



SunStorageTek™ 2500 Series Array Site Preparation Guide

Sun Microsystems, Inc.
www.sun.com

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Preface

The *Sun StorageTek 2500 Series Array Site Preparation Guide* describes facilities and system requirements for installing the Sun StorageTek™ 2500 Series Array. Follow the guidelines as outlined in this document when planning your installation.

Before You Read This Book

Before you begin to install the Sun StorageTek 2500 Series Array, you must have already read the regulatory and safety requirements described in this book:

- *Sun StorageTek 2500 Series Array Regulatory and Safety Compliance Manual*

How This Book Is Organized

Chapter 1 describes the requirements for preparing the customer site for installation of the Sun StorageTek 2500 Series Array.

Chapter 2 describes the physical, environmental, and electrical requirements for the Sun StorageTek 2500 Series Array.

Appendix A provides worksheets to help you gather the information you need to complete the installation.

Using UNIX Commands

This document might not contain information on basic UNIX[®] commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris[™] Operating System documentation, which is at

<http://docs.sun.com>

Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output.	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. <code>% You have mail.</code>
AaBbCc123	What you type, when contrasted with on-screen computer output.	<code>% su</code> <code>Password:</code>
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .

* The settings on your browser might differ from these settings.

Related Documentation

Title	Part Number
<i>Sun StorageTek 2500 Series Array Regulatory and Safety Compliance Manual</i>	820-0025- <i>nn</i>
<i>Sun StorageTek 2500 Series Array Release Notes</i>	820-0031- <i>nn</i>
<i>Sun StorageTek 2500 Series Array Hardware Installation Guide</i>	820-0015- <i>nn</i>
<i>Sun StorageTek Common Array Manager Software Installation Guide</i>	820-0213- <i>nn</i>
<i>Sun StorageTek Common Array Manager Software User's Guide</i>	820-0027- <i>nn</i>
<i>Sun StorageTek Common Array Manager Command Line Interface Manpage</i>	820-0028- <i>nn</i>
<i>Sun StorageTek Common Array Manager Quick Reference</i>	820-0029- <i>nn</i>

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Sun StorageTek 2500 Series Array Site Preparation Guide, part number 820-0024-10

Planning for the Installation

This chapter describes the requirements for preparing the customer site for installation of the Sun StorageTek 2500 Series Array. It contains the following sections:

- [“Customer Obligations” on page 1](#)
- [“Safety Information” on page 2](#)
- [“Site Wiring and Power Requirements” on page 4](#)

Customer Obligations

The customer is obliged to inform Sun Microsystems, Inc. of any and all ordinances and regulations that might affect the installation. The customer is responsible for meeting all government codes and regulations concerning facilities. The customer is also required to do the following:

- Comply with all local, national, and international codes covered in this specification. The subjects covered include fire and safety, building, and electrical codes.
- Document and inform Sun Microsystems, Inc. of any deviations from this specification.

Safety Information

Install the Sun StorageTek 2500 Series Array in accordance with the local safety codes and regulations at the facility site. Make sure that you read the safety precautions in the *Sun StorageTek 2500 Series Array Regulatory and Safety Compliance Manual*.

The following sections contain additional safety information for the local facility:

- [“Handling Precautions” on page 2](#)
- [“Secure Installation Requirements” on page 3](#)
- [“Placement of a Sun Product” on page 3](#)

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

Handling Precautions



Caution – A fully populated cabinet can weigh in excess of 1500 pounds (682 kg). Ensure that all surfaces this system will move over can withstand this load.

The cabinet is equipped with wheels so you can move it. Use enough personnel when moving the cabinet, especially on sloped loading docks and ramps, to gain access to a raised computer room floor. Move the cabinet slowly and deliberately, and make sure that the floor is free from foreign objects and cables that the cabinet could roll over.



Caution – To avoid injury, wear protective footwear when moving a system.

Secure Installation Requirements

To minimize personnel injury in the event of a seismic occurrence, you must securely fasten the cabinet 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 the cabinet on a level surface. At each corner, on the base of the cabinet, are adjustable nonskid pads. Extend these pads when the cabinet is installed to prevent the cabinet from rolling. Do not use these pads to level the cabinet.

Placement of a Sun Product

Allow enough room surrounding the cabinet for access to the cabinet and arrays for maintenance.



Caution – Do not block or cover the openings of your Sun product. 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 system cabinets from front to back. Air enters at the front, circulates, and is expelled at the back of the cabinet. The front and back door clearances provide sufficient space for cooling. See [Chapter 2](#) for specific clearance specifications.

