Sun Blade 6000 Modular System

Site Planning Guide

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Using This Documentation

This guide provides information on preparing the site for system installation.

This guide is written for system installers and administrators who are familiar with rackmounting systems and installing computer hardware.

The following topics are covered:

- "Downloading Chassis Firmware" on page v
- "Documentation and Feedback" on page vi
- "About This Documentation" on page vi

▼ Downloading Chassis Firmware

1. **Navigate to the Sun Blade 6000 modular system product page at:**
   `http://www.oracle.com/technetwork/systems/patches/firmware/release-history-jsp-138416.html`
2. **Click Sun Blade 6000 Chassis.**
3. **Click the software update version that you want to download.**
   The Oracle support login page appears.
4. **Enter a user name and password.**
5. **Click the patch name that is displayed.**
6. **On the main patch page, click Download.**
7. **Click on the file that is displayed to download.**

Documentation and Feedback

TABLE P-1

Documentation	Link
All Oracle Products	http://www.oracle.com/documentation
Sun Blade 6000 modular system	http://download.oracle.com/docs/cd/E19938-01/index.html
Oracle ILOM	http://www.oracle.com/technetwork/documentation/sys-mgmt-networking-190072.html

Provide feedback on this documentation at:
http://www.oracle.com/goto/docfeedback

About This Documentation

This documentation set is available in both PDF and HTML. The information is presented in topic-based format (similar to online help) and therefore does not include chapters, appendices, or section numbering.

A PDF that includes all information on a particular topic subject (such as hardware installation or product notes) can be generated by clicking on the PDF button in the upper left corner of the page.

Introduction to Site Planning

This document provides system specifications and site requirements you must meet when planning to install the Sun Blade 6000 modular system in your data center.

For safety and compliance information, refer to the *Safety and Compliance Manual for Sun Blade 6000 and Sun Blade 6048 Modular Systems* and *Important Safety Information for Sun Hardware Systems*.

These topics provide introductory information on site planning:

- "Customer Obligations" on page 1
- "System Configuration" on page 1
- "Site Planning Checklist" on page 2

Customer Obligations

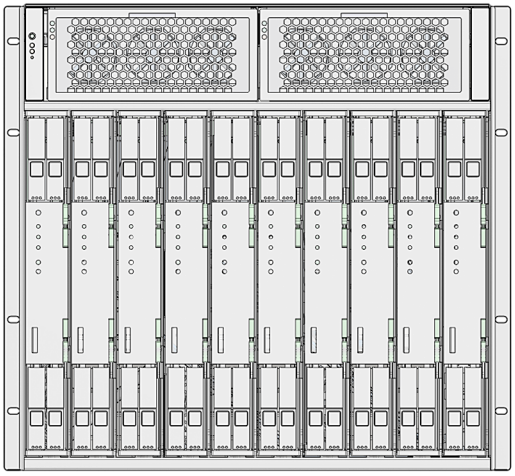
The customer is obliged to inform Oracle, Inc. of any and all ordinances and regulations that affect the installation. The customer is responsible for meeting all local, national, and international government codes and regulations concerning facilities, such as safety, building, and electrical codes.

System Configuration

The modular configuration of the Sun Blade 6000 modular system consists of the following hardware components:

- 10U chassis (Sun Blade 6000 chassis)
- Up to 10 Sun Blade server or storage modules.
- 1 CMM
- Up to 2 (NEMs)

- Up to 20 PCIe EMs
- 2 power supply modules
- 6 rear fan modules



Site Planning Checklist

The following table organizes the site planning tasks into a checklist that you can use during the site planning process.

