Sun StorEdge™ 3120 SCSI Array

Just the Facts

Sun microsystems

Copyrights

Last update: 4/19/2004

Table of Contents

Figure 1. The Sun StorEdge™ 3120 SCSI array

Introduction

Sun is proud to announce the new Sun StorEdge™ 3120 SCSI array. This Ultra320 SCSI LVD 1U high array is best targeted at Sun's Volume Server products as well as Enterprise Server boot devices.

Sun has condensed high performance, high availability, and simple manageability into a flexible, versatile, reliable, rugged, cost-effective, super-scaling, high-density package. Each Sun StorEdge 3120 SCSI array holds four 1-inch high disks and is available as a JBOD unit. The Sun StorEdge 3120 SCSI array can easily fulfill a wide variety of network computing storage requirements.

Customers of Sun's Volume Server products should find the Sun StorEdge 3120 SCSI array an excellent storage complement to complete their IT infrastructure. Environments requiring higher levels of storage capacity can obtain up to .5TB in a single array. Highly condensed and scalable, the 1U-high/4-drive Sun StorEdge 3120 SCSI array supports up to 4 disks. As a key component in a storage network, this system connects to host servers via industry-standard PCI SCSI host bus-adapters, and to local/remote management consoles via standard SCSI connections using the Sun StorEdge Configuration Services storage management suite.

This compact, ultra-dense, super-rugged disk array is designed to meet the wide range of Sun's Volume Server platform requirements by providing Sun storage customers with midrange/enterprise-class performance/availability features, management functionality, and configuration flexibility at volume (entry) level price points who require:

• **Affordability**: Midrange and enterprise features and functionality at entry-level price points.

- **Super condensed**: Extremely space-efficient, high-density, 4-drive 1U arrays support hundreds of gigabytes of storage and redundant host connections.
- **Intuitive, simple setup and management**: Single management GUI provides intuitive RAID and LUN configuration for every Sun StorEdge 3000 family array in the environment.
- **Functionality**: Multi-LUN support with non-disruptive dynamic LUN expansion.
- **Flexibility**: Low-cost SCSI; choice of mid-plane configurations with the ability to expand to match the cost of storage to the value of the data.
- **Scalability**: Cost-effectively grow from two drives to four, from 146GB to .5 TB in single-drive increments.
- **Expandability**: Adding more capacity, performance, or availability is simple and thrifty. Grow capacity and I/O performance in single-drive increments. Grow throughput performance (bandwidth) by configuring for dual channel operations. Increase availability with redundant hot-swap and warm-swap FRUs.
- **Reliability**: Full NEBS level 3 compliance and a sub-set of MIL-STD-810F compliant packaging can survive harsh environments and provide flexibility in installation location.
- **Configurability**: Many combinations of drives speeds, capacities and quantities to match to virtually any application need.

Key Features

The initial release of the Sun StorEdge 3120 SCSI array includes the following features:

Feature	Specifications
Interface	Ultra320 SCSI LVD
Hard Disk Drives	Ultra320 SCSI LVD 36-GB 15000-rpm, 1-inch (low profile)
	Ultra320 SCSI LVD 73-GB 10000-rpm, 1-inch high (low Profile)
	Ultra320 SCSI LVD 73-GB 15000-rpm, 1-inch (low profile)
	Ultra320 SCSI LVD 146-GB 10000-rpm, 1-inch high (low Profile)
Number of Drives	4 maximum per drive array
	2 drive or 4 drive configurations
	64 per 72-inch Sun StorEdge cabinet (16 arrays)
Rack Height of array	1U (1.75 inches high)
Sun Server Platform Support, Solaris Operating Environment	Most Sun Enterprise, Sun Fire, Sun Netra, Sun Blade and Sun Ultra servers
Supported HBAs	Solaris 8 and 9:
	X6758A = PCI Ultra160 SCSI host adapter
	X2222A = Dual Ultra-2 SCSI/Dual Fast Ethernet PCI Adapter HBA
	X4422A = PCI Adapter w/2 GbE and 2 Ultra2 LVD SCSI I/F
	Microsoft Windows 2000 and 2003, Red Hat Linux AS 2.1 and 3.0:
	X9265A = Ultra320 SCSI Dual Channel PCI-X Host Adapter
	HP-UX 11i:
	HP A6829A = HP Ultra 160 SCSI Adapter
	IBM AIX 5.1:
	LSI SYM53C1010 = Dual Channel PCI Ultra3 SCSI Adapter

Feature	Specifications
Supported Solaris™ Operating Environment	Solaris 8, 9
Other Supported Operating Environment	Microsoft Windows 2000 and 2003, HP-UX 11i, AIX 5.1
Mid-plane Options	Concatenated bus (single) or split bus (dual), field-configurable via jumper cable
Power Supply Options	100 to 240VAC or -48V or -60VDC dual hot-swap/redundant
Cooling	Hot-swap/redundant fans (integrated into PS units)
Sun Cluster Software Support	Version 3.0
NEBS Compliance	Level 3 compliant, certified by Telcordia

Additional features of the Sun StorEdge 3120 SCSI array include the following:

•Density of 584 GB raw capacity in 1U format (with 146 GB drives)

•Redundant hot-swappable (FRUs)

  −Two power supplies, each with power inlet

  −Two cooling fans integrated into each power supply FRU

  −Disk drives (when RAID protected using optional host-based software)

•Event monitoring and reporting; component health monitoring: disk, power, thermal, fans; SAF-TE and SMART compliant

•Software support includes, but is not limited to, Solaris Volume Manager, Sun Cluster 3.0, and VERITAS Volume Manager (VxVM) software

Product Availability

The Sun StorEdge 3120 SCSI array schedule is as follows:

•Revenue Release (RR) 3/26/04
•PRESTO Announce 3/09/04
•General Availability (GA) 3/26/04
•Webdesk Orderability 3/26/04

Product Family Placement

The Sun StorEdge 3120 SCSI array is the new member of the StorEdge 3000 product family. This product family consists of a variety of models, each with different technical specifications, yet all sharing a common management software, architecture, and firmware functionality.

The following table below is a feature comparison of Sun's 1U SCSI storage array product line.

Sun StorEdge 3120 SCSI Array	Sun StorEdge S1 SCSI Array
Workgroup	Workgroup
•JBOD •Software-based RAID	•JBOD •Software-based RAID
•Solaris Operating Environment 8, 9 •Microsoft Windows 2000 and 2003 •HP-UX 11i •AIX 5.1	•Solaris Operating Environment
When to sell •Price/performance •Ultra320 SCSI •High Availability including redundant components •NEBS Level 3 compliance required •MIL-STD-810F subset compliance •When maximum storage density is desired or required •RAS + •High performance •Flexibility of configurations	**When to sell** •Installed base customers •For small-capacity applications •Cost-sensitive applications •NEBS Level 3 compliance required
When NOT to sell •Customer requires StorEdge S1 array similarity	**When NOT to sell** •Ultra320 SCSI required •High performance requirements

Storage Feature Comparison

The table below provides a feature comparison for Sun's storage product line.

•Yes = Feature supported

•No = Feature not supported

•N/A = Not applicable for the specified array

Functionality/Attribute	Sun StorEdge 3120 SCSI Array	Sun StorEdge S1 Array
Form Factor (Rack/Disk Density)	1U	1U
NEBS Level 3 Compliance	Yes	Yes
MIL-STD-810F Subset Compliance	Yes	No
Ultra320 SCSI LVD	Yes	No
Two Host SCSI Ports	Yes	No
Split Bus or Single Bus Configurable	Yes	No
In-Band Monitoring	Yes	Yes
19-inch Depth for Telco Cabinets	Yes	Yes
AC/DC Power Supplies	Yes	Yes
GUI/Terminal/Web-Based Manageability	Yes	Yes
Component Health Monitoring	Yes	Yes
Sun Cluster 3 Software Support	Yes	Yes

Key Messages

- High-density 1U rack unit with high-performance/high-availability/high-reliability/high-functionality SCSI RAID storage at entry-level pricing
- Low cost high density JBOD array with enterprise features
- Flexible dual host connection and dual split bus configurations
- RAS fully redundant highly available dual power supply and fans
- Ruggedized by NEBS level 3 and MIL-STD-810F subset compliance
- Easy and flexible in/out-of-band health monitoring and management

Target Markets

The Sun StorEdge 3120 SCSI array is ideal for any environment where space is at a premium. Customers should appreciate this array's unsurpassed versatility, which combines enterprise-class high availability features, high-speed performance, cost-effective configurability, easy-to-use common management interface, remote control functionality, and a highly ruggedized package.

The Sun StorEdge 3120 SCSI array is ideal for IT managers, system administrators, and IT technicians especially in telecommunications or government markets. From an application solution, the Sun StorEdge 3120 SCSI array provides an extremely dense, low-cost, high data availability external disk array storage solution for server users that are supporting different operating environments. The most common applications for a Sun StorEdge 3120 SCSI array include the following:

•Messaging (email or voicemail)	•Enterprise resource planning
•Accounting	•Application/software development
•Customer relationship management	•Small database (OTLP or DSS)
•Sales force automation	•Static web content delivery
•E-commerce	•File and print
•Supply chain management	•Proxy caching
•Internet applications	•Data warehousing/data mart
•Document management	•Data analysis/decision support
•Directory services	•Dynamic web content delivery

Market Value Proposition

The Sun StorEdge™ 3120 SCSI array is a compact, ultra-dense, super-rugged disk array designed to meet the wide range of Sun™ Volume Server platform requirements by providing Sun storage customers with midrange/enterprise-class performance/availability features, management functionality, and configuration flexibility at volume level (entry) pricing.

