# Netra™ X4200 M2 Server Site Planning Guide

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# Preface

The *Netra X4200 M2 Server Site Planning Guide* provides the data center site requirements for the installation of the Netra X4200 M2 server. This document provides detailed physical, electrical, power, and cooling specifications for the server. This document is written for data center administrators who have advanced experience maintaining a data center environment and for experienced system installers.

# Related Documentation

| Application | Title | Part Number | Format | Location |
|---|---|---|---|---|
| Service | *Netra X4200 M2 Server Service Manual* | 820-0063 | PDF | Online |
| Installation | *Netra X4200 M2 Server Setup Guide* | 820-0062 | PDF | Online |
| | *Netra X4200 M2 Operating System Installation Guide* | 820-0065 | PDF | Online |
| | *Netra X4200 M2 Server Windows Operating System Installation Guide* | 819-4346 | PDF | Online |
| Updates | *Netra X4200 M2 Server Product Notes* | 820-0067 | PDF | Online |
| Planning | *Netra X4200 M2 Server Site Planning Guide* | 820-0069 | PDF | Online |
| Compliance | *Netra X4200 M2 Server Safety and Compliance Guide* | 820-0068 | PDF | Online |
| RAID | Sun LSI 106x RAID User's Guide | 820-4933 | PDF | Online |
| ILOM | *Integrated Lights Out Manager (ILOM) Administration Guide* | 819-1160 | PDF | Online |
| Hardware Safety | *Important Safety Information for Sun Hardware Systems* | 816-7190 | Print | In ship kit |

The documents listed as online are available at:

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CHAPTER

# Netra X4200 M2 Server Site Planning Guide

This guide provides the specifications and site requirements you need when planning the installation of the Netra™ X4200 M2 server.

For safety and compliance information, refer to the *Netra X4200 M2 Server Safety and Compliance Guide*, 820-0068, and the *Important Safety Information for Sun Hardware Systems*, 816-7190.

## Physical Specifications

These 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 | 19 in. (481.9 mm) |
| | Maximum overall | 20.25 in. (514.4 mm) |
| Height | 2U nominal | 3.4 in. (87.1 mm) |
| Weight | Server only | 35.0 lbs (15.9 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 | Non-operating |
|---|---|---|
| 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 | 5% to 85% noncondensing, short term 25˚F to 113˚F<br>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˚F (38˚C) maximum wet bulb |
| Elevation (Sun requirement) | Maximum 9840 feet (3000 meters) at 104˚F (40˚C) | Maximum 39,370 feet (12,000 meters) |
| Elevation (NEBS requirement) | –200 feet to 5900 feet (–60 meters to 1800 meters) at 104˚F (40˚C)<br>5900 feet to 13,100 feet (1800 meters to 4000 meters) at 86˚F (30˚C) | |

* Does not apply to removable media devices.
\ Maximum ambient operating temperature is derated by 1 degree C per 500m elevation.

# 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 | DC Version Requirement | AC Version Requirement |
|---|---|---|
| Voltage | –48 VDC or –60 VDC nominal | 100 VAC to 240 VAC single phase, 47–63 Hz |
| Current (per input) | 10.2A maximum per input at –48 VDC | 5.4A maximum per input at 100 VAC |
| Current (total) | 10.4A maximum total for all inputs at –48VDC | 5.6 A maximum total for all inputs at 100 VAC |
| Power* | 500 Watts | 550 Watts |
| DC Input Treatment | Isolated DC Return (DC-I) | N/A |

* Total input power is approximately equally divided among the operating power supplies.

**Caution –** WARNING: The intra-building port(s) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

# Agency Compliance Specifications

The server complies with the following specifications.

| Category | Relevant Standards |
|---|---|
| Safety | UL/CSA-60950-1<br>EN60950-1<br>IEC60950-1 CB Scheme with all country deviations<br>IEC825-1, 2<br>CFR21 part 1040<br>CNS14336,<br>GB4943 |
| Ergonomics | EK1-ITB-2000 |
| RFI/EMI | EN55022 Class A<br>47 CFR 15B Class A<br>ICES-003 Class A<br>VCCI Class A<br>AS/NZ 3548 Class A<br>CNS 13438 Class A<br>KSC 5858 Class A<br>GB9254 Class A<br>EN61000-3-2<br>GB17625.1<br>EN61000-3-3 |
| Immunity | EN55024<br>IEC 61000-4-2<br>IEC 61000-4-3<br>IEC 61000-4-4<br>IEC 61000-4-5<br>IEC 61000-4-6<br>IEC 61000-4-8<br>IEC 61000-4-11 |
| Telecommunications | EN300-386<br>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 |

# Recommended Operating Environment

Your environmental control system must provide intake air for the server that 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.

## Surge Protector Devices

An external Surge Protection Device (SPD) is not intended to be used at the AC input of this network equipment. The Netra X4200 server meets NEBS criteria without the addition of an SPD.

# 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 that there is unobstructed airflow through the chassis. The server uses internal blowers that can achieve a total airflow of 120 CFM (3.4 $m^3$/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 $cm^2$) each. This equates to a 60% open area perforation pattern across the front and rear area of the server. The impact of other open area characteristics that are more restrictive should be evaluated by the user.
- Ensure that front and rear clearances between the cabinet doors and 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 the server is mounted. These clearance values are based on the above inlet and exhaust impedance (available open area) and assume a uniform distribution of the open area across the inlet and exhaust areas. Clearance values greater than these are recommended for improved 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 and should be evaluated by the user. 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 listed below:

| Parameter | Operating | Idling |
|---|---|---|
| Acoustic power LWAd (1B=10dB) | 7.1 B | 7.2 B |
| Acoustic pressure LpAm | 58.9 dBA | 59.0 dBA |

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 (SERIAL MGT) port must use shielded cables, and both ends of the shield must be grounded.