Requirement	Task	Completed
Configuration	Have you determined the hardware configuration for each system?	Yes__ No__
	Have you determined the type and number of cabinets and racks you need?	Yes__ No__
	Have you determined how you will populate each rack?	Yes__ No__
	Have you determined which external peripherals, such as terminals, monitors, keyboards, SCSI devices, and so forth, the systems require?	Yes__ No__
Environmental	Does the data center environment meet the system specifications for temperature and humidity?	Yes__ No__
	Have you determined the thermal load, heat dissipation, and air conditioning requirements of all equipment in the data center?	Yes__ No__

Requirement	Task	Completed
	Can you maintain the data center environment when certain failures occur, such as power failure, air conditioning unit failure, or humidity control unit failure?	Yes__ No__
	Is fire suppression and alarm equipment installed?	Yes__ No__
Power	Have you determined the maximum power requirements of the systems?	Yes__ No__
	Are you using two AC power sources to establish power grid redundancy?	Yes__ No__
	Have you installed a modular power system, if required?	Yes__ No__
	Do you have sufficient power receptacles and circuit breakers for each system and its peripherals?	Yes__ No__
	Are the power receptacles within 13 feet (4 m) of the racks?	Yes__ No__
	Have you installed and labeled the circuit breakers?	Yes__ No__
Physical	Does the facility's loading dock meet standard common carrier truck requirements? If not, have you made other arrangements for unloading the racks and systems, such as providing a fork lift?	Yes__ No__
	Are pallet jacks or carts available to move the systems and racks from the loading dock to the computer room?	Yes__ No__
	Will the equipment fit through the access route and into the computer room?	Yes__ No__
	Have you calculated the weight of each rack with all the equipment installed within it?	Yes__ No__
	Is the data center floor able to support the weight of the systems and racks?	Yes__ No__
	Have you established where you will locate each rack on the data center floor?	Yes__ No__
	Are the systems and racks positioned so that the heated exhaust air of one system does not enter the air inlet of another system?	Yes__ No__
	Is there sufficient clearance around the racks for system access and maintenance?	Yes__ No__
Miscellaneous	Are there sufficient people available to unload, unpack, and install the systems into the racks?	Yes__ No__
	Have system administrators and service technicians enrolled in appropriate training courses to upgrade their skills, as necessary?	Yes__ No__
	Have you acquired all the hardware needed to set up the systems and racks?	Yes__ No__
	Do you have the documents required to install the systems into the racks?	Yes__ No__

Preparing the Site for System Installation

Install the Sun Blade 6000 modular system in accordance with the local safety codes and regulations at the facility site. You must be familiar with and adhere to the safety precautions in the *Sun Blade 6000 Modular System Safety and Compliance Manual*.

Do not make mechanical or electrical modifications to the equipment. Oracle, Inc. is not responsible for regulatory compliance of a modified Oracle product.

These topics provide information that you need to prepare your site for system installation:

- "Load-Bearing and Handling Precautions" on page 5
- "Power and Electrical Requirements" on page 6
- "Cooling Requirements" on page 8
- "Temperature and Humidity Requirements" on page 9
- "Airflow Requirements" on page 10
- "Clearance for Service and Aisle Requirements" on page 10
- "Route to the Data Center" on page 11

Load-Bearing and Handling Precautions

A fully configured Sun Blade 6000 modular system can weigh in excess of 400 pounds (182 kg) while in its shipping container, and 350 pounds (160 kg) when unpacked. Any floor that this system will cross, or surface on which the system is placed, must be able to support these loads.

The system is shipped on a pallet. You must maintain the system in a vertical, upright position while it is in its shipping container. Be sure you use enough personnel when moving the system, especially on sloping loading docks and ramps,

to gain access to a raised computer room floor. Move the system slowly and deliberately, and ensure that the floor is free of foreign objects, cables, or other obstructions.

Power and Electrical Requirements

The Sun Blade 6000 modular system uses two 200–240V, 5600W power supply modules. The following topics describe the power and electrical requirement for the chassis:

- "Power Consumption" on page 6
- "Power Budgeting" on page 6
- "Electrical Requirements" on page 7
- "Power Cords" on page 7
- "Grid Redundancy" on page 8

Power Consumption

The amount of power that the system consumes dependents on its configuration, that is, the number of active modular components installed. To determine the power redundancy requirements, you need to know:

- Source power available
- Power consumption (depends on component configuration)
- Redundancy level required

The system requires a minimum of four AC inputs. To provide 2N power redundancy at a 5600W consumption level, and to ensure that the system can tolerate a loss of one power supply, the system should never exceed 6250W of power consumption at any given time.

