



# Sun Blade™ 8000 Series Site Planning Guide

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Sun Microsystems, Inc.  
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# Preface

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The *Sun Blade 8000 Series Site Planning Guide* provides the data center site requirements for the installation of the Sun Blade 8000 Modular System and the Sun Blade 8000 P Modular System. This document provides detailed physical, electrical, power, and cooling specifications, as well as recommendations for compatible cabinets. This document is written for data center administrators who have advanced experience maintaining a data center environment and for experienced system installers.

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## Sun Blade 8000 Series Product Web Sites

You can find extensive information about the Sun Blade 8000 Series systems, including components and options, as well as service plans, at the Sun Blade 8000 Series product web sites.

- For the **Sun Blade 8000 Modular System:**

<http://www.sun.com/servers/blades/8000/>

- For the **Sun Blade 8000 P Modular System:**

<http://www.sun.com/servers/blades/8000p/>

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## Related Documentation

You can locate the Sun Blade 8000 Series documents by searching for Sun Blade 8000 at the following Sun documentation web site:

<http://docs.sun.com>

You can go directly to the Sun Blade 8000 Series documentation pages at the following web sites:

- For the Sun Blade 8000 Modular System

<http://docs.sun.com/app/docs/coll/blade8000>

- For the Sun Blade 8000 P Modular System

<http://docs.sun.com/app/docs/coll/blade8000p>

The most current versions of the documentation are located on the web sites.

Content	Title	Part Number	Format	Location
Late-breaking information	<i>Sun Blade 8000 Series Product Notes</i>	819-5651	PDF HTML	Web
Site Planning (this document)	<i>Sun Blade 8000 Series Site Planning Guide</i>	819-5648	PDF HTML	Web
<ul style="list-style-type: none"><li>• Rackmounting</li><li>• Hardware Setup</li><li>• Cabling</li><li>• Management Network</li><li>• OS Installations</li></ul>	<i>Sun Blade 8000 Series Installation Guide</i>	819-5647	PDF Printed	Web Customer-orderable option
<ul style="list-style-type: none"><li>• Product Overview</li><li>• BIOS</li><li>• OS Configurations</li><li>• Service Procedures</li><li>• System Management</li><li>• I/O Interconnectivity</li><li>• Diagnostics</li><li>• Fault Management</li></ul>	<i>Sun Blade 8000 Series Online Information System</i>	819-5846	HTML	Web
Safety and compliance information	<i>Sun Blade 8000 Series Safety and Compliance Manual</i>	819-5652	PDF	Web
	<i>Important Safety Information for Sun Hardware Systems</i>	816-7190	Printed	Chassis ship kit

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# Documentation, Support, and Training

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# Site Planning for the Sun Blade 8000 Series Systems

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This guide provides system specifications and site requirements you must meet when planning to install the Sun Blade™ 8000 Modular System or Sun Blade 8000 P Modular System in your data center.

For safety and compliance information, refer to the *Sun Blade 8000 Series Safety and Compliance Manual* (819-5652) and the *Important Safety Information for Sun Hardware Systems* (816-7190).

This site planning guide is organized as follows:

- “Customer Obligations” on page 1
- “System Configuration” on page 2
- “Preparing the Site Before the System Arrives” on page 2
- “Compatible Cabinets” on page 8
- “Route to the Data Center” on page 9
- “Facility Safety” on page 9
- “System Specifications” on page 11
- “Regulatory Compliance” on page 16
- “Site Planning Checklist” on page 18

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## Customer Obligations

The customer is required to inform Sun Microsystems, Inc. of any and all ordinances and regulations that affect the system 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.

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# System Configuration

The modular configuration of the **Sun Blade 8000 Modular System** consists of the following hardware components:

- 19U chassis (Sun Blade 8000 Chassis)
- Up to 10 Sun Blade Server Modules
- Up to 2 Chassis Monitoring Modules (CMM)
- Up to 4 Network Express Modules (NEM)
- Up to 20 PCI Express ExpressModules (EM)
- 6 power supply modules
- 9 rear fan modules
- 3 front fan modules

The modular configuration of the **Sun Blade 8000 P Modular System** consists of the following hardware components:

- 14U chassis (Sun Blade 8000 P Chassis)
- Up to 10 Sun Blade Server Modules
- Up to 2 Chassis Monitoring Modules (CMM)
- Up to 2 Network Express Modules (NEM)
- 4 power supply modules
- 9 rear fan modules

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# Preparing the Site Before the System Arrives

Install the Sun Blade 8000 Series systems 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 8000 Series Safety and Compliance Manual* (819-5652).

