installed in the front of the chassis with power receptacles in the rear. Each power supply module has an integrated, replaceable fan module. • DC model – 4 installed in the front of the chassis with power connections at the rear. Each power supply module has an integrated, non-replaceable fan module.
11	DC input unit	(Only on DC models) Provides the DC input terminals by which the DC input power cables are connected and includes Telco Alarm LEDs at the front of the chassis.
n/s	REMs	Provide HBA functionality on some blade servers. A REM mounts to a REM connector on the server module motherboard. Different RAID levels are supported, based on the REM purchased.
n/s	FEMs	Installed on the server module, FEMs enable server modules to use the 10GbE connections provided by certain NEMs. NEMs and the corresponding FEMs operate as a matched set.
n/s	Status LEDs	Located on the front and rear of the chassis. These indicators provide a visual status of the modular system through status OK, fault, temperature failure, and locate LEDs.

Related Information

- "Supported Racks" on page 6
- "Location Restrictions for DC Models" on page 6
- "Aisle Clearance for Service" on page 7
- "AC Power Requirements" on page 8
- "Determining DC Power Requirements" on page 10
- "Environmental Requirements" on page 14
- "Airflow Requirements" on page 16
- "Acoustic Noise Emissions" on page 17

■ “Weight and Size Specifications for Moving and Lifting” on page 18

Supported Racks

The modular system is rackmountable in racks with the following specifications:

- 19-inch EIA-310D type rack
- Depth of 35.4 to 39.4 inches (90 to 1000.1 cm)
- Front-to-back rail-to-rail spacing of 26.77 to 34.25 inches (68 to 87 cm)
- Certified to meet seismic requirements for NEBS-compliant environments

Related Information

- “Modular System Overview” on page 2
- “Location Restrictions for DC Models” on page 6
- “Aisle Clearance for Service” on page 7
- “AC Power Requirements” on page 8
- “Determining DC Power Requirements” on page 10
- “Environmental Requirements” on page 14
- “Airflow Requirements” on page 16
- “Acoustic Noise Emissions” on page 17
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Location Restrictions for DC Models

The DC model must be installed in a restricted-access location.

The IEC, EN and UL 60950 standards define a restricted-access location as an area intended for qualified or trained personnel only with access controlled by a locking mechanism such as a key lock or an access card system.

Caution – The DC power source must be located in the same premises as the DC model. The power source cannot be in one building with the modular system in another building. This restriction minimizes the possibility of transient energy appearing on the main DC input to the modular system.

Related Information

- "Modular System Overview" on page 2
- "Supported Racks" on page 6
- "Aisle Clearance for Service" on page 7
- "AC Power Requirements" on page 8
- "Determining DC Power Requirements" on page 10
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- "Airflow Requirements" on page 16
- "Acoustic Noise Emissions" on page 17
- "Weight and Size Specifications for Moving and Lifting" on page 18

Aisle Clearance for Service

Ensure that the cabinet that you plan to use meets the aisle clearance specifications in the following table.

Ideal cabinet placement is with the front facing a cold aisle and the rear facing a hot aisle. This layout enables cool air to flow through the front air intake, and heated air to exhaust out the rear.

Location	Service Access Requirement
Clearance for chassis installation	3 feet (0.9 m) on both sides of the chassis as it is lifted into the rack.
Front aisle (cold aisle)	5 feet (1.5 m) required for rackmounting.
Back aisle (hot aisle)	3 feet (0.9 m) required for cable access.

Related Information

- "Modular System Overview" on page 2

AC Power Requirements

Use the following information to plan for the installation of the AC version of the modular system.

The amount of power that a modular system consumes depends on the types and quantities of components installed in the chassis. For guidance and power estimates for your configuration, use the power conversion calculator at:

http://www.oracle.com/us/products/servers-storage/sun-power-calculators/calc/6000chassis-power-calculator.html

Note – To provide 2N power redundancy and to ensure that the system can tolerate a loss of one AC power supply, do not configure a system to exceed 6250W of input power consumption.

Caution – This product does not provide branch circuit overcurrent protection as defined by the US NEC (United States National Electrical Code), Article 100. Installations of this product in compliance with the US NEC must be on branch circuits with overcurrent protection as defined by Article 480.3 of the US NEC. Product power inputs with current ratings 16A or less must have a branch circuit or supplementary overcurrent protection device rated at no more than 20A. Product power inputs with current ratings of more than 16A must have a branch circuit or supplementary overcurrent protection device rated at no more than 160% of the product input current rating. Other national and/or local electrical codes might apply to the installation of this product.

Note – For power redundancy, ensure that AC power is provided from two independent feeds, one for each power supply.

The AC model requires four circuits that meet the specifications in the following table.

Function	Specification
Voltage	Four 200 to 240 VAC branch circuits (one for each modular system inlet).
Frequency	50/60 Hz.
Current	16A or 20A per output, total four AC inputs (two per power supply module).
AC power cords:	
• For use with external power sources (not through a modular power system)	**Americas Domestic** – NEMA L6-20P to IEC 320-C19M (4m, Oracle PN X5044A-Z). **International** – IEC309 to IEC320-C19 (4m, Oracle PN X5045A-Z). **Installed in a rack with a modular power system** – IEC320-C319 to IEC 320-C20 (1.5m, Oracle PN X5046A-Z; 2.0m, Oracle PN X5047A-Z). **Note -** Power cords are selected when the modular system is ordered, and shipped with the modular system.
• MPS	For MPS power cord requirements, refer to the documentation supplied with the MPS.

Related Information

- "Modular System Overview" on page 2
- "Supported Racks" on page 6
- "Location Restrictions for DC Models" on page 6
- "Aisle Clearance for Service" on page 7
- "Determining DC Power Requirements" on page 10
- "Environmental Requirements" on page 14
- "Airflow Requirements" on page 16
- "Acoustic Noise Emissions" on page 17
- "Weight and Size Specifications for Moving and Lifting" on page 18

Determining DC Power Requirements

Use the following topics to prepare your DC power source for the DC model.

Related Information

- "Modular System Overview" on page 2
- "Supported Racks" on page 6
- "Location Restrictions for DC Models" on page 6
- "Aisle Clearance for Service" on page 7
- "AC Power Requirements" on page 8
- "Environmental Requirements" on page 14
- "Airflow Requirements" on page 16
- "Acoustic Noise Emissions" on page 17
- "Weight and Size Specifications for Moving and Lifting" on page 18

Important Cautions for DC Power Sources

Caution – The DC power source must be located in the same premises as the DC model. The power source cannot be in one building with the modular system in another building. This restriction minimizes the possibility of transient energy appearing on the main DC input to the modular system.

Caution – A power disconnect device is not incorporated with the equipment. You must incorporate an external, readily accessible disconnect device to the equipment.

Caution – This product does not provide branch circuit overcurrent protection as defined by the US NEC (United States National Electrical Code), Article 100. Installations of this product in compliance with the US NEC must be on branch circuits with overcurrent protection as defined by Article 480.3 of the US NEC.

Product power inputs with current ratings 16A or less must have a branch circuit or supplementary overcurrent protection device rated at no more than 20A. Product power inputs with current ratings of more than 16A must have a branch circuit or supplementary overcurrent protection device rated at no more than 160% of the product input current rating. Other national and/or local electrical codes might apply to the installation of this product.

Caution – The Netra 6000 DC system enclosure must be reliably connected to earth ground. The Netra 6000 DC system enclosure has a safety earth bonding point. See "Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68. This bonding point can be used to meet the central office requirements for enclosure or shelf grounding in GR1089-CORE. The grounding point is for connection of an electrical conductor between the system enclosure metal and a nearby point on the central office ground system. The use of this bonding point connection is optional if the system chassis mounting meets the requirements for a reliable chassis ground connection.

Related Information

- "Power Calculator" on page 11
- "DC Power Specifications" on page 12
- "L/R Ratio Impact on DC Power System Stability" on page 14
- "Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68
- "DC Power Cable Wiring Reference" on page 72

Power Calculator

The amount of power that a modular system consumes depends on the types and quantities of components installed in the chassis. For guidance and power estimates for your configuration, use the power conversion calculator at:

`http://www.oracle.com/us/products/servers-storage/sun-power-calculators/calc/netra-6000-power-calculator-519736.html`

Note – To provide N+1 power redundancy, do not configure a system that exceeds 8,460W of input power.

Related Information

- "Important Cautions for DC Power Sources" on page 10
- "DC Power Specifications" on page 12
- "L/R Ratio Impact on DC Power System Stability" on page 14
- "Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68
- "DC Power Cable Wiring Reference" on page 72

DC Power Specifications

A DC model, configured with maximum power redundancy, requires eight input power connections. Depending on the system load configuration, operation is possible on a minimum of two, three, or four, input power connections meeting the requirements in the following table.

The DC power source for the system must meet the following criteria:

- -48 VDC or -60 VDC nominal DC power system
- Electrically isolated from any AC power source and must meet TNV-2 requirements as defined by UL 60950-1 and IEC 60950-1
- Reliably connected to earth (the battery positive bus is connected to the grounding electrode)

State	Input Voltage (VDC)	Power Supplies in Operation	Maximum for One Input (Watts)	Maximum Total Chassis Input Power (Watts)	Maximum Total Blade and NEM Load (Watts)
Normal operation	-39.5 to -72	4	2,160	8,640	7,280
One power supply offline	-48 to -72	3	2,880*	8,640*	7,280
Low input voltage with one power supply offline	-39.5 to -48	3	2,400	7,200	6,050

* These values are the total chassis rating and maximum power for any one input.

The following specifications apply to the DC model:

- Maximum chassis overhead is 490W for cooling fans and 7W for the CMM.
- Each operating power supply must have at least one input (A or B) present.
- When both A and B inputs are present on a power supply, the highest input voltage applies to the input voltage as shown in the previous table.

- The air temperature at the chassis air intake is between -5 degrees C and +55 degrees C.
- At least two power supplies must have A, B, or A and B inputs present to provide CMM power and begin system operation.
- The starting voltage for the power supplies is -45 VDC +/-3 VDC.
- The low voltage shutdown for the power supplies is -38.5 VDC +/-1 VDC.
- The high voltage shutdown for the power supplies is above -72.5 VDC.
- Factory setting for power supplies PS0 and PS1 is to default to their A input when both the A and B inputs are at -48 VDC or greater.
- Factory setting for power supplies PS2 and PS3 is to default to their B input when both the A and B inputs are at -48 VDC or greater.
- The default input for each power supply is user selectable through the Oracle ILOM interface. User selections are stored in the CMM and must be reset if a different CMM is installed in the system.
- Total system input power is shared equally by the power supplies in operation. With both A and B inputs present for four operating power supplies, one-half of the system load is on the A inputs and one-half is on the B inputs unless the user has selected a different default setting for the power supply input switches.
- The power supplies switch inputs when the voltage of the default input decreases to -46.5 VDC +/-1.5 VDC and the other input is at -48 VDC or greater.
- There is no current sharing between the A and B inputs of a power supply. Only one input is active at any time.
- Reversing the input voltage to a power supply input will not cause damage but the power supply will not operate.
- All inputs have electronic overcurrent protection.
- All positive return inputs have fuse protection with type TLS70 fuses. The fuses are part of the input power unit and are not user serviceable. The fuses prevent damage due to current between the A and B returns if there is a failure of the power supply input switch.
- The A/B input switches are fully isolating so that there is no current flow between the A and B positive returns under normal operating conditions.
- The power inputs are type DC-I and are isolated from the system chassis.
- When input power is initially applied or restored to a chassis, the 12V output of the power supplies is automatically activated after three minutes if there is no communication from the CMM.
- Inrush current at initial application of input power to each input is typically a 500A pulse lasting less than 100 microseconds.

Related Information

- "Important Cautions for DC Power Sources" on page 10

- "Power Calculator" on page 11
- "L/R Ratio Impact on DC Power System Stability" on page 14
- "Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68
- "DC Power Cable Wiring Reference" on page 72

L/R Ratio Impact on DC Power System Stability

The DC modular system places a negative resistance load on the DC power system to which it is connected.

The L/R ratio in the DC power system determines if the power system voltages and currents are stable with the negative resistance load of the modular system.

If the L/R ratio becomes too large, high transient voltages or oscillation might result and lead to unreliable system operation or to damage to the modular system power supplies.

To ensure stability of the DC power system with the modular system at maximum load, use a maximum L/R ratio of 2 microhenries per milliohm for the DC power distribution design. When L/R exceeds 2 microhenries per milliohm, you might need to add capacitors or capacitor-resistor damping circuits at the modular system inputs to prevent power system instability.

Related Information

- "Important Cautions for DC Power Sources" on page 10
- "Power Calculator" on page 11
- "DC Power Specifications" on page 12
- "Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68
- "DC Power Cable Wiring Reference" on page 72

Environmental Requirements

Ensure that the modular system is placed in an environment that meets the following specifications.

Specification	Operating	Nonoperating
Temperature	• Long-term operation: 5°C to 45°C (41°F to 113° F) noncondensing • Short-term NEBS operation: -5°C to 55°C (23°F to 131°F)	-40°C to 70°C (-40°F to 158° F) noncondensing
Maximum possible heat dissipation / HVAC load	• AC model: 6250W • DC model: 8460W	n/a
Maximum possible temperature rise through chassis	• AC model: 19°C (66.2°F) at sea level • DC model: 26°C (78.8°F) at sea level	n/a
Optimum ambient temperature	22°C (71.6°F)	n/a
Relative humidity	• Long-term operation: 5 to 85% RH, noncondensing, not to exceed 0.024 kg water/kg of dry air • Short-term operation: 5 to 90% RH, noncondensing, not to exceed 0.024 kg water/kg of dry air	Up to 93% RH, noncondensing, 38°C max wet bulb
Optimum ambient relative humidity	45 to 50% RH, noncondensing*	n/a
Altitude	4000 m (13000 ft) above sea level at aisle-ambient temperature of 35°C	0 to 12000 m (39370 ft)

* Conditions should not fluctuate by more than 5.5°C (10°F) or 10% relative humidity during a 60-minute period.

The amount of heat output varies, depending on the modular system configuration. Typical airflow (for room temperatures below 23°C) is about 600 CFM. Maximum specifications are listed in the following table.

Description	Specification
Maximum possible system volumetric airflow	1012 CFM
Maximum possible heat dissipation/HVAC load	29,500 BTU/h

Description	Specification
Maximum possible temperature rise through chassis	18.5°C (33°F)

Related Information

- "Modular System Overview" on page 2
- "Supported Racks" on page 6
- "Location Restrictions for DC Models" on page 6
- "Aisle Clearance for Service" on page 7
- "AC Power Requirements" on page 8
- "Determining DC Power Requirements" on page 10
- "Airflow Requirements" on page 16
- "Acoustic Noise Emissions" on page 17
- "Weight and Size Specifications for Moving and Lifting" on page 18

Airflow Requirements

The modular system uses forced air to draw in ambient air from the front of the chassis and exhaust heated air to the rear. Forced air is handled by six rear fan modules. Each fan module has two fans (total of 12 rear fans). Additional fans are located in each power supply module in the front of the chassis.

To ensure adequate cooling, follow these guidelines:

- Do not block the ventilation areas of the chassis.
- Ensure that cabling does not block any airflow.
- Only use cabinet doors that are at least 60% perforated. Remove cabinet doors that do not meet this specification.
- Ensure that front clearance between the inside of the cabinet door and the system is a minimum of 0.2 inches (0.5 cm).
- Ensure that rear clearance between the inside cabinet door is a minimum of 3.1 inches (7.9 cm).

Related Information

- "Modular System Overview" on page 2
- "Supported Racks" on page 6

- "Location Restrictions for DC Models" on page 6
- "Aisle Clearance for Service" on page 7
- "AC Power Requirements" on page 8
- "Determining DC Power Requirements" on page 10
- "Environmental Requirements" on page 14
- "Acoustic Noise Emissions" on page 17
- "Weight and Size Specifications for Moving and Lifting" on page 18

Acoustic Noise Emissions

Declared noise emissions are in accordance with ISO 9295/9296 standards.

Data center personnel must take necessary precautions to reduce exposure to the high noise levels.

Acoustic noise emission levels are as follows:

Function	Specification
Operating/idling acoustic noise (LwAd, 1B=10 dB)	• AC model: 7.6B at or below 27°C (80.6°F), 9.1B at maximum ambient • DC model: 7.8B at or below 27°C (80.6°F), 9.1B at maximum ambient

Related Information

- "Modular System Overview" on page 2
- "Supported Racks" on page 6
- "Location Restrictions for DC Models" on page 6
- "Aisle Clearance for Service" on page 7
- "AC Power Requirements" on page 8
- "Determining DC Power Requirements" on page 10
- "Environmental Requirements" on page 14
- "Airflow Requirements" on page 16
- "Weight and Size Specifications for Moving and Lifting" on page 18

Weight and Size Specifications for Moving and Lifting

The chassis, packaging, and pallet weigh approximately 600 lb (272 kg). Plan ahead to have equipment needed to move the shipment.

Ensure that your loading dock and route to the data center have the following access allowances:

- Minimum 56 inch (142 cm) height
- Minimum 37 inch (94 cm) width

Note – Always keep the modular system in the upright position while in its shipping container.

