Sun StorEdge™ S1 Array

Just the Facts

(SunWIN token# 314474)

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Sun StorEdge™ S1 Array Positioning

Introduction

The Sun StorEdge™ S1 array is a rackable, thin storage product that is 1 rack unit (1 U) high, with multiple rackmounting options. The Sun StorEdge S1 array can house up to three 18 GB or three 36 GB SCSI disk drives. This product is designed to be an affordable, versatile, rackmountable, incremental storage solution for a wide variety of markets.

Its 1U form factor enables companies to maximize rack density, thereby minimizing the use of valuable vertical space. Products which occupy less space are essentially less expensive to maintain and operate. Potential applications for the Sun StorEdge S1 array include hot-swap disks for rackmount servers, hot-swap boot disks, hot-swap mirroring of systems and data disks for rackmount servers, and incremental storage.

Telcordia NEBS Level 3 certified, the unit ships with a number of NEBS features that certify the fire proof and fire resistant enclosure to withstand Zone 4 earthquakes, operate within compliant levels of EMI and ESD, and to operate in environments with non-ambient temperature, high humidity, and airborne contaminants. These features not only meets the demands of telecoms, service providers, and military entities, but also provides unparalleled peace of mind at no extra cost to other customers who may not experience such environmental extremes.

To support deployment in today's typical data center, various rackmount support options are standard. A choice of AC or –48V/–60V DC power is also available.

Product Family Placement

The Sun StorEdge S1 array—part of the StorEdge family of storage solutions—is the next generation of the Netra™ st D130 storage array. The Sun StorEdge S1 array is a low-profile, rackmounted, low-cost thin storage that provides incremental storage for Netra and other Sun servers.

Storage/Serviceability Features

- Up to three hot-swap 18 or 36 GB disks
- High performance 10K rpm disks
- Ultra3 SCSI LVD, Ultra2 SCSI LVD, or Ultra SCSI SE connect to host
- Dual SCSI connectors
- Status LEDs on front and back of unit, activity LEDs for each disk
- Simplified field replaceable units (FRUs)
- Auto termination
- Up to four enclosures per SCSI chain
- Dual host support on Sun™ Cluster software
- Labeling area for customer identification

Key Messages

The Sun StorEdge S1 array delivers a high-performance, versatile, scalable, rack-optimized, and cost-effective solution for customers seeking to complement their existing Sun servers with incremental storage.

- Hot-swappable, incremental storage for Netra and Sun Enterprise™ servers and cluster applications
- 1 rack unit high, 18-inch depth, rackmount-ready enclosure
- Up to three hot-swappable, 18 GB or 36 GB, 10K rpm high performance disk drives (JBOD)
- Ultra3 SCSI LVD, Ultra2 SCSI LVD, or Ultra SCSI SE direct connect to standard port on Sun servers
- Scalable up to four daisy-chained enclosures
- 12 meters of cabling length
- Up to 160 Mbytes/sec transfer rate
- Status LEDs for FRUs
- Remote monitoring software for Sun server hosts
- NEBS Level 3 ruggedized
- Choice of AC or –48 V DC power
- Dual cooling fans
- Isolated ground chassis (DC Power)
- Rack options for 19-inch, 23-inch, 24-inch and 600-mm standard enterprise and telecom racks
- Carrier-grade serviceability features
- Quick deployment, easy maintenance, high MTBF

New Features

The Sun StorEdge S1 array features higher performance, more rack-planning flexibility, and greater scalability than its predecessor, the Netra st D130 storage array.

Feature	Sun StorEdge S1 Array	Netra st D130 Storage Array
Host Interface	Ultra3 SCSI LVD	Ultra SCSI SE
Transfer Rate	Up to 160 Mbytes/sec	Up to 40 Mbytes/sec
Maximum Cabling Length	12 meters	3 meters
Scalability	Up to 4 units or 12 drives	Up to 2 units or 6 drives

Availability

18 GB and 36 GB disk drives are now available in both AC- and DC-powered versions

Target Users

The Sun StorEdge S1 array is designed to be used by system administrators, system architects, and telecom system designers. The Sun StorEdge S1 array can be mounted in various rack configurations, takes up a minimum amount of space, and provides incremental storage at a competitive price.

Target Markets

Below are the industries and key features to highlight that are appropriate for the Sun StorEdge S1 array.

Industry/Customer	Key Features to Highlight
• Service Provider • Data center	• 1 U form factor • Rackmountable • Up to three hot-swappable disks • High performance 10K rpm disks • Dual SCSI connectors, up to four enclosures per SCSI chain • Status LEDs on front and back of unit, activity LEDs for each disk drive • Simplified field replaceable units (FRUs) • Dual host support on Sun Cluster • Labeling area for customer identification • Designed to provide continued operation in high humidity, 0–50°C, earthquake Zone 4 • Choice of AC or DC power
• Telecom • OEM/Network Equipment Builders • Central Office	• 1 U form factor • Telcordia NEBS Level 3 certified • Choice of AC or DC power • Rackmountable • Dual cooling fans • Up to three hot-swappable disk drives • Isolated ground chassis (DC version)
• Enterprise • Financials • Education • Manufacturing • Health Care	• 1 U form factor • Rackmountable • Up to three hot-swappable disks • High performance 10K rpm disks • High performance 10K rpm disks • Dual SCSI connectors, up to four enclosures per SCSI chain
• Government/Military	• 1 U form factor • Designed to provide continued operation in high humidity, 0–50°C, earthquake Zone 4 • Status LEDs on front and back of unit, activity LEDs for each disk drive • Simplified field replaceable units (FRUs) • Choice of AC or DC power