Sun has condensed high performance, high availability, and simple manageability into a flexible, versatile, reliable, rugged cost-effective super-scaling high-density package. The Sun StorEdge 3120 SCSI array is an excellent choice for providing external local storage.

This array allows simplified storage planning by providing a highly open; flexible; and configurable architecture featuring a common scalable foundation for building today's and tomorrow's storage solutions, which decreases acquisition, deployment, and management costs.

Key Features, Technical Functions, and Benefits

Feature	Technical Function	Benefit
•Ultra320 SCSI LVD drive and host interface	•Up to 320 MB/sec. raw bandwidth per channel	•Very fast access and transfer of information
•Dual hot-swap/redundant power supplies and fans	• If one fails, the other keeps the array running smoothly; dynamic replacement of failed unit does not disrupt production I/O	•Easy serviceability and enhanced system availability
•LVD SCSI signal	•Up to 10-meter external cable length	•Separate server to array enclosure for ease of physical systems management
•One or two SCSI bus options	•Effectively provides two separate and distinct SCSI buses, each supporting 2 drives	•Easy field configuration for varied computing environments
•Industry-standard rack/system cabinet mounting	•Center post or four post compatibility	•Provides easy installation

Field-Replaceable Units (FRUs)

All of the Sun StorEdge 3120 SCSI array's major components are field-replaceable units (FRUs) and are easily accessible from the front or rear of the unit. Each FRU has a set of LEDs, which indicate health, and status of the array. Hot-swappable FRUs are quickly and easily replaced while the system remains up and running.

The Sun StorEdge 3120 SCSI array's FRUs include the following:

•**Hot-swappable**

   –Two power supplies, AC or DC with integrated fan module (PSU)

   –Up to 4 Ultra320 SCSI LVD disk drives (when RAID protected using optional host software)

System Architecture

The Sun StorEdge 3120 SCSI array enclosures are rack-mountable, NEBS Level 3-compliant, mass storage subsystems. The 1U-high Sun StorEdge 3120 SCSI array utilizes the Ultra320 LVD SCSI interface both internally to the drives and externally to the host ports.

Configuration management and enclosure event reporting are enabled through in-band SCSI ports. Host-based software packages, such Sun StorEdge Configuration Service software, are available to interface for in-band management and event reporting. Sun StorEdge Configuration Service software can be also launched in a web browser.

Each Sun StorEdge 3120 SCSI array holds up to four 1-inch high (low profile) Ultra320 LVD SCSI disk drives and can support one expansion drive array.

The mid-plane for one (single concatenated) or two (dual split) SCSI buses is quickly and easily configured via a short external patch cable (the cable is included with the array). Attaching the cable to create a single-bus configuration sets certain disk slots with unique SCSI target IDs on that bus. The label on the front of the chassis identifies the target IDs.

Dual hot-swap/redundant load-sharing/load-balancing 100 to 240VAC or -48 or -60VDC power supply units each have separate power inputs and contain two high-velocity (52 CFM) fans with detection circuitry to monitor degraded performance provides superior temperature control.

The Sun StorEdge 3120 SCSI arrays support SAF-TE protocol (SCSI Accessed Fault-Tolerant Enclosures) for reporting the environmental information onto the in-band SCSI bus.

Key Architectural Features

- Two array configuration options: single concatenated mid-plane or dual split mid-plane

- Configuration management and enclosure event reporting enabled through in-band SCSI port

- Power supply/fan assemblies are all hot-swap/redundant, field-replaceable units (FRUs)

- All FRUs are easily accessible from the front or rear of the array

- Each array supports up to four hot-plug, 1-inch high (low-profile) Ultra320 SCSI LVD disk drives

- Colored LED indicators provide FRU status as well as enclosure environmental and hardware status

- Cable lengths of up to 10 meters utilizing Ultra320 SCSI-compliant LVD cables

- Auto SCSI termination technology supported on all external SCSI ports

- Single-bus or dual-bus configurations by simple external jumper cable connection

- Embedded SAF-TE protocol interface for in-band enclosure (array) reporting capability

- Compact, low-profile VHDCI connectors on the host and drive I/O port modules for high density cable capability

- Dual redundant power supply/fan assemblies provide high availability (for example, can take inputs from separate power grids)

- AC power supplies feature load-sharing balancing and auto-ranging AC voltage input capability

- Multi-host support, (up to two SCSI buses for host channels)

- Optional DC (-48/-60V) version for mobile and Telco installations

- NEBS Level 3; GR-63-CORE, GR-1089-CORE compliant

- Subset of MIL-STD-810F compliant

- Web browser support for Sun StorEdge Configuration Service (Netscape™ 4.7+)

Host Interface

The host interface of the Sun StorEdge 3120 SCSI array is Ultra320 SCSI LVD, and can support a maximum of two direct attached hosts.

Input Power Options

- Dual-input load-sharing/load-balancing 90 to 250VAC universal input, load sharing

- Dual-input load-sharing/load- balancing -48VDC (-36VDC to .72VDC) or -60VDC input capabilities available

Power Supplies/Fans

The Sun StorEdge 3120 SCSI array has two fully redundant power supplies with load-sharing and load-balancing capabilities. Each AC power supply has auto-ranging capability from 90VAC to 250VAC and 47 to 63 Hz. With these redundant power supplies, one maintains electrical power to the system if the other fails.

A single power supply can spin up, maintain, and sustain power for a fully loaded Sun StorEdge 3120 SCSI array unit. Each power supply has an automatic thermal shutdown to prevent power supply damage from extreme heat environments.

Both power supply units (PSUs) are removable canisters that slide into one of two slots in the back of the system. Each PSU canister has a locking handle, power status LED, AC power cord connector, and power switch.

Each power supply housing also contains fan assemblies. Each fan is electrically isolated and powered by +12-volt common rail. This allows the fans to continue to run from the redundant power supply even though its power supply unit is turned off.

Power supplies can be replaced while the Sun StorEdge 3120 SCSI array controller and expansion arrays are in operation (hot-swappable).

Mid-planes

The mid-plane is the main interconnect between the SCSI disk drives and host I/O board. The drive mid-plane has two separate SCSI buses. The internal buses can be independently configured as two 2-drive port channels or dependently configured as a single 4-drive channel by use of external rear panel jumper cables. There are no active components on the drive mid-plane.

Front Panel Indicators

This section describes the components accessed at the front of the Sun StorEdge 3120 SCSI array.

- Light indicators at the far right hand side of panel indicating (from top to bottom):
  - Power
  - Fan
  - Temperature
  - Event

Immediately below the Event LED is an audible-alert RESET push button.

Behind the lockable front door are:

- Drive bays containing plug-in disk drives (drive sleds)
- Light indicators (LEDs) indicating drive status adjacent to each drive bay

Rear Panel Indicators and Switches

These components are located on the back of the Sun StorEdge 3120 SCSI array:

- Four SCSI I/O connectors for connection to host or expansion array and two SCSI bus configuration connectors for selecting single-bus or split-bus configurations.

- Two plug-in power supply canisters with integrated fan canisters.

With the exception of the drive sled connectors inside the Sun StorEdge chassis, the following connectors are located on the modules of the rear panel of the unit.

Note: Sun StorEdge 3120 SCSI array can support EITHER AC or DC power options.

The figures below display the port connections and LEDs for the rear panel components. SB or DB icons indicate where cables connect for single or dual bus.
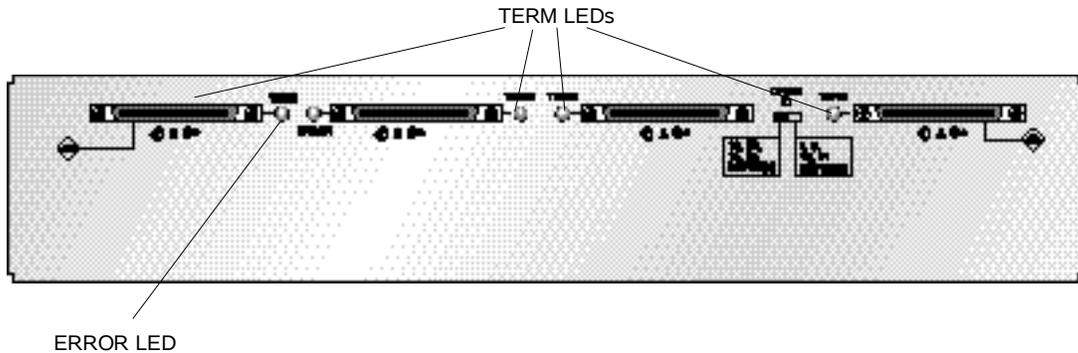
Figure 2. Sun StorEdge™ 3511 array rear panel

What Works With What

Solaris Operating Environment, Sun Server and HBA Support

The following table lists the Sun systems that are supported for the Sun StorEdge 3120 SCSI Array running Solaris SPARC 8 or higher.