Power Budgeting

The power requirements for different components in the Sun Blade 6000 system are provided through the power conversion calculator. Use the power calculator for estimating the power consumption of your system:

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

The intent of the power calculator is to provide guidance for estimating the electrical and heat loads for typical operating conditions. The *Max power* results shown in the calculator (at 100% workload) represent server module power consumption measurements with CPUs at 100% utilization running SPECjbb2005. The *Idle power* results shown in the calculator represent power consumption measurements taken from server modules with operating systems booted and stabilized, yet running at minimal utilization.

Results shown are representative of measurements taken with room temperatures below 25º C. Actual power consumption will vary with application type, application utilization and ambient temperature. Whenever possible, use actual measurements.

Use these specifications for planning purposes only. The system's actual power requirements depend on which components are included in your configuration. Use Oracle ILOM to verify the system's actual power requirements. Refer to the Oracle ILOM documentation.

Oracle ILOM documentation is available at:
`http://www.oracle.com/pls/topic/lookup?ctx=ilom30&id=homepage`

Electrical Requirements

The data center must meet the following electrical requirements for installation of a Sun Blade 6000 system:

- Four 200–240 VAC, 16A/20A branch circuits, one for each of the AC inlets on the system, are required.

  Each AC inlet requires a separate power cord; therefore, four power cords are required. The power cord must be rated at 16A or 20A, depending on the site location.

- If you are using an Oracle MPS in the cabinet, refer to the documentation supplied with the cabinet for the MPS power requirements.
- If you are not using an MPS, you must supply a branch circuit with a connector that meets the requirements of your system.

Power Cords

The connection to the Sun Blade 6000 chassis AC inlet requires the following types of power cords, dependent on site location and power source.

- If you are connecting the system directly to an external power source (for example, power is not obtained through a modular power system), use the power cords described in the following table.

Location	Oracle Part Number	Quantity	Length	Connections
Americas Domestic	X5044A-Z	4	4 meters	NEMA L6-20P to IEC320-C19
Americas Domestic	X5915A-N*	2	4 meters	NEMA L6-30P to NEMA L6-20R
International	X5045A-Z		4 meters	IEC309, 16A, 3 pin to IEC320-C1

* Requires X5044A-Z. Order Qty 2 X5915-N for each X5044A-Z ordered

- If you are connecting the system to a (rack internal) modular power system, use this type of power cord: IEC320-C19 to IEC320-C20 – 1.5 meter, Oracle part number X5046A-Z; 2.0 meter, Oracle part number X5047A-Z

Grid Redundancy

You can configure the Sun Blade 6000 modular system for grid redundancy by using two AC line feeds and the appropriate modular power system. *Grid redundancy* refers to the performance of the chassis power subsystem in the intended AC configuration. For grid redundancy, the AC configuration is supplied by AC power from two independent feeds, which can be called Line A and Line B. When you connect one power supply to the Line A feed and one power supply to the Line B feed, the system can tolerate the failure of one power supply or the complete loss of either AC feed.

Cooling Requirements

Every watt of power used by the system is dissipated into the air as heat. The upper limit of thermal power dissipation of the chassis in 6250W 2N configuration is 21,325 BTU/hr. This requires that the data center HVAC system must accommodate the maximum heat release of a fully configured system, as well as any other systems in the data center.

The amount of heat output per Sun Blade 6000 system varies, depending on the system configuration. The systems are equipped with fans that route cool air throughout the chassis from front to rear. The fans are speed controlled based on system temperature sensors. Typical airflow (for room temperatures below 23º C) is about 600 CFM. Maximum possible airflow is about 1012 CFM.