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Selling Highlights

Market Value Proposition

The Sun StorEdge S1 array provides the following solutions for customers in a wide range of markets:

- Ruggedized, rack-optimized thin storage in space-constrained environments
- Incremental storage for Netra and workgroup servers
- High performance, fast accessibility to data
- Hot-swappable, redundant boot disks for Netra, workgroup, and Enterprise servers
- High availability applications (mirroring, clustering)
- Cost-effective alternative

Applications

The Sun StorEdge S1 array is targeted at the following applications:

- Low-cost incremental storage
- Boot device for Sun Enterprise servers
- Cluster applications with the Netra T1 server and Sun StorEdge S1 array
- Hot-swappable, redundant system disks for Netra and other Sun servers
- Ruggedized storage for service providers and telecom
- Mirroring—by using up to four Sun StorEdge S1 array units and mirroring software on the host, build redundant system and data disks with no single point of failure
- Web hosting server storage applications
- Web caching server storage applications

Compatibility

The Sun StorEdge S1 array is compatible with the following platforms:

- Netra t 1400/1405 server(s)
- Netra t 1120/1125 server(s)
- Netra t1/T1 server(s)
- Netra ct 400/800 server(s)
- Sun Enterprise 220R server
- Sun Fire™ 280R server
- Sun Enterprise 420R server
- Sun Enterprise 3500 – 6500 server(s) (target Q3FY02)
- Sun Enterprise 10000 server (target Q3FY02)
- Sun Fire 15K server
- Sun Fire 3800 – 6800 server(s) (target Q3FY02)

Enabling Technology

Technology Overview

The Sun StorEdge S1 array provides up to 109 GB of storage (436 GB when daisy chained) incrementally, allowing users to add the amount of storage needed when it is needed. The hot-swappable, high performance disk drives can be connected directly to the Ultra SCSI port standard on Sun servers or to Ultra3 SCSI, Ultra2 SCSI, or Ultra SCSI SE host adapters.

Clustering

Clustering configurations with Netra T1, and Netra t 1400/1405 servers provides a high performance, high availability, low profile system at a competitive price with no single point of failure.

Carrier-Grade Features

- NEBS certification and ETSI compliance

- AC or DC power

- Dual cooling fans

- Status LEDs in front and back

- Telcordia NEBS Level 3 certified

- Ruggedized to operate in earthquake Zone 4 locations

- Continuous operation in 50°C for up to 96 hours

- Stringent EMI emission control

- Flame resistant, fire proof, metal enclosure

- Self-contained system design minimizes operational interference to other systems in the same rack

- Isolated ground option for DC power

Form Factor

- Rackable thin storage, 1 U (1.73" high)

- Depth (18.6") of the Sun StorEdge S1 array enables it to fit easily into industry-standard racks without hanging out of the back, allowing easy access to rear cables

Daisy Chaining

- Dual connectors enable daisy chaining of up to four enclosures, supporting up to 436 GB per SCSI chain or dual hosting in applications such as Sun Cluster

- Switch on back of chassis to select SCSI IDs 2, 3, 4 or 10, 11, 12

Refer to the section "Sun StorEdge S1 Array Daisy Chain Configuration" on page 18 for more details about daisy chaining.

Data Storage Capabilities

- Up to three hot-swappable, 18 GB or 36 GB, 10K rpm disk drives

- Ultra3 SCSI LVD, Ultra2 SCSI LVD, or Ultra SCSI SE connection to standard SCSI port on Sun servers and to host adapters

- Dual SCSI connectors

- Auto termination

- Connect up to four enclosures per SCSI chain

- Two-position switch allows quick selection of SCSI IDs 2, 3, 4 or 10, 11, 12

- Supports standard SCA hot-swappable disk drive with spud brackets

System Architecture

Overview

The Sun StorEdge S1 array is a rackable thin storage with a 1 U form factor. Its versatility, rack-optimized and carrier-grade features make it ideally suited for a wide range of customers, from the telecom and service provider markets to enterprise customers in the financials, education, manufacturing, and health care arenas. The internal architecture of the Sun StorEdge S1 array is relatively simple, supporting up to 109 GB of storage, with greater capacities to come as disk capacities grow.