Supported SUN SPARC Servers & Connection Methods				
Sun Servers	**(X)6758A Dual-channel, Ultra 3 SCSI, LVD, PCI HBA**	**On Board Server SCSI Host Controller**	**(X)2222A, (X) 4422A Dual channel, Ultra-2 SCSI/Dual Fast Ethernet PCI HBA**	**(X)1018A Single-Ended Fast/Wide SCSI/Fast Ethernet SBUS HBA**
Ultra^{TM} 60 workstation	Yes	Yes	Yes	No
Ultra 80 workstation	Yes	Yes	Yes	No
Sun Blade^{TM} 150 workstation	No	No	Yes	No
Sun Blade 1000 workstation	Yes	Yes	Yes	No
Sun Blade 1500 workstation	Yes	Yes	Yes	No
Sun Blade 2000 workstation	Yes	Yes	Yes	No
Sun Blade 2500 workstation	Yes	Yes	Yes	No
Netra^{TM} 20 server	Yes	Yes	Yes	No
Netra 120 server	Yes	Yes	Yes	No
Netra 210 server[1]	Yes	Yes	Yes	No
Netra 240 server[1]	Yes	Yes	Yes	No
Netra 440 server[1]	Yes	Yes	Yes	No
Netra 1280 server	Yes	Yes	Yes	No
Netra t 1120 server	Yes	Yes	Yes	No
Netra t 1125 server	Yes	Yes	Yes	No
Netra t 1400 server	Yes	Yes	Yes	No
Netra t 1405 server	Yes	Yes	Yes	No
Sun Enterprise^{TM} 220R server	Yes	Yes	Yes	No
Sun Enterprise 250 server	Yes	Yes	Yes	No
Sun Enterprise 420R server	Yes	Yes	Yes	No
Sun Enterprise 450 server	Yes	Yes	Yes	No

Supported SUN SPARC Servers & Connection Methods				
Sun Enterprise 3500 server	No[2]	Yes	No	Yes
Sun Enterprise 4500 server	No[2]	Yes	No	Yes
Sun Enterprise 5500 server	No[2]	Yes	No	Yes
Sun Enterprise 6500 server	No[2]	Yes	No	Yes
Sun Servers	**(X)6758A Dual Channel Ultra 3 SCSI, LVD, PCI HBA**	**On Board Server SCSI Host Controller**	**(X)2222A, (X)4422A Dual channel, Ultra-2 SCSI/Dual Fast Ethernet PCI HBA**	**(X)1018A Single-Ended Fast/Wide SCSI/Fast Ethernet SBUS HBA**
Sun Enterprise 10000 server	No[2]	Yes	No	Yes
Sun Fire™ 280R server	Yes	Yes	Yes	No
Sun Fire V120 server	Yes	Yes	Yes	No
Sun Fire V210 server	Yes	Yes	Yes	No
Sun Fire V240 server	Yes	Yes	Yes	No
Sun Fire V250 server	Yes	Yes	Yes	No
Sun Fire V440 server	Yes	Yes	Yes	No
Sun Fire V480 server	Yes	No	Yes	No
Sun Fire V880 server	Yes	No	Yes	No
Sun Fire V1280 server	Yes	Yes	Yes	No
Sun Fire E2900 server	Yes	Yes	Yes	No
Sun Fire 4800 server	Yes	No[4]	Yes	No
Sun Fire 4810 server	Yes	No[4]	Yes	No
Sun Fire E4900 server	Yes	No[4]	Yes	No
Sun Fire 6800 server	Yes	No[4]	Yes	No
Sun Fire E6900 server	Yes	No[4]	Yes	No
Sun Fire 12000 server[3]	Yes	No	Yes	No
Sun Fire 15000 server[3]	Yes	No	Yes	No
Sun Fire E20000 server	Yes	No	Yes	No
Sun Fire E25000 server	Yes	No	Yes	No

Note 1 – The Netra 210, Netra 240 and Netra 440 were mistakenly excluded in table 3 of the Sun StorEdge 3120 SCSI Array Release Notes (816-7955-10). These servers are supported as stated in this table.

Note 2 - This HBA is not supported by the specific server at this time.

Note 3 - These servers currently do not support the (X)4422A HBA.

Note 4 – No on-board SCSI port is available on this server.

Solaris Boot Support

For supported on-board controllers as well as (X)2222A, (X)4422A and (X)1018A HBAs, booting from the 3120 RAID Array is supported. No special procedures are necessary.

To boot a host using the (X)6758A, Sun StorEdge PCI Dual Ultra3 SCSI host bus adapter, specific steps must be followed. Please refer to the "Bootability" chapter in the *Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter Installation Guide, part number 816-2156.* An online copy of the installation guide is also available from the web site:

http://www.sun.com/sunsolve

and search for "Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter" in the "Search SunSolve" search area.

Solaris X86 9 04/04 Operating System, Sun Server and HBA Support

Sun Servers	On-Board SCSI	X9265A LSI22320-R
Sun Fire V60x/V65x	No[1]	No[3]
Sun Fire V20z	No[2]	Yes

Note 1 – At this time, on-board HBAs with the Sun Fire V60x and V65x servers are not supported due to incompatibility with the SCSI chip and LSI repeater in the Sun StorEdge 3120 SCSI array.

Note 2 – These servers do not have on-board SCSI ports available.

Note 3 – The X9265ALSI22320-R HBA has not been fully qualified with the Sun StorEdge 3120 SCSI arrays attached to the Sun Fire V60X and V65x servers as of this publication date.

Linux Operating System, Sun Server and HBA Support

The following table lists the Sun systems that are supported for the Sun StorEdge 3120 SCSI array and the adapters supported for each of the supported systems for the Red Hat Linux Operating System.

Sun Servers	On-Board SCSI	X9265A LSI22320-R
Sun Fire V60x/V65x	No[1]	Yes
Sun Fire V20z	No[2]	Yes

Note 1 – At this time, on-board HBAs with the Sun Fire V60x and V65x servers are not supported due to incompatibility with the SCSI chip and LSI repeater in the Sun StorEdge 3120 SCSI array.

Note 2 – These servers do not have on-board SCSI ports available.

Other Operating Systems, 3rd Party Server and HBA Support

The table below lists supported connection methods for Microsoft Windows, Red Hat Linux, Novell NetWare, HP-UX and IBM AIX Operating Systems.

Operating Systems	X9265A Ultra320 SCSI Dual Channel PCI-X Host Adapter	Adaptec 39320A-R Ultra320 SCSI Dual Channel PCI	HP A6829A HP Ultra 160 SCSI Adapter	LSI SYM53C1010 Dual Channel PCI Ultra3 SCSI Adapter
Microsoft Windows 2000/2003	Yes[1]	No	No	No
Red Hat Linux AS 2.1 and 3.0	Yes[1]	No	No	No
IBM AIX 5.1	No	No	No	Yes
HP-UX 11i	No	No	Yes	No
Novell NetWare 5.1 or 6.5 operating system	No	Yes	No	No

Note 1 – *The X9265A Host Bus Adapter can only be used with the Sun Fire V20z.*

General Note – If a customer wants to use other HBAs than the ones listed, please use the Get To Yes (GTY) process.

General Note – Sun Enterprise Services will honor the Sun StorEdge product warranty and provide break/fix service for Sun StorEdge 3120 SCSI arrays attached to the non-Solaris Operating Environment platforms listed above.

Peripherals Support

The following peripherals are supported on the Sun StorEdge 3120 SCSI array.

Category	Description
SCSI Disk Drive	Drives include drive carrier. Supported drives are: • 36-GB, 15000-rpm, Ultra 3 SCSI LVD (part number: XTA-SC1NC-36GB-15K) • 73-GB, 10000-rpm, Ultra 3 SCSI LVD (part number: XTA-SC1NC-73GB-10K) • 73-GB, 15000-rpm, Ultra 3 SCSI LVD (part number: XTA-SC1NC-73GB-15K) • 146-GB, 10000-rpm, Ultra 3 SCSI LVD (part number: XTA-SC1NC-146GB-10K) *Note – In an array shipped with less than 4 drives, each empty slot in the array contains an air management sled to correctly handle the air flow and heat. Each drive slot requires either a disk drive or an air management sled.*
Optional Power and Cooling Unit	XTA-3000-1UDC-Kit, Sun StorEdge 3120 DC power and cooling unit (hot-swap)

Category	Description		
Cables	**Cable type & Length**	**Marketing Part Number**	**Manufacturing Part Number**
	VHDCI/VHDCI - 0.8 m	(X)1136A	595-5645-XX
	VHDCI/VHDCI - 1.2 m	(X)1137A	595-5647-XX
	VHDCI/VHDCI - 2 m	(X)1138A	595-5646-XX
	VHDCI/VHDCI - 4 m	(X)3830B	595-6349-XX
	VHDCI/VHDCI - 10 m	(X)3831B	595-6350-XX
	HD-68/VHDCI - 0.8 m	(X)1132A	595-5660-XX
	HD-68/VHDCI - 1.2 m	(X)1135A	595-7460-XX
	HD-68/VHDCI - 2 m	(X)3832A	595-4693-XX
	HD-68/VHDCI - 4 m	(X)3830A	595-4694-XX
	HD-68/VHDCI - 10 m	(X)3831A	595-4695-XX
Rail Kits	• XTA-3000-1URK-19U Universal Rail Kit for Sun Racks and industry standard 19" RETMA racks • XTA-3000-1URK-19C 19" TELCO rack, center mount rail kit • XTA-3000-1URK-19F 19" TELCO rack, front mount rail kit		

Note - The Sun StorEdge 3120 SCSI arrays do not come with any SCSI cables. Customers can order these according to their cabling needs.