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

# Load-Bearing and Handling Precautions

A Sun Blade 8000 Modular System can weigh in excess of 600 pounds (272 kg) when shipped, and 536 lb (243 kg) when fully configured and ready to rackmount. A Sun Blade 8000 P Modular System can weigh in excess of 484 pounds (220 kg) when shipped, and 420 lb (191 kg) when fully configured and ready to rackmount. Any floor that the 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 8000 Modular System uses six power supply modules; the Sun Blade 8000 P Chassis uses four power supply modules. In both chassis, the modules provide 48V at 3000W per supply for a total of 9000W per chassis.

The AC power requirements for the Sun Blade 8000 Series systems are as follows:

- Voltage - 200 to 240 VAC
- Frequency - 50 to 60 Hz
- Current - 16A per power supply

The data center must meet the following electrical requirements for installation of a Sun Blade 8000 Series system:

- 200 to 240 VAC, 16A/20A branch circuits, one for each of the AC inlets on the chassis, are required. If AC power and power supply redundancy are not required, three 200 to 240 VAC, 16A/20A branch circuits are required.

The amount of power that the system consumes is dependent 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 (depends on power supply configuration and available source power)
- Power consumption (depends on component configuration)
- Redundancy level required

Both systems require a minimum of three active power supply modules. You can configure the power supplies as follows:

- Sun Blade 8000 Chassis - N+N for full grid redundancy
- Sun Blade 8000 P Chassis - N+1 for power supply redundancy

With the Sun Blade 8000 system, to provide a full N+N (3+3 ) power redundancy at a 9000W consumption level, and to ensure that the system can tolerate a loss of three power supplies, the system should never exceed 9000W of power consumption at any given time. If you need only N+1 redundancy (loss of up to one power supply without suffering any outage), the system should contain four active power supplies. For N+2 redundancy (loss of up to two power supplies without suffering any outage) the system should contain five active power supplies.

You can configure the Sun Blade 8000 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 AC power from two independent feeds, which can be called Line A and Line B. By connecting three power supplies to the Line A feed and three power supplies to the Line B feed, the system can tolerate the failure of up to three power supplies or the complete loss of either AC feed.

The Sun Blade 8000 P Modular System supports N+1 power supply redundancy. A minimum of three operating power supplies are required to support a fully configured system without N+1 power supply redundancy.

## Power Cord Requirements

The connection to the Sun Blade 8000 Series chassis AC inlets requires the following types of power cords, which are dependent on site location. Each AC inlet requires a separate power cord; therefore, six power cords are required for the Sun Blade 8000 Chassis and four power cords are required for the Sun Blade 8000 P Chassis. The power cord must be rated at 16A or 20A, depending on the site location.

If you are connecting the system directly to an external power source or to a modular power system, use these types of power cords:

- **Sun Blade 8000 Chassis:**
  - Americas Domestic - NEMA L6-20P to IEC320-C19 (13 feet/4 meter; Sun part number X5044A-Z)
  - International - IEC309 to IEC320-C19 (13 feet/4 meter; Sun part number X5045A-Z)
  - Optional power cord for connecting a rackmounted chassis to a modular power system - IEC320-C19 to IEC320-C20 (5 feet/1.5 meter; Sun part number X5046A-Z); (6 feet/2 meter; Sun part number X5047A-Z)
- **Sun Blade 8000 P Chassis:**
  - Americas Domestic - NEMA L6-20P to IEC320-C19 (13 feet/4 meter; Sun part number X5074A-Z)
  - International - IEC309 to IEC320-C19 (13 feet/4 meter; Sun part number X5075A-Z)

- Optional power cord for connecting a rackmounted chassis to a modular power system - IEC320-C19 to IEC320-C20 (5 feet/1.5 meter; Sun part number X5076A-Z); (6 feet/2 meter; Sun part number X5077A-Z)

If you are using a Sun modular power system (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 Calculations

You can use the Sun Blade 8000 Series Power Calculators to help you determine the power requirements of either the Sun Blade 8000 or Sun Blade 8000 P Modular System. The intent of the Power Calculator is to provide guidance for estimating the electrical and heat loads per populated chassis for racking and facilities planning purposes. The power results given by the Power Calculator represent the worst-case, maximum sustained total server module and chassis power consumption for room temperatures below 25 °C. The results represent CPU under maximum possible stress and 100% utilization.