Figure 1. The Sun StorEdge S1 Array

Sun StorEdge S1 Array Features and Benefits

Feature	Function	Benefit
• 1 U form factor	• Efficient use of valuable vertical rack space	• Helps reduce total cost of ownership • Helps reduce overall operating and maintenance costs
• Multiple rackmount options, ships with rails	• Easily fits into customer 19", 23", 24", and 600 mm racks	• Helps reduce total cost of ownership
• High performance Ultra3 SCSI 18/36 GB 10K rpm drives	• Excellent performance, interchangeability with other Sun products (except the Netra ft 1800 server)	• Helps increase availability and reliability • Faster time to market
• Front accessible, hot-swappable drives	• Allows minor configuration changes without service interruption	• Helps increase availability • Helps reduce overall operating and maintenance costs

Feature	Function	Benefit
• Storage Subsystem Manager (SSM 2.0) and LED fault lights front and rear, activity LED for each drive	• Enables simple status monitoring of each drive bay, recognition of faulty unit from front and rear, thereby increasing ease of serviceability	• Helps increase availability • Helps reduce overall operating and maintenance costs
• Dual SCSI connectors	• Enables clustering configurations, daisy chaining of up to four enclosures	• Helps increase availability
• Dual cooling fans	• Two cooling fans with high MTBF ratings help reduce the risk of device faults	• Helps reduce overall operating and maintenance costs • Helps maintain data integrity
• Telcordia NEBS Level 3 certification	• Certified to withstand Zone 4 earthquakes; operates in non-ambient climates and within stringent EMI and ESD levels; fire proof and fire resistant enclosure	• Helps increase availability and reliability • Helps maintain data integrity
• AC or –48 V DC power options	• Works with customer's power system enabling easy installation and operation	• Helps reduce overall operating and maintenance costs
• Simplified field replaceable units (FRUs)	• Only two FRUs—enclosure and disks—for easy servicing	• Helps reduce overall operating and maintenance costs
• Competitive pricing	• Enables storage expansion in affordable increments	• Helps reduce total cost of ownership
• Recessed labeling area in front bezel	• Enables customer to easily label and identify units	• Helps reduce overall operating and maintenance costs
• Auto termination	• No termination plugs needed	• Helps reduce overall operating and maintenance costs

System Architecture

- AC or DC power supply

- Dual cooling fans

- Dual SCSI connectors with Ultra3 SCSI LVD, Ultra2 SCSI LVD, or Ultra SCSI single-ended interface to host

Figure 2. Sun StorEdge S1 Array Enclosure

Disk Tray Key Facts

- Each Sun StorEdge S1 array disk tray holds a maximum of three, low profile, 3.5-inch, hot-pluggable disk modules.

- All drives are mounted in a spud bracket for easy installation and removal from the tray.

- High performance, 10K rpm, 18 or 36 GB drives.

- The drives use SCA-2 connectors in which the ground leads make first contact for hot-pluggable support. This enables electrical hot plugging. The cable-free drives plug directly into the backplanes to provide higher reliability.

Storage Subsytem Manager

The Sun StorEdge S1 array comes with Storage Subsystem Manager 2.0, allowing customers to monitor the Sun StorEdge S1 array from any system in the network running the Solaris™ Operating Environment for temperature, status, or disk drive information.

Enclosure Service

Enclosure services provide and/or accept configuration and maintenance information. Information about the Sun StorEdge S1 array is obtained through physical inspection of the unit or through software (downloadable from the Web; refer to http://webhome.ebay/networkstorage/products for details.)

The following components generate or receive enclosure status or control information:

• Power supply (local only)

• Cooling fans (local only)

• Disk drives

Front Panel Indicators
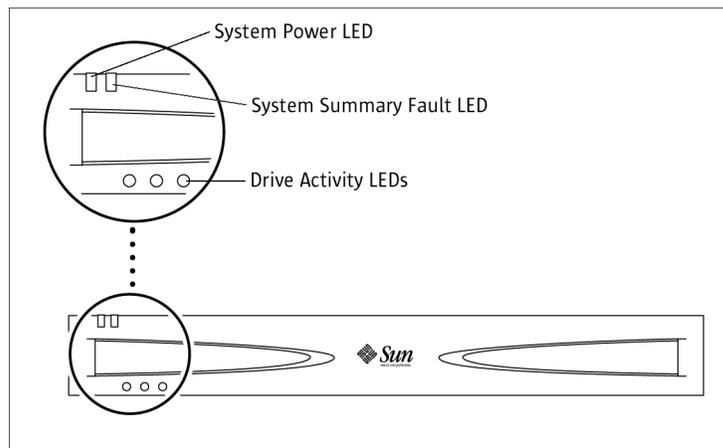
Figure 3. Front Panel System Power/Fault Indicators
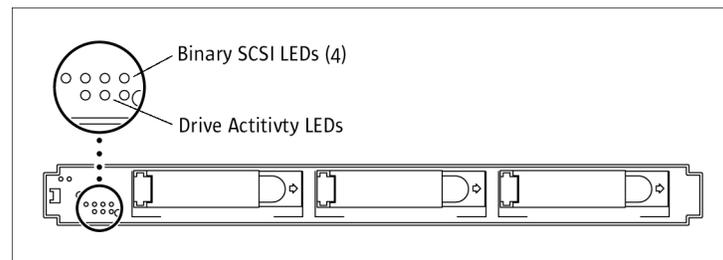
Figure 4. Front Panel Disk Drive LEDs