Sun Expansion Cabinets/Racks

The following table shows the supported cabinets with their associated rack mount kits and other required kits. See the *Sun StorEdge 3000 Family Rack Installation Guide for 2U Arrays* for installation instructions.

Cabinet Name	Cabinet Part Number(s)	Required Kit(s)	Required Kit Part Number	Maximum Number of Arrays Supported per Cabinet
Sun StorEdge 72-inch Expansion Cabinet	SG-(X)ARY030A	Rack mount Kit	(X)TA-3000-1URK-19U	16
Sun Fire Cabinet	SF-(X)CAB, SFE-(X)CAB	Rack mount Kit	(X)TA-3000-1URK-19U	10
Sun Rack 900-38	SR9-(X)KM038A-IP	Rack mount Kit	(X)TA-3000-1URK-19U	24

Cabinet Name	Cabinet Part Number(s)	Required Kit(s)	Required Kit Part Number	Maximum Number of Arrays Supported per Cabinet
Sun Rack 900-36N	SR9-(X)BM036A-IP	Rack mount Kit	(X)TA-3000-1URK-19U	24
Sun Fire 6800 System	F6800-1	Rack mount Kit	(X)TA-3000-1URK-19U	7
Sun Fire E6900 System	E6900-BASE	Rack mount Kit	(X)TA-3000-1URK-19U	5
Standard EIA Cabinets	Not Applicable	Rack mount Kit	(X)TA-3000-1URK-19U	Varies
Telco flush mount racks	Not Applicable	Rack mount Kit	(X)TA-3000-1URK-19F	Varies
Telco center-of-gravity racks	Not Applicable	Rack mount Kit	(X)TA-3000-1URK-19C	Varies

Important - *All rack ready array part numbers require the purchase of a rail kit; no rail kits ship standard with the rack ready part numbers.*

Support Information and System Requirements

Operating Environments

The following table lists the operating environments supported for hosts connected to the Sun StorEdge™ 3120 SCSI array.

Supported Operating Environments	Notes
Solaris™ 8 Operating Environment and later	Sun StorEdge Configuration Service is supported with Solaris Operating Environment. Requires the appropriate version of the Solaris Operating Environment recommended patch cluster.
Solaris 9 OS x86 Platform Edition (9 4/04)	Sun StorEdge Configuration Service is supported with Solaris Operating Environment.
Windows 2000 Server, Windows 2000 Advanced Server, Windows 2003, and Windows NT Server 4.0 operating systems	Windows 2000 operating systems requires Service Pack 3. Windows NT operating system requires Service Pack 6A. Sun StorEdge Configuration Service is supported with Windows 2000 Server, Windows 2000 Advanced Server, Windows 2003, and Windows NT Server 4.0 operating systems.
Red Hat Linux 2.1 and 3.0 operating system	Sun StorEdge Configuration Service is supported with Red Hat Linux Operating Systems.
Novell Netware 5.1 and 6.5	Sun StorEdge Configuration Service and CLI management interfaces for the StorEdge 3120 SCSI Array are NOT supported on these operating systems. Configuration management is only available through the terminal menu via a telnet or top session to the array.

Bundled Software Components

The following table lists the software components of the Sun StorEdge 3120 SCSI Array Professional Storage Manager software CD that ships with the array.

Management Software	Notes
Sun StorEdge 3000 Family Configuration Service v. 1.5	Sun JAVA™ GUI and web browser management interface. Setup and maintain 1 to 30 arrays from one console. Agent on servers communicates to application on console. Servers and console must be on same subnet.
Sun StorEdge 3000 Family Diagnostic Reporter v. 1.5	This utility provides monitoring and notification of key component and environmental conditions. Works in conjunction with Sun StorEdge Configuration Service (SSCS).

Management Software	Notes
CLI Utility	This utility, shipped on the software CD, can be used for in-band, script-based management.

Supported Optional Software

The following table lists backup, clustering, diagnostic, file systems and other supported software.

Type	Product Name
Backup Software	• VERITAS NetBackup 4.5 and greater software • Solstice Backup^{TM} 6.1 and greater software
Clustering Software	• Sun Cluster 3.0, Release 3.0 and greater, 2 node support • Veritas Cluster (VCS) 3.2, 3.5 • MS Cluster Service (MSCS) Windows 2000 Server, Windows 2003 Server

Diagnostic Software	• Sun Storage Automated Diagnostic Environment (StorADE) 2.3 software (with patch), Device Edition, is shipped separately without charge when the Sun StorEdge 3120 SCSI array is ordered through WEBDESK
	• Sun StorEdge Diagnostic Expert 1.2 software (bundled with Sun StorEdge Enterprise Storage Manager 1.2 software)
	  • The Sun Storage StorADE and Diagnostic Expert software products provided limited functionality for the Sun StorEdge 3120 SCSI array. They display asset information and monitor device health only
	  • Patch 116720-07 (SUNWstade) is required to be installed in order to work with the Sun StorEdge 3310 SCSI RAID array
	  • StorADE does not provide diagnostics capability at this time

File System Software	• Sun StorEdge Performance Suite 4.0 software (Sun StorEdge QFS software) • Sun StorEdge Utilization Suite 4.0 software (Sun StorEdge SAM-FS software) • VERITAS File System (VxFS) 3.5
Point-in-Time Copying and Remote Mirroring Software	• Sun StorEdge Availability Suite 3.1 software (includes point-in-time copy service, formerly known as Sun StorEdge Instant Image software, and remote mirror service, formerly known as Sun StorEdge Network Data Replicator (SNDR) software)
Host-Based Volume Management	• Solstice DiskSuite^{TM} 4.2.1 software (includes dynamic multi-pathing (DMP) support), included on installation CD 2 of 2 with the Solaris 8 4/01 Operating Environment. It can be configured to run on SPARC^{TM} platforms or x86 hardware environments that have the Solaris 8 Operating Environment installed • Solaris Volume Manager software, bundled in the Solaris 9 Operating Environment (both SPARC and x86) • VERITAS Volume Manager w/DMP (VxVm) 3.2, 3.5 • Embedded Windows Volume Manager • VERITAS Volume Manager w/DMP (VxVM) 3.2, 3.5 for Windows and Linux

3rd Party Operating System and Application Certification

The following table lists the Sun StorEdge 3120 SCSI array 3rd party operating system and application certification.

Certification	Notes
Microsoft Windows 2000, 2003: standalone and cluster	URL: http://www.microsoft.com/whdc/hcl/search.mspx Search for "StorEdge" Note: Certification in process
Veritas Volume Manager (VxVM) for windows and Linux, Veritas File System (VxFS) 3.5, Veritas Cluster (VCS) 3.2, 3.5	URL: http://www.veritas.com Note: Certification in planned.
Novell NetWare	The Sun StorEdge has completed the necessary qualification testing. Netware 6 Cluster Services are not supported with the 3120 SCSI Array.

Non-Supported Configurations

Sun receives numerous inquires regarding what is missing from the Supported Systems and Adapters, (What Works With What), with the Sun StorEdge 3120 SCSI array. The following table is provided to help reduce the effort required to determine what is not supported with this array. Qualification and support status of the items listed in this table are subject to change. Check the latest What Works With What version for updated information.

System/Hardware/Software/Feature	Support Status
Solaris 2.5.1 Operating System support	Will not be qualified or supported
Solaris 2.6 Operating System support	Will not be qualified or supported
SGI Irix support	Not qualified/supported
SuSE Linux Enterprise Server 8 for x86	Not qualified/supported

Ordering Information

Bundled Accessories/Peripherals and Documentation

Note: For all configurations, AC power cord country kits are ordered separately. DC power configurations include two -48 volt DC power cords.

Sun StorEdge 3120 SCSI Array JBOD Configuration

The Sun StorEdge 3120 SCSI array JBOD base configuration ships with:

* One 1-foot SCSI VHDCI-VHDCI jumper cable.

* One CD containing Sun StorEdge Professional Storage Manager, installation and configuration documents.

* One AC cord locks in a plastic bag, if an AC-powered array is ordered.

* One set of front bezel keys in a plastic bag.

* One Quick Install Guide.

Connecting Your SCSI Array

Connecting Sun StorEdge 3120 SCSI Arrays to Hosts

Connecting Cables for a Single-Bus Configuration

A single-bus I/O configuration assigns all disk drive IDs in a chassis to one channel.

1. To configure a JBOD unit as a single-bus configuration, connect the SCSI jumper cable between SCSI ports labeled with the SB icon, the B In and A Out ports as shown in Figure1. Tighten the cable jack screws with six full clockwise turns to ensure proper connection and operation.
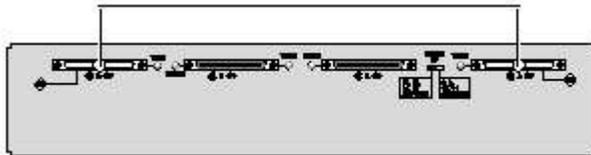
Figure1. Cabling for Single-Bus JBOD

2. Connect your JBOD array to a host server with SCSI cables as shown in Figure1, Figure 2, or Figure 3.

Caution – When you connect the host cable in single-bus configuration, attach the host cable in a way that does not bend or damage the jumper cable.

