Sun Storage 2500-M2 Arrays

Site Preparation Guide

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About This Guide

The *Sun Storage 2500-M2 Arrays Site Preparation Guide* describes facilities and system requirements for installing Sun Storage 2500-M2 Arrays. Follow the guidelines as outlined in this document when planning your installation.

This guide helps you make decisions about ventilation, electrical power, floor loading, and network configuration. Conduct a power survey to make sure that the storage array, and input power is free of noise, spikes, and fluctuations.

Before You Read This Guide

Before you begin to install Sun Storage 2500-M2 Arrays, you must have already read the regulatory and safety requirements described in this book:

- *Sun Storage 2500-M2 Arrays Regulatory and Safety Compliance Manual*

Related Documentation

Task	Title
Review safety information	*Sun Storage 2500-M2 Arrays Safety and Compliance Manual* *Important Safety Information for Sun Hardware Systems*
Review known issues and workarounds	*Sun Storage 2500-M2 Arrays Hardware Release Notes* *Sun Storage Common Array Manager Release Notes*
Prepare the site	*Sun Storage 2500-M2 Arrays Site Preparation Guide*
Install the array	*Sun Storage 2500-M2 Arrays Hardware Installation Guide*
Install the management software	*Sun Storage Common Array Manager Quick Start Guide* *Sun Storage Common Array Manager Installation and Setup Guide*
Install multipath driver	*Sun StorageTek MPIO Device Specific Module Installation Guide, For Microsoft Windows OS* *Sun StorageTek RDAC Multipath Failover Driver Installation Guide, For Linux OS*
Manage the array	*Sun Storage Common Array Manager Array Administration Guide* and Online Help
Troubleshooting and hardware replacement procedures	Service Advisor, launched from Sun Storage Common Array Manager

Documentation, Support, and Training

These web sites provide additional resources:

- Documentation `http://www.oracle.com/technetwork/documentation/oracle-unified-ss-193371.html`
- Support `https://support.oracle.com`
- Training `https://education.oracle.com`

CHAPTER 1

Planning for the Installation

This chapter describes the requirements for preparing the customer site for installation of Sun Storage 2500-M2 Arrays. It contains the following sections:

Customer Obligations

The customer is obliged to inform Oracle Corporation 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 Oracle Corporation of any deviations from this specification.

Safety Information

Install Sun Storage 2500-M2 Arrays in accordance with the local safety codes and regulations at the facility site. Make sure that you read the safety precautions in the *Sun Storage 2500-M2 Arrays Regulatory and Safety Compliance Manual*.

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

Note – Do not make mechanical or electrical modifications to the equipment. Oracle Corp. is not responsible for regulatory compliance of a modified 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 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 product. Never place a product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your 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.

CHAPTER 2

Sun Storage 2500-M2 Arrays Specifications

This chapter describes the physical, environmental, and electrical requirements for the Sun Storage 2500-M2 Arrays. It contains the following sections:

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

Components	Height	Width	Depth	Weight—Maximum*	Weight—Empty†
Controller tray	3.4 in. (8.64 cm)	19 in. (48.26 cm)	21.75 in. (55.25 cm)	59.52 lb (27 kg)	41.01 lb (18.60 kg)
Expansion tray	3.4 in. (8.64 cm)	19 in. (48.26 cm)	21.75 in. (55.25 cm)	57.98 lb (26.3 kg)	39.46 lb (17.9 kg)

* Maximum weight indicates a controller tray with all of its drives and other components installed. Because drive weights can vary, this value can vary from the value specified as much as either 0.66 lb (0.3 kg) times the maximum number of drives per controller tray for 3.5-in. SATA drives or 0.18 lb (0.08 kg) times the maximum number of drives per controller tray for 2.5-in. SATA drives.

† Empty weight indicates a controller tray with the controller modules, the power-fan modules, and the drives removed.

TABLE 2-2 provides the weight for array components.

TABLE 2-2 Controller Tray Component Weight

Component	Weight
Controller module	4.70 lb (2.131 kg)
Power-fan module	5.51 lb (2.5 kg)
2.5-in. SATA drive	0.66 lb (0.3 kg)
3.5-in. SATA drive	2.2 lb (1.0 kg)

TABLE 2-3 Controller Tray Shipping Weight

Height	Width	Depth
9.5 in. (24.13 cm)*	25 in. (63.50 cm)	23 in. (58.42 cm)

* Controller tray with twelve 3.5-in. drives.

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 2-4 lists the environmental conditions in which the array is designed to operate.

TABLE 2-4 Controller Tray Temperature*

Parameter	Requirement
Operating range (both cabinet and subsystem)	50˚F to 104˚F (10˚C to 40˚C)
Maximum rate of change	50˚F (10˚C) per hour
Storage range	14˚F to 122˚F (–10˚C to 50˚C)
Maximum rate of change	59˚F (15˚C) per hour
Transit change	–40˚F to 140˚F (–40˚C to 60˚C)
Maximum rate of change	68˚F (20˚C) per hour

* 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 2-5 lists the relative humidity ranges of the controller tray.