Rear Panel Indicators and Switches
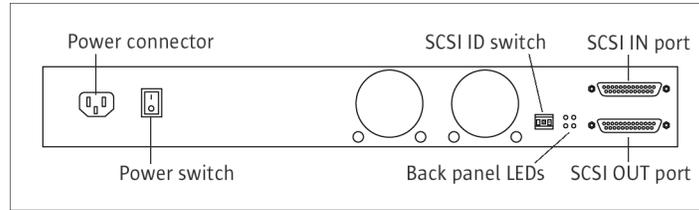
Figure 5. Rear View
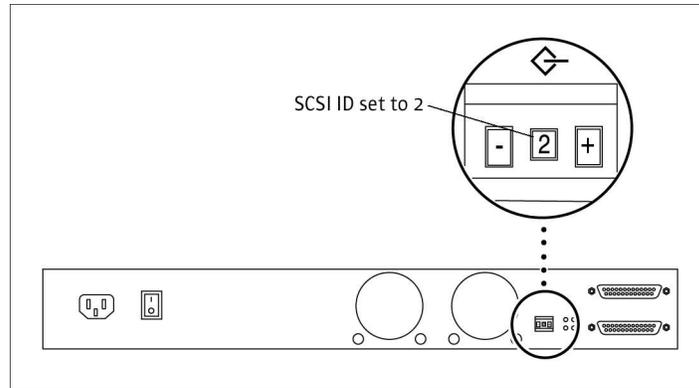
Figure 6. SCSI ID Switch
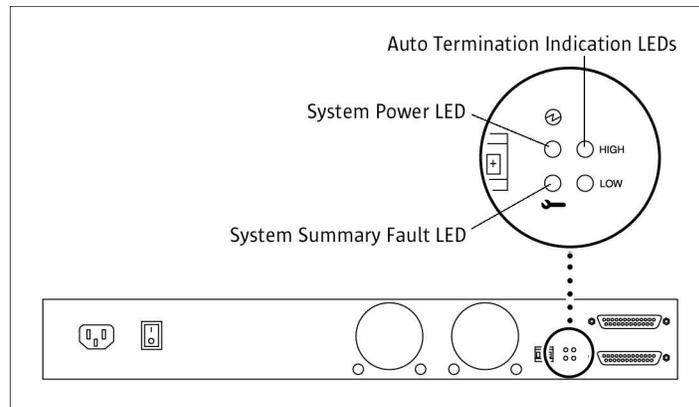
Figure 7. Rear Panel LEDs

Sun StorEdge S1 Array DC Version

Figure 8 shows the back of the DC version of the Sun StorEdge S1 array chassis. Note that there are two DC connectors. DC connectors are available as an X-option and come in sets of 10. Two connectors are typically needed per Sun StorEdge S1 array. These connectors can be used for other DC-powered products in the Netra product family of servers, storage, and peripherals.
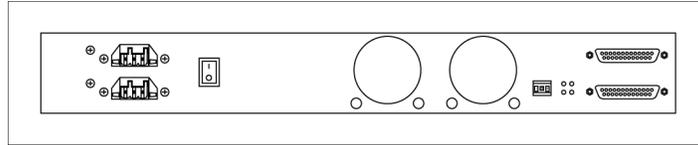
Figure 8. Rear of DC Unit

Figure 9 shows a DC connector and the placement of the input power cables. For more information about setting up the DC connectors, refer to the DC Connector Product Notes.

Note: *Customers need to ensure that there is sufficient power to run the added servers, storage, and peripherals.*
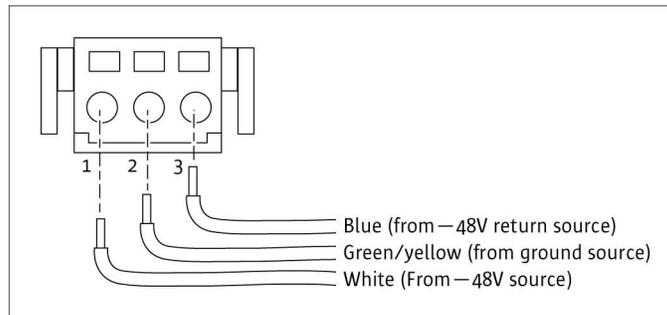
Figure 9. DC input power cables

Reliability, Availability, and Serviceability (RAS)

Reliability

- NEBS Level 3 ruggedness: metal enclosure, can withstand Zone 4 earthquakes and non-ambient temperatures and operate within stringent EMI and ESD levels
- Extremely reliable fans and power supply with high MTBF ratings

Availability

- Can be used for high availability mirroring applications
- Can be used for high availability clustering applications

Serviceability

- Status LEDs in the front and back of the Sun StorEdge S1 array indicate power and enclosure operating status
- Front-accessible, hot-swappable disk drives
- Activity LEDs for each disk drive
- Uses standard SCSI driver available on Sun host adapters
- Server software provides drive statistics and adds functionality, for example, enables remote users to determine whether individual drives are working
- Two field replaceable units (FRUs)—enclosure and drives
- Recessed labeling area on the front of the Sun StorEdge S1 array bezel prevents label from accidentally coming off and allows customers to identify various units

Electrical Requirements

AC Source Site Requirements

Electrical Element	Requirement
Voltage	100 V AC to 240 V AC (nominal)
Frequency	47–63 Hz
Max. operating current	4.0 amps
Max. surge current	• 20 amps peak on a cold start (after AC has been off for more than 200 ms) • 100 amps peak on a warm start (after AC has been off for less than 200 ms)

Overcurrent protection devices must be provided as part of each host equipment rack.

- Circuit breakers are located between the AC source and the Sun StorEdge S1 array enclosure.

- Circuit breakers must not trip when presented with inrush current of 100 amps lasting 5 ms.

The power can be disconnected for servicing in any of the following ways:

- Disconnect the connector from the power module at the rear of the enclosure.