Single-Bus JBOD with One Host Connection

Caution – BEFORE you disconnect a cable from the array, the host bus on that cable must be inactive.

Caution – When you connect the host cable in single-bus configuration, attach the host cable in a way that does not bend or damage the jumper cable.

To connect a JBOD in a single-bus configuration to a single host, connect the following ports:
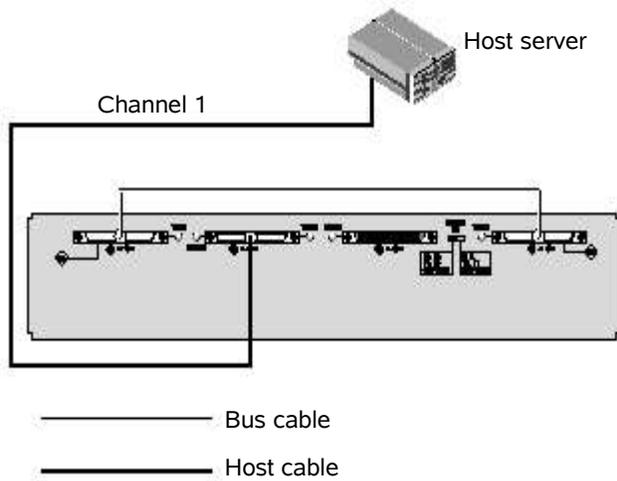
Figure 2. JBOD Directly Connected to a Host (Single-Bus)

In Figure 2, the host server is connected to port B Out. The following table shows the drive IDs for Figure 2.

Table 1. Example of Drive IDs for a Single Host, Single-Bus, Left-Switch Setting

Channel	Switch	ID
1	Left	12, 13, 14, 15

To connect multiple JBODs in a single-bus configuration to a single host, connect the following ports:
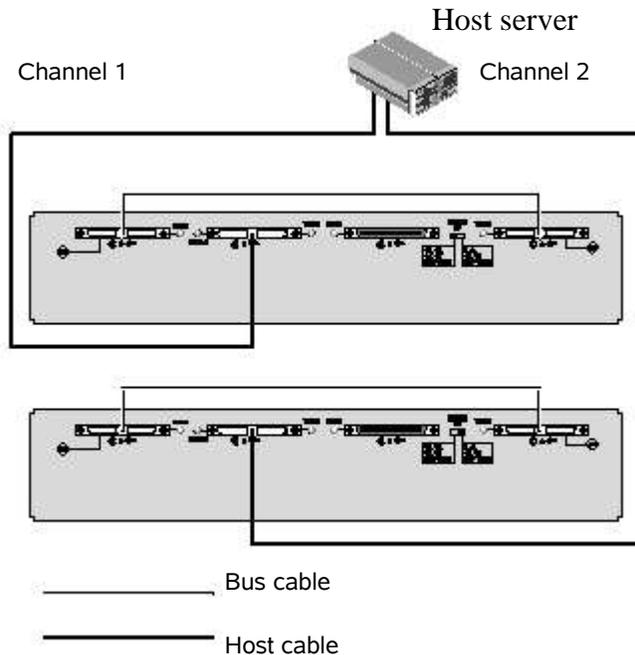
Figure 3. Multiple JBODs Directly Connected to a Host (Single-Bus)

, the host server is connected to port B Out. The following table shows the drive IDs for Figure 3.

Table 2. Example of Drive IDs for a Single Host, Single-Bus Switch Settings

Channel	Switch	ID
1	Left	12, 13, 14, 15
2	Right	8, 9, 10, 11

Single-Bus, Multi-Initiator JBOD Configuration

A dual-host, single-bus multi-initiator configuration primarily works in conjunction with multi-initiator software such as Sun Cluster or Veritas Cluster. In this configuration, each host server is connected to each host channel. Without the multi-initiator software, the host servers can write to the same drive simultaneously which may overwrite data.

You can configure a non-cluster dual-host, single-bus environment, but you must ensure that the hosts write to different disks on the SCSI bus by setting up a special configuration. For instance, you can specifically configure which host writes to each disk to prevent data overwrites.

Note – *Each device in your configuration must have a unique ID, including any HBA devices. For instance, if your HBA device uses ID 6, do not use the left-switch setting, which sets the SAF-TE ID to 6.*

Caution – *BEFORE you disconnect a cable from the array, the host bus on that cable must be inactive.*

Caution – *When you connect the host cable in single-bus configuration, attach the host cable in a way that does not bend or damage the jumper cable.*

To connect a JBOD in a single-bus configuration to dual hosts, connect the following ports:

Host server A   Host server B

Channel 1   Channel 2

_____ Bus cable

_____ Host cable
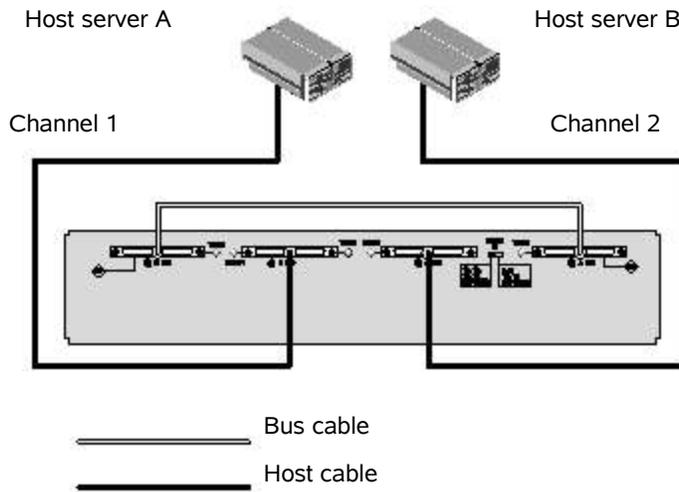
Figure 4. JBOD Directly Connected to Two Hosts (Single-Bus)

In Figure 4, Host A is connected to port B Out and Host B is connected to port A In. The following table shows the drive IDs for Figure 4.

Table 3. Example of Drive IDs for Dual Hosts, Single-Bus, Right-Switch Setting

Server	Channel	Switch	ID
A	1	Right	8, 9, 10, 11
B	2	Right	8, 9, 10, 11

Dual-Bus, Single-Initiator JBOD Configuration

There are two important features to note with the dual-bus, single-initiator mode JBOD configuration:

- Connect one A and one B input port on the JBOD with an HBA host connection to the host. The I/O SCSI connectors are auto-terminated.
- In a dual-bus configuration, the SCSI ID numbers automatically change according to the switch settings.

Single-initiator mode is when there is only one host connection on a SCSI channel.

_____

Caution – *BEFORE you disconnect a cable from the array, the host bus on that cable must be inactive.*
_____

Figure 5 shows a dual-bus JBOD with two host connections, one host connection to each channel (single-initiator mode). This is an efficient way to provide mirroring capability for a single host.
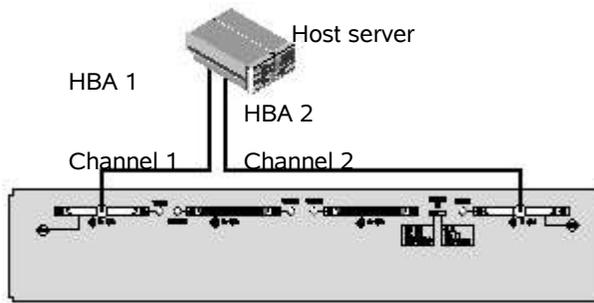
Figure 5. JBOD Directly Connected to a Host (Dual-Bus)

In Figure 5, HBA 1 is connected to port B In and HBA 2 is connected to port A Out. The following table shows the drive IDs for Figure 5.

Table 4. Example of Drive IDs for a Single Host, Dual-Bus, Left-Switch Setting

HBA	Channel	Switch	ID
1	1	Left	14, 15
2	2	Left	12, 13

Figure 6 shows multiple hosts with multiple JBODs in a dual-bus JBOD configuration with two host connections, one host connection to each channel (single-initiator mode). This is an efficient way to provide mirroring capability.
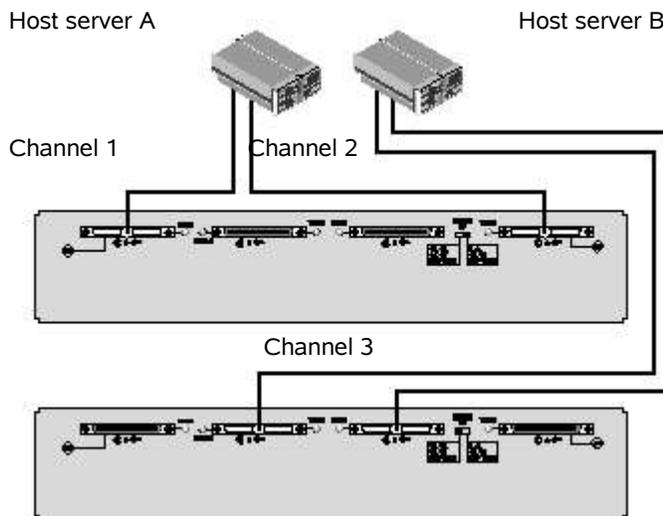
**Figure 6.** JBODs Directly Connected to Hosts (Dual-Bus)

In Figure 6, Host A is connected to port B In and port A Out, and Host B is connected to port B Out and port A In. The following table shows the drive IDs for Figure 6

Table 5. Example of Drive IDs for Multiple Hosts, Dual-Bus Switch Settings

Server	Switch	Channel	ID
A	Right	1	10, 11
A	Right	2	8, 9
B	Left	3	14, 15
B	Left	4	12, 13

To connect a dual-bus JBOD, perform the following steps.

