Sun Netra X4250 Server

Site Planning Guide

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Sun Netra X4250 Server Site Planning

This guide provides the specifications and site requirements for planning the installation of Sun Netra X4250 server from Oracle.

For safety and compliance information, refer to the *Sun Netra X4250 Server Safety and Compliance Guide*, 820-4054, and the *Important Safety Information for Sun Hardware Systems*, 821-1590, that came with your server.

Physical Specifications

The following are the physical specifications for the server.

Dimension	Server Dimensions	Measurements
Width	Bezel	17.4 in. (442.0 mm)
	Server chassis	16.75 in. (425.5 mm)
Depth	To connector plane	20 in. (502 mm)
	Maximum overall	20.67 in. (525 mm)
Height	2 rack unit (2U) nominal	3.44 in. (87.4 mm)
Weight	Server only	34.78 lbs (15.81 kg)

Clearance for Service Access

These are the minimum clearances needed for servicing the server.

Description	Specification
Clearance, front of server	36 inches (91 cm)
Clearance, rear of server	36 inches (91 cm)

Environmental Specifications

These are the environmental specifications for the AC and DC versions of the server.

Specification	Operating	Nonoperating
Ambient temperature*	41˚F to 104˚F (5˚C to 40˚C) up to 6000 feet (1829 meters)†	–40˚F to 158˚F (–40˚C to 70˚C)
Relative humidity	10% to 90% noncondensing, short term 25˚F to 113˚F (-5˚C to 55˚C) 5% to 90% noncondensing, but not to exceed 0.024 kg of water per kg of dry air (0.053 lbs. water/2.205 lbs. dry air)	Up to 93% noncondensing 100.4˚ (37.7˚C) maximum wet bulb
Elevation (Sun requirement)	Maximum 9840 feet (3000 meters) at 104˚F (40˚C)	Maximum 39370 feet (12000 meters)
Elevation (NEBS requirement)	-200 feet to 5900 feet (-60 meters to 1800 meters) at 104˚F (40˚C) 5900 feet to 13100 feet (1800 meters to 4000 meters) at 86˚F (30˚C)	
Vibration	DC servers: 0.1G, 5-100 Hz, 0.1 Oct/min AC servers: 0.1G (x,y axes); 0.15G (z axis), 5-500 Hz, 1 Oct/min	DC servers: 0.1G, 5-100 Hz, 0.1 Oct/min AC servers: 0.25G (x,y axes); 0.5G (z axis), 5-500 Hz, 1 Oct/min
Shock	DC servers: Operating 30 m/s2, 11msec half-sine AC servers: 3G, 11msec half-sine	DC servers: Operating 30 m/s2, 11 msec half-sine AC servers: 1 in. roll off front to back, 0.5 in. roll off side to side, 20 mm step-up
Seismic	AC server only: Zone 4	Not applicable

* Does not apply to removable media devices.

† Maximum ambient operating temperature is derated by 1 degree C per 500m elevation.

AC and DC Power Source Requirements

The server has two hot-swappable power supplies. Both the AC and the DC power supplies are capable of current sharing. To ensure redundant operation of the power supplies, connect the two power cords to separate circuits.

The following table shows the electrical limits and ranges for the server.

Parameter	AC Version Requirement	DC Version Requirement
Voltage (nominal)	100-120/200-240 VAC	-48 or -60 VDC (-40 to -75 VDC range)
Input current (maximum)	8.2 A	19 A
Frequency	50/60 Hz	N/A
DC Input Treatment	N/A	Isolated DC Return (DC-1)

Note – The DC power source must be reliably connected to ground.

Additional Power System Information

The total input power for the system is divided equally among the power supplies in operation. Reversing the positive and negative inputs to the power supplies of a DC input system will not cause damage. However, the power supplies with reversed input will not operate.

The inputs to a power supply are isolated from the system chassis and the other power supply inputs. The AC or DC power inputs may be at different voltages within the acceptable range and may have different offset voltages relative to the system chassis.

Changing Sun Servers From AC to DC Input or From DC to AC Input

Safety agency requirements prohibit Sun Microsystems from changing a product from AC input to DC input or from DC input to AC input after the product has been removed from the agency approved manufacturing site.

Agency Compliance Specifications

The server complies with the following specifications.