- Turn off the circuit breakers in the rack where the enclosure is mounted.

- Disconnect the main plug from the AC source.

DC Source Site Requirements

Electrical Element	Requirement
Voltage	–48 V DC to –60V DC
Max. operating current	4.0 amps
Max. input surge current	• 20 amps peak on a cold start (after AC has been off for more than 200 ms) • 100 amps peak on a warm start (after AC has been off for less than 200 ms)

Note: *The DC power supply range is –40 V DC to –75 V DC, 5 amps max. operating current.*

- Electrically isolated from any AC source.

- Reliably connected to the earth (the battery room positive bus is connected to ground).

- Capable of providing up to 200 watts of power per feed pair.

- Overcurrent protection devices must be provided as part of each equipment rack.

- Circuit breakers must be located between the DC power source and the Sun StorEdge S1 array enclosure. Two 10-amp, double-pole, fast trip, DC-rated circuit breakers must be used for each power supply.

Chassis Dimension and Weight

	U.S.	Metric
Height	1.73 in (1 rack unit—1U)	4.4 cm
Width	17.16 in.	43.6 cm
Depth (with front bezel)	18.6 in.	47.2 cm
Weight (without drives)	13 lbs	5.9 kg
Weight (fully loaded)	19.4 lbs	8.8 kg
Shipping Weight (product and packing)	20 lbs	9.5 kg

Environment

The Sun StorEdge S1 array is designed to meet the following requirements:

Environmental Specifications

Climate Control	Location	Minimum to Maximum Range
Temperature (dry bulb)	Operating	5°C to 40°C (41°F to 104°F)
	Storage	–25°C to 65°C (–13°F to 149°F)
	Transit	–25°C to 65°C (–13°F to 149°F)
Short term (96 consecutive hrs)	Operating	–5°C to 55°C (23°F to 131°F)
	Non-operating	–40°C to 70°C (–40°F to 158°F)
Temperature derating (max)	Operating	3.3°C per 1000m (1.7°F per 1000 ft) above sea level
Relative humidity (non- condensing)	Operating	5% to 85%
Short term (96 consecutive hrs)	Storage	5% to 95%
	Transit	5% to 95%
	Operating	5% to 90%
	Non-operating	5% to 95%
Altitude (based on drives)	Operating	0m to 3,000m (0 ft to 10,000 ft) above sea level
	Storage	0m to 12,000m (0 ft to 40,000 ft) above sea level
	Transit	0m to 12,000m (0 ft to 40,000 ft) above sea level
Heat dissipation (maximum)	Operating	150 watts, 512 BTU per hour
Sound power	Operating	6.0B, in accordance with ISO 9296
	Idle	6.0B, in accordance with ISO 9296
Earthquake	Location	NEBS requirements for earthquake Zone 4

Regulations

The Sun StorEdge S1 array meets or exceeds the following requirements:

Safety	UL 1950, CSA C22.2-No. 950, EN 60650 (73/23/EEC), IEC 950
Emissions	CFR Title 47, FCC Part 15, EN 55022 (89/336/EEC)
Immunity	EMC Directive (89/336/EEC), EN50082-1
Telecom environment	Telcordia: GR-63-CORE, NEBS GR-1089-CORE, TR-NWT-000295
Compliance • Telcordia • Safety • EMC	• SR–3580 NEBS Level 3 certified • cULus Mark, TüVGS Mark, CE Mark • CE Mark (93/68/EEC), FCC authorized Class A

Requirements and Configuration

System Requirements

The Sun StorEdge S1 array requires Netra t1/T1, Netra t 1120/1125, Netra t 1400/1405, Netra ct 400/800, Sun Enterprise 220R, 420R, 3500–6500, 10000, Sun Fire 280R, 15K, 3800-3600 servers, or other Sun servers with an on-board Ultra3 SCSI LVD, Ultra2 SCSI LVD, or Ultra SCSI SE interface and/or host adapter.

System Configuration

Standard Components Shipped with the Sun StorEdge S1 Array

The following pieces of hardware come as indicated with every Sun StorEdge S1 array:

- One AC power cord (AC-version only)
- Four DC plug connectors (DC-version only)
- Appropriate country cable
- Ultra SCSI cable
- Rackmount brackets

Sun StorEdge S1 Array Configuration Guidelines

The Sun StorEdge S1 array is supported by the following host platforms.

Sun StorEdge S1 Array DC-Powered Version	Sun StorEdge S1 Array AC-Powered Version
Telecom Servers • Netra T1 Model 100 • Netra t 1120 (Solaris 2.6, Solaris 7, Solaris 8 Operating Environments) • Netra t 1400 • Netra ct 400/800	Netra Servers • Netra t1 Model 105 • Netra T1 AC200 • Netra t 112x • Netra t 140x
	Enterprise Servers (Solaris 2.6, Solaris 7, Solaris 8 Operating Environments) • Sun Enterprise 3500 – 6500 (target Q3FY02) • Sun Enterprise 10000 (target Q3FY02) • Sun Fire 15K • Sun Fire 3800 – 6800 (target Q3FY02)
	Workgroup Servers • Sun Enterprise 220R • Sun Fire 280R • Sun Enterprise 420R

Supported Host Configurations

The Sun StorEdge S1 array is supported by the following configurations:

• Single host

• Daisy chain (four enclosure maximum)

• Sun Cluster 2.2, 3.0

Refer also to the *Sun StorEdge S1 Array Installation and Maintenance Manual*. This guide contains detailed information about correct SCSI cabling for the Sun StorEdge S1 array.