- To access the **Sun Blade 8000 Power Calculator**, go to:

<http://www.sun.com/servers/blades/8000chassis/calc/index.jsp>

- To access the **Sun Blade 8000 P Power Calculator**, go to:

<http://www.sun.com/servers/blades/8000pchassis/calc/index.jsp>

# Cooling Requirements

Every watt of power used by the system is dissipated into the air as heat. The thermal power dissipation of the chassis in a 9000W N+N (Sun Blade 8000 Modular System) or N+1 (Sun Blade 8000 P Modular System) configuration is 30,735 BTU/hr. This requires that the data center heating, ventilation, and air conditioning (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 8000 Series 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 maximum airflow through the chassis is 1500 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 [TABLE 1](#)), the system fans will enable the system to work within the temperature specifications for systems in operation as noted in [TABLE 7](#). Thermal characteristics of the Sun Blade 8000 Series systems are provided in [TABLE 9](#).

## Temperature and Humidity Requirements

Avoid temperature and humidity extremes. The operating and nonoperating temperature specifications listed in [TABLE 7](#) reflect the systems' hardware limits, in order to meet all functional requirements. Note that the operating temperatures apply to the air entering the system and not necessarily to the temperature of the air in the aisles.

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 22 °C (71.6 °F) it is easy to maintain safe relative humidity ranges and to provide a buffer in the event of an environmental support system failure.

Ambient relative humidity levels between 45% and 50% 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 system failures due to intermittent interference from static discharges that can occur when relative humidity is too low. Electrostatic discharge (ESD) is easily generated and less easily dissipated in areas where the relative humidity is below 35%, and becomes critical when levels drop below 30%.

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

# Airflow Requirements

The Sun Blade 8000 Series systems use 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 systems provides two primary regions of airflow: The lower airstream cools the Server Modules, and the upper airstream cools the power supplies, Chassis Monitoring Modules, and Network Express Modules. In the Sun Blade 8000 Chassis, the upper airstream also cools the PCI Express ExpressModules.

The rear fan cage includes nine rear fan modules, each module having two fans, for a total of 18 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 approximately 1500 cfm (cubic feet per minute) of total airflow through the chassis.

The upper airstream provides forced air by using a combination of internal fans within each power supply, and in the Sun Blade 8000 Chassis by also using the three front fan modules.

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% 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 cabinet doors and the system should allow a minimum of 0.2 inch (5 mm) at the front of the system and 3.1 inches (78.7 mm) at the rear of the system for proper airflow.

# Clearance for Service and Aisle Requirements

To enable installation and servicing of the Sun Blade 8000 Series system, including access to system cables, follow these space restrictions.

**TABLE 1** Service and Aisle Clearance Requirements

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
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. This layout eliminates the direct transfer of hot exhaust air from one system into the intake air of another system.

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# Compatible Cabinets

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**Note** – The Sun Blade 8000 Series Chassis is designed for 4-post rackmounting only. Two-post rackmounting is not supported.

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The Sun Blade 8000 Series Chassis are designed for rackmounting. The chassis can be mounted into 35.4 to 39.4 inches (900 to 1000 mm) deep, 19-inch EIA-310D cabinets. The chassis can accommodate corresponding front-to-back, rail-to-rail spacing between 26.77 inches (680 mm) to 34.25 inches (870 mm).

Sun Microsystems offers EIA 310D-compliant cabinets for mounting the Sun Blade 8000 Series systems. The Sun Rack 1000 cabinet family supports both the Sun Blade 8000 and Sun Blade 8000 P Modular Systems.

When determining the maximum number of Sun Blade systems that you can install into a rack, there are two factors to consider: space and power. Space simply refers to number of usable rack units provided by the rack and the number of rack units required by the equipment to be racked. You must remember to count not only the rack units being used by the Sun Blade systems going into the rack, but also the rack units taken up by the power distribution system(s) being used in the rack.

Determining the power requirements is more complex to calculate, especially if you plan to power the racked equipment by the power distribution system provided by the rack. You must consider both the number of power cords and amperage per power cord required by the racked equipment and the number of outlets and amperage per outlet/outlet circuit provided by the rack power distribution system(s).