If possible use a mechanical lift to install the chassis into the rack. If using a mechanical lift is not possible, you must depopulate the chassis and have at least four people to manually lift the chassis.

The following table provides the dimensions and weights of the modular system chassis shipping carton.

Packaged Modular System	(10U) AC Dimension or Weight	(11U) DC Dimension or Weight
Carton:		
• Height	31 in. (129.3 cm)	32.75 in (83 cm).
• Width	26.5 in. (67.3 cm)	27.5 in. (70 cm)
• Length	36 in. (91.4 cm)	36 in. (94 cm)
Weight, approximate	600 lb (272 kg)	610 lb (277 kg)

The following table provides the dimensions and approximate weights of unpacked components:

Unpacked Component	(10U) AC Dimension or Weight	(11U) DC Dimension or Weight
Height	17.25 in. (43.8 cm)	19 in. (48.2 cm)
Width (excluding rackmounting tabs)	17.50 in. (44.5 cm)	17.50 in. (44.5 cm)

Unpacked Component	(10U) AC Dimension or Weight	(11U) DC Dimension or Weight
Depth (including front bezel)	27.25 in. (69.2 cm)	27.25 in. (69.2 cm)
Chassis weight (empty)	137 lb (62 kg)	145 lb (66 kg)
Chassis weight (with component filler panels)	211 lb (96 kg)	218 lb (99 kg)
Chassis weight (fully configured with chassis components)	360 lb (163 kg)	368 lb (167 kg)
Subassembly weights:		
• I/O chassis with midplane	79 lb (35.8 kg)	88 lb (40 kg)
• CMM	1.3 lb (0.6 kg)	1.3 lb (0.6 kg)
• Front indicator module	1.8 lb (.8 kg)	1.8 lb (.8 kg)
• AC power supply module (without fan module)	18.5 lb (9.7 kg)	n/a
• Front fan module in AC power supply	1.9 lb (0.88 kg)	n/a
• DC power supply module	n/a	8.5 lb (4 kg)
• DC input unit	n/a	10 lb (5 kg)
• DC power supply adapter	n/a	2.6 lb (1.2 kg)
• Server module	20 lb (9.1 kg)	20 lb (9.1 kg)
• Rear fan module	2.3 lb (1.1 kg)	2.3 lb (1.1 kg)
• NEM	3.9 lb (1.8 kg)	3.9 lb (1.8 kg)
• PCI EM	0.8 lb (.4 kg)	0.8 lb (.4 kg)
• Filler panel, server module	6 lb (2.7 kg)	6 lb (2.7 kg)
• Filler panel, NEM	2.7 lb (1.2 kg)	2.7 lb (1.2 kg)
• Filler panel, PCI EM	0.4 lb (.2 kg)	0.4 lb (.2 kg)

Related Information

- "Modular System Overview" on page 2
- "Supported Racks" on page 6
- "Location Restrictions for DC Models" on page 6
- "Aisle Clearance for Service" on page 7
- "AC Power Requirements" on page 8
- "Determining DC Power Requirements" on page 10
- "Environmental Requirements" on page 14
- "Airflow Requirements" on page 16

- "Acoustic Noise Emissions" on page 17

Preparing to Install the Modular System

The following topics describe the tools you need, how to unpack the shipment, and how to save the modular system MAC address for later use.

Related Information

- "Installing the Chassis Into Your Rack" on page 27
- "Preparing Your Site Before the System Arrives" on page 1

▼ Gather Required Tools and Equipment

1. **Gather the following tools.**
   - No. 2 Phillips screwdriver
   - M6 hex driver (for DC model)
   - Antistatic wrist strap
   - Antistatic mat
   - Box cutter or knife for unpacking
2. **Gather additional equipment that might be needed to complete the installation:**
   - **(DC models) Power cable supplies and equipment** – Eight cables built to the specifications listed in "Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68.
   - **Ethernet cables** – One cable is needed for each LAN connection you plan to make to the CMM, server modules, NEMs, and PCI EMs.

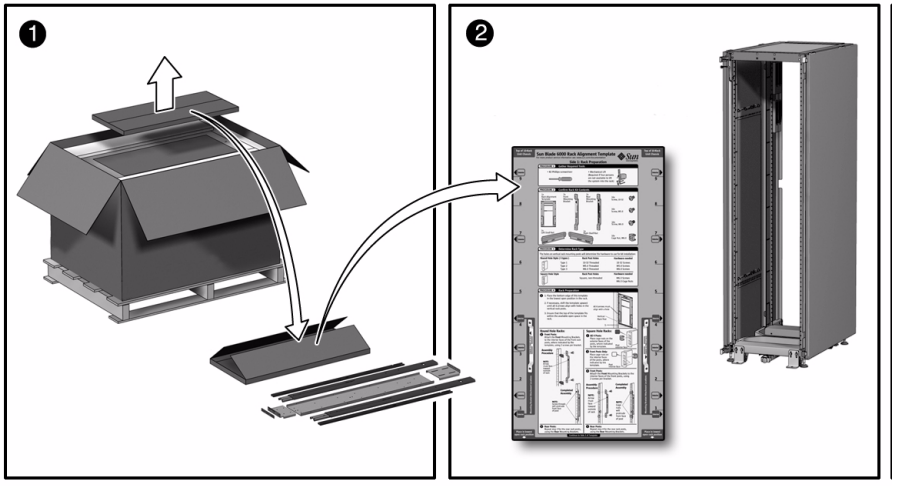
- **Terminal device** – Can be a terminal, a laptop with terminal emulation software, or a connection through a terminal server.
- **Serial cable** – Used to connect the terminal device to the CMM. You can use a crossover cable or a straight-though cable with a crossover adapter.

Related Information

- "Connectivity Choices" on page 57
- "Cable the CMM SER MGT Port" on page 61
- "Cable the CMM NET MGT Port" on page 63
- "Cable NEM and PCI EM Modular Options" on page 64

▼ Remove the Shipping Carton

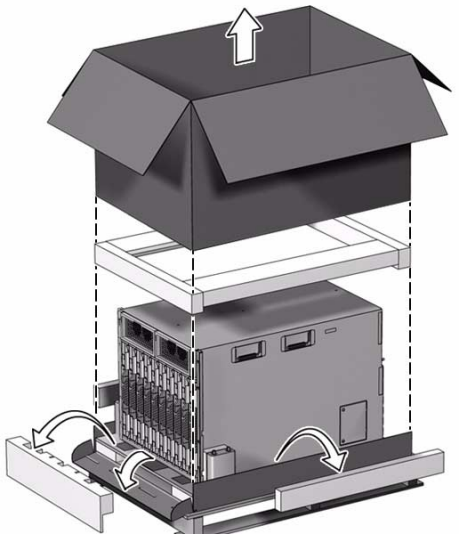
1. **Open the top of the carton and set aside the rail kit and rack alignment template.**



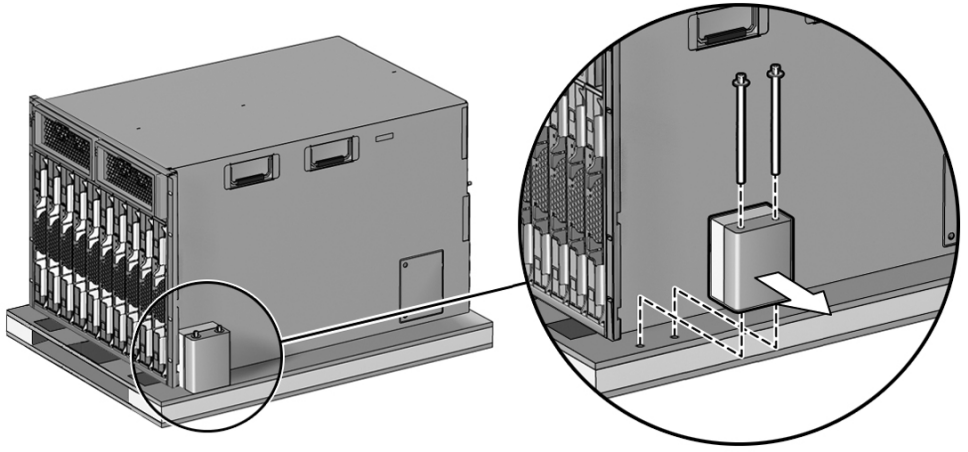
2. **Lift the carton straight up and remove packing filler pieces from the sides of the chassis.**

   If you are using a mechanical lift to lift the chassis, do not remove the chassis from the pallet at this time. Instructions for lifting and removing the pallet are provided in "Installing the Chassis Into Your Rack" on page 27.

Note – Before discarding the carton, save the Customer Information sheet that is provided in a pouch on the outside of the carton. This sheet provides important serial number and MAC address information.



3. **Determine if you need to remove the pallet restraints.**
   - If you are using a mechanical lift, do not remove the pallet restraints at this time.
   - If you are manually lifting the chassis into the rack, remove the pallet restraints.



Related Information

- "Note the CMM MAC Address" on page 25
- "Verify Shipment Contents" on page 24

▼ Verify Shipment Contents

- **Verify that the items described in the following table are provided with your chassis shipment.**

Chassis Packaged Items	Description
Chassis	Chassis contains: • 1 CMM • 9 server module filler panels • 2 NEM filler panels or NEMs • 20 PCI EM filler panels or PCI EMs • Dongle for server module serial connectivity • RJ-45 to DB-9 serial adapter for the dongle
Accessory kit	Provides limited set of documentation
Country kit	4 power cords
Rackmount kit	Provides the following: • Rack alignment template • Rackmount shelf • Rack adapter plates • Screws needed for rack installation
Additional options	Might include the following: • NEMs (up to 2) • PCI EMs (up to 20) • Server or disk modules (up to 10)

Related Information

- "Gather Required Tools and Equipment" on page 21
- "Remove the Shipping Carton" on page 22
- "Note the CMM MAC Address" on page 25

▼ Note the CMM MAC Address

Depending on the method you use to initially configure the chassis, you might need to know the unique MAC address that was assigned to the CMM at the factory. The MAC address is located on the Customer Information sheet that is in a pouch on the side of the shipping carton.

1. **Obtain the Customer Information sheet from the shipping carton.**
2. **Save or make note of the MAC address listed on the Customer Information sheet.**

   Depending on the configuration method you use, the MAC address might be used later in the configuration tasks.

Related Information

- "CMM IP Address Configuration" on page 59
- "Configure the IP Addresses Using Your DHCP Server" on page 76
- "Remove the Shipping Carton" on page 22

Installing the Chassis Into Your Rack

Based on the method you plan to use to lift the chassis, perform the tasks in the following table.

Description	Links
Install the chassis manually (requires a minimum of four people).	"Depopulating the Chassis" on page 27 "Mounting the Chassis in a Rack" on page 38 "Repopulating the Chassis" on page 43
Install the chassis using a mechanical lift.	"Mounting the Chassis in a Rack" on page 38

Related Information

- "Modular System Overview" on page 2
- "Supported Racks" on page 6
- "Weight and Size Specifications for Moving and Lifting" on page 18

Depopulating the Chassis

If you are not using a mechanical lift to mount the chassis in a rack, perform one of the following groups of tasks to remove the preinstalled components from the chassis:

Description	Links
Depopulate an AC chassis.	“Use Antistatic Equipment” on page 28 “Remove the Power Supplies (AC)” on page 29 “Remove Server and Storage Modules” on page 31 “Remove the Fan Modules” on page 32 “Remove the NEMs” on page 33 “Remove the PCI EMs” on page 35 “Remove the CMM” on page 36 “Remove Filler Panels” on page 36
Depopulate a DC chassis.	“Use Antistatic Equipment” on page 28 “Remove the Power Supplies (DC)” on page 30 “Remove Server and Storage Modules” on page 31 “Remove the Fan Modules” on page 32 “Remove the NEMs” on page 33 “Remove the PCI EMs” on page 35 “Remove the CMM” on page 36 “Remove Filler Panels” on page 36

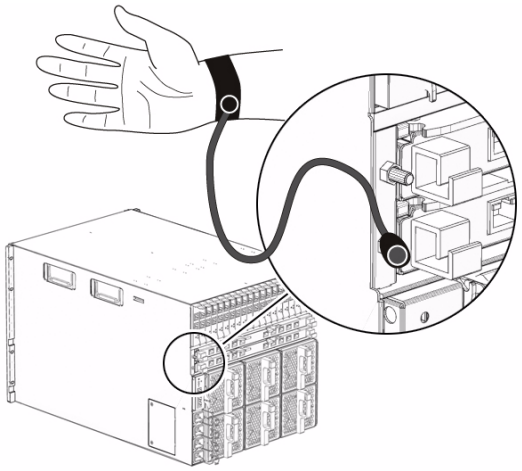
Related Information

- “Mounting the Chassis in a Rack” on page 38
- “Repopulating the Chassis” on page 43
- “Modular System Overview” on page 2

▼ Use Antistatic Equipment

Modular system components are extremely sensitive to static electricity.

- **Use the following practices to avoid damaging sensitive components:**
  - Use an antistatic wrist strap. Attach this wrist strap to your wrist and ground the other end of strap to the system chassis (sheet metal).



- Place static sensitive components such as hard drives, server modules, server module options, NEMs, and PCI EMs on an antistatic surface.

Related Information

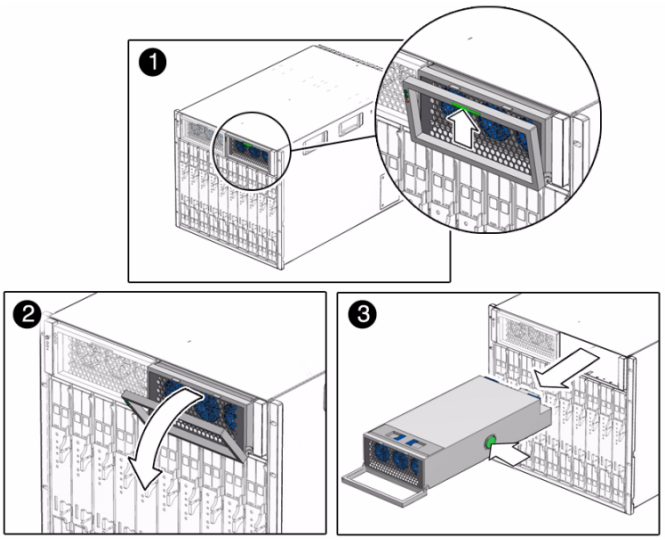
- "Verify Shipment Contents" on page 24

▼ Remove the Power Supplies (AC)

This topic describes how to remove the power supplies from an AC chassis in preparation for manually lifting the chassis into a rack.

Perform the following steps to remove each power supply.

1. **From the front of the chassis, locate the power supply to be removed.**



2. **Press the green button on the power supply handle and rotate the supply handle down.**
3. **Pull the power supply out and support the weight of the power supply with your other hand.**

Caution – The power supply is heavy. Do not pull the supply all the way out with the handle. Support the underside of the power supply with your other hand.

Related Information

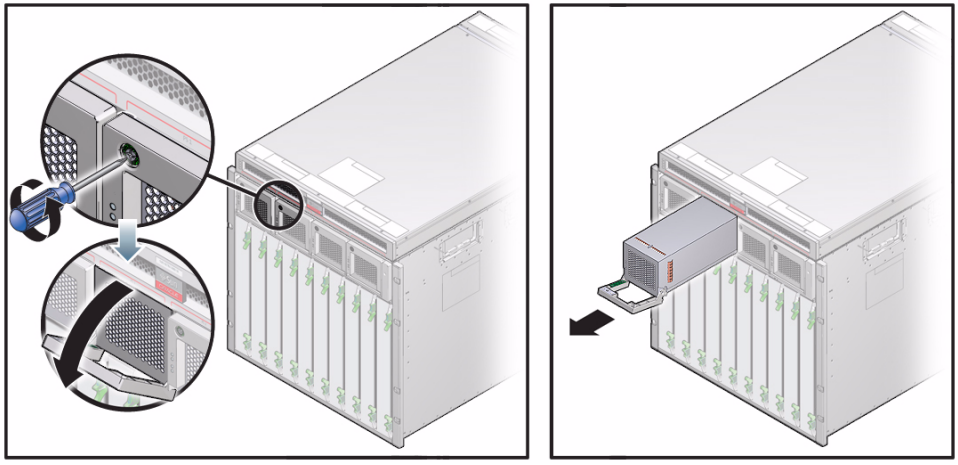
- "Use Antistatic Equipment" on page 28
- "Remove Server and Storage Modules" on page 31
- "Install the Power Supplies (AC)" on page 48
- "Modular System Overview" on page 2

▼ Remove the Power Supplies (DC)

This topic describes how to remove the DC power supplies from a DC chassis in preparation for manually lifting the chassis into a rack.

Perform the following steps to remove each power supply.

1. **From the front of the chassis, locate the power supply to be removed.**



2. **Unscrew the green captive screw.**
3. **Lower the power supply handle.**
4. **Pull the power supply out and support the weight of the power supply with your other hand.**

Caution – The power supply is heavy. Do not pull the supply all the way out with the handle. Support the underside of the power supply with your other hand.