As long as the necessary air conditioning is provided in the data center to dissipate the heat load, and sufficient space and properly vented door openings are provided at the front and back of rackmounted systems (see "Clearance for Service and Aisle Requirements" on page 10), the system fans will enable the system to work within the temperature specifications for systems in operation (see "Environmental Specifications" on page 19). Thermal characteristics of the Sun Blade 6000 chassis system are provided in "Thermal Design Specifications" on page 20.

Temperature and Humidity Requirements

The operating and nonoperating temperature specifications listed in "Environmental Specifications" on page 19 reflect the system's hardware limits, in order to meet all functional requirements. Note that the operating temperatures apply to the air entering the system and not necessarily the temperature of the air in the aisles.

Avoid temperature and humidity extremes. The optimum operating ambient temperature and humidity ranges are the recommended operating environment. Operating the system within the ambient temperature range is optimal for system reliability. At 23º C (73.4o F) it is easy to maintain safe relative humidity ranges and to provide a buffer if the environmental support system fails.

Ambient relative humidity levels between 45 percent and 50 percent are the most suitable for system operations to:

- Prevent corrosion.
- Provide an operating time buffer in the event of an environmental control system failure.
- Help avoid failures due to intermittent interference from static discharges that can occur when relative humidity is too low. ESD is easily generated and less easily dissipated in areas where the relative humidity is below 35 percent, and becomes critical when levels drop below 30 percent.

Conditions should not be allowed to fluctuate by more than 5.5 º C (10 ºF) or 10 percent relative humidity during a 60-minute period.

Airflow Requirements

The system uses forced air to draw in ambient air for cooling from the front of the chassis, while heated air exits the rear of the chassis. The design of the system provides two primary regions of airflow: The lower airstream cools the server modules, and the upper airstream cools the power supplies, chassis monitoring modules, Sun Blade 6000 network express modules, and PCIe ExpressModules.

The rear fan cage includes six rear fan modules, each module having two fans, for a total of 12 fans. The fans draw cool air through the front of the server modules and exhaust heated air through the back of the chassis. This results in a typical measurement of approximately 600 CFM of total airflow.

The upper airstream provides forced air by using a combination of internal fans within each power supply.

Follow these airflow guidelines:

- Do not block the ventilation areas of the chassis.
- Ensure that all cabling at the rear of the chassis does not block any exhaust air.
- Ensure that front and rear cabinet doors are at least 60 percent perforated to ensure minimal restriction of airflow. Removal of either or both doors will improve the cooling capability of the system.
- Front and rear clearance between the inside of the cabinet doors and the system should allow a minimum of 0.2 inch (0.5 cm) at the front of the system and 3.1 inches (7.9 cm) at the rear of the system for proper airflow.

Clearance for Service and Aisle Requirements

To enable installation and servicing of the system, including access to system cables, follow these space restrictions.

Location	Service Access Requirement
System extended from rack	3 feet (0.9 m) on both sides of the system to facilitate installation
Front cold aisle	5 feet (1.5 m); required for rackmounting

Location	Service Access Requirement
Back hot aisle	3 feet (0.9 m); required for cable access

Arrange racks in a hot aisle–cold aisle layout. This layout enables cool air to flow through the aisles to the system's front air intake and enables heated air to flow from the system's back exhaust. A hot aisle–cold aisle layout eliminates the direct transfer of hot exhaust air from one system into the intake air of another system.

Route to the Data Center

Ideally, the data center and loading dock should be located in close proximity to one another. The access allowances for the path from the loading dock to the data center must include:

- A minimum 56-inch (142-cm) height
- A minimum 37-inch (94-cm) width (greater is recommended)

The system chassis and factory-installed components ship in a single container on a pallet. The system must be kept in a vertical, upright position at all times while in its shipping container. Ensure that the equipment and personnel unloading the chassis shipping container can handle the shipping dimensions and weight of the container. See "Shipping Crate Physical Specifications" on page 17 for shipping container and weight specifications.