In general, the 42 rack unit Sun Rack 1000-42 with either the Modular Power System (MPS) 60A 3-phase (US, Canada, Mexico, Taiwan, and Japan) or the MPS 32A 3-phase (EMEA and APAC - except Taiwan and Japan) provides the most flexibility for racking various systems and is the recommended rack to use. The number of chassis supported in the Sun Rack 1000-42 in the table below is based on both the available space and the internal power provided to the racked equipment using the various power distribution options.

**TABLE 2** Sun Blade Modular Systems Supported in a Sun Rack 1000-42

System	PDS	MPS 30A 1-Phase	MPS 30A 3-Phase	MPS 60A 3-Phase	MPS 32A 3-Phase	External Power
Sun Blade 8000	0	0	0	1 with 1x MPS 2 with 2x MPS	2	2
Sun Blade 8000 P	0	0	0	1 with 1x MPS 2 with 2x MPS	2	3



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## 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 accommodate the shipping dimensions and weight of the container. See [TABLE 4](#) 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 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.

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## Facility Safety

Observe the following guidelines and precautions when installing the Sun Blade 8000 Series systems.

### 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 standalone 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 8000 Series system to prevent the cabinet from moving. For stability, only one Sun Blade 8000 Series system should be extended from the cabinet at one time. Always install equipment in the cabinet from the bottom up to help stabilize the cabinet.

## Placement of a Sun Product

Do not block or cover the openings of the Sun Blade 8000 Series system. Never place a Sun product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Sun product. Air cools the Sun Blade 8000 Series system from front to back. The front and rear cabinet door clearances must provide sufficient space for cooling. See [“Airflow Requirements” on page 7](#) for specific clearance specifications.

## Hazardous Conditions Precautions

Because of the inherent nature of the system’s modular design, care must be taken to ensure that operators are not exposed to the hazardous conditions as defined in [TABLE 3](#).

**TABLE 3** Hazardous Conditions Restrictions

Hazard	Limit
Voltage	Greater than 60 VDC, 30 VRMS, or 42.4V peak-to-peak
Energy	Greater than 240 VA
Mechanical	Moving parts and sharp edges

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# System Specifications

The standard **Sun Blade 8000 Modular System** is shipped with the following components installed:

- 1 Sun Blade 8000 Chassis
- 6 power supply modules
- 9 rear fan modules
- 3 front fan modules
- 1 Chassis Monitoring Module (CMM)
- 1 power interface module
- 9 Server Module filler panels, 20 PCI Express ExpressModule filler panels, 1 CMM filler panel, and 4 Network Express Module filler panels

The standard **Sun Blade 8000 P Modular System** is shipped with the following components installed:

- 1 Sun Blade 8000 PChassis
- 4 power supply modules
- 9 rear fan modules
- 1 Chassis Monitoring Module (CMM)
- 1 power interface module
- 9 Server Module filler panels, 1 CMM filler panel, and 2 Network Express Module filler panels

Also shipped with the Sun Blade 8000 Series systems are:

- Rackmount rail kit
- Rackmount tray
- Rack Alignment Template
- DB-9 to RJ-45 adapter
- 10 Sun Blade X8400 Blade adapter components
- Documentation

# Shipping Crate Physical Specifications

The chassis shipping crate physical specifications are as follows.

**TABLE 4** Standard Shipping Crate Physical Specifications (Sun Blade 8000 and 8000 P Systems)

Dimension or Weight	Sun Blade 8000 Specification	Sun Blade 8000 P Specification
Shipping crate height	50.9 inches (129.3 cm)	43 inches (109.22 cm)
Shipping crate width	26.5 inches (67.3 cm)	26.5 inches (67.3 cm)
Shipping crate length	36 inches (91.4 cm)	36 inches (91.4 cm)
Chassis, packaging, and pallet weight	Approximately 600 lb (272 kg)	Approximately 484 lb (220 kg)

## Chassis and Components Dimensions and Weights

The unpacked chassis and component dimensions and weights are listed in [TABLE 5](#) and [TABLE 6](#).