Related Information

- "Use Antistatic Equipment" on page 28
- "Remove Server and Storage Modules" on page 31
- "Install the Power Supplies (AC)" on page 48
- "Modular System Overview" on page 2

▼ Remove Server and Storage Modules

This topic describes how to remove the server or storage modules from a chassis in preparation for manually lifting the chassis into a rack.

Note – Usually the server or storage modules are not shipped in the chassis, so you might not need to perform these steps. If this is the case, go to the next topic, "Remove Filler Panels" on page 36.

Perform the following steps to remove each module:

1. **From the front of the chassis, locate each server or storage module and note which slot it is installed in.**

Note – You must return each module to its original location.

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2. **Press the latches on the ejectors at the top and bottom of the module.**
3. **Swing out both ejector latches simultaneously.**
4. **Use the ejector latches to start pulling the server module out of its slot.**

Caution – Do not use the ejector latches to carry the module, because the latches do not support the weight of the module.

---

5. **Use your hands to finish pulling the module out of the chassis while supporting the weight of the module from the bottom.**

Related Information

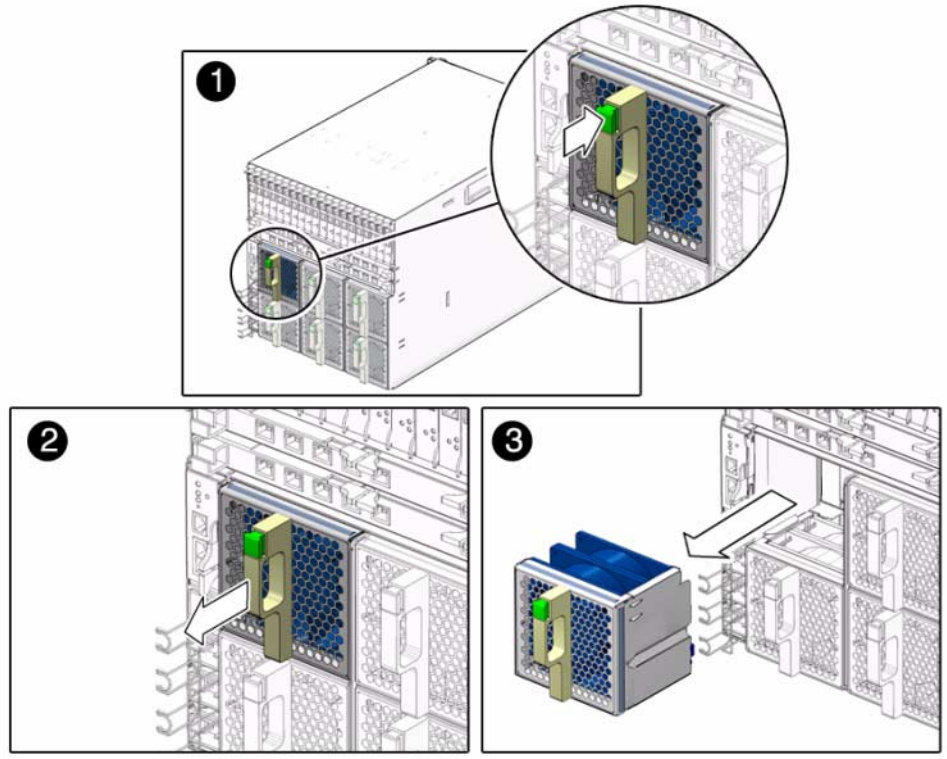
- "Use Antistatic Equipment" on page 28
- "Remove the Fan Modules" on page 32
- "Install Server and Storage Modules" on page 50
- "Modular System Overview" on page 2

▼ Remove the Fan Modules

This topic describes how to remove the fan modules from a chassis in preparation for manually lifting the chassis into a rack.

Perform the following steps to remove each fan module.

1. **From the rear of the chassis, locate the fan module that you plan to remove.**



2. **Press and hold the green button on the fan handle.**
3. **Pull out the fan module.**

Related Information

- "Use Antistatic Equipment" on page 28
- "Remove the NEMs" on page 33
- "Install the Chassis Fan Modules" on page 48
- "Modular System Overview" on page 2

▼ Remove the NEMs

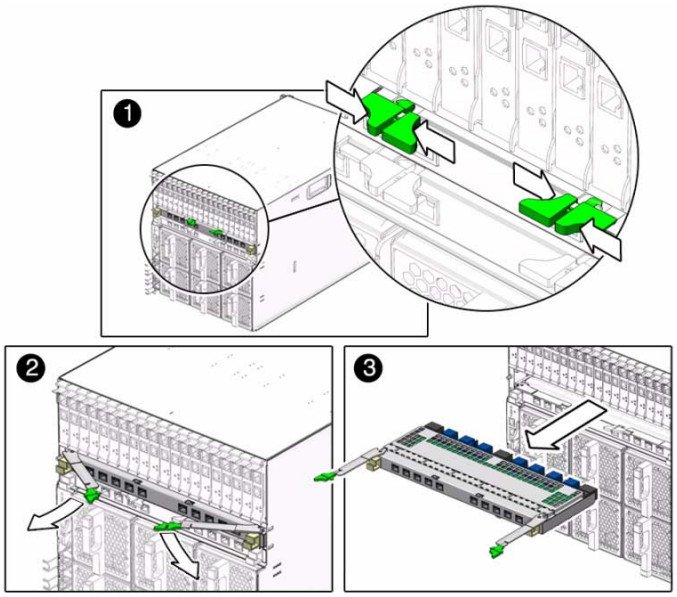
This topic describes how to remove NEMs from a chassis in preparation for manually lifting the chassis into a rack.

Perform the following steps to remove each NEM.

Note – If your modular system does not contain any NEMs, skip these steps and go to "Remove the PCI EMs" on page 35.

1. **From the rear of the chassis, locate each NEM and note which slot it is installed in.**

Note – You must return each NEM to its original location.



2. **Press and hold the ejector buttons on both right and left ejector levers.**
3. **Open the ejector levers by rotating them outward.**
4. **Pull the NEM toward you.**

Related Information

- "Use Antistatic Equipment" on page 28
- "Remove the PCI EMs" on page 35
- "Install the NEMs" on page 46
- "Modular System Overview" on page 2

▼ Remove the PCI EMs

This topic describes how to remove PCI EMs from a chassis in preparation for manually lifting the chassis into a rack.

Perform the following steps to remove each PCI EM.

Note – If your modular system does not contain any PCI EMs, skip these steps and go to "Remove the CMM" on page 36.

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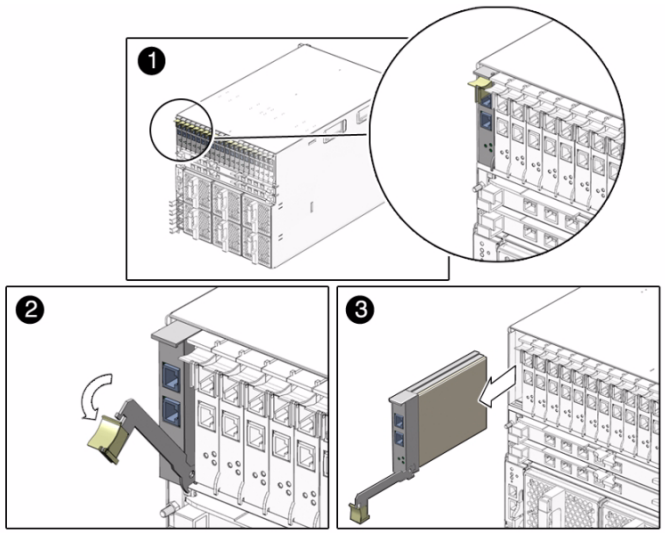
1. **From the rear of the chassis, locate each PCI EM and note which slot it is installed in.**

Note – You must return each PCI EM to its original location.



2. **Place one finger on top of the ejector lever and rotate the lever downward.**
3. **Pull the ejector lever toward you and pull the PCI EM out of the chassis.**

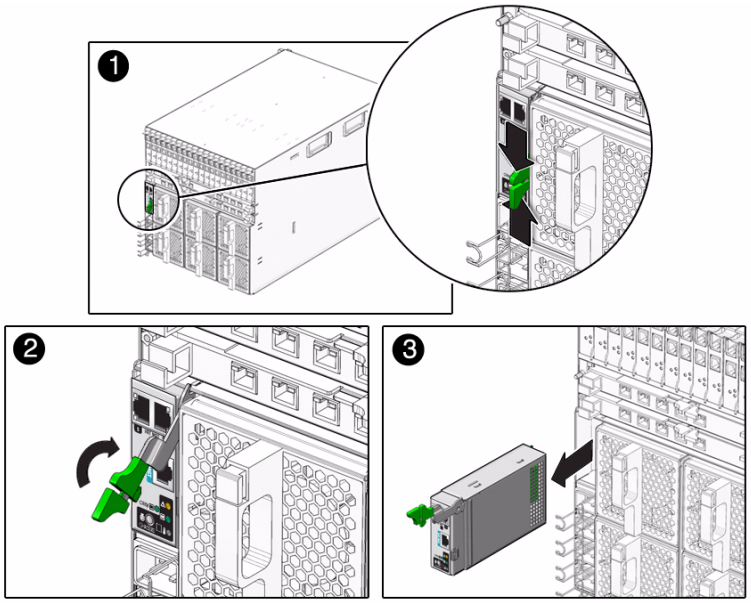
Related Information

- "Use Antistatic Equipment" on page 28
- "Remove the CMM" on page 36
- "Install the PCI EMs" on page 45
- "Modular System Overview" on page 2

▼ Remove the CMM

This topic describes how to remove the CMM from a chassis in preparation for manually lifting the chassis into a rack.

1. **From the rear of the chassis, locate the CMM.**



2. **Press and hold the ejector buttons on the CMM ejector lever.**
3. **Pull the ejector lever away and up to disengage the CMM.**

Related Information

- "Use Antistatic Equipment" on page 28
- "Mounting the Chassis in a Rack" on page 38
- "Install the CMM" on page 44
- "Modular System Overview" on page 2

▼ Remove Filler Panels

This topic describes how to remove the server module, NEM, and PCI EM filler panels from a chassis in preparation for manually lifting the chassis into a rack.

Caution – Do not operate the modular system without filler panels installed in all empty slots. Filler panels must be installed in all unoccupied slots to ensure proper cooling and to comply with FCC regulations.

1. Identify the filler panels in your chassis.

FIGURE: Server Module Filler Panel

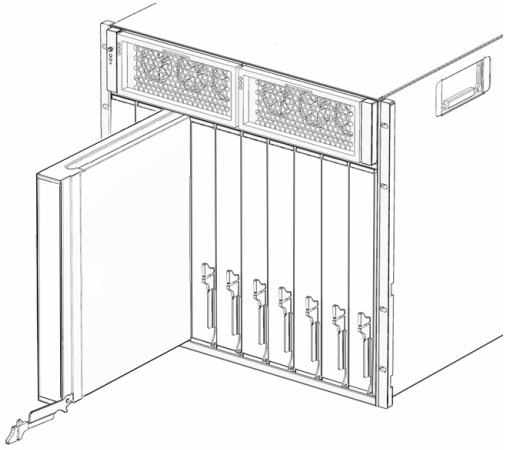


FIGURE: PCI EM Filler Panel

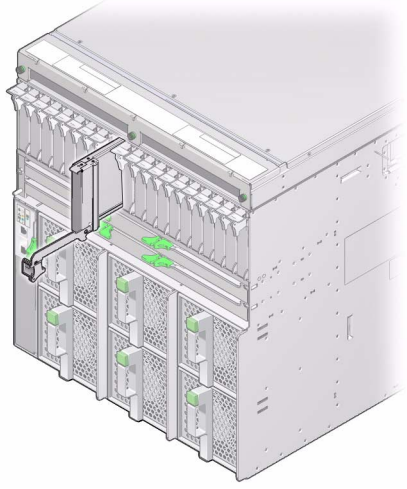
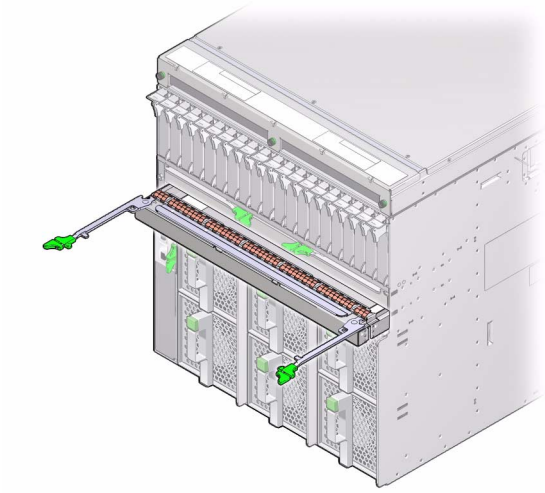


FIGURE: NEM Filler Panel



2. **For each filler panel, open the ejector latch.**
3. **Use the ejector latch to pull the filler panel out of its slot.**

Related Information

- "Install Filler Panels" on page 52

Mounting the Chassis in a Rack

Refer to the instructions on the chassis *Rack Alignment Template* for your model (AC or DC) for detailed instructions on mounting the chassis in a rack. This template is included with the modular system rackmount kit and is also available online (see "Related Documentation" on page viii). Be sure to print out the PDF file of the template at the original scale so the rack spacing indicated on the template is accurate.

Chassis mounting instructions on the template are repeated in the following topics, but you still need the rack alignment template to determine the proper rack hole alignment.

These topics provide the following information:

Step	Description	Links
1.	Identify the rackmounting hardware for your rack.	"Identify Rackmounting Hardware for Your Rack Type" on page 39
2.	Position the template on your rack.	"Position the Template" on page 40
3.	Attach mounting brackets to your rack.	"Attach Mounting Brackets to Your Rack" on page 40
4.	Install the chassis shelf rails.	"Install the Shelf Rails" on page 41
5.	Lift and install the chassis.	"Lift and Install the Chassis" on page 41

Related Information

- "Weight and Size Specifications for Moving and Lifting" on page 18
- "Depopulating the Chassis" on page 27
- "Repopulating the Chassis" on page 43

▼ Identify Rackmounting Hardware for Your Rack Type

The type of holes on your rack posts determine which rackmounting hardware you must use.

Note – Rackmounting hardware information is also provided on the *Rack Alignment Template* for your model (AC or DC).

- **Use the following table to determine which hardware to use to mount the chassis in your rack.**

Rack Post Hole Style	Rackmounting Kit Hardware Needed
Round hole, type 1, 10-32 threaded	10-32 screws
Round hole, type 2, M5 threaded	M5 screws
Round hole, type 3, M6 threaded	M6 screws, short M6 screws, long
Square hole, unthreaded	M6 screws, short M6 screws, long M6 cage nuts

Related Information

- "Supported Racks" on page 6
- "Gather Required Tools and Equipment" on page 21
- "Verify Shipment Contents" on page 24
- "Position the Template" on page 40

▼ Position the Template

Perform the following *Rack Alignment Template* positioning steps for each post in your rack.

Note – Template positioning steps are also provided on the *Rack Alignment Template* for your model (AC or DC).

---

1. **Place the bottom edge of the template in the lowest open position of the rack, with the side of the template along the left side of a rack post.**
2. **Shift the template upward until all six template arrows align with holes in the rack posts.**

   Ensure that the top of the template fits within the available open space in the rack.
3. **Mark or make note of the post holes that line up with the mounting hardware arrows as shown on the template.**

Related Information

- "Supported Racks" on page 6
- "Attach Mounting Brackets to Your Rack" on page 40

▼ Attach Mounting Brackets to Your Rack

1. **Follow the instructions on the *Rack Alignment Template* to mount the brackets using the hardware you identified.**

   See "Identify Rackmounting Hardware for Your Rack Type" on page 39.
2. **Install the shelf rails.**

   See "Install the Shelf Rails" on page 41.

Related Information

- "Supported Racks" on page 6

- "Gather Required Tools and Equipment" on page 21
- "Install the Shelf Rails" on page 41

▼ Install the Shelf Rails

Note – Template positioning steps are also provided on the *Rack Alignment Template* for your model (AC or DC).