1. Connect each JBOD port to a host as shown in Figure 6.

2. Make inactive the host bus connections of any cable which will be installed or removed.

3. Use your host system disk management utilities to prepare the disks in the Sun StorEdge 3120 SCSI array for use.

Refer to your host system documentation for more information about disk management utilities available to you.

Dual-Bus, Multi-Initiator JBOD Configuration

A dual-host, dual-bus quad-initiator configuration primarily works in conjunction with multi-initiator software such as Sun Cluster or Veritas Cluster. In this configuration, each host server is connected to each host channel. Without the multi-initiator software, the host servers can write to the same drive simultaneously which may overwrite data.

You can configure a non-cluster dual-host, dual-bus quad-initiator environment, but you must ensure that the hosts write to different disks on the SCSI bus by setting up a special configuration. For instance, you can specifically configure which host writes to each disk to prevent data overwrites.

Caution – BEFORE you disconnect a cable from the array, the host bus on that cable must be inactive.

To connect a JBOD in a dual-bus configuration to two hosts, connect the following ports:
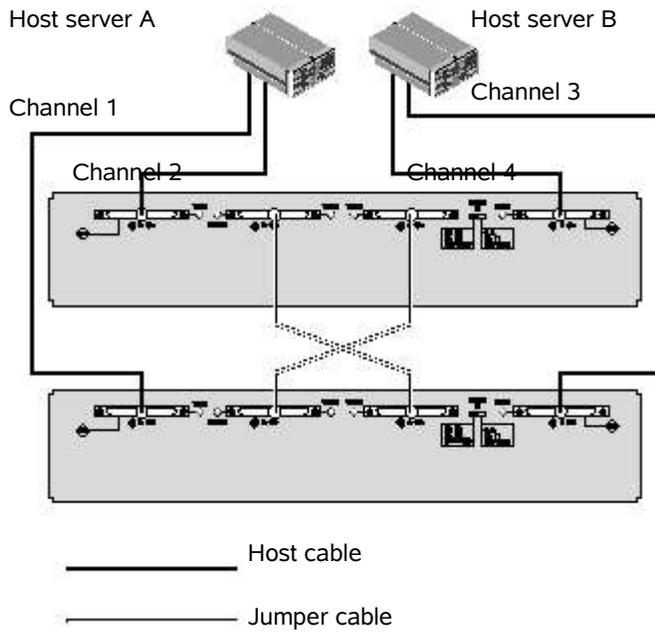
Figure 7. JBODs Directly Connected to Dual Hosts (Dual-Bus)

In Figure 7, Host A is connected to port B In on JBOD1 and to port B In on JBOD2. Host B is connected to port A Out on JBOD1 and to port A Out on JBOD2. A jumper cable connects the port B Out drive on JBOD1 to the port A In drive on JBOD2, which enables Host A to access the channels on Port A of JBOD2. A jumper cable connects the port A In drive on JBOD1 to the port B Out drive on JBOD2, which enables Host B to access the channels on Port B of JBOD2. This configuration is common for failover protection in a network cluster environment.

The following table shows the drive IDs for Figure 7.

Table 6. Example of Drive IDs for Multiple Hosts in a Multi-Initiator Configuration with a Right-Switch Setting

Server	Switch	Channel	ID
A	Right	1	8, 9, 10, 11
A	Right	2	8, 9, 10, 11
B	Right	3	8, 9, 10, 11
B	Right	4	8, 9, 10, 11

Configuration and Management Software

There is one way to configure and manage a Sun StorEdge™ 3120 SCSI array:

Sun StorEdge Configuration Service (SSCS) Graphical User Interface

- This requires that an SSCS agent utility be loaded onto a Solaris™ Operating Environment server that is connected to a Sun StorEdge 3120 SCSI array that is to be managed/monitored.

- An SSCS console utility also needs to be loaded onto a Solaris Operating Environment workstation.

- From an SSCS console, the user can manage an X number of SSCS agents/Sun StorEdge 3120 SCSI arrays.

- SSCS agent/console utilities for the Solaris Operating Environment are included in the Sun StorEdge 3120 SCSI software CD shipping package.

- More details about SSCS are found in the sections below.
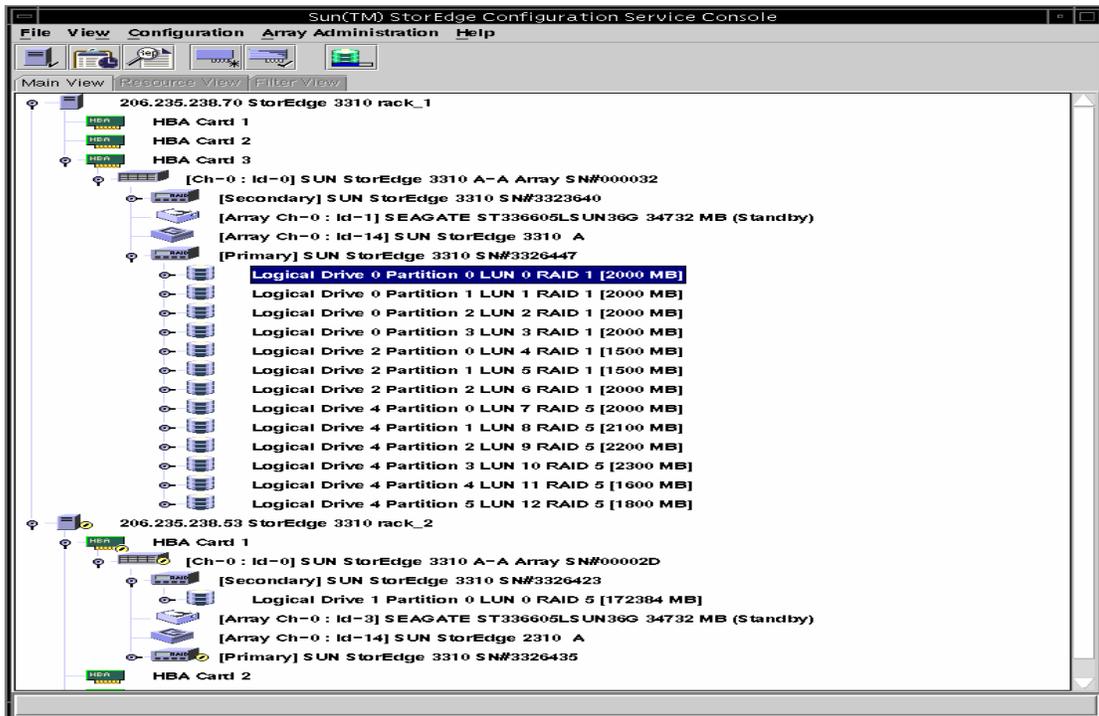
Figure 14. Sun StorEdge Configuration Service GUI
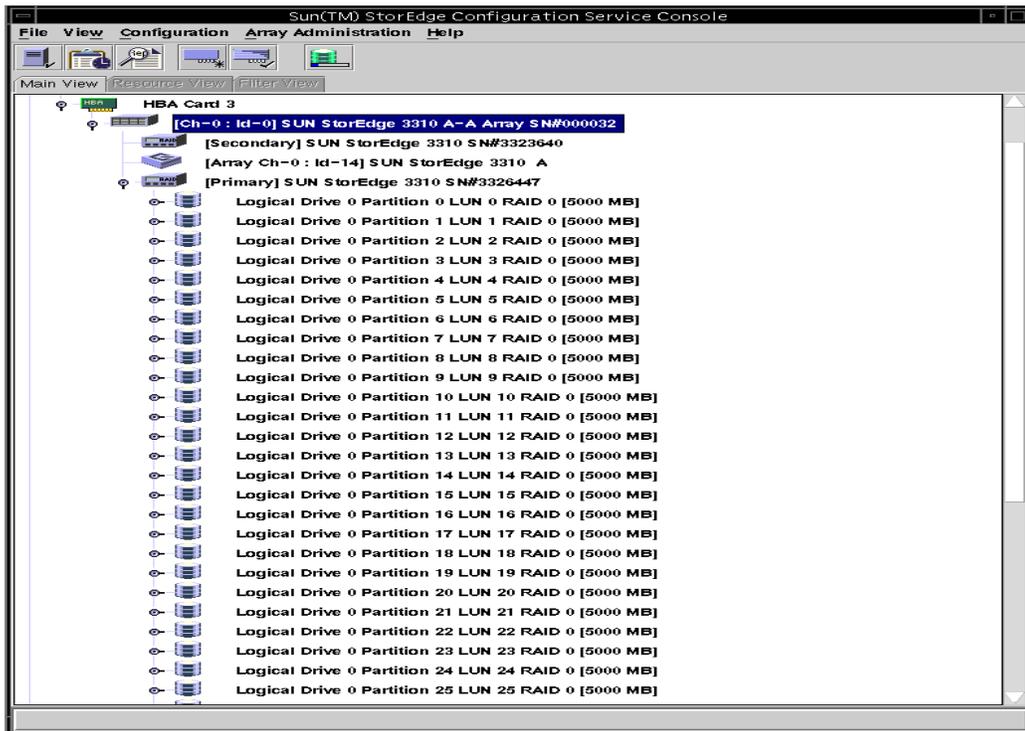
Web Browser

This method allows SSCS to be launched from a web browser (Netscape™ 4.7+). The functionality is the same as SSCS itself.