If there is a significant temperature or humidity difference between the system and the data center environment, keep the system in its shipping container in a location that has a temperature and humidity environment similar to that of the data center. Wait at least 24 hours before removing the system from its shipping container to prevent thermal shock and condensation.

Provide a room that is separate from the data center in which to open equipment cartons and to repack hardware when you install and remove parts. Avoid unpacking the cartons in the data center. Dirt and dust from the packing materials can contaminate the data center.

Rackmounting Considerations

This section describes information that you need to consider when planning to rackmount the systems.

These topics are covered in this section:

- "Mounting the Chassis in a Rack" on page 13
- "Compatible Cabinets" on page 13
- "Number of Chassis Supported in a Rack" on page 14

Mounting the Chassis in a Rack

You should use a mechanical lift to install the chassis into the rack. To install the chassis manually, you will need four people. Refer to the *Sun Blade 6000 Rack Alignment Template,* for specific instructions on rackmounting the chassis. This document is available at:

`http://www.oracle.com/pls/topic/lookup?ctx=sb6000&id=homepage`

Compatible Cabinets

The chassis is designed for rackmounting. It can be mounted into 19-inch EIA-310D cabinets with a depth of 35.4 to 39.4 inches (90.0 to 100.1 cm). The chassis can accommodate corresponding front-to-back, rail-to-rail spacing of 26.77 inches (68.0 cm) to 34.25 inches (87.0 cm).

Oracle offers EIA 310D-compliant cabinets for mounting the Sun Blade 6000 modular system. The Sun Rack 1000 cabinet family is among the newer cabinets from Oracle. These cabinets are designed to hold three Sun Blade 6000 modular system (Sun Rack 1000-38) or four Sun Blade 6000 modular systems (Sun Rack 1000-42). The following table lists the physical specifications for the Sun Rack 1000 cabinets.

Specification	Sun Rack 1000-38	Sun Rack 1000-42
Usable rack units	38	42
Height	74 inches (188 cm)	81 inches (205.7 cm)
Width	23.5 inches (60 cm)	23.5 inches (60 cm)
Depth	39.4 inches (1000 cm)	39.4 inches (1000 cm)
Weight of empty rack	370 lb (167.8 kg)	426 lb (193.2 kg)
Weight of empty rack with shipping pallet	540 lb (244.9 kg)	683 lb (309.7 kg)
Weight of empty rack with MPS (no pallet)	465 lb (210.9 kg)	521 lb (236.3 kg)
Load capacity	1200 lb (544 kg)	1200 lb (544 kg)

Number of Chassis Supported in a Rack

Up to four Sun Blade 6000 chassis can be installed in a 1000-42 rack, with the exceptions shown in the following list.

The following configurations are supported by MPS:

- Worst case consumption (32A), 60A-3 phase: one Sun Blade 6000 chassis
- One 32A-3 phase – three Sun Blade 6000 chassis
- Two 60A-3 phase – three Sun Blade 6000 chassis
- Two 30A-1 phase – one Sun Blade 6000 chassis

Facility Safety

Observe the following guidelines and precautions when installing the Sun Blade 6000 modular system.

- "Secure Installation Requirements" on page 15
- "Placement of Product" on page 15
- "Hazardous Conditions Precaution" on page 16

Secure Installation Requirements

To minimize personal injury in the event of a seismic occurrence, you must securely fasten the cabinet in which the system is rackmounted to a rigid structure extending from the floor to the ceiling, or from the walls, of the room in which the cabinet is located.

Install a stand-alone system or a rackmounted system on a level surface. At the base of the cabinet is an anti-tilt bar. This bar must be extended before you install the Sun Blade 6000 modular system to prevent the cabinet from moving.

Placement of Product

Do not block or cover the openings of the Sun Blade 6000 modular system. Never place an Oracle product near a radiator or heat register.