1. **Orient the left shelf rail so that it runs from the front left mounting bracket to the rear mounting bracket.**
2. **Insert the front shelf rail hooks into the bracket slots and push the shelf rail down to engage the hooks.**
3. **Extend the rear section of the shelf rail and insert the rear hooks into the rear bracket slots.**

   Ensure that the hooks are fully engaged in the bracket.
4. **Repeat these steps to mount the right shelf rail.**

Related Information

- "Gather Required Tools and Equipment" on page 21
- "Lift and Install the Chassis" on page 41

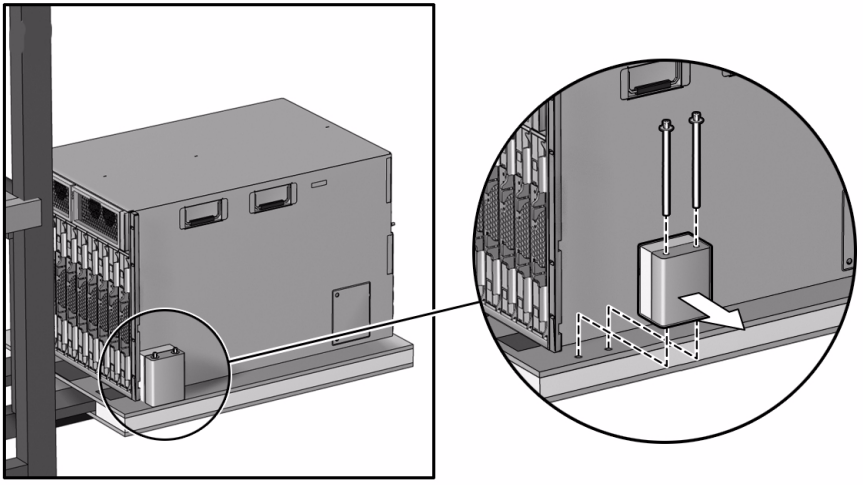
▼ Lift and Install the Chassis

Perform the following steps either using a mechanical lift or manually with four people. If you are manually installing the chassis, ensure that you depopulate the chassis first. See "Depopulating the Chassis" on page 27.

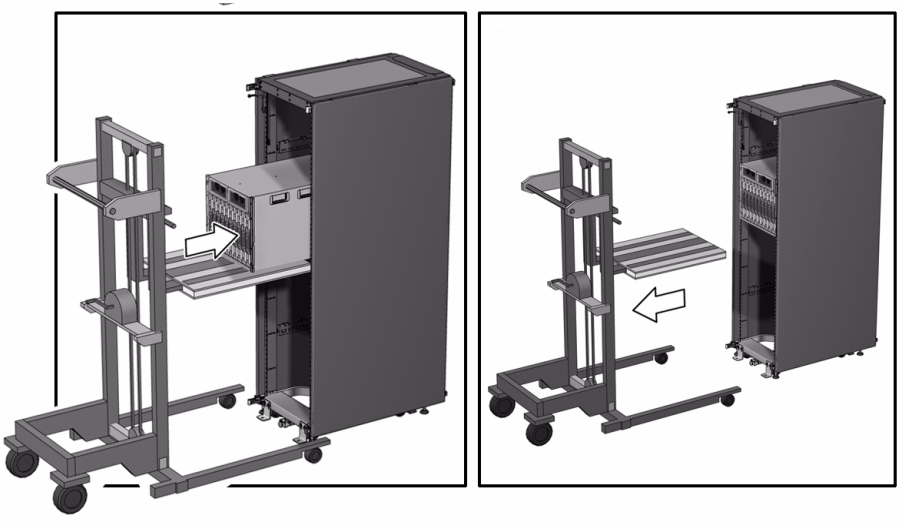
Caution – The chassis is heavy. Use a mechanical lift or depopulate the chassis and use four people to lift the chassis.

1. **Raise the chassis so that the bottom of the chassis is at the height of the rail shelf.**
2. **If you are using a mechanical lift, remove the pallet restraints.**

   If you are lifting manually and have already removed the restraints, go to Step 3.



3. **Slide the chassis into the rack until the chassis front mounting flanges contact the rack posts.**



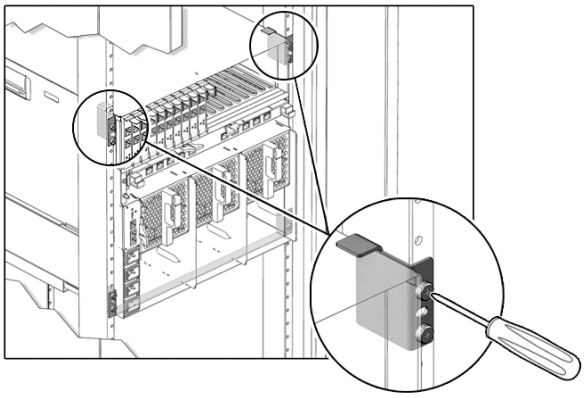
4. **Install 8 screws to secure the front of the chassis to the rack, as shown on the rack alignment template.**

   If using M6 screws, use the long screws for this step.

5. **Fasten two upper rear brackets to the rack.**

   Place the screws in the two outside holes of the bracket, and leave the middle hole empty.

Note – Permanent installation of these two brackets is required for seismic bracing.



6. **If you depopulated the chassis, repopulate the chassis.**

   See "Repopulating the Chassis" on page 43.

Related Information

- "Remove the Shipping Carton" on page 22
- "Identify Rackmounting Hardware for Your Rack Type" on page 39
- "Weight and Size Specifications for Moving and Lifting" on page 18

Repopulating the Chassis

If you depopulated the chassis to install it manually, reinstall the components.

Description	Links
Repopulate an AC chassis.	"Use Antistatic Equipment" on page 28 "Install the CMM" on page 44 "Install the PCI EMs" on page 45 "Install the NEMs" on page 46 "Install the Chassis Fan Modules" on page 48 "Install the Power Supplies (AC)" on page 48 "Install Server and Storage Modules" on page 50 "Install Filler Panels" on page 52
Repopulate a DC chassis.	"Use Antistatic Equipment" on page 28 "Install the CMM" on page 44 "Install the PCI EMs" on page 45 "Install the NEMs" on page 46 "Install the Chassis Fan Modules" on page 48 "Install the Power Supplies (DC)" on page 49 "Install Server and Storage Modules" on page 50 "Install Filler Panels" on page 52

Related Information

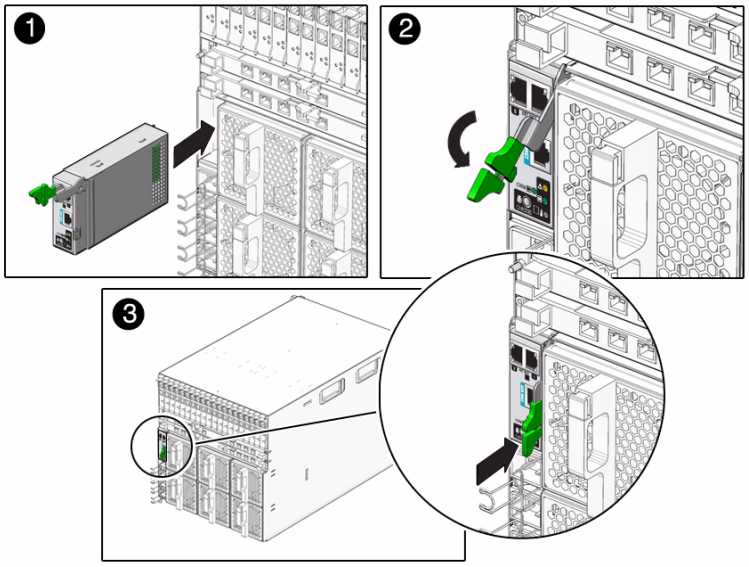
- "Depopulating the Chassis" on page 27
- "Mounting the Chassis in a Rack" on page 38
- "Modular System Overview" on page 2

▼ Install the CMM

This topic describes how to replace the CMM in a chassis if you previously removed it to manually install the chassis in a rack.

1. **Align the CMM with the CMM slot and slide it into the slot until seated.**

   Ensure that the CMM lever is oriented to the right.



2. **Close the CMM lever.**

Related Information

- "Use Antistatic Equipment" on page 28
- "Remove the CMM" on page 36
- "Install the PCI EMs" on page 45
- "Modular System Overview" on page 2

▼ Install the PCI EMs

This topic describes how to replace PCI EMs in a chassis if you previously removed them or if they shipped separately.

Perform the following steps for each PCI EM.

Note – If you are installing a PCI EM that shipped separately from the chassis, also refer to the installation instructions provided with the PCI EM.

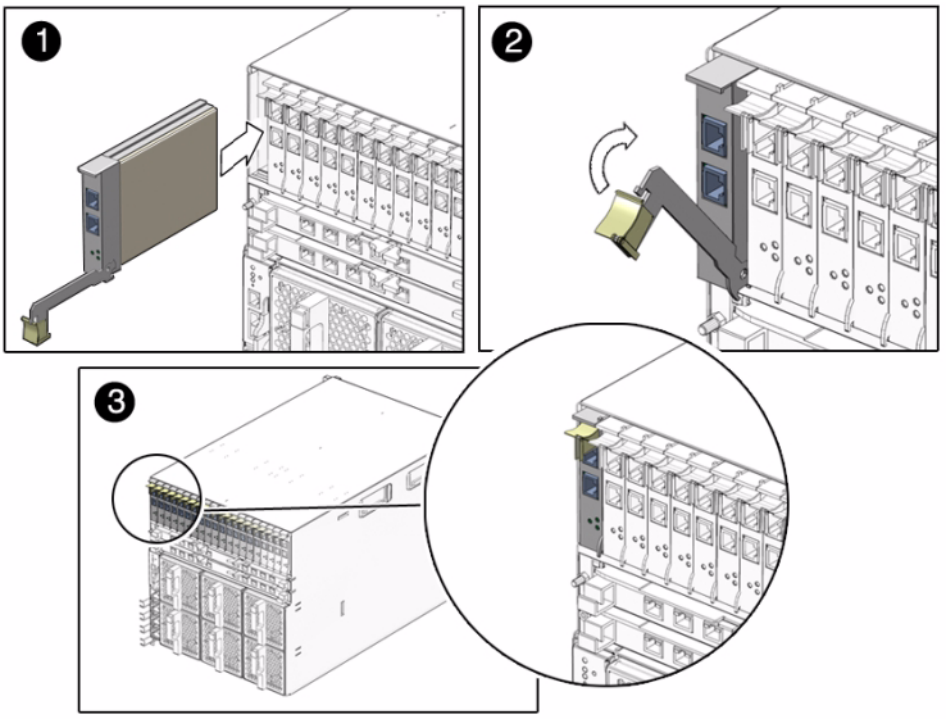
---

1. **For each PCI EM that provides an Ethernet interface, record the unique factory-assigned MAC addresses for future reference.**

   The MAC addresses are usually printed on the PCI EM board. You might need to open the PCI EM cover to see the MAC address label.

2. **Align the PCI EM with the vacant PCI EM slot and slide the PCI EM into the slot until seated.**

   Ensure that the PCI EM lever is open and oriented to the right.



3. **Close the PCI EM lever.**

Related Information

- "Use Antistatic Equipment" on page 28
- "Remove the PCI EMs" on page 35
- "Install the NEMs" on page 46
- "Modular System Overview" on page 2

▼ Install the NEMs

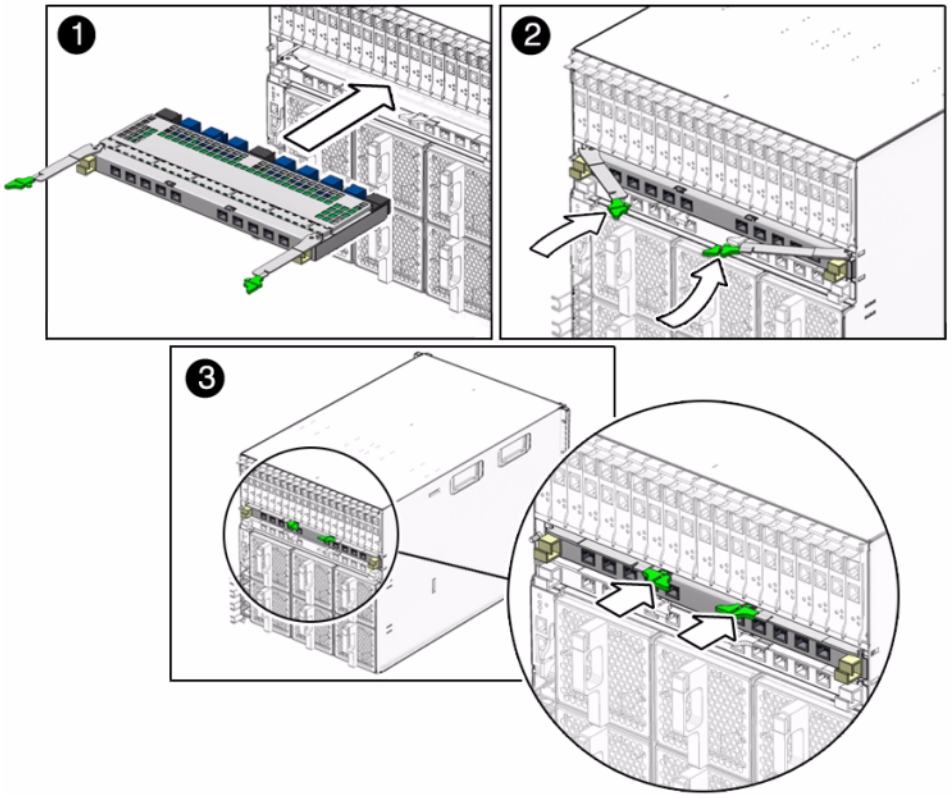
This topic describes how to replace NEMs in a chassis if you previously removed them or if they shipped separately.

Perform the following steps for each NEM you are installing.

Note – If you are installing a NEM that shipped separately from the chassis, also refer to the installation instructions provided with the NEM.

1. **Align the NEM with the vacant NEM slot and slide it in until seated.**

   Ensure that the NEM levers are open and oriented toward the top of the NEM.



2. **Secure the NEM by closing the NEM levers.**

Related Information

- "Use Antistatic Equipment" on page 28
- "Remove the NEMs" on page 33
- "Install the Chassis Fan Modules" on page 48
- "Modular System Overview" on page 2

▼ Install the Chassis Fan Modules

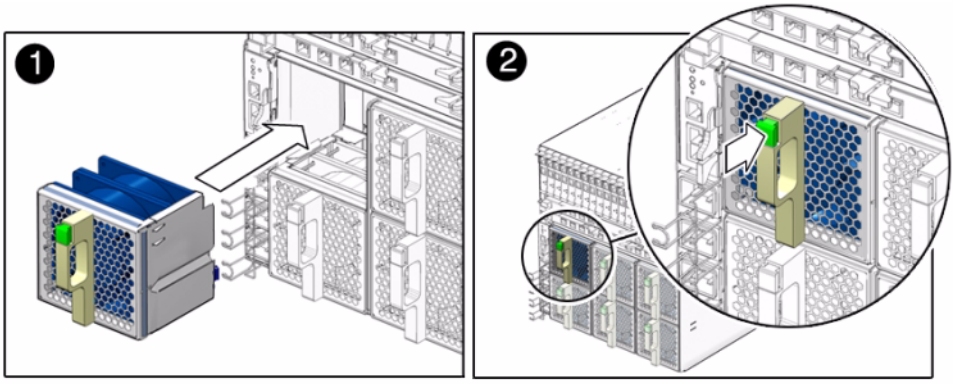
This topic describes how to replace fan modules in the chassis if you previously removed them to manually install the chassis in a rack.

Perform the following steps to install each fan module.

- **Align the fan module with an empty fan module slot and slide it in until seated.**

  Ensure that the fan module is oriented so that the green button on the handle is toward the top of the handle.

  You hear a click when the fan module is fully seated.



Related Information

- "Use Antistatic Equipment" on page 28
- "Remove the Fan Modules" on page 32
- "Install the Power Supplies (AC)" on page 48
- "Modular System Overview" on page 2

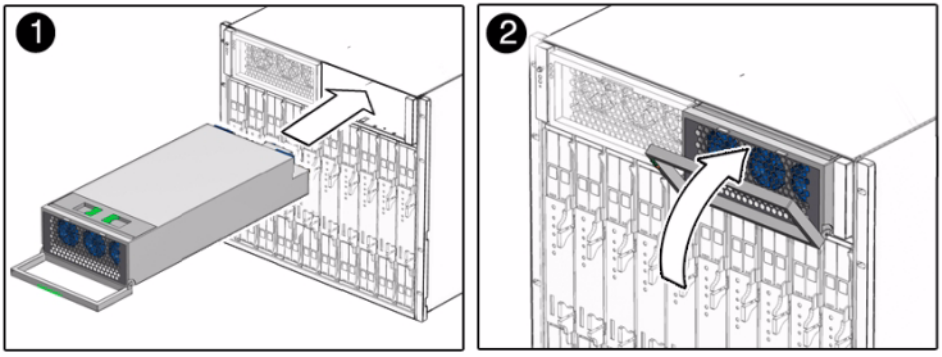
▼ Install the Power Supplies (AC)

This topic describes how to replace AC power supplies in a chassis if they were previously removed to manually install the chassis in a rack.

Perform the following steps to install each power supply.

