

# Sun Netra T5440 Server

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## Site Planning Guide



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# Sun Netra T5440 Server Site Planning Guide

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This guide provides the specifications and site requirements for planning the installation of Oracle's Sun Netra T5440 server.

For safety and compliance information, refer to the *Sun Netra T5440 Server Safety and Compliance Guide*, 820-4446, and the *Important Safety Information for Sun Hardware Systems*, 821-1590, that came with your server.

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## Physical Specifications

The following are the physical specifications for the server.

<b>Dimension</b>	<b>Server Dimensions</b>	<b>Measurements</b>
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	4 rack unit (RU) nominal	6.85 in. (174 mm)
Weight	Server only	70.28 lbs (31.88 kg)

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## 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)

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## Environmental Specifications

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

Specification	Operating	Non-operating
Ambient temperature*	41°F to 104°F (5°C to 40°C) -5 C to 55 C (short term) <sup>†</sup>	-40°F to 158°F (-40°C to 70°C)
Relative humidity	5% to 85% noncondensing, Short term: 5% to 90% relative humidity, noncondensing, but not to exceed 0.024 kg water/kg dry air (0.053 lbs water/2.205 lbs dry air)	Up to 93% relative humidity noncondensing, 40°C (104°F)
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)	

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Specification	Operating	Non-operating
Vibration	DC servers: 0.1G, 5-100Hz, 0.1 Oct/min AC servers: 0.1G (x,y axes); 0.15G (z axis), 5-500Hz, 1 Oct/min	DC servers: 0.1G, 5-100Hz, 0.1 Oct/min AC servers: 0.25G (x,y axes); 0.5G (z axis), 5-500Hz, 1 Oct/min
Shock	DC servers: Operating 30 m/s <sup>2</sup> , 11msec half-sine AC servers: 3G, 11msec half-sine	DC servers: Operating 30 m/s <sup>2</sup> , 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/DC Power Source Requirements

The server has four 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 two of the power inputs to one power source and the other two power inputs to a second, independent power source.

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

Parameter	DC Version Requirement	AC Version Requirement
Voltage	-40 VDC or -75 VDC nominal	100 VAC to 240 VAC single phase, 47-63 Hz
Current (per input)	12.5 A maximum per input at -60 VDC	6 A maximum per input at 100 VAC and 3A maximum at 200-240 V AC
Current (total)	19 A maximum total for all inputs at -48 VDC	6 A maximum total for all inputs at 100-120 VAC 3.0 A maximum total for all inputs at 200-240 VAC
Power*	Maximum output power 660 Watts (using 1 power supply)	Maximum output power 660 Watts (using 1 power supply)
DC Input Treatment	N/A	Isolated DC Return (DC-I)



\* The Current per input (assuming the use of only one power supply with maximum output power of 660 Watts) is the same as the Current total. This table indicates what the system consumes and not what the power supplies are capable of.

## 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
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	CE, FCC, ICES-003, C-tick, VCCI, GOST-R, BSMI, MIC, UL/cUL, UL/GS, UL/S-mark, CCC

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# 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

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**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.

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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 Requirements



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**Caution** – Oracle’s Sun Netra T5440 server opening must be 400mm (15.7 in.) wide and 98mm (3.86 in.) high at a minimum. The 400mm (15.7 in.) width dimension must not be reduced, but height can vary as long as 39,200 square mm is provided.

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- Ensure unobstructed airflow through the chassis. The server uses internal blowers that can achieve a total airflow of 120 CFM (3.4 m<sup>3</sup>/min) 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<sup>2</sup>) 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.

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**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 to meet NEBS environment requirements.

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- 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)	7.2 B	7.2 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 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).



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**Caution** – To maintain NEBS compliance, all I/O ports must use shielded cables, and both ends of the shield must be grounded, except Ethernet ports.

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