Failure to follow these guidelines can cause overheating and affect the reliability of your Oracle product. Air cools the Sun Blade 6000 modular system from front to back. The front and rear cabinet door clearances must provide sufficient space for cooling. See "Airflow Requirements" on page 10 for specific clearance specifications.

Hazardous Conditions Precaution

Because of the inherent nature of the system's modular design, take care to ensure that operators are not exposed to moving parts and sharp edges.

Specifications

This following topics describe the system specifications.

- "Shipping Crate Physical Specifications" on page 17
- "Chassis and Components Dimensions and Weights" on page 18
- "AC Power Requirements" on page 19
- "Environmental Specifications" on page 19
- "Thermal Design Specifications" on page 20
- "Acoustic Noise Emissions" on page 20
- "Regulatory Compliance" on page 21

Shipping Crate Physical Specifications

The standard Sun Blade 6000 modular system is shipped with the following components installed:

- 1 Sun Blade 6000 chassis
- 2 power supply modules
- 6 rear fan modules
- 2 front fan modules
- 1 CMM
- 9 server module filler panels, 20 PCIe EM filler panels, and 2 NEM filler panels

Also shipped with the Sun Blade 6000 modular system are:

- Rackmount rail kit (including shipping brackets)
- Rack alignment template
- DB-9 to RJ-45 adapter
- Dongle (multi-port cable)
- Documentation

The chassis shipping crate physical specifications are shown in the following table.

Dimension or Weight	Specification
Shipping crate height	50.9 inches (129.3 cm)
Shipping crate width	26.5 inches (67.3 cm)
Shipping crate length	36 inches (91.4 cm)
Chassis, packaging, and pallet weight	Approximately 600 lb (272 kg)

Chassis and Components Dimensions and Weights

The unpacked chassis and component dimensions and weights are shown in the following table.

Dimension or Weight	Specification
Chassis height	17.25 inches (438.15 mm); (10 rack units without clearance)
Chassis depth	27.25 inches (692.15 mm); includes chassis metal and front bezel
Chassis width	17.50 inches (444.5 mm); does not include rackmounting ears
Chassis weight	Fully configured system: 350 lb (159 kg) Empty chassis: 78.7 lb (35.7 kg)
Subassembly weights	• I/O chassis with midplane: 26 lb (11.79 kg) • Power supply module: 21.38 lb (9.7 kg) • Front fan module: 1.95 lb (0.88 kg) • Rear fan module: 2.31 lb (1.04 kg) • Network express module: 3.85 lb (1.75 kg) • PCIe ExpressModule: 0.90 lb (0.41 kg) • Chassis monitoring module: 1.15 lb (0.52 kg) • Front indicator module: 0.75 lb (0.34 kg) • Server module - see server module documentation

AC Power Requirements

The AC power requirements of the system are shown in the following table.

Power Type	Function	Specification
AC Power	Input power	1+1 PSU rating, 6272 W or 6400 VA each power supply module
	Voltage	200 to 240 VAC
	Frequency	50 to 60 Hz
	Current	16A per output, total four AC inputs (two per power supply module).
	Number of AC inputs	4
	AC input connection	• Americas Domestic – NEMA L6-20P to IEC320-C19M (4m, Oracle PN X5044A-Z) • International – IEC309, 250 V, 16 A, 3 Pin to IEC320-C19 (4m, Oracle PN X5045A-Z) • Installed in rack with modular power system – IEC320-C319 to IEC320-C20 (1.5m, Oracle PN X5046A-Z; (2.0m, X5047A-Z)
DC Power	Output power	1+1 PSU rating, 5740 W each power supply module

Environmental Specifications

The environmental specifications of the system are shown in the following table.