1. **From the front of the chassis, locate an empty power supply slot.**
2. **Pull the power supply handle out and away from the power supply to open the handle.**

3. **Align the power supply so that the power supply LEDs are oriented to the left.**



4. **Slide the power supply into the chassis.**
5. **Close the power supply handle until it clicks into place.**

Related Information

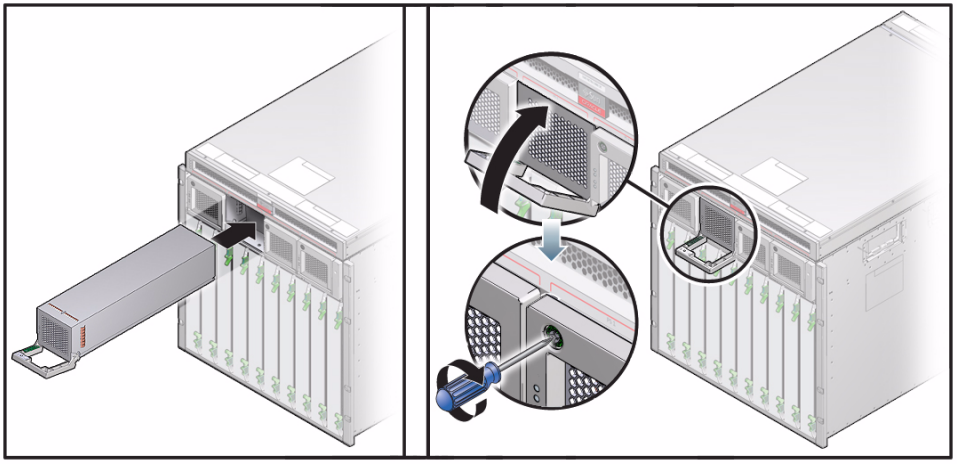
- "Use Antistatic Equipment" on page 28
- "Remove the Power Supplies (AC)" on page 29
- "Install Server and Storage Modules" on page 50
- "Modular System Overview" on page 2

▼ Install the Power Supplies (DC)

This topic describes how to replace DC power supplies in a chassis if they were previously removed to manually install the chassis in a rack.

Perform the following steps to install each power supply.

1. **Ensure that the DC power supply handle is open.**
2. **From the front of the chassis, align the DC power supply with an empty power supply slot.**



3. **Slide the power supply into the slot.**
4. **Close the handle.**
5. **Tighten the green captive screw.**

Related Information

- "Use Antistatic Equipment" on page 28
- "Remove the Power Supplies (AC)" on page 29
- "Install Server and Storage Modules" on page 50
- "Modular System Overview" on page 2

▼ Install Server and Storage Modules

This topic describes how to replace server and storage modules in a chassis if they were previously removed or if they shipped separately.

Perform the following steps to install each module.

Note – If you are installing a server or storage module that shipped separately from the chassis, also refer to the installation instructions provided with the module.

---

1. **For each server or storage module, record the unique factory-assigned MAC addresses for future reference.**

   The MAC addresses might be on a label on the module or on the Customer Information sheet that is in a pouch on the shipping carton.

2. **Determine which chassis slots to use.**

   See "Chassis Slot Assignments" on page 53.

3. **Before installing the module into the chassis, install any optional components for the module.**

   The following list describes types of optional components that you might need to install:

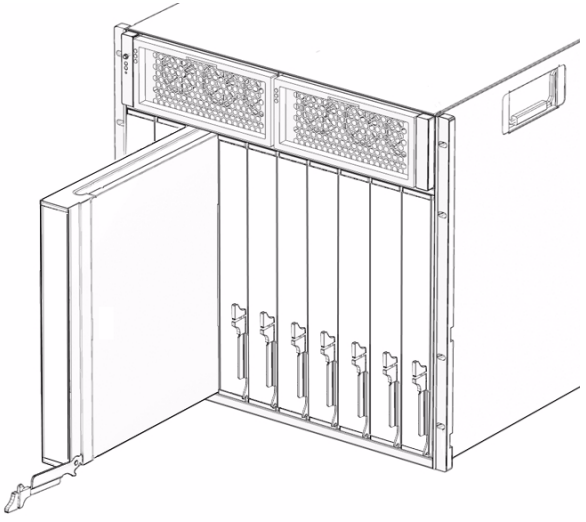
   - **REMs** – Install on server modules before installing the server module in the chassis.
   - **FEMs** – Install on the server module before installing the server module in the chassis.
   - **Additional memory**
   - **Flash or hard drives**

   For installation details, refer to the product and server module documentation.

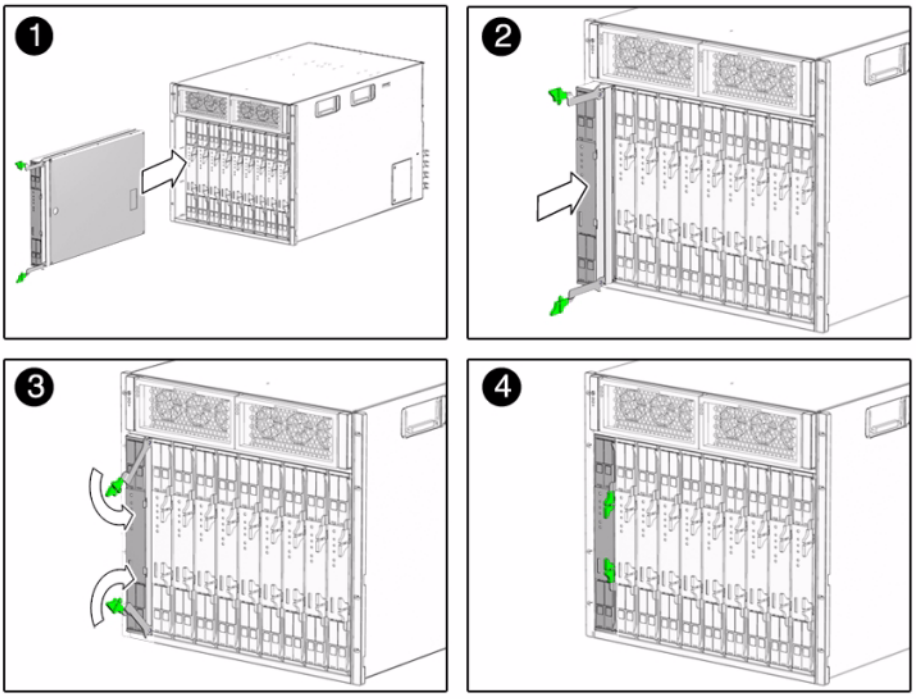
4. **(If necessary) From the front of the chassis, remove the filler panel from the slot in which you plan to install the module.**

   Rotate the filler panel ejector levers and pull the panel toward you.

Note – Filler panels must be installed in all unoccupied slots to ensure proper cooling and to comply with FCC regulations.



5. **Position the module vertically so that the ejector levers are on the right.**



6. **Push the module into the slot until the module stops.**
7. **Rotate the ejectors down until they lock the module into place.**

Related Information

- "Use Antistatic Equipment" on page 28
- "Remove Server and Storage Modules" on page 31
- "Modular System Overview" on page 2
- "Chassis Slot Assignments" on page 53

▼ Install Filler Panels

Replace all the filler panels that were removed.

Caution – Do not operate the modular system without filler panels installed in all empty slots. Filler panels must be installed in all unoccupied slots to ensure proper cooling and to comply with FCC regulations.

1. **Align the filler panel with the slot.**

   For illustrations of the filler panels, see "Remove Filler Panels" on page 36.

2. **Slide the filler panel into place.**

3. **Close the latch.**

Related Information

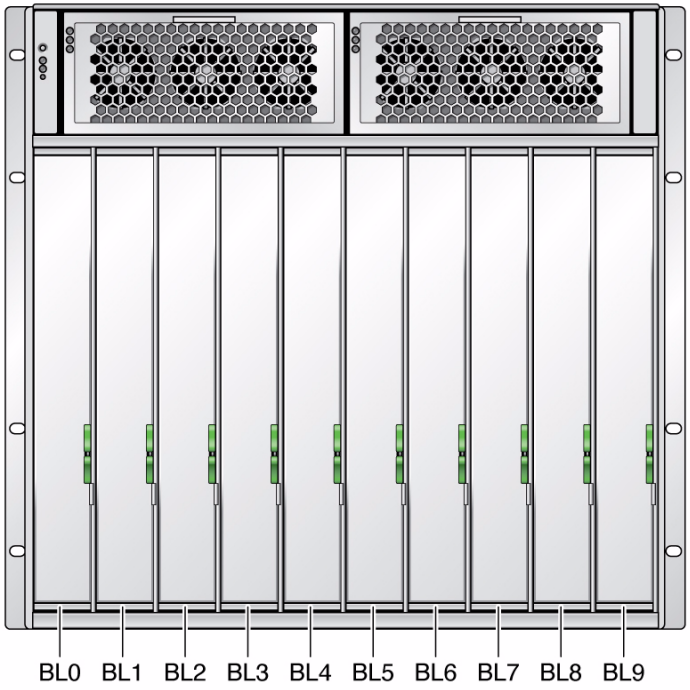
- "Remove Filler Panels" on page 36
- "Chassis Slot Assignments" on page 53

Chassis Slot Assignments

The following figure shows the chassis server and storage module slot designations. Each slot is identified as BL0 through BL9 and can hold a server module, storage module, or filler panel.

Note – The slot assignments are the same for the AC and DC models.

When you install a server or storage module into one of these slots, the module is identified by CMM ILOM as `/CH/BL`*n*, where *n* represents the slot number.



Use the following guidelines when installing server and storage modules:

- If you are only installing server modules, you can install them in any slot, in any order. You do not need to fill the slots sequentially. For example, three server modules can be installed into slots BL4, BL5, and BL9, or any other combination of slots.
- If you are installing a combination of server modules and storage modules, refer to the storage module documentation to find out if you must follow certain slot configurations.
- Install a filler panel in all unoccupied slots. See "Remove Filler Panels" on page 36.
- Be aware that PCI EM and NEM ports correspond with specific slots. See "Cable NEM and PCI EM Modular Options" on page 64.

Related Information

- "Install Server and Storage Modules" on page 50
- "Modular System Overview" on page 2

Connecting To and Powering On the Modular System

The tasks you perform to configure, connect, and power on the modular system depend on your environment. Select from the following topics to perform tasks that meet your installation goals.

Description	Links
Identify the best configuration sequence for your environment.	"Role of Oracle ILOM During Installation" on page 56 "Connectivity Choices" on page 57 "CMM IP Address Configuration" on page 59
Configure the CMM SER MGT port.	"Cable the CMM SER MGT Port" on page 61 "Cable NEM and PCI EM Modular Options" on page 64 "Powering On the Modular System" on page 65 "Log Into the CMM Through the SER MGT Port" on page 74 "Change the CMM ILOM root Account Password" on page 80
Configure both the CMM SER MGT port and the NET MGT port with a static IP address.	"Cable the CMM SER MGT Port" on page 61 "Cable the CMM NET MGT Port" on page 63 "Cable NEM and PCI EM Modular Options" on page 64 "Powering On the Modular System" on page 65 "Log Into the CMM Through the SER MGT Port" on page 74 "Configure the CMM NET MGT Port With a Static IP Address" on page 75 "Log Into the CMM Through the NET MGT Port" on page 79 "Change the CMM ILOM root Account Password" on page 80
Configure the CMM NET MGT port using your DHCP server to assign IP addresses to the CMM and modular components.	"Cable the CMM NET MGT Port" on page 63 "Cable NEM and PCI EM Modular Options" on page 64 "Powering On the Modular System" on page 65 "Configure the IP Addresses Using Your DHCP Server" on page 76 "Identify the IP and MAC Addresses" on page 77 "Log Into the CMM Through the NET MGT Port" on page 79 "Change the CMM ILOM root Account Password" on page 80

Related Information

- "Modular System Overview" on page 2
- "Gather Required Tools and Equipment" on page 21
- "Note the CMM MAC Address" on page 25

Role of Oracle ILOM During Installation

Oracle ILOM software provides an environment from which to perform modular system administration tasks. Some of those tasks are performed when you install the modular system.

Note – This topic covers Oracle ILOM concepts that apply to installation. For comprehensive information about Oracle ILOM, refer to the Oracle ILOM documentation listed in "Related Documentation" on page viii.

Separate installations of the Oracle ILOM firmware are preinstalled on the following components:

- Modular system CMM
- Each SP on each server module

Each component runs its own version of Oracle ILOM firmware. The CMM has a minimum version of Oracle ILOM and a set of valid Oracle ILOM commands. Each server module has other minimum versions of Oracle ILOM with a different set of Oracle ILOM commands. For Oracle ILOM version details, refer to the product notes for the modular system and for the server modules.

Note – To help distinguish the different instances of Oracle ILOM, the term *CMM ILOM* is used to refer to the ILOM that runs on the modular system CMM. For further information on Oracle ILOM for the server modules, refer to the server module documentation.

The preinstalled CMM ILOM and server module ILOM firmware ships with the following preconfigured Oracle ILOM administrator account:

User name: `root`

Password: `changeme`

You cannot delete the preconfigured Oracle ILOM administrator account, but you can change the default password. This account offers built-in administrative privileges (read and write access) to all CMM ILOM functions, features, and commands.

You might perform the following types of activities with Oracle ILOM during installation:

- Configuring the network parameters for the CMM and modular components
- Viewing the Oracle ILOM chassis inventory table to see the part numbers and serial numbers
- Updating the CMM or server module Oracle ILOM firmware (though a firmware upgrade)
- Resetting the CMM

To set up CMM and server modules with initial network configuration information, you must establish a connection through the CMM ILOM. You can choose to access the CMM ILOM through one or both of the following CMM ports:

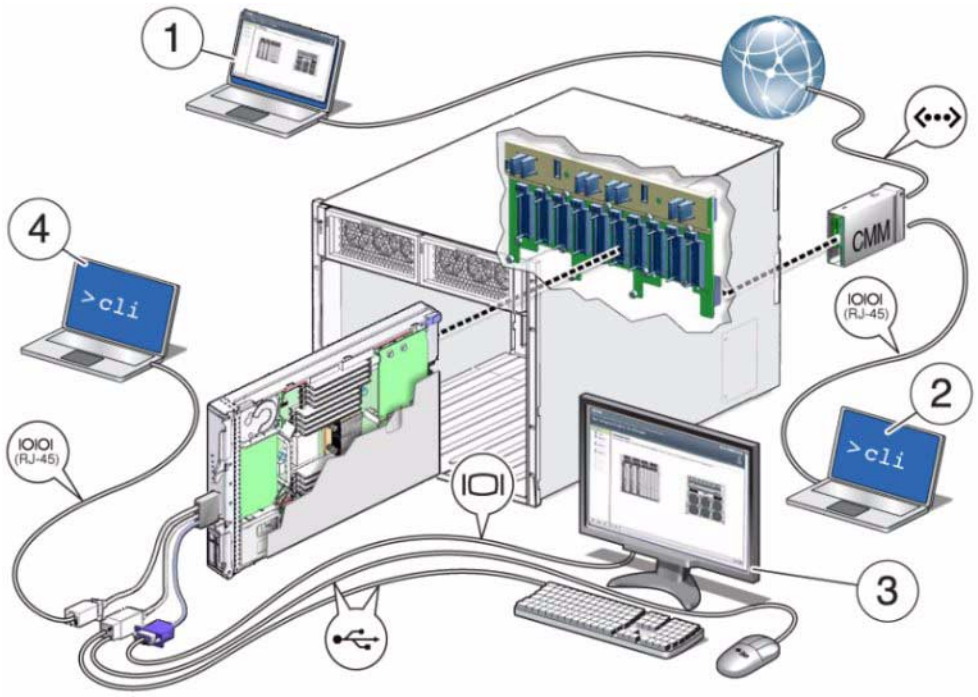
- **SER MGT** – You connect a terminal device and log into the CMM ILOM using the default user name and password.
- **NET MGT** – You either first log into the CMM ILOM using the SER MGT port to provide the NET MGT port with a static IP address, or use your network DHCP server provide the IP address. Once you know the CMM IP address, you use the `ssh` command with the CMM IP address to log in using the default user name and password.

Related Information

- "Connectivity Choices" on page 57
- "CMM IP Address Configuration" on page 59
- "Related Documentation" on page viii

Connectivity Choices

The following illustration and table show some of the ways you can connect to Oracle ILOM to perform administrative tasks.



No.	Source	Destination	Description
1	(Ethernet) CMM NET MGT port	Your network	The CMM NET MGT port is connected to your network. From your network, log into Oracle ILOM on the CMM using the IP address of the CMM. Once logged in, you can navigate to an individual server module SP to administer that server module. You can use the Oracle ILOM CLI or web interface.
2	(Serial) CMM SER MGT port	Terminal device	A terminal device is connected to the CMM SER MGT port. From the terminal device, log into Oracle ILOM on the CMM. Once logged in, you can navigate to an individual server module SP to administer that server module. You can only use the Oracle ILOM CLI though this connection.

No.	Source	Destination	Description
3	(Local KVM connection) Server module SP UCP port (dongle required)	USB keyboard and mouse, and a VGA monitor	A USB keyboard and mouse are connected to a dongle on the server module. A VGA monitor is connected to the 15-pin dongle connector. You can log into Oracle ILOM on the server module SP using the Oracle ILOM CLI or web interface.
4	(Serial connection) Server module SP UCP port (dongle required)	Terminal device	A terminal device is connected to a dongle that is connected to a server module. You can log into Oracle ILOM on the server module SP using the CLI.

Related Information

- "CMM IP Address Configuration" on page 59
- "Role of Oracle ILOM During Installation" on page 56

CMM IP Address Configuration

To connect to the CMM NET MGT port through your network, the NET MGT port must have an IP address. You use the IP address to log into the CMM NET MGT port with the `ssh` command.