Figure 15. Sun StorEdge Configuration Service GUI, launched via web browser
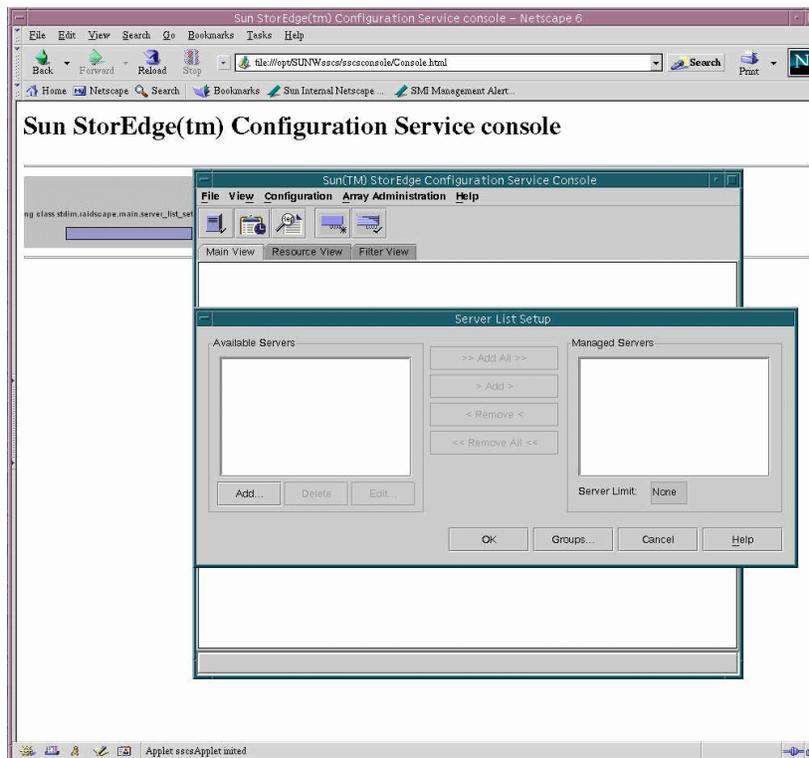
Figure 17. Sun StorEdge Configuration Service GUI, from web browser

Sun StorEdge Configuration Service Software

Sun StorEdge Configuration Service software is a Java™ technology-based software program that combines storage configuration, maintenance, and monitoring tools into a single, easy-to-use application. Sun StorEdge Configuration Service software provides centralized administration of Sun StorEdge 3120 SCSI storage systems across existing local and wide area networks. It greatly simplifies storage management and reduces its administration costs.

The Sun StorEdge Configuration Service software graphical interface uses intuitive controls and graphics to present configuration options, maintenance features, and status information for storage systems and servers. A color-coded design provides feedback and clear status information for each component. Critical conditions that require immediate attention are always easily identified and simple to locate. Configuration features and controls are well marked and operate smoothly. Sun StorEdge Configuration Service software is also very easy to learn through its use of familiar interface elements.

Sun StorEdge Configuration Service software provides complete monitoring of Sun StorEdge 3120 power supplies, disk drives, etc. From a single Sun StorEdge Configuration Service console located anywhere on a network, system administrators can view entire Sun StorEdge 3120 storage systems, change storage configurations, and monitor storage status. In the event of a status change, Sun's Diagnostic Reporter software sends real-time, proactive alerts to the system administrator via its console display, e-mail, or through an alphanumeric pager, allowing users to monitor the storage system remotely.

Storage setup and management is easy with Sun StorEdge Configuration Service software. Custom configuration options allow network administrators to configure parameters to meet particular server and application requirements. With Sun StorEdge Configuration Service's unsurpassed ease of use and attention to detail, even the most ambitious storage installations are simple to manage.

Configuration services features include the following:

- GUI based management and monitoring

- Phone home alert support (email alerts)

    −Defines the types of message traps sent, the timing of messages sent, forward encrypted messages, and receive messages on the Diagnostic Reporter which functions as an email viewing program.

    −Operates in background mode continuously on the computer where it is installed and also has a controlling Sun StorEdge Configuration Service Agent (a controlling agent is the only agent which talks to a specific array).

Event Notification

- Notification of temperature, fan, and power supply status

- Each FRU has a status LED

    −Provides easy identification of FRU status

    −Automatic awareness of FRU installation

- Audible alarm

CLI Functionality

The command line interface (CLI) provides limited commands over the Sun StorEdge 3120 array. These commands are discussed in this section. The most important function of the CLI is to download disk firmware.

Supported Command Modes

The CLI supports single command mode and prompting mode as shown in the following examples.

Type the entire command on the command line:

```
# sccli /dev/rdsk/c1t0d0s2 show events
```

Or specify the device on the command line:

```
# sccli /dev/rdsk/c1t0d0s2
sccli> show events
        :
sccli> quit
```

Or specify nothing on the command line:

```
# sccli
Available devices:
        1. /dev/rdsk/c1t0d0s2 [SUN StorEdge 3120 00028E]
        2. /dev/rdsk/c1t1d0s2 [SUN StorEdge 3120 00028F]
Enter selection: 1
sccli> show events
        :
sccli> quit
```

Accessing SCCLI Man Pages

To access the Man page for sccli without specifying environment variables, type

```
# man -M /opt/SUNWsscs/man sccli
```

To be able to type man **sccli** without specifying the man page directory each time, add the directory **/opt/SUNWsscs/man** to the colon-separated list of directories in the $MANPATH environment variable.

SCCLI Options and Subcommands

This section explains the device name, lists the options, and provides the available sccli subcommands along with sample code.

Note: To prevent unauthorized access, the sccli requires super user or system administrator privileges.

Specifying the Device Name

Except for the help command, all sccli subcommands require the specification of a device filename, typically specified as:

```
/dev/rdsk/cXtYdZs2
```

where

X = controller number

Y = scsi target number

Z = logical unit number

s2 = slice 2 of the (logical) disk. Usually, slice 2 is specified when identifying a disk for administrative purposes, but any slice number between 0 and 7 (if the slice exists) works.

Note: If no device is specified on the command line, and more than one Sun StorEdge 3120 array is connected to the host, a menu of devices is presented with one device filename for each array. If there is only one StorEdge 3120 device connected to the host, that device is selected automatically.

Options

-y, --yes

Assume a yes response to any yes/no prompts. This is used to allow particularly dangerous commands to be run from a script without prompting the user.

-n, --no

Assume a no response to any yes/no prompts.

```
-v, --version
```
Displays the version number of the sccli utility and exits without processing any subcommands.

```
-h, --help, --usage
```
Displays a usage message.

Options Usage

```
# sccli option device subcommand
```

Subcommands

Note: If no subcommand is entered on the command line, sccli enters an interactive mode, prompting the user to enter subcommands until the quit command is entered. All subcommands operate on the currently-selected device.

about

Displays version and copyright information.
```
# sccli device about
```

```
# sccli /dev/rdsk/c0t5d0s2 about
sccli version 1.0.2
Sun StorEdge 3000 Series command line interface
Copyright 2002 Dot Hill Systems Corporation
All rights reserved. Use is subject to license terms.
```

Caution: All download commands are potentially dangerous and should be used only as instructed.

download disk-firmware

Downloads disk driver firmware into disk drives connected to the Sun StorEdge array. If a disk-model string is specified, it is matched against SCSI INQUIRY data to determine which drives should be programmed.

When using this command:

*   I/O is interrupted.

Note: The option disk-model must be 16 characters. If it is less than 16 characters, a space must be inserted for each missing character up to 16 in between the quote marks. See the following code for an example.

```
# sccli device download disk-firmware filename disk-model
```

```
# sccli /dev/rdsk/c0t5d0s2 download disk-firmware st3366051.0538.fw
"ST336605LSUNS6G "
Controller is shutdown and entered into download mode
Start to send Disk Firmware data
Flashing firmware data, please wait...
Disk Firmware Download on Channel 0 Id 0 Completed
Disk Firmware Download on Channel 0 Id 1 Completed
```

```
Disk Firmware Download on Channel 0 Id 2 Completed
Disk Firmware Download on Channel 0 Id 3 Completed
Disk Firmware Download on Channel 0 Id 4 Completed
Disk Firmware Download on Channel 0 Id 5 Completed
Disk Firmware Download on Channel 0 Id 8 Completed
Disk Firmware Download on Channel 0 Id 9 Completed
Disk Firmware Download on Channel 0 Id 10 Completed
Disk Firmware Download on Channel 0 Id 11 Completed
Disk Firmware Download on Channel 0 Id 12 Completed
Disk Firmware Download on Channel 0 Id 13 Completed
Resetting controller...Done
```

download safte-firmware

Downloads firmware into the SAF-TE microprocessor in an LVD SCSI array enclosure controller.