Sun StorEdge S1 Array Basic Configuration
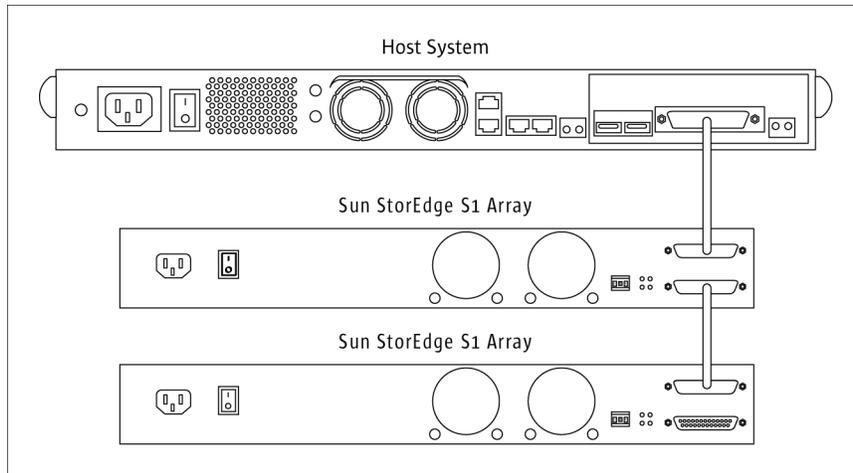
Figure 10. Basic Configuration

Refer to the *Sun StorEdge S1 Array Installation and Maintenance Manual* for detailed information.

Sun StorEdge S1 Array Daisy Chain Configuration

The Sun StorEdge S1 array can be daisy chained as follows.

Server	Number	Cable Length
Netra T1 on-board SCSI	2	0.5 m right angle or 0.8 m straight
Netra t 1120/1125 on-board SCSI	1	0.8 m
Netra t 1400/1405 on-board SCSI	1	0.8 m
Sun Enterprise 220R, Sun Enterprise 280R, Sun Enterprise 420R on-board SCSI	1	0.8 m
SCSI port on 10/100 Base T F/W Ultra SCSI PCI adapter (X1032A)	2	2.0 m (use 0.5m to daisy chain the second unit)
Each SCSI port on dual SE SCSI card (X6540A)	2	0.8 m

Server	Number	Cable Length
Each SCSI-3 port on dual SCSI-3 LVD card (X2222A)	4	2.0 m (use 0.5 to daisy chain the second unit)

Figure 11 illustrates four Sun StorEdge S1 array units daisy chained to an Ultra3 SCSI LVD host system.
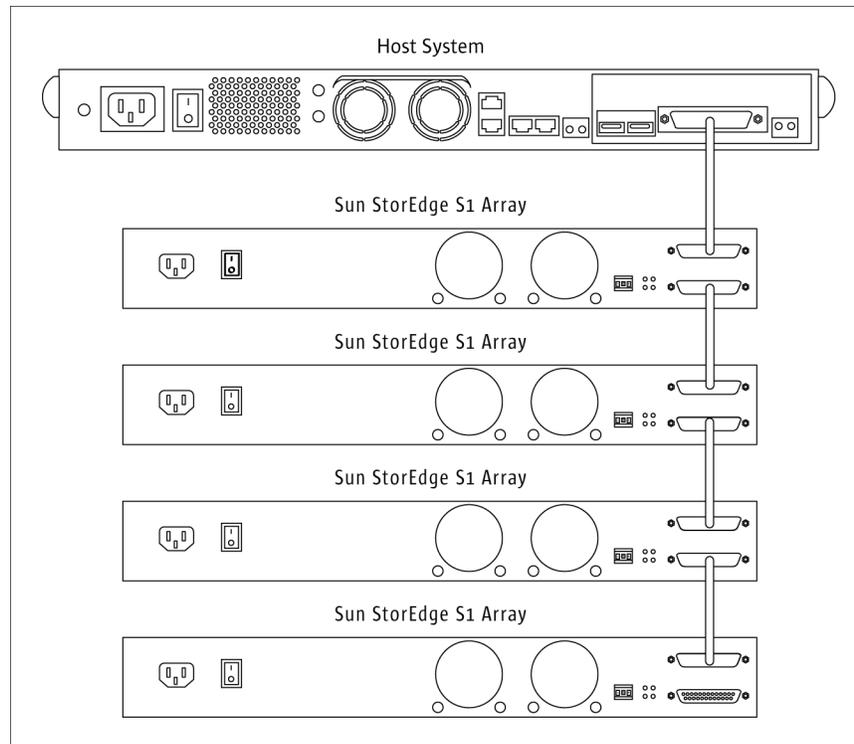
Figure 11. Ultra3 SCSI Host System

Refer to the *Sun StorEdge S1 Array Installation and Maintenance Manual* for detailed information.