**TABLE 5** Chassis and Component Physical Specifications (Sun Blade 8000 System)

Dimension or Weight	Specification
Chassis height	33.01 inches (838.49 mm); (19 rack units without clearance)
Chassis depth	28.43 inches (722 mm); includes chassis metal and front bezel
Chassis depth in rack	27.56 inches (700 mm); distance from the front vertical mounting rail to rear of the chassis
Chassis width	17.5 inches (444.5 mm); does not include rackmounting ears
Chassis weight	Fully configured system: 536 lb (243.13 kg) Empty chassis: 94 lb (42.64 kg) Subassembly weights: <ul style="list-style-type: none"><li>• Chassis handles: 20 lb (9.07 kg)</li><li>• I/O chassis with midplane: 26 lb (11.79 kg)</li><li>• Power supply module: 12 lb (5.44 kg)</li><li>• Server Module: 23 lb (10.43 kg)</li><li>• Front fan module: 3 lb (1.36 kg)</li><li>• Rear fan module: 3 lb (1.36 kg)</li><li>• Network Express Module: 7 lb (3.18 kg)</li><li>• PCI Express ExpressModule: 2 lb (0.91 kg)</li></ul>

**TABLE 6** Chassis and Component Physical Specifications (Sun Blade 8000 P System)

Dimension or Weight	Specification
Chassis height	24.26 inches (616.21 mm); (14 rack units without clearance)
Chassis depth	28.43 inches (722 mm); includes chassis metal and front bezel
Chassis depth in rack	27.56 inches (700 mm); distance from the front vertical mounting rail to rear of the chassis
Chassis width	17.5 inches (444.5 mm); does not include rackmounting ears
Chassis weight	Fully configured system: 420 lb (190.51 kg) Empty chassis: 75 lb (34 kg) Subassembly weights: <ul style="list-style-type: none"> <li>• Chassis handles: 20 lb (9.07 kg)</li> <li>• I/O chassis with midplane: 15 lb (6.80 kg)</li> <li>• Power supply module: 9.25 lb (4.19 kg)</li> <li>• Server Module: 23 lb (10.43 kg)</li> <li>• Rear fan module: 3 lb (1.36 kg)</li> <li>• Network Express Module: 7 lb (3.18 kg)</li> </ul>

## Environmental Specifications

**TABLE 7** Environmental Specifications (Sun Blade 8000 and 8000 P Systems)

Specification	Operating	Nonoperating
Temperature	5 to 35°C (41 to 95°F) noncondensing	-40 to 65°C (-40 to 149°F) noncondensing
Optimum ambient temperature	22°C (71.6°F)	
Relative humidity	10 to 90% RH, noncondensing, 27°C max wet bulb	5 to 93% RH, noncondensing, 38°C max wet bulb
Optimum ambient relative humidity	45 to 50% RH, noncondensing	
Altitude	0 to 7500 feet (2286 m)	0 to 10,000 feet (3048 m)
Sine Vibration	Z (vertical)-axis: 0.15G X/Y axis: 0.10G 5 to 500 Hz sine	Z (vertical)-axis: 0.50G X/Y axis: 0.25G 5 to 500 Hz sine
Shock	3Gs, 11 msec, half sine (rackmounted enclosure)	

# AC Power Requirements

**TABLE 8** AC Power Requirements (Sun Blade 8000 and 8000 P Systems)

Function	Specification
Voltage	200 to 240 VAC
Frequency	50 to 60 Hz
Current	16A per power supply.
Number of AC inputs	Sun Blade 8000 Chassis - 6 Sun Blade 8000 P Chassis - 4
AC input connection	<ul style="list-style-type: none"> <li>• Sun Blade 8000 Chassis: Americas Domestic - NEMA L6-20P to IEC320-C19 (4 m, Sun PN X5044A-Z) International - IEC309 to IEC320-C19 (4 m, Sun PN X5045A-Z) Installed in rack with modular power system - IEC320-C319 to IEC320-C20 (1.5 m, Sun PN X5046A-Z; 2.0 m, Sun PNX5047A-Z)</li> <li>• Sun Blade 8000 P Chassis: Americas Domestic - NEMA L6-20P to IEC320-C19 (4 m, Sun PN X5074A-Z) International - IEC309 to IEC320-C19 (4 m, Sun PN X5075A-Z) Installed in rack with modular power system - IEC320-C319 to IEC320-C20 (1.5 m, Sun PN X5076A-Z; 2.0 m, Sun PNX5077A-Z)</li> </ul>