Site Wiring and Power Requirements

The AC power distribution boxes in the cabinet use common industrial wiring. Consider the following information when preparing the cabinet installation site:

- **AC power source** – The AC power source must provide the correct voltage, current, and frequency specified on the module model and serial number label.
- **Earth ground** – Site wiring must include an earth ground connection to the AC power source.
- **Circuit overloading** – Power circuits and associated circuit breakers must provide sufficient power and overload protection. To prevent possible damage to the AC power distribution boxes and other components in the cabinet, use an external, independent power source that is isolated from large switching loads (such as air conditioning motors, elevator motors, and factory loads).
- **Module power distribution** – All units attached to the two power strips inside that cabinet must be auto-ranging between 180 and 264 VAC, 47-63 Hz.
- **Power interruptions** – The cabinet and modules will withstand the following applied voltage interruptions (with or without an integrated uninterruptible power supply [UPS]):
 - **Input transient** – 0V for 1 cycle with no interruption
 - **Duration** – 70 percent of nominal for 0.5 seconds and 0V for 5 seconds, recoverable with user intervention
- **Power failures** – If a total power failure occurs, when power is restored the modules within the cabinet automatically perform a power-up recovery.

Sun StorageTek 2500 Series Array Specifications

This chapter describes the physical, environmental, and electrical requirements for the Sun StorageTek 2500 Series Array. It contains the following sections:

- [“Dimension and Weight Specifications” on page 5](#)
- [“Environmental Requirements” on page 6](#)
- [“Electrical Requirements” on page 7](#)

Dimension and Weight Specifications

The floor space at the installation site must be strong enough to support the combined weight of the cabinet, controller trays, expansion trays, and associated equipment. The site also requires sufficient space for installation, operation, and servicing the arrays and sufficient ventilation to provide a free flow of air to the unit.

The total weight of an expansion tray depends on the number of drives installed.

[TABLE 2-1](#) provides the physical dimensions and weight of the array.

TABLE 2-1 Dimensions and Weight

Height	Width	Depth	Weight (Fully Populated/Empty)
3.5 in.	17.6 in.	20.3 in.	54.3 lb./32 lb.
8.8 cm	44.7 cm	51.4 cm	24.6 kg/14 kg

with rails - 2U

Environmental Requirements

This section describes the environmental conditions that are prerequisite to installing the unit, and heat conditions that are generated by normal operation of the unit.

[Table 2-2](#) lists the environmental conditions in which the array is designed to operate.

TABLE 2-2 Temperature¹

Parameter	Specification
Operating range	50°F to 104°F (10°C to 40°C)
Maximum rate of change	18°F (10°C) per hour
Storage range	14°F to 149°F (-10°C to 65°C)
Maximum rate of change	27°F (15°C) per hour
Transit change	-40°F to 149°F (-40°C to 65°C)
Maximum rate of change	36°F (20°C) per hour

¹ If you plan to operate a system at an altitude between 3280 feet to 9842 feet (1000 meters to 3000 meters) above sea level, lower the environmental temperature 3.3°F (1.7°C) for every 3280 feet (1000 meters) above sea level.

Humidity

[Table 2-3](#) lists the relative humidity of the array.

TABLE 2-3 Humidity (noncondensing)

Parameter	Specification
Operating range	20% to 80% (noncondensing)
Storage range	10% to 90%
Transit range	5% to 95%
Maximum dew point	26°C (79°F)
Maximum gradient	10% per hour

Altitude

Table 2-4 lists the altitude specifications for the array.

TABLE 2-4 Altitude

Environment	Specification
Operating	30.5 m (100 ft) below sea level to 3000 m (9842 ft) above sea level
Storage	30.5 m (100 ft) below sea level to 3000 m (9842 ft) above sea level
Transit	30.5 m (100 ft) below sea level to 12,000 m (40,000 ft) above sea level

Shock and Vibration

Table 2-5 lists the shock and vibration specifications for the array.

TABLE 2-5 Shock and Vibration

Condition	Parameter	Specification
Vibration	Operating	5-500-5 Hz, 0.25 g sinusoidal, 2 octave per minute, 3 axis
	Nonoperating (unpacked)	5-500-5 Hz, 1.0 g sinusoidal, 2 octave per minute, 3 axis
	Transit and storage (packed)	5-500-5 Hz, 2.0 g sinusoidal, 2 octave per minute, 3 axis
Shock	Operating (no damage)	5-g peak acceleration, 11 ms duration, 1/2 sine pulse, 3 axis
	Nonoperating (unpacked)	25-g peak acceleration, 11 ms duration, 1/2 sine pulse, 3 axis
	Transit and storage (packed)	30-g peak acceleration, 11 ms duration, 1/2 sine pulse, 3 axis

Electrical Requirements

This section provides information regarding site power and wiring, module AC power requirements, and power cord routing instructions.

Site Wiring and Power

The tray uses wide-ranging redundant power supplies that automatically accommodate voltages to the AC power source. The power supplies operate within the range of 90 VAC to 264 VAC, at a minimum frequency of 50 Hz and a maximum frequency of 60 Hz. The power supplies meet standard voltage requirements for both domestic (inside USA) and international (outside USA) operation. They use standard industrial wiring with line-to-neutral or line-to-line power connections.