Specification	Operating	Nonoperating
Temperature	5 to 32º C (41 to 90 ºF) noncondensing	–40 to 65º C (–40 to 149º F) noncondensing
Optimum ambient temperature	22º C (71.6º F)	

Specification	Operating	Nonoperating
Relative humidity (RH)	10 to 90% RH, noncondensing, 27º C max wet bulb	5 to 93% RH, noncondensing, 38º C max wet bulb
Optimum ambient relative humidity	45 to 50% RH, noncondensing	
Altitude	0 to 10,000 feet (3048 m) maximum ambient temperature is derated by 1º C per 300 m (984 ft) above 900 m (2953 ft)	0 to 39,370 feet (12,000 m)
Sine vibration	Operating: Z (vertical) axis: 0.15 G, X-Y axis: 0.10 G, 5 Hz-500 Hz sine	Z (vertical) axis: 0.50 G, X-Y axis: 0.25 G, 5 Hz-500 Hz sine
Shock	3 Gs, 11 msec, half sine (rackmounted enclosure)	

Thermal Design Specifications

The thermal design specifications of the system are shown in the following table.

Parameter	Specification
Maximum possible system volumetric airflow	1012 CFM
Maximum possible heat dissipation/HVAC load	21,325 BTU/hr
Maximum possible temperature rise through chassis	18.5º C (33º F)

Acoustic Noise Emissions

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

Data center personnel should take necessary precautions to reduce exposure to the high noise levels. Acoustic noise emission levels are shown in the following table.

Function	Specification
Operating/idling acoustic noise (LwAd, 1B=10 dB)	8.6 B at or below 25º C, 9.2 B at maximum ambient

Regulatory Compliance

The system complies with the Oracle and regulatory agency standards shown in the following table.

Category	Standard
Product safety	• UL approved to UL 60950 and C22.2 No. 60950 • UL Demko approval to EN60950-1 and CB Report IEC 60950-1; including all amendments and full worldwide deviations • GOST Certification for Russia • Korean MIC Certification • China CCC Mark for power supply (system is exempt since it is rated greater than 1300W) • CE Declaration of Conformity (SMI self-declaration) to The Electromagnetic Compatibility Directive and Low Voltage Directive 2006/95/EC • IRAM S-Mark for power supply (system is exempt due to class of equipment) • CNS 14336 (Taiwan)
Laser product and optical I/O	• FCC Registration to Code of Federal regulations 21 CFR 1040-Lasers • TUV approval to IEC 60825-1 Safety of Laser Products • Canadian Radiation Emitting Devices Act REDR C1370

Category	Standard
Electromagnetic interference	• CFR 47 Part 15 (Code of Federal Regulations, Part 15, Subpart B) Class A • EN55022:2006 Class A per EMC Directive 2004/108/EEC (CE Mark) • VCCI Class A • Industry Canada ICES-003 • AS/NZ 3548 (Australia/New Zealand) • CNS 13438 (Taiwan)
Immunity	EN55024:1998 +A1:2001 +A2:2003 per EMC Directive 2004/108/EEC, including: • IEC 61000-4-2 Electrostatic discharge immunity test • IEC 61000-4-3 Radiated, radio-frequency, electromagnetic field immunity test • IEC 61000-4-4 Electrical fast transient/burst immunity test • IEC 61000-4-5 Surge immunity test • IEC 61000-4-6 Immunity to conducted disturbances, induced by radio-frequency fields • IEC61000-4-8 Power frequency magnetic field immunity test • IEC 61000-4-11 Voltage dips, short interruptions, and voltage variations immunity tests
Line distortion	• EN 61000-3-2 per EMC Directive 89/336/EEC
Voltage fluctuations and flicker	• EN 61000-3-3 per EMC Directive 89/336/EEC

Glossary

C

CFM Cubic feet per minute

CMM Chassis monitoring module

E

ESD Electrostatic discharge

H

HVAC Heating, ventilation, and air conditioning

M

MPS Modular power system

N

NEM Network Express Module

O

Oracle ILOM Oracle Integrated Lights Out Manager

P

PCIe EM PCIe ExpressModule

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