Licensing/Usage

N/A

Interconnect

• UltraSCSI single-ended

• Ultra2 SCSI low voltage differential

• Ultra3 SCSI low voltage differential

Standards/Conformance

- UltraSCSI single ended
- Ultra2 SCSI low-voltage differential
- Ultra3 SCSI low-voltage differential
- Telcordia NEBS

Software

The Sun StorEdge S1 array operates with Solaris 2.6 Operating Environment or higher.

Other Late Breaking News

For other late breaking news for the Sun StorEdge S1 array, go to:

`http://www.sun.com/storage/workgroup/s1`

Internationalization

The Sun StorEdge S1 array documentation is available in English. Go to the following Web site to get internationalization documentation:

`http://www.sun.com/storage/workgroup/s1`

Base Models

The following are some sample base models for the Sun StorEdge S1 array:

Order Number	Title and Description
NS-XDSKS1-236GAC	Sun StorEdge S1 array, AC Rackable thin storage for telecoms and service providers with: • 19" rackmount ready, 1 U ¥ 17.6" ¥ 18.6" • Telcordia NEBS Level 3 certification • 2 Ultra3 SCSI 18/36 GB 10K rpm drives (hot-swappable) • Dual cooling fans
NS-XDSKS1-318GAC	Sun StorEdge S1 array, AC Rackable thin storage for telecoms and service providers with: • 19" rackmount ready, 1 U ¥ 17.6" ¥ 18.6" • Telcordia NEBS Level 3 certification • 2 Ultra3 SCSI 18/36 GB 10K rpm drives (hot-swappable) • Dual cooling fans
ALW-15-D-UP-S1	Sun StorEdge UniPack/MultiPack or Netra st D130 storage array trade-in upgrade

Other Base Models

Order number	Option Description
NS-XDSKS1-218GAC	2 Ultra3 SCSI 18 GB 10K rpm, hot-swap drive (AC)
NS-XDSKS1-318GDC	3 Ultra3 SCSI 18 GB 10K rpm, hot-swap drives (DC)
NS-DSKS1-218GAC (CTO)	2 Ultra3 SCSI 18 GB 10K rpm, hot-swap drives (AC)
NS-DSKS1-318GAC (CTO)	3 Ultra3 SCSI 18 GB 10K rpm, hot-swap drives (AC)

Options

The Sun StorEdge S1 array supports the following options:

Order number	Option Description
X5248A	18 GB 10K rpm 1" Ultra3 SCSI drive, x-option
X5250A	36 GB 10K rpm 1" Ultra3 SCSI drive, x-option
X1032A	PCI 100BaseT and Ultra SCSI SE card (fresh choice)
X6540A	PCI dual channel Ultra SCSI SE
X2222A	PCI dual fast Ethernet + dual SCSI adapter

Order number	Option Description
X6919A	19" rackmount kit—includes both fixed mount brackets and rail mount kit
X6920A	19" rackmount kit for Sun Fire 3800 – 6800 servers
X6966A	23" rackmount kit—includes both fixed mount brackets and rail mount kit
X6967A	24" rackmount kit—includes both fixed mount brackets and rail mount kit
X6968A	600 mm rackmount kit—includes both fixed mount brackets and rail mount kit
X1134A	0.8 meter Ultra SCSI-3/SCSI-3 cable
X1139A	2-meter Ultra SCSI-3/SCSI-3 cable
X9940A	4-meter Ultra SCSI-3/SCSI-3 cable
X1132A	0.8-meter Ultra SCSI-3/VHDCI cable
X3832A	2-meter Ultra SCSI-3/VHDCI cable
X3830A	4-meter Ultra SCSI-3/VHDCI cable
X3831A	10-meter Ultra SCSI-3/VHDCI cable
X949A	Wago DC connector set, contains 10 extra DC connectors

Upgrades

Upgrade Paths

An upgrade path is available to upgrade from Sun StorEdge UniPack/MultiPack and Netra st D130 storage arrays deployed in rackmount situations to the Sun StorEdge S1 array.

Service and Support

The SunSpectrum℠ program is an innovative and flexible service offering that allows customers to choose the level of service best suited to their needs, ranging from mission-critical support for maximum solution availability to backup assistance for self-support customers. The SunSpectrum program provides a simple pricing structure in which a single fee covers support for an entire system, including related hardware and peripherals, the Solaris™ Operating Environment software, and telephone support for Sun™ software packages. The majority of Sun's customers today take advantage of the SunSpectrum program, underscoring the value that it represents. Customers should check with their local Sun Enterprise™ Services representatives for program and feature availability in their areas.

Warranty

The warranty on the hardware is one year, 15-day factory return.