You can use the following methods to determine an IP address for the NET MGT port:

- Do not assign an IP address (use this method only if you plan to use the CMM SER MGT port exclusively).
- Your DHCP server provides a dynamic IP address to the NET MGT port. You must determine what address was assigned so that you can use that address to log into the CMM. See "Identify the IP and MAC Addresses" on page 77.
- Assign a static IP address. Usually you perform this task by initially logging into the SER MGT port and then assigning the NET MGT port with a static address.

When you first apply power, the CMM ILOM broadcasts a DHCP request for an IP address. If you have a DHCP server, and the DHCP server responds with an IP address assignment, the CMM accepts the address. If server modules are powered up at the same time, they also broadcast the DHCP request and receive individual IP addresses.

If you want to use static addresses instead of the dynamic addresses provided by your DHCP server, you can assign a static IP address at any time.As soon as the CMM is configured with a static IP address, the CMM will no longer broadcast for a DHCP address.

Decide which IP address configuration method works best for your environment, and perform one of the following tasks:

- "Configure the CMM NET MGT Port With a Static IP Address" on page 75
- "Configure the IP Addresses Using Your DHCP Server" on page 76

Related Information

- "Identify the IP and MAC Addresses" on page 77
- "Role of Oracle ILOM During Installation" on page 56
- "Connectivity Choices" on page 57

Connecting Data and Management Cables

Caution – All data cable connections are restricted to intra-building interfaces and must be isolated from the exposed outside plant cabling. Using primary protectors does not eliminate this restriction. Ensure that these connections do not connect metallically to interfaces that connect to the outside plant or its wiring.

These topics describe how to connect cables to the server.

- "Cable the CMM SER MGT Port" on page 61
- "Cable the CMM NET MGT Port" on page 63
- "Cable NEM and PCI EM Modular Options" on page 64

Related Information

- "Connectivity Choices" on page 57
- "CMM IP Address Configuration" on page 59
- "Gather Required Tools and Equipment" on page 21

▼ Cable the CMM SER MGT Port

This task describes how to cable the modular system CMM SER MGT port.

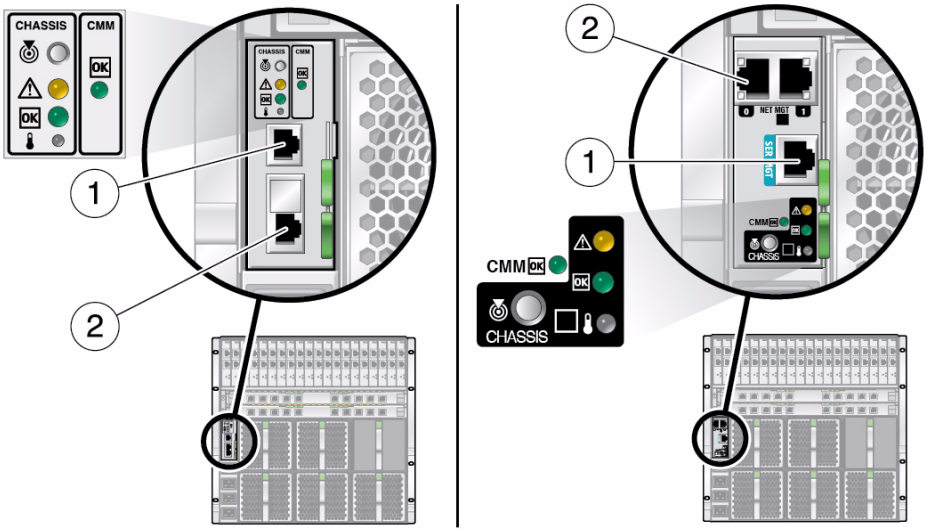
This task is optional, but required for any of the following circumstances:

- You want to perform administrative tasks using CMM ILOM CLI commands through a serial device.
- You need temporary access to the CMM (for example, to assign a static IP address to the CMM).
- You do not plan to access the CMM through the NET MGT port, and the serial port is the best alternative.

Note – You can only perform Oracle ILOM CLI commands through the SER MGT port. You cannot use the Oracle ILOM web interface through the SER MGT port.

---

1. **Gather the following equipment:**
   - **Terminal device** – Can be a terminal, laptop, connection through a terminal server, and so forth.
   - **RJ-45 serial cable**.
   - **Crossover adapter or null-modem type cable** – When you connect a terminal device (DTD) to the SER MGT port (DTD), the transmit and receive signals must be crossed. Use a crossover adapter or a crossover serial cable to accomplish this task.
2. **Using your serial cable and crossover adapter, connect your terminal device to the SER MGT port on the CMM.**



No.	Description
1.	SER MGT – CMM serial management port (RS-232, RJ-45 serial port)
2.	NET MGT – CMM network management port (Ethernet)

3. **Ensure that your terminal device is configured with the following parameters:**
   - 9600 bps
   - 8 bit no parity
   - No parity
   - 1 stop bit
   - No flow control

   When the modular system is powered on, initialization messages and the Oracle ILOM login prompt are displayed.

Note – The default factory Oracle ILOM login account is `root` and the password is `changeme`.

Related Information

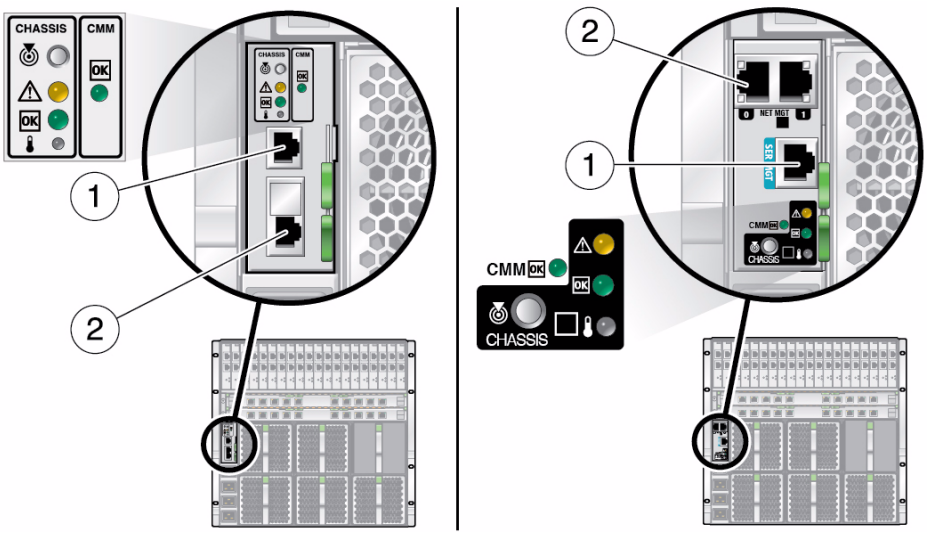
- "Role of Oracle ILOM During Installation" on page 56
- "Connectivity Choices" on page 57
- "CMM IP Address Configuration" on page 59
- "Cable the CMM NET MGT Port" on page 63

▼ Cable the CMM NET MGT Port

This task is optional, but required for any of the following circumstances:

- You want to perform administrative tasks using the CMM ILOM CLI or web interface through your network.
- You do not plan to access the CMM through the SER MGT port, and the network port is the best alternative.

- **Use an RJ-45 Ethernet cable to connect the NET MGT port to your network.**



No.	Description
1.	SER MGT – CMM serial management port (RS-232, RJ-45 serial port)
2.	NET MGT – CMM network management port (Ethernet)

Related Information

- "Identify the IP and MAC Addresses" on page 77
- "Role of Oracle ILOM During Installation" on page 56
- "Connectivity Choices" on page 57
- "CMM IP Address Configuration" on page 59
- "Cable the CMM SER MGT Port" on page 61

▼ Cable NEM and PCI EM Modular Options

The following modular components have ports that might require cabling to an appropriate device:

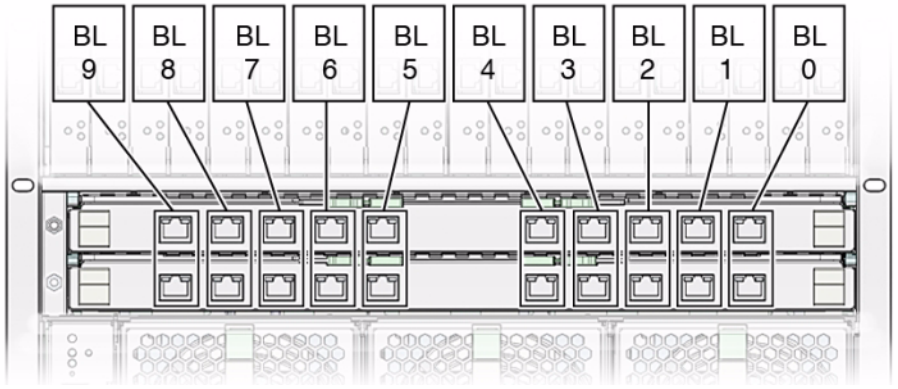
- **NEMs** – Up to 10 Ethernet ports for each NEM (20 ports if two NEMs are installed)
- **PCI EMs** – Up to 2 ports for each PCI EM (40 ports if twenty PCI EMs are installed)

Each port is associated with a specific server module based on the slot in which the NEM or PCI EM is installed.

Perform this task for each NEM and PCI EM modular component that is installed.

1. **Connect Ethernet RJ-45 cables to any NEM ports that you plan to use.**

   Use the chassis labels or the following figure to understand which server module corresponds with each NEM port.



Note – BL stands for *blade*, which is a generic term for either a server module or storage module.

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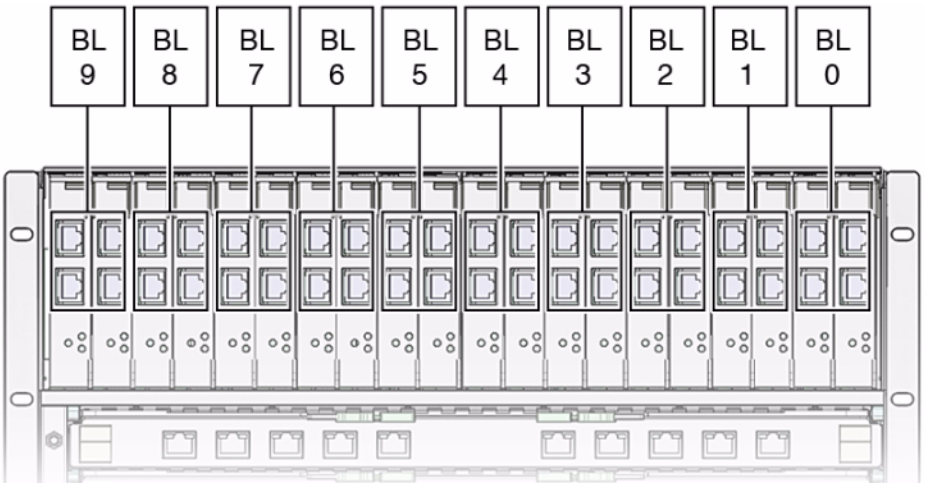
2. **Connect the appropriate cable to any PCI EM ports that you plan to use.**

   Use the chassis labels or the following figure to understand which server module corresponds with each PCI EM port. Up to four ports are associated with each server module.



The individual PCI EM ports are numbered as follows:

- **Gigabit Ethernet PCI EM port numbers** – Port 1 appears at the top and port 0 appears on the bottom of the PCI EM.
- **Fibre Channel PCI EM port numbers** – Port 0 appears at the top and port 1 appears on the bottom of the PCI EM.
- **InfiniBand PCI EM port numbers** – Port 1 appears at the top and port 0 appears on the bottom of the PCI EM.

Related Information

- "Modular System Overview" on page 2
- "Install the PCI EMs" on page 45
- "Install the NEMs" on page 46
- "Identify the IP and MAC Addresses" on page 77

Powering On the Modular System

Description	Links
Power on an AC model.	"Power On the Modular System (AC)" on page 66

Description	Links
Power on a DC model.	"Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68 "DC Power Cable Wiring Reference" on page 72

Related Information

- "AC Power Requirements" on page 8
- "Determining DC Power Requirements" on page 10

▼ Power On the Modular System (AC)

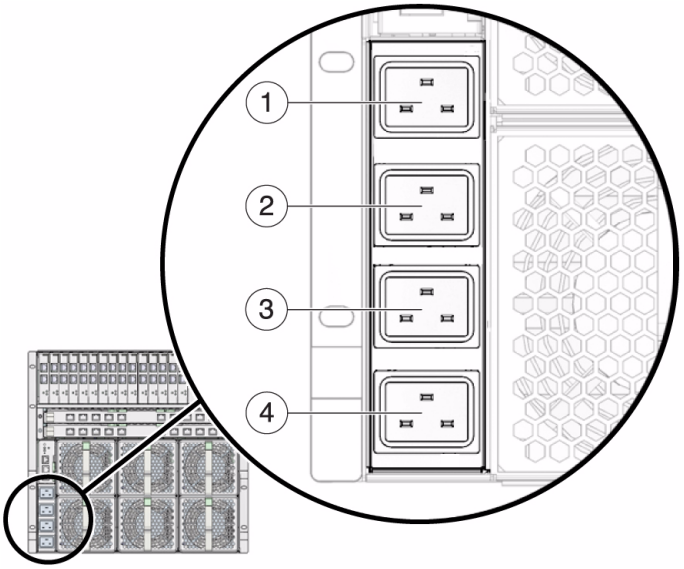
This topic describes how to apply power to the AC model.

The AC model applies standby power to the installed components when one or more of the inputs have AC power connected. If the CMM is installed and functioning, main power will be controlled by the CMM settings. If the CMM is not installed or is not functioning, main power will be automatically activated after a 3 minute delay.

Note – You can set the CMM ILOM `auto-power-on` parameter so that when power is applied, the CMM supplies only standby power to the modular system or main power. For details, refer to *Modular System Remote Management (ILOM)*.

Note – Many components such as modular servers, NEMs, and PCI EMs are hot-pluggable, meaning that you can install the components while the chassis is powered up. Refer to the component documentation to find out if a component is hot-pluggable.

1. **On the rear of the chassis, open the metal retention clips for each power receptacle.**
2. **Plug the four power cords into the four receptacles.**

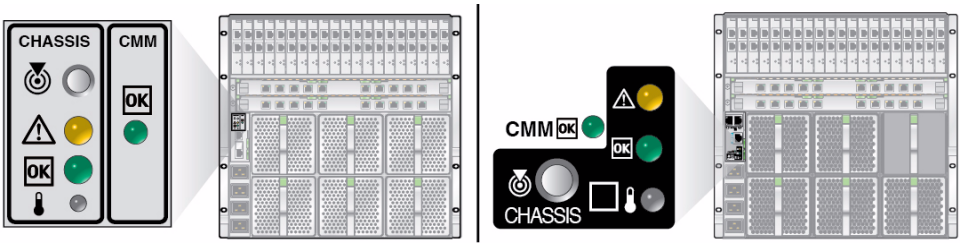


	Description
1	Power supply 1, AC1
2	Power supply 1, AC0
3	Power supply 0, AC1
4	Power supply 0, AC0

3. **Secure each power cord by closing the metal retention clips.**
4. **Plug the other end of the power cords into your power source.**

   For power redundancy, plug the PS0 and PS1 cords into separate power circuits.

   Main power is automatically distributed to the modular system.
5. **Verify the chassis initialization by viewing the front or rear status LEDs.**
   - **Green OK LEDs** – Illuminate a solid green light, indicating successful initialization.
   - **Amber fault LED** – Illuminates if a fault is detected. If the amber fault LED is illuminated, check for other fault indicators on modular components, unplug the chassis, and take corrective actions.



Related Information

- "AC Power Requirements" on page 8

▼ Install DC Power Cables and Apply Power to the Modular System (DC)

This topic describes how to build the DC power cables and apply power to the DC model.

The DC model applies standby power to the installed components when two or more of the power supplies have input power connected. If the CMM is installed and functioning, main power will be controlled by the CMM settings. If the CMM is not installed or is not functioning, main power will be automatically activated after a 3 minute delay.

Caution – The DC power source must be located in the same premises as the DC model of the modular system. The power source cannot be in one building with the modular system in another building. This restriction minimizes the possibility of transient energy appearing on the main DC input to the modular system.

Caution – A power disconnect device is not incorporated with the equipment. You must incorporate an external, readily accessible disconnect device to the equipment.

Caution – This product does not provide branch circuit overcurrent protection as defined by the US NEC (United States National Electrical Code), Article 100. Installations of this product in compliance with the US NEC must be on branch circuits with overcurrent protection as defined by Article 480.3 of the US NEC. Product power inputs with current ratings 16A or less must have a branch circuit or supplementary overcurrent protection device rated at no more than 20A. Product power inputs with current ratings of more than 16A must have a branch circuit or

supplementary overcurrent protection device rated at no more than 160% of the product input current rating. Other national and/or local electrical codes might apply to the installation of this product.

Note – You can change the setting for the CMM ILOM `auto-power-on` parameter so that when power is applied, the CMM supplies only standby power to the modular system instead of main power. For details, refer to *Modular System Remote Management (ILOM)*.