TABLE 2-5 Humidity (noncondensing)

Parameter	Specification
Operating range (both cabinet and subsystem)	20% to 80% (noncondensing)
Storage range	10% to 90%
Transit range	5% to 90%
Operating gradient	50˚F (10˚C) per hour maximum
Storage gradient	59˚F (15˚C) per hour maximum

TABLE 2-5 Humidity (noncondensing)

Parameter	Specification
Transit gradient	68°F (20°C) per hour maximum
Maximum dew point	79°F (26°C)
Maximum gradient	10% per hour

Altitude

TABLE 2-6 lists the altitude specifications for the array.

TABLE 2-6 Altitude Ranges for the Controller Tray

Environment	Specification
Operating	100 ft (30.5 m) below sea level to 9840 ft (3000 m) above sea level
Storage	100 ft (30.5 m) below sea level to 9840 ft (3000 m) above sea level
Transit	100 ft (30.5 m) below sea level to 40,000 ft (12,000 m) above sea level

Airflow and Heat Dissipation

TABLE 2-7 Airflow and Minimum Clearance

Position	Clearance
Front	30 in. (76 cm)
Back	24 in. (61 cm)

TABLE 2-8 Power and Heat Dissipation for the Controller Tray

Component	KVA	Watts (AC)	Btu/Hr
Controller modules with two power-fan modules and 12 drives	0.400	399	1366

Acoustic Noise

TABLE 2-9 Acoustic Noise at 25°C for the Controller Tray

Measurement	Level
Sound power (standby operation)	6.2 bels maximum
Sound pressure (normal operation)	6.2 bels maximum

Shock and Vibration

TABLE 2-10 lists the shock and vibration specifications for the controller tray.

TABLE 2-10 Shock and Vibration

Condition	Parameter	Specification
Vibration	Operating	5-500-5 Hz, sinusoidal
	Nonoperating (unpacked)	5-500-5 Hz, sinusoidal, 1 octave per minute, flat profile .50 G
Shock	Operating (no damage)	10-g peak acceleration, 5 ms duration, 1/2 sine pulse
	Nonoperating (unpacked)	20-g peak acceleration, 8 ms duration, trapezoidal pulse

Electrical Requirements

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

Site Wiring and Power

The controller tray uses 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. They 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 its power source from large switching loads (such as air-conditioning motors, elevator motors, and factory loads).
- Power interruptions—The controller tray can withstand the following applied voltage interruptions (with or without an integrated uninterruptible power supply [UPS]):
  - 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 controller tray automatically performs a power-on recovery sequence without operator intervention after power is restored.

Note – When a power failure occurs, the controller tray uses battery power to back up the data that is in cache.

AC 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 2-11.

TABLE 2-11 Tray AC Power Requirements

Condition	Specification
Input voltage	100 - 240V
Input frequency	50 or 60Hz
Input current	7.0 - 2.9A

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.

Nominal input voltages for the DC power source are as follows:

- Input voltage: –42 to -60VDC
- Operating current: 21.7 to 15.3A

Controller Tray Power Factor Correction

Power factor correction is applied within the power supply, which maintains the power factor of the controller tray at greater than 0.95 with nominal input voltage.

Power Cords and Receptacles

Sun Storage 2500-M2 Arrays are shipped with either two AC power cords or two DC power cords per tray, depending on the configuration ordered.

AC Power Cords

Each AC power cord connects one of the power supplies in a tray to an independent, external AC power source, such as a wall receptacle or a UPS.

If you have a cabinet with internal power cabling, such as a ladder cord, you do not need the AC power cords that are shipped with the controller-drive tray.

DC Power Connector Cables

Each –48-VDC power connector cable plugs into the DC power connector on the back of the controller tray. The three source wires on the other end of the power connector cable connect the tray to centralized DC power plant equipment, typically through a bus bar above the cabinet.

Caution – A qualified service person is required to make this DC power connection according to NEC and CEC guidelines.

Caution – Risk of electrical shock—This unit has more than one power source. To remove all power from the unit, all DC MAINS must be disconnected by removing all power connectors from the power supplies.

Two (optionally four) DC power connector cables are provided with each controller or expansion tray. Two DC power connectors are on the back of each tray's DC power supply 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.

Battery Life

For a fully rated battery backup unit (BBU) battery life, cell limitations are listed in TABLE 2-12.

TABLE 2-12 Battery Life Specifications

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)

APPENDIX **A**

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 Storage 2500-M2 Arrays 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 Sun Storage 2500-M2 Arrays.

TABLE A-2 Sun Storage 2500-M2 Arrays Data Host Information

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