Category	Relevant Standards
Safety	UL/CSA-60950-1 EN60950-1 IEC60950-1 CB Scheme with all country deviations IEC825-1, 2 CFR21 part 1040 CNS14336, GB4943
Ergonomics	EK1-ITB-2000
RFI/EMC	EN55022 Class A 47 CFR 15B Class A ICES-003 Class A VCCI Class A AS/NZ 3548 Class A CNS 13438 Class A KSC 5858 Class A GB9254 Class A EN61000-3-2 GB17625.1 EN61000-3-3

Category	Relevant Standards
Immunity	EN55024 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-8 IEC 61000-4-11
Telecommunications	EN300-386 IEC 60068
Regulatory markings (pending)	CE, FCC, ICES-003, C-tick, VCCI, GOST-R, BSMI, MIC, UL/cUL, UL/DEMKO/GS, UL/S-mark, CCC

Operating Environment

Your environmental control system must provide intake air for the server which complies with the limits specified in "Environmental Specifications" on page 2.

To avoid overheating, *do not* direct warmed air:

- Toward the front air intake of the server
- Toward the server access panels

Note – When you receive your server, place it in the environment in which you will install it. Leave the server in its shipping crate at its final destination for 24 hours. This resting period prevents thermal shock and condensation.

The server has been tested to meet all functional requirements when operating in the operating environmental limits presented in "Environmental Specifications" on page 2. Operating computer equipment in extremes of temperature or humidity increases the failure rate of hardware components. To minimize the chance of component failure, use the server within the optimal temperature and humidity ranges.

Electrical Power

Good practice is to connect each power supply to a separate circuit, which enables the server to remain operational if one of the circuits fails. Consult your local electrical codes for any additional requirements.

Ambient Temperature

An ambient temperature range of 21˚C (69.8˚F) to 23˚C (73.4˚F) is optimal for server reliability. At 22˚C (71.6˚F) it is easy to maintain safe relative humidity levels. Operating in this temperature range provides a buffer if the environmental support systems fail.

Ambient Relative Humidity

Ambient relative humidity levels between 45% and 50% are the most suitable for data processing operations in order to:

- Prevent corrosion
- Provide an operating time buffer in the event of environmental control system failure
- Help avoid failures caused by the intermittent interference from static discharges that 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%.

Airflow Considerations

- Ensure unobstructed airflow through the chassis. The server uses internal blowers that can achieve a total airflow of 120 CFM (3.4 m^3/) in normal operating conditions.
- Ensure that inlet air enters at the front of the server and exits from the back.
- Ensure that ventilation openings such as cabinet doors, for both the inlet and exhaust of the server, provide a minimum open area of 35.5 $in.^2$ (231 cm^2) each. This size equates to a 60% open area perforation pattern across the front and rear area of the server 17.4 in. x 3.4 in. (442 mm x 87.1 mm). The impact of other open area characteristics that are more restrictive. You must evaluate.
- Ensure that front and rear clearance of the server allow a minimum of 0.2 in. (5 mm) at the front of the server and 3.15 in. (80 mm) at the rear of the server when mounted. These clearance values are based on the inlet and exhaust impedance (available open area) stated in the third bullet assume a uniform distribution of the open area across the inlet and exhaust areas. These values also improve cooling performance.

Note – The combination of inlet and exhaust restrictions such as cabinet doors and the spacing of the server from the doors can affect the cooling performance of the server. You must evaluate these restrictions. The server placement is particularly important for high-temperature NEBS environments where the server inlet ambient temperature is 55˚C (131˚F). (The DC-powered server is NEBS compliant.)

- Take care to prevent recirculation of exhaust air within a rack or cabinet.
- Manage cables to minimize interference with the server exhaust vent.
- Ensure that air temperature rise through the server is no greater than 68˚F (20˚C).

Acoustic Noise Emissions

The acoustic noise emissions on the server are as follows:

Parameter	Operating	Idling
Acoustic power LWAd (1B=10dB)	7.3 B	7.3 B

Declared noise emissions are in accordance with ISO 9296 standards.

Calculating Heat Dissipation

To calculate the heat generated by a server so that you can estimate the heat your cooling system must dissipate, convert the figure for the server's power requirement from Watts to BTU/hr. A general formula for doing this is to multiply the power requirement figure in Watts by 3.412.

NEBS Level 3 Certification

Telcordia certified that the DC-powered version of the server meets NEBS Level 3 requirements per SR-3580, including the appropriate sections of GR-63-CORE (*Network Equipment-Building System Requirements: Physical Protection*) and GR-1089-CORE (*Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment*).

Caution – To maintain NEBS compliance, the network management (NET MGT) Ethernet port and the RJ-45 serial management (SER MGT) port must use shielded cables, and both ends of the shield must be grounded.