Note – Many components such as modular servers, NEMs, and PCI EMs are hot-pluggable, meaning that you can install the components while the chassis is powered up. Refer to the component documentation to find out if a component is hot-pluggable.

1. **Ensure that the circuit breakers on your power source are open or that the fuses are removed.**

Caution – To prevent electrical shock, ensure that no power is present on the circuits to which you are connecting.

2. **Review the DC power cable wiring diagram.**

   See "DC Power Cable Wiring Reference" on page 72.

3. **Disengage all four power supplies from the chassis.**

   Do not remove the supplies completely. Pull them forward by approximately 1 inch (25 mm).

   See "Remove the Power Supplies (DC)" on page 30.

4. **Assemble the ground and power cable ends using the following specifications and the following steps:**

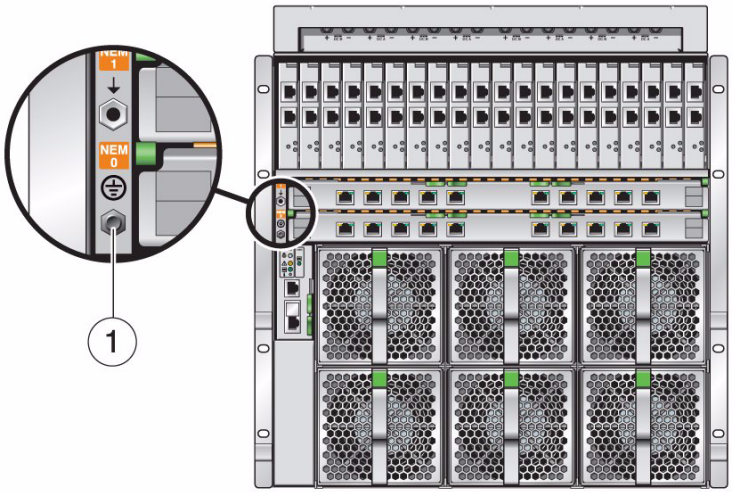
Number of circuits	8
Number of power cables	8 (2 wires in each cable)
Number of ground cables	1
Input voltage per circuit	-48 VDC or -60 VDC nominal
Maximum amperage per circuit	60A
Wire gage	6 AWG

a. **Crimp a ground lug onto a ground cable.**

   Use a crimping tool or approved equivalent to secure the lugs onto the cables.

b. **Use an M6 nut and washer to fit the lug to the 6 mm electrical grounding stud on the rear of the system chassis.**

Note – This 6 mm electrical grounding stud is a safety earth bonding point.



No.	Description
1.	Chassis DC grounding stud

c. **Connect the other end of the ground cable to a stable ground point.**

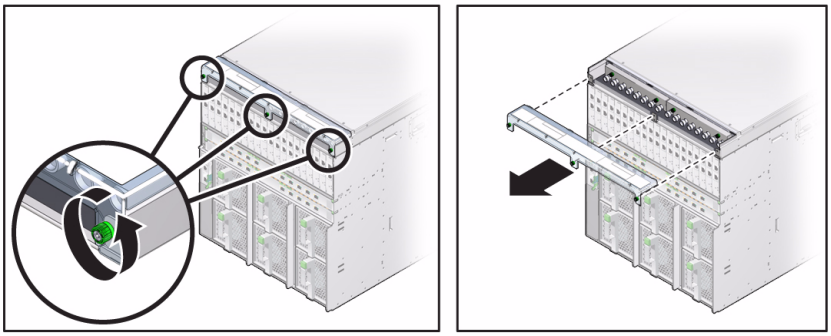
Caution – The Netra 6000 DC system enclosure must be reliably connected to earth ground. The Netra 6000 DC system enclosure has a safety earth bonding point. This bonding point can be used to meet the central office requirements for enclosure or shelf grounding in GR1089-CORE. The grounding point is for connection of an electrical conductor between the system enclosure metal and a nearby point on the central office ground system. The use of this bonding point connection is optional if the system chassis mounting meets the requirements for a reliable chassis ground connection.

---

d. **Crimp single-hole, right-angle lugs onto the input and return cables.**

e. **Remove the safety cover from the DC power unit input area at the back of the chassis.**

Use a screwdriver to loosen the green captive screws.

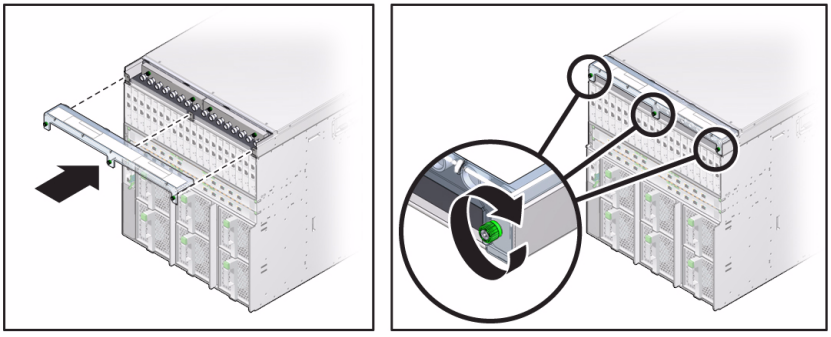


f. **Use M6 nuts and washers to secure the lugs to the DC input unit terminals.**

See "DC Power Cable Wiring Reference" on page 72.

g. **Replace the safety cover on the rear of the DC input unit.**

Use a screwdriver to tighten the green captive screws.



5. **Ensure that the circuit breakers on your power source are open or that the fuses are removed.**

Caution – To prevent electrical shock, ensure that no power is present on the circuits to which you are connecting.

6. **Connect the remaining power cables to the customer-supplied circuit breakers or fuse panel.**

7. **Verify all DC connections before applying power.**

8. **Apply power to the chassis by closing the circuit breakers or installing the fuses.**

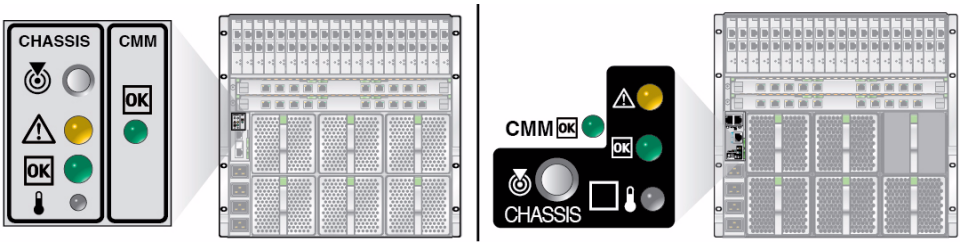
9. **Reengage the four power supplies into the chassis.**

   See "Install the Power Supplies (DC)" on page 49.

   Main power is automatically distributed to the modular system.

10. **Verify the chassis initialization by viewing the front or rear status LEDs.**

    - **Green OK LEDs** – Illuminate a solid green light, indicating successful initialization.
    - **Amber fault LED** – Illuminates if a fault is detected. If the amber fault LED is illuminated, check for other fault indicators on modular components, unplug the chassis, and take corrective actions.



Related Information

- "Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68
- "Determining DC Power Requirements" on page 10

DC Power Cable Wiring Reference

This topic provides specifications, a wiring diagram, and locations of the DC terminals on the modular system.

Note – The DC power source must be located in the same premises as the DC model of the modular system. The power source cannot be in one building with the modular system in another building. This restriction minimizes the possibility of transient energy appearing on the main DC input to the modular system.

TABLE: DC Power Cable Specifications

Number of circuits	8
Number of power cables	8 (2 wires in each cable)
Number of ground cables	1
Input Voltage per circuit	-48 VDC or -60 VDC nominal
Maximum amperage per circuit	60A
Wire gage	6 AWG

FIGURE: DC Input Unit Wiring Diagram

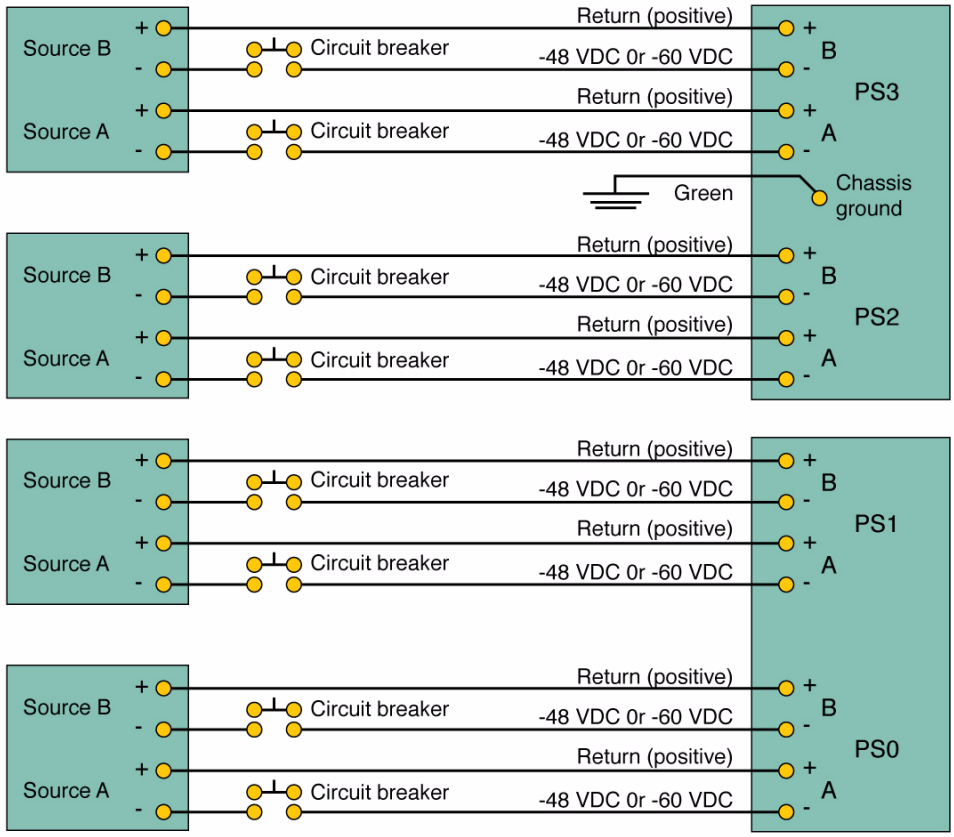


FIGURE: DC Input Unit Wiring Terminals

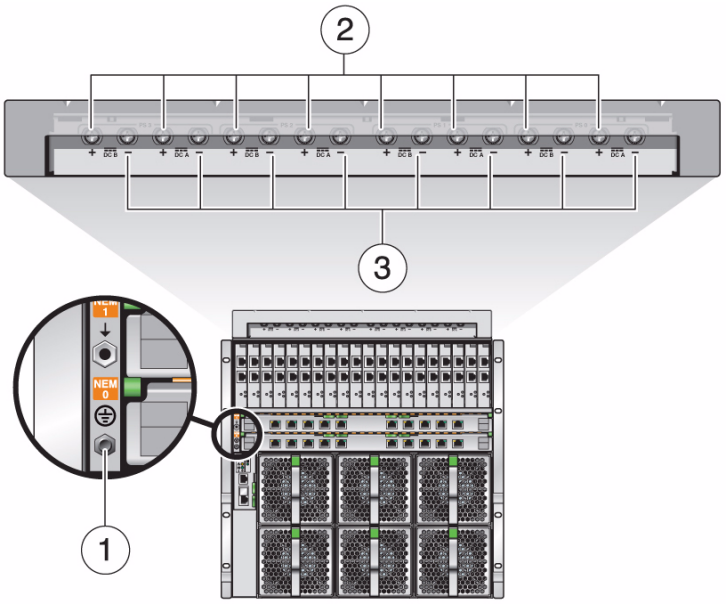


Figure Legend

1	Chassis ground terminal
2	Return (positive) terminals
3	-48 VDC or -60 VDC supply terminals

Related Information

- "Determining DC Power Requirements" on page 10
- "Install DC Power Cables and Apply Power to the Modular System (DC)" on page 68

▼ Log Into the CMM Through the SER MGT Port

This task is optional, but recommended when you need or want to perform tasks using CMM ILOM though a serial device rather than through your network.

Note – You can only run Oracle ILOM CLI commands through the SER MGT port. You cannot run the Oracle ILOM web interface through the SER MGT port.

1. **Ensure that you have cabled a terminal device to the CMM SER MGT port.**

   See "Cable the CMM SER MGT Port" on page 61.

2. **From your terminal device, log into the CMM SER MGT port specifying a valid Oracle ILOM user account and password.**

   The following factory default CMM ILOM account is valid, until changed:

   - User account – `root`
   - Password – `changeme`

   This default account has administrator privileges.

   Once you are logged in, you communicate with the CMM using the CMM ILOM CLI. For CLI details, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide*.

Related Information

- "Change the CMM ILOM root Account Password" on page 80
- "Role of Oracle ILOM During Installation" on page 56
- "Connectivity Choices" on page 57
- "Log Into the CMM Through the NET MGT Port" on page 79

▼ Configure the CMM NET MGT Port With a Static IP Address

This task assigns a static IP address to the CMM NET MGT port. Alternatively, you can use DHCP services to dynamically assign the IP address as described in "Configure the IP Addresses Using Your DHCP Server" on page 76.

Note – When the CMM is configured with a static IP address, the CMM no longer broadcasts for a DHCP address.

1. **Log into the CMM SER MGT port with an account that has administrator privileges.**

   See "Log Into the CMM Through the SER MGT Port" on page 74.

2. **Access the CMM network directory:**

```
-> cd /CMM/network
```

3. **Specify the IP, netmask, and gateway addresses for the CMM ILOM:**

```
-> set pendingipaddress=static_IP_address
-> set pendingipnetmask=static_netmask_address
-> set pendingipgateway=ip_gateway_address
-> set pendingipdiscovery=static
```

4. **Commit the changes:**

```
-> set commitpending=true
```

Related Information

- "Configure the IP Addresses Using Your DHCP Server" on page 76
- "CMM IP Address Configuration" on page 59

▼ Configure the IP Addresses Using Your DHCP Server

This task uses your DHCP server to dynamically assign the CMM NET MGT port IP address. Alternatively, you can assign a static IP address as described in "Configure the CMM NET MGT Port With a Static IP Address" on page 75.

1. **Verify that your DHCP server is configured to accept new MAC addresses.**
2. **Verify that the CMM NET MGT port is cabled to your network.**

   See "Cable the CMM NET MGT Port" on page 63.
3. **Apply power to the modular system.**

   See "Power On the Modular System (AC)" on page 66.

   The modular system automatically broadcasts to receive an IP address from a DHCP server.

Note – Once you configure the modular system with a static IP address, the modular system no longer broadcasts to receive an IP address from a DHCP server.

Related Information

- "Log Into the CMM Through the NET MGT Port" on page 79
- "Role of Oracle ILOM During Installation" on page 56
- "Connectivity Choices" on page 57
- "CMM IP Address Configuration" on page 59
- "Identify the IP and MAC Addresses" on page 77

▼ Identify the IP and MAC Addresses

You must know the CMM IP address to log into the CMM through the NET MGT port. You also must know the IP address of the SP of any server module that you want to log into through the network.

Perform this task to identify the CMM IP addresses, such as when you want to log into the CMM through your network and the DHCP server assigned the IP address.

1. **Use one of the following methods to identify the CMM IP address:**
   - Access the CMM ILOM though the SER MGT port.

   a. **Connect a terminal device to the CMM SER MGT port.**

      See "Cable the CMM NET MGT Port" on page 63.

   b. **Log into the CMM though the CMM SER MGT port.**

      See "Log Into the CMM Through the SER MGT Port" on page 74.

   c. **View the CMM IP address and MAC address information:**

```
-> show /CMM/network

 /CMM/network
    Targets:
        test

    Properties:
        commitpending = (Cannot show property)
        dhcp_server_ip = none
        ipaddress = 10.7.95.153
        ipdiscovery = static
        ipgateway = 10.7.95.254
        ipnetmask = 255.255.255.0
        macaddress = 00:21:28:3E:2B:B6
        pendingipaddress = 10.7.95.153
```

```
        pendingipdiscovery = static
        pendingipgateway = 10.7.95.254
        pendingipnetmask = 255.255.255.0
        state = enabled
        switchconf = port0
```

d. View the IP addresses or MAC address of server modules, using the Oracle ILOM `show` command with the path of each server module.

Replace the *x* in `BL`*x* with the number of the server module.

```
-> show /CH/BLx/SP/network

 /CH/BL0/SP/network
    Targets:

    Properties:
        type = Network Configuration
        commitpending = (Cannot show property)
        ipaddress = 10.7.95.155
        ipdiscovery = static
        ipgateway = 10.7.95.254
        ipnetmask = 255.255.255.0
        macaddress = 00:21:28:14:F6:5B
        pendingipaddress = 10.7.95.155
        pendingipdiscovery = static
        pendingipgateway = 10.7.95.254
        pendingipnetmask = 255.255.255.0
        state = enabled
```

- On your DHCP server, review the IP address assignment information.

  Sometimes you can obtain the IP address assignments by viewing the DHCP log files on the server. If you know the MAC address of the CMM or server module, you can locate the IP address assigned to it.