Power Input

The AC power sources must provide the correct voltage, current, and frequency specified on the tray model and serial number label. The tray can run without interruption within the limits shown in [TABLE 2-6](#).

TABLE 2-6 Tray AC Power Requirements

Condition	Specification
Input voltage	100 - 240 V
Input frequency	50 or 60 Hz (nominal)
Steady-state maximum current	At 240 V: 1.9 A; at 100 V: 3.9 A
Standby current	0.21 A at 240 V, 60 Hz; 0.15 A at 100 V, 50 Hz

Site Preparation for DC Power

This section provides information regarding site power and wiring, power requirements (–48 VDC), and power cord routing instructions for the Sun StorageTek 2500 Series Arrays:

- [“Site Wiring and Power” on page 8](#)
- [“DC Power Input” on page 9](#)
- [“DC Power Connector Cables and Source Wires” on page 10](#)

Site Wiring and Power

The Sun StorageTek 2500 Series Arrays use wide-ranging, redundant power supplies that automatically accommodate voltages to the AC power source or the optional –48-VDC power source.

The power supplies meet standard voltage requirements for both North American (USA and Canada) operation and worldwide (except USA and Canada) operation. The power supplies use standard industrial wiring with line-to-neutral or line-to-line power connections.

Note – Power for the optional –48-VDC power configuration is supplied by a centralized DC power plant instead of the AC power source in the cabinet. Refer to the associated manufacturer’s documentation for specific DC power source requirements.

Consider the following information when preparing the array’s installation site:

- Protective ground – Site wiring must include a protective ground connection to the AC power source or the optional –48-VDC power source.

Note – Protective ground is also known as safety ground or chassis ground.

- **Circuit overloading**

Power circuits and associated circuit breakers must provide sufficient power and overload protection. To prevent possible damage to the array, isolate their power source from large switching loads (such as air-conditioning motors, elevator motors, and factory loads).

- **Interruptions:**

- Input transient – 50 percent of the nominal voltage
- Duration – One-half cycle
- Frequency – Once every 10 seconds
- Power failures – If a total power failure occurs, the array automatically performs a power-on recovery sequence without operator intervention after power is restored.

DC Power Input

The DC power source must provide the correct voltage, current, and frequency specified on the array nameplate label and the serial number label.

The DC power limits within which the Sun StorageTek 2500 Series Arrays can run without interruption include the following:

- Nominal voltage
 - Low range: –36 VDC
 - High range: –72 VDC
- Operating current: 15.8 A maximum

DC Power Connector Cables and Source Wires

The Sun StorageTek 2500 Series Array are shipped with –48-VDC power connector cables if the DC power option is ordered. The power connector cable plugs into the DC power connector on the back of the array. The three source wires on the other end of the power connector cable connect the array to centralized DC power plant equipment, typically through a bus bar above the cabinet. A qualified service person is required to make this DC power connection.

Two (optionally four) DC power connector cables are provided with each array. There are two DC power connectors on the back of each array's two DC power supplies if additional redundancy is required.

Note – It is not mandatory that the second DC power connection on the array's DC power supplies be connected. The second DC power connection is provided for additional redundancy only and may be connected to a second DC power bus.

Additional DC Specifications

The following are specifications for DC power for a fully populated controller or expansion module:

Heat Output: 445 Watts (1519 BTU/Hr) using DC Power Source (NEBS)

Safety and Emissions: EN 300 386 (NEBS)

Battery Life

For a fully rated battery backup unit (BBU) battery life, cell limitations are listed in the following table.

Operating	50°F to 95°F (10°C to 35°C)
Storage (up to three months)	14°F to 113°F (-10°C to 45°C)
Transit (up to seven days)	-4°F to 140°F (-20°C to 60°C)

Power Cords and Receptacles

All trays are shipped with two AC power cords that are appropriate for use in a typical outlet in the destination country.

Each power cord connects one of the power supplies in a tray to an independent external power source, such as those provided in the supported Sun cabinet, a wall receptacle, or uninterruptible power supply (UPS).

Configuration Worksheets

Use the worksheets in this appendix to help you collect the information you need to perform the installation. [TABLE A-1](#) lists the information you need to collect to configure the array.

TABLE A-1 Sun StorageTek 2500 Series Array Configuration Worksheet

Controller A MAC address:	
Controller B MAC address:	
Controller A IP address:	
Controller B IP address:	
Management host IP address:	
Network mask:	
Name server domain name:	
IP address of the domain name server (DNS):	
Gateway IP address:	
Email notification address:	

TABLE A-2 lists the information you need to collect for each data host connected to the Sun StorageTek 2500 Series Array.

TABLE A-2 Sun StorageTek 2500 Series Array Data Host Information

Host name:	
Vendor:	
Model:	
Operating system:	
Patch/Service pack:	
Number of HBAs:	
HBA World Wide Name (WWN):	
HBA model:	
HBA driver:	