Education

Support Readiness Training

take it to the nᵗʰ

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Glossary

1 rack unit (1 U)	One rack unit as defined by the Electronic Industries Alliances (EIA). A vertical measurement equal to 1.75 inches.
AC	Alternating current.
ATM	Asynchronous transfer mode. ATM is a network technology that supports realtime voice, video, and data. ATM is used as a backbone technology by major enterprises and ISPs.
Carrier grade	Rackmountable systems with features including remote alarm capabilities, front-back cooling, front accessibility of media, rear cabling, and rugged NEBS-compliant packaging.
Cluster	Multiple server/storage configuration using software that enables failover protection should any drive fail.
Commodity server	A server that is replaced when it fails, instead of being repaired.
Density	Number of units in a given amount of space.
Differential SCSI	A type of SCSI signaling used when devices are spread across a room. Total cable length is approximately 80 feet (24.4 m). Differential devices cost more than single-ended devices.
Ethernet 10/100BASE-T	The most widely used LAN access method defined by the IEEE 802.3 standard; uses standard RJ-45 connectors and telephone wire. 100BASET is also referred to as Fast Ethernet.
EMI	Electromagnetic interference
ESD	Electrostatic discharge
ETSI	European Telecommunications Standards Institute; a non-profit membership organization dedicated to standardizing telecommunications throughout Europe.
FC-AL	Fibre channel arbitrated loop. A topology for Fibre Channel in which all devices are linked together in a loop.
field replaceable units (FRUs)	A feature that allow one unit to be exchanged with another to minimize mean time to repair
Hot-swappable	A feature that allows an administrator to remove a drive without affecting software integrity.
Infrastructure services	Services that an SP runs to provide revenue services to clients. Examples include: firewalls, DNS, log processing, authentication, mail-relay, distributed SNMP, and low-end cache server.
I/O	Input/output. Transferring data between the CPU and any peripherals.
ISP	Internet service provider.
JBOD	Just a bunch of disks; a group of hard disks that are not set up in a RAID configuration.
LVD SCSI	Low voltage differential; a type of SCSI signaling that supports cable lengths of up to 39.4 feet (12 m). LVD SCSI uses data low and data high lines to increase transmissions distance. LVD is less costly than differential because transceivers are built into the controller chips. LVD also requires less power. Sun does not support LVD in servers or host adapters. Sun StorEdge S1 array is compatible with third-party LVD host adapters, although Sun does not formally support it.
MTBF	Mean time between failures. The average time a component works without failure. The larger the number, the longer the component will continue to operate.

MTTR	Mean time to repair. The average time it takes to repair a component.
NEBS	Network Equipment Building Standard. A stringent standard for durability, grounding cables, and hardware interfaces specified by Telcordia Technologies (formerly Bellcore) for equipment used in Telecom central offices.
RAID	Redundant Array of Independent Disks
Revenue services	Services for which an SP can collect payment from clients. Examples include: low-end Web server, low-end hosting server, and application server.
SCSI	Small computer systems interface. Pronounced "scuzzy." A hardware interface that allows the connection of up to 15 peripheral devices to a single bus.
service provider (SP)	An organization that provides access to the Internet and offers a range of services which include e-mail, Web site hosting, corporate firewalls, and virtual private networks.
Sun Cluster	A Sun high availability software product that, when combined with redundant hardware, provides failover protection and helps eliminate possible points of failure.
Thin storage	Storage devices of two rack units (2 U) height or less.
Ultra SCSI single-ended	A SCSI interface that transfers 20 Mbytes/sec for 8-bit versions and 40 Mbytes/sec for 16-bit versions. The maximum cable length is 9.8 feet (3 m) for up to four devices and 4.9 feet (1.5 m) for five or more. Typically, up to 15 peripheral devices can be connected to a single bus.
Ultra2 SCSI LVD	A SCSI interface that transfers 40 Mbytes/sec for 8-bit versions and 80 Mbytes/sec for 16-bit versions. The maximum cable length is 39.4 feet (12 m). Backwards-compatible with Ultra SCSI single-ended.
Ultra3 SCSI LVD	A SCSI interface that transfers 160 Mbytes/sec for 16-bit versions. The maximum cable length is 39.4 feet (12 m). Backwards-compatible with Ultra SCSI single-ended and Ultra2 SCSI.

Materials Abstract

Collateral	Description	Purpose	Distribution	Token # or COMAC order #
Sales Tools				
Sun StorEdge S1 Array Just the Facts	Reference guide for the Sun StorEdge S1 array	Sales Tool	SunWin	314474
Sun StorEdge S1 Array Presentation	Customer presentation	Sales Tool	SunWin	314270
Sun Intros	Sun Introduction with pricing and Q&A	Sales Tool	SunWin	313045
Product Literature				
Sun StorEdge S1 Array Datasheet	2-page color datasheet	Sales Tool	Field distribution	313862
External Web Sites	http://www.sun.com/storage/workgroup/s1			
Internal Web Sites	http://webhome.ebay/networkstorage/products/s1			

Sun Confidential: Need to Know

Competitive Information

	Sun StorEdge S1 Array	HP SureStore DS 2100	Dothill SANnet RAID Blade	AMI StorTrends 1108J	NStor NexStor 802S
Announced	Announced 12/2001	Announced 01/2001	Announced 05/2001	Announced 06/2001	Announced 05/2001
Form Factor	1 U	1 U	1 U	1 U	1 U
Type	JBOD	JBOD	RAID	JBOD	JBOD
Drive Capacity	18, 36 GB	18, 36 GB	18, 36, 73 GB	No data	18, 36, 73 GB
Drive Speed	10k rpm	10k rpm	10k rpm	No data	10–15k rpm
Redundancy	Cooling fans	No data	Dual SCSI channels	Power supplies, cooling fans	Power supplies, cooling fans
Rugged Packaging & NEBS Certification	Yes	No	No	No	No
Depth	47.2cm / 18.6"	38.1cm / 15"	43.9cm / 17.3"	76.2cm / 30"	58.4 cm / 23"
Price*	$2,295 – $4965	$2,404 – $7,096	No data	Starts at $4,029	No data