  The CMM and server module MAC addresses are also listed on the Customer Information sheets that are included in a pouch on the outside of the shipping container.

2. Use the IP address to log into the CMM NET MGT port.

See "Log Into the CMM Through the NET MGT Port" on page 79.

Related Information

- "Connectivity Choices" on page 57
- "CMM IP Address Configuration" on page 59
- "Note the CMM MAC Address" on page 25

▼ Log Into the CMM Through the NET MGT Port

Perform this task when you want to access the CMM ILOM through your network. You can perform Oracle ILOM CLI or web interface commands.

1. **Ensure that the following conditions are met:**
   - The CMM NET MGT is connected to your network.

     See "Cable the CMM NET MGT Port" on page 63.
   - An IP address is assigned to the CMM and you know the address. See:
     - "Configure the CMM NET MGT Port With a Static IP Address" on page 75
     - "Configure the IP Addresses Using Your DHCP Server" on page 76
     - "Identify the IP and MAC Addresses" on page 77
   - You know a valid CMM ILOM account and password.

Note – The default login account is `root` and the default password is `changeme`.

---

2. **From your network, perform the following command:**

```
$ ssh root@CMM_IP_address
Password: CMM_root_password
->
```

   Once you are logged in, the Oracle ILOM `->` prompt is displayed and you can perform ILOM commands that are valid on the CMM. You can also perform a variety of Oracle ILOM commands to administer the modular components. Refer to the Oracle ILOM documentation for more information. See "Related Documentation" on page viii.

Related Information

- "Change the CMM ILOM root Account Password" on page 80
- "Log Into the CMM Through the SER MGT Port" on page 74
- "Role of Oracle ILOM During Installation" on page 56
- "Connectivity Choices" on page 57
- "CMM IP Address Configuration" on page 59

▼ Change the CMM ILOM `root` Account Password

1. **Log into the CMM ILOM `root` account.**

   See one of the following tasks:

   - "Log Into the CMM Through the SER MGT Port" on page 74
   - "Log Into the CMM Through the NET MGT Port" on page 79

Note – The default login account is `root` and the default password is `changeme`.

---

2. **Perform the following Oracle ILOM command to change the password:**

```
-> set /CMM/users/root password=new_password
```

   For more information about creating new Oracle ILOM user accounts and assigning a role (privileges) to a user account, refer to Oracle ILOM documentation.

Related Information

- "Role of Oracle ILOM During Installation" on page 56
- "Connectivity Choices" on page 57
- "CMM IP Address Configuration" on page 59

Installing Shipping Brackets on a Sun Rack 1000

The following topics describe how to install shipping brackets that secure Oracle's Sun Netra 6000 chassis in a Sun Rack 1000 during shipping.

You *only* need to perform this activity prior to shipping Oracle's Sun Rack 1000 that has a modular system with server modules installed.

Note – One shipping bracket kit is included with each modular system.

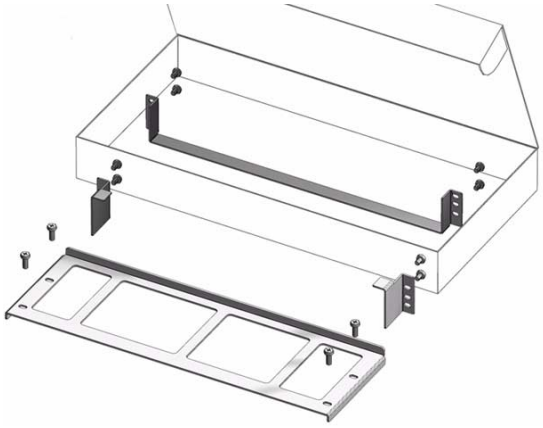
- "Install Shipping Brackets" on page 81
- "Remove Shipping Brackets" on page 85

Related Information

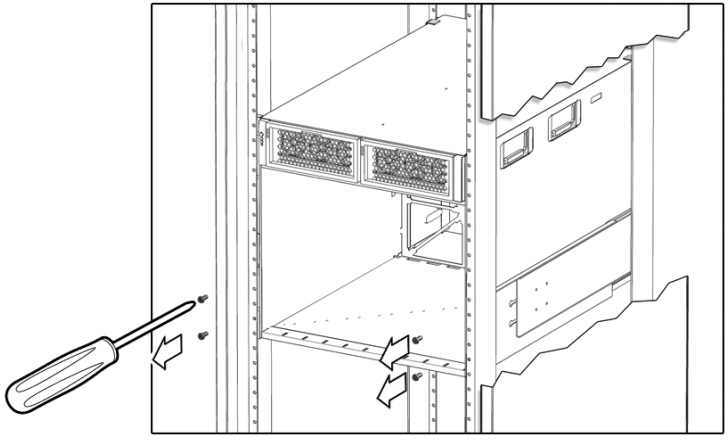
- "Weight and Size Specifications for Moving and Lifting" on page 18
- "Supported Racks" on page 6
- "Verify Shipment Contents" on page 24
- "Install Server and Storage Modules" on page 50

▼ Install Shipping Brackets

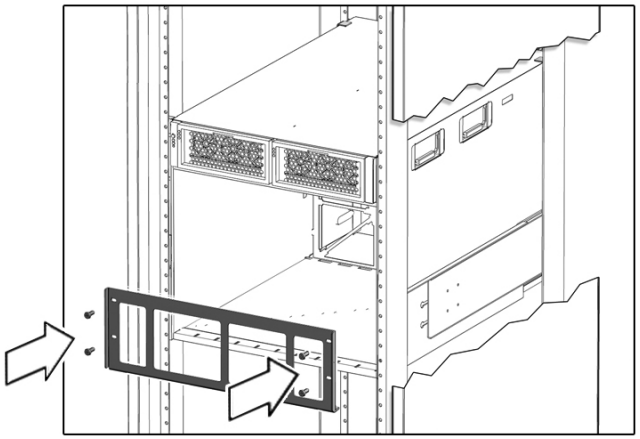
1. **Unpack the following items from the shipping bracket kit:**
   - Four shipping brackets
   - Four 18 mm M6 screws
   - Eight 14 mm M6 screws



2. **From the front of the system, remove the bottom four screws that fasten the chassis to the rack.**

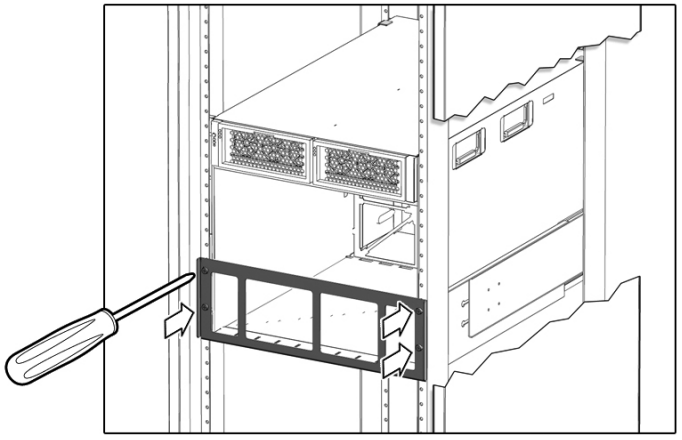


3. **Place the front support bracket into the lower front of the chassis so that the bottom edge of the bracket fits under the chassis and the front of the bracket is flush with the chassis.**

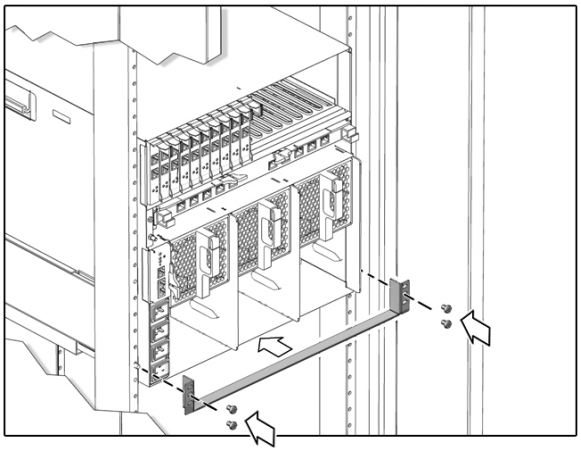


4. **Fasten the front shipping bracket with four 18 mm M6 screws.**

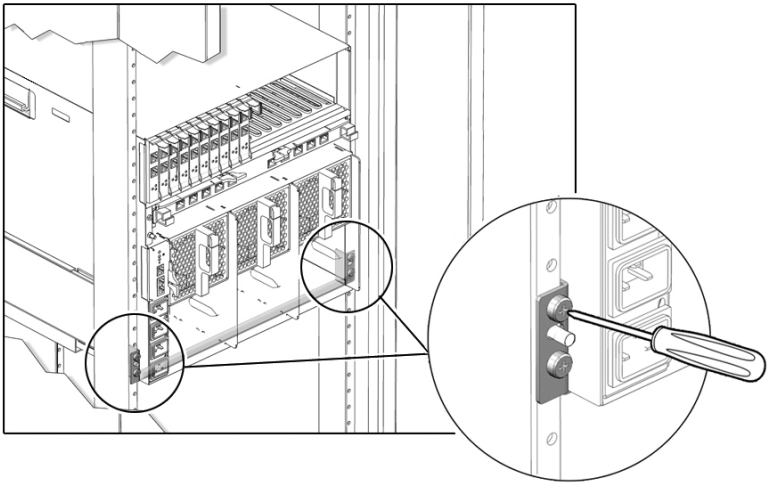
Note – Save these screws. You use them later when you fasten the chassis to the rack.



5. **Attach the lower rear bracket so that the lower edge slides under the bottom of the chassis and the middle holes on each side of the bracket fit over the screws protruding from the rack.**



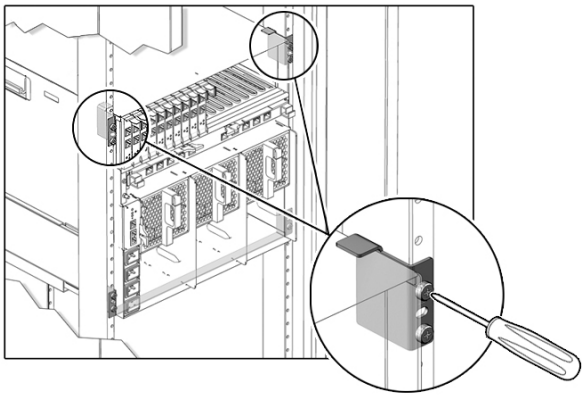
6. **Fasten the rear lower bracket to the rack using four 14 mm M6 screws.**



7. **(If necessary) Fasten the two upper rear brackets to the rack using four 14 mm M6 screws.**

Note – These brackets are installed when the chassis is installed into the rack. Therefore, you might not need to install the brackets now. Permanent installation of these two brackets is required for seismic bracing. If these brackets are not installed, install them now.

Place the screws in the two outside holes of the bracket. Leave the middle hole empty.

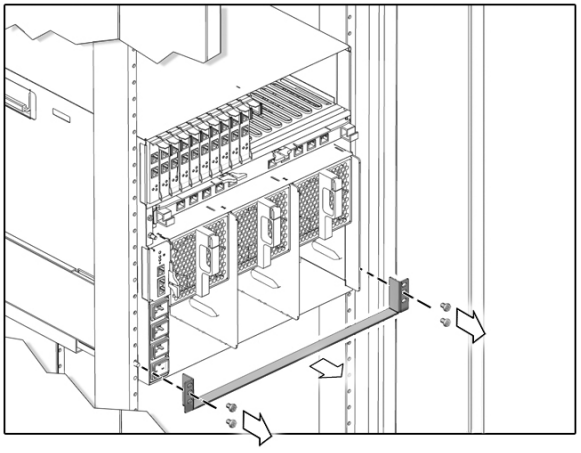


Related Information

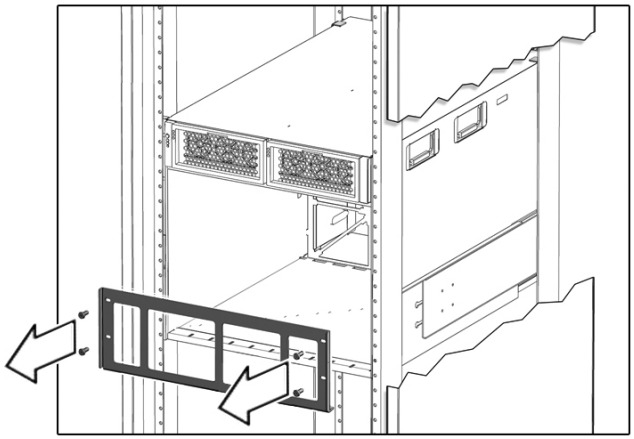
- "Weight and Size Specifications for Moving and Lifting" on page 18
- "Remove Shipping Brackets" on page 85

▼ Remove Shipping Brackets

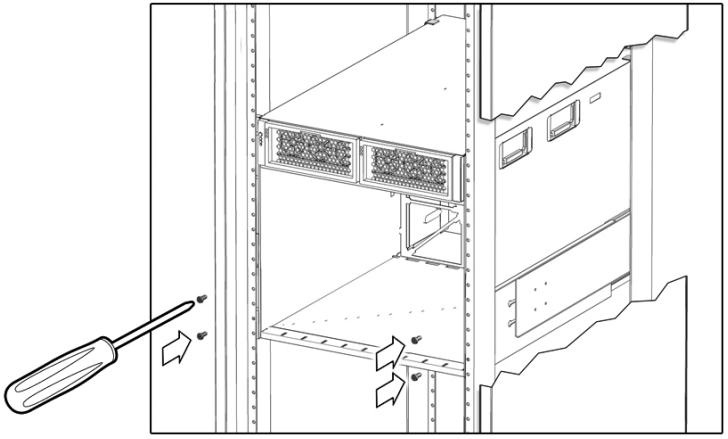
1. **Remove the four screws from the lower rear bracket and remove the bracket.**



2. **Remove the four screws from the front bracket and remove the bracket.**
   Set the screws aside for later use.



3. **Secure the front of the chassis to the rack by replacing the four screws you removed from the front bracket.**



Related Information

- "Install Shipping Brackets" on page 81

Glossary

A

ASF Alert standard format.

B

blade Generic term for server modules and storage modules.

blade server Server module.

C

chassis Modular system enclosure.

CMM Chassis monitoring module. Oracle ILOM runs on the CMM providing lights out management of the components in the chassis. See *Oracle ILOM*.

CMM ILOM Oracle ILOM that runs on the CMM. See *Oracle ILOM*.

CRU Customer-replaceable unit.

D

disk module or disk blade Interchangeable terms for storage module.

E

ESD Electrostatic discharge.

F

FEM Fabric expansion module. FEMs enable server modules to use the 10GbE connections provided by certain NEMs.

FRU Field-replaceable unit.

FIM Front indicator module.

H

HBA Host bus adapter.

I

ILOM See *Oracle ILOM*.

Installation Title of the portion of the HTML topic set that corresponds to the PDF book *Sun Netra 6000 Modular System Installation Guide*.

IPMI Intelligent platform management interface.

K

KVM Keyboard, video, mouse. Refers to using a switch to enable sharing of one keyboard, one display, and one mouse with more than one computer.

L

L/R Ratio of inductance to resistance.

M

MAC or MAC address Media access controller address.

MPS Modular power system.

N

name space Top-level ILOM CMM targets.

NEM Network express module. NEMs provide 10/100/1000 Ethernet, SAS connectivity to storage modules, and 10GbE Ethernet ports.

NET MGT port Network management port. An Ethernet port on the CMM and on server module service processors.

NTP Network Time Protocol.

O

Oracle ILOM Oracle Integrated Lights Out Manager (ILOM). Oracle ILOM firmware is preinstalled on a variety of Oracle systems. Oracle ILOM enables you to remotely manage your Oracle servers regardless of the state of the host system.

P

PCI EM PCIe ExpressModule. Modular components that are based on the PCI Express industry-standard form factor and offer I/O features such as Gigabit Ethernet and Fibre Channel.

PET Platform event trap.

PS Power supply, as in device and sensor names, such as `/CH/PS0/PRST`.

power supply side Each of the AC power supplies has an A side and a B side. The major 12V power paths of the two sides are independent. The two sides share a common 3.3V stand-by power output, a diagnostics and control section, and a fan module.

R

REM RAID expansion module. Sometimes referred to as a host bus adapter (HBA). Supports the creation of RAID volumes on disk drives.

Remote Management Title of the portion of the HTML topic set that corresponds to the PDF book *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Netra 6000 Modular System*.

S

SER MGT port Serial management port. A serial port on the CMM and on server modules service processors.

server module Modular component that provides the main compute resources (CPU and memory). Server modules might also have onboard storage, and connectors that hold REMs and FEMs.

Service Title of the portion of the HTML topic set that corresponds to the PDF book *Sun Netra 6000 Modular System Service Manual*.

SNMP Simple Network Management Protocol.

SP Service processor.

storage module Modular component that provides compute storage to the server modules.

U

UCP Universal connector port.

Index

E

F

G

H

I

L

M

N

T

U

V

W