# Thermal Design Specifications

**TABLE 9** Thermal Design Specifications (Sun Blade 8000 and 8000 P Systems)

Parameter	Specification
Total system volumetric airflow	1500 cfm
Total heat dissipation/HVAC load	30,735 BTU/hr (9000W N+N configuration for Sun Blade 8000 Modular System or 9000W N+1 configuration for Sun Blade 8000 P Modular System)
Average temperature rise through chassis	15°C (59°F)

# Airflow Requirements

**TABLE 10** Chassis Airflow Specifications (Sun Blade 8000 and 8000 P Systems)

Function	Specification
Airflow	1500 cfm
Airflow direction	Front to back

# Acoustic Noise Emissions

**TABLE 11** Acoustic Noise Specifications (Sun Blade 8000 and 8000 P Systems)

Function	Specification
Operating acoustic noise (maximum fan speed)	90 dBA from front
	95 dBA from rear

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

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# Regulatory Compliance

The Sun Blade 8000 Series systems comply with the following Sun Microsystems and regulatory agency standards.

**TABLE 12** Regulatory Compliance

Category	Standard
Product safety	<ul style="list-style-type: none"><li>• UL approved to UL 60950 and C22.2 No. 60950</li><li>• TUV approval to EN60950-1 and CB Report IEC 950 3rd Edition; including all amendments and full worldwide deviations</li><li>• GOST Certification for Eastern Block countries</li><li>• Korean MIC Certification</li><li>• China CCC Mark for power supply and fans rated 27V or greater (system is exempt since it is rated greater than 1300W)</li><li>• CE Declaration of Conformance (SMI self declaration) to The Electronic Compatibility Directive and Low Voltage Directive with accompanying "Technical Data File"</li><li>• Approval to Argentinian standards</li></ul>
Laser product and optical I/O	<ul style="list-style-type: none"><li>• FCC Registration to Code of Federal regulations 21 CFR 1040-Lasers</li><li>• TUV approval to IEC 60825-1 Safety of Laser Products</li><li>• Canadian Radiation Emitting Devices Act REDR C1370</li></ul>
Electromagnetic interference	<ul style="list-style-type: none"><li>• 47 CFR 15B (Code of Federal Regulations, Part 15, Subpart B) Class A</li><li>• EN55022:1998 Class A per EMC Directive 89/336/EEC (CE Mark)</li><li>• VCCI Class A</li><li>• Industry Canada ICES-003</li><li>• AS/NZ 3548 (Australia/New Zealand)</li><li>• CNS 13438 (Taiwan)</li></ul>



**TABLE 12** Regulatory Compliance (*Continued*)

<b>Category</b>	<b>Standard</b>
Immunity	<ul style="list-style-type: none"><li>• EN55024:1998 per EMC Directive 89/336/EEC, including:</li><li>• IEC 61000-4-2 Electrostatic discharge immunity test</li><li>• IEC 61000-4-3 Radiated, radio-frequency, electromagnetic field immunity test</li><li>• IEC 61000-4-4 Electrical fast transient/burst immunity test</li><li>• IEC 61000-4-5 Surge immunity test</li><li>• IEC 61000-4-6 Immunity to conducted disturbances, induced by radio-frequency fields</li><li>• IEC61000-4-8 Power frequency magnetic field immunity test</li><li>• IEC 61000-4-11 Voltage dips, short interruptions, and voltage variations immunity tests</li></ul>
Line distortion	<ul style="list-style-type: none"><li>• EN 61000-3-2 per EMC Directive 89/336/EEC</li></ul>
Voltage fluctuations and flicker	<ul style="list-style-type: none"><li>• EN 61000-3-3 per EMC Directive 89/336/EEC</li></ul>

# Site Planning Checklist

TABLE 13 organizes the site planning tasks into a checklist that you can use during the site planning process.

**TABLE 13** Site Planning Checklist

Requirement	Completed	Task
Configuration	Yes__ No__	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, or SCSI devices the systems require (if any)?
Environmental	Yes__ No__	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__	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?
Power	Yes__ No__	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 (4m) of the racks?
	Yes__ No__	Have you installed and labeled the circuit breakers?
Physical	Yes__ No__	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?

**TABLE 13** Site Planning Checklist (*Continued*)

<b>Requirement</b>	<b>Completed</b>	<b>Task</b>
	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 room around the racks for system access and maintenance?
Miscellaneous	Yes__ No__	Are there sufficient number of 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?