When using this command:

• I/O is interrupted.

 # sccli *device* **download safte-firmware** *filename*

 # sccli */dev/rdsk/c0t5d0s2* download safte-firmware *saftefw.bin*
```
Controller is shut down and entered into download mode
Start to download firmware of SAFTE device modules
SAFTE Module EMU ENVIRONMENTAL Download on Channel 0 Id 14 OK!
SAFTE Module EMU ISEMS Download on Channel 0 Id 14 OK!
SAFTE Module EMU LED CONTROLLER Download on Channel 0 Id 14 OK!
SAFTE Module POWER SUPPLY CTRL Download on Channel 0 Id 14 OK!
SAFTE Module SAFTE HC11 Download on Channel 0 Id 14 OK!
Writing Safte FW Package 0.93 to target Channel 0 Id 14 OK!
Download SAFTE Firmware OK!
Safte Module Firmware Download on Channel 0 Id Completed
Resetting Controller...Done
```

help

Displays a short synopsis of available commands.

 # sccli help

inquiry

Displays SCSI INQUIRY data returned by the array controller. (Shortcut for show inquiry-data).

```
# sccli device inquiry
```

```
# sccli /dev/rdsk/c0t5d0s2 inquiry
Vendor: SUN
Product: StorEdge 3120
Revision: 0325
Vendor-specific S/N: 5E034B32-00
Peripheral Device Type: 0
Removable Media: no
Page 80 Serial Number: 00028E5E034B3200
Page 83 Logical Unit Device ID: 600C0FF00000000000028E5E034B3200
```

select

Select a new device to which subsequent commands are issued. If no device is specified, and more than one choice exists, a menu of choices is displayed.

```
sccli> select device
```

```
sccli> select /dev/rdsk/c0t5d0s2
sccli: selecting /dev/rdsk/c0t5d0s2 [SUN StorEdge 3120 00028E]
```

show inquiry-data

Displays the SCSI INQUIRY data returned by the array controller.

```
# sccli device show inquiry-data
```

```
# sccli /dev/rdsk/c0t5d0s2 show inquiry-data
Vendor: SUN
Product: StorEdge 3120
Revision: 0325
Vendor-specific S/N: 5E034B32-00
Peripheral Device Type: 0
Removable Media: no
Page 80 Serial Number: 00028E5E034B3200
Page 83 Logical Unit Device ID: 600C0FF00000000000028E5E034B3200
```

quit

Exits the interactive mode.

```
sccli> quit
```

Specifications

Physical Specifications

Description	U.S.	International
Height	1.75 inches	4.4 cm
Width	19.0 inches	48.2 cm
Depth	21.0 inches	53.3 cm
Weight (fully populated)	30.0 lb.	13.6 kg
Weight (with packaging)	40.6 lb.	18.4 kg

Heat and Air Flow

- Air flow for the Sun StorEdge 3120 SCSI Array is from front to rear.

- A fully populated array dissipates 341 BTUs per hour during normal operation.

Primary Input Voltage/Frequency Range

Input selection is automatic, and the power supply operates continuously over the required input range.

The AC power supply is capable of supplying full rated output power in the input voltage range of 90 VAC to 250VAC from a single phase source.

The following table shows input power at different voltages , 50Hz (worst case), and states of operation for 2 AC power supplies in Watts, Amps and BTUs :

Watts per Input Voltage / Frequency	Idle	Operating	Spin Up
90 VAC / 50Hz	89.1 Watts	100.8 Watts	230.4 Watts
115 VAC / 50Hz	88.5 Watts	100.5 Watts	216.2 Watts
264 VAC / 50Hz	97.6 Watts	108.2 Watts	211.2 Watts
Amps per Input Voltage / Frequency	Idle	Operating	Spin Up
90 VAC / 50Hz	0.99 Amps	1.12 Amps	2.56 Amps
115 VAC / 50Hz	0.77 Amps	0.87 Amps	1.88 Amps
264 VAC / 50Hz	0.37 Amps	0.41 Amps	0.80 Amps
BTUs per Input Voltage / Frequency	Idle	Operating	Spin Up
90 VAC / 50Hz	304 BTUs	344 BTUs	786 BTUs
115 VAC / 50Hz	302 BTUs	343 BTUs	738 BTUs
264 VAC / 50Hz	333 BTUs	369 BTUs	721 BTUs

The following table shows input power at 115 Volts, AC , 60Hz, and states of operation for 2 AC power supplies in Watts, Amps and BTUs :

Watts per Input Voltage / Frequency	Idle	Operating	Spin Up
115 VAC / 60Hz	88.55 Watts	100.5 Watts	243.8 Watts
Amps per Input Voltage / Frequency	Idle	Operating	Spin Up
115 VAC / 60Hz	0.77 Amps	0.87 Amps	2.12Amps
BTUs per Input Voltage / Frequency	Idle	Operating	Spin Up
115 VAC / 60Hz	302 BTUs	341BTUs	832 BTUs

AC Input Power

AC input power with both power supplies operating:

- Nominal input voltage: 100VAC to 240VAC

- Input voltage range: 90VAC to 250VAC

- Input frequency range: 47 Hz to 63 Hz

DC input Power

- Nominal input voltage: -48 or -60VDC

- Input voltage range: -36VDC to 75VDC

Power Cooling Unit

The power cooling unit (PCU) temperature threshold is 60 degrees C.

Environmental Specifications

Feature	Specifications
Temperature	
• Operating	5°C to 40°C (41°F to 104°F)
• Nonoperating	-40°C to 65°C (-40° F to 149°F)
Relative Humidity	
• Operating	10% to 90% relative humidity, 27°C max. wet bulb, non-condensing
• Nonoperating	93% relative humidity, 38°C max. wet bulb, non-condensing
Altitude	
• Operating	-30 m to 3048 m (-100 to 10,000 ft.)
• Nonoperating	-30 m to 12,192 m (-100 to 40,000 ft.)

Sun microsystems

Feature	Specifications
Shock	
• Operating	5.0 G, 11-ms, half-sine
• Nonoperating	15.0 G, 11-ms, half-sine
Vibration	
• Operating	0.20 G, 5 to 500 Hz, swept-sine
• Nonoperating	1.0 G, 5 to 500 Hz, swept-sine
Heat Output	341 BTUs/hr
Acoustical Noise	LWAD = 7.2Bels

Certifications and Regulations

Meets or exceeds the following requirements.

Standard	Specifications
Safety	UUL Listed UL 60950:2000, CSA-C22.2 No. 60950-00, EN 60950: 2000, IEC 60950, TUV, CB Scheme, GOST-R Mark; S-Mark; GS Mark
Emission	FCC Part 15 Class B, CISPR 22 55022:1998 Class B, ICES-003, VCCI Class B, EN AS/NZS 3548:1996, BSMI CNS 13438 Class B, S-Mark
Harmonics	IEC 61000-3-2:2000, IEC 61000-3-3:1995/A1:2001
Immunity	CSIPR 24 EN 55024
Certifications	NEBS Level 3 certified (GR-63-CORE; GR-1089-CORE), MIL-STD-810F, ETSI EN 300 386

Product Safety

Country	Standard
U.S.	UL Listed to UL60950:2000, 3rd Edition
Canada	CSA Standard CAN/CSA-C22.2 No. 60950-00 3rd Edition
Germany	TÜV; GS mark (ergonomics) (Rheinland)
European Union	EN60950:2000
Japan	Part of World-wide CB Scheme
China	CCC mark
Australia	Part of World-wide CB Scheme
Argentina	Resolution 92-98 (S-Mark)
Russia	Part of Worldwide CB Scheme (GOST-R mark); Hygienic Mark (ergonomics)

Electromagnetic Compatibility

Country	Standard
U.S.	FCC #47, Part 15, Subpart B, Class A (standalone minimum)
Canada	ICES-003
Japan	VCCI Class B
European Union, Germany	EN 55022:1998 Class B
Australia/New Zealand	AS/NZS 3548:1996
China	GB4943-1995, GB9254-1998, GB17625,1-1998 (CCC mark)
Korea	MIC Korea
Taiwan	BSMI CNS 13438 Class B (standalone minimum)
Russia	GOST-R mark
Argentina	S mark

Electromagnetic Interference

Test	Standard
Harmonics Emissions	EN 61000-3-2:2000 (No Limits)
Voltage Flicker	EN 61000-3-3:1995/A1:2001 (No Limits)
ESD	EN 55024 (8kV Contact, 15kV Air)
RF Field	EN 55024 (10V/m)
Electrical Fast Transient Burst	EN 55024 (1kV I/O, 2kV Power)
Surge	EN 55024 (1kV I/O, 1kV Power L-L, 2kV Power L-G)
RF Conducted	EN 55024 (3V I/O and Power)
Power Frequency Magnetic Field	EN 55024 (N/A monitors only)
Voltage Dip and Interruption	EN 55024 (0V/0.5cycle, 70%V/0.5sec, 0V/5sec)

Webdesk Ordering Flow Chart

The following is a text representation of Webdesk's GUI order flow for the Sun StorEdge 3120 SCSI array. Please visit WEBDESK directly for the most updated flow structure.

There are three URLs, depending on the geography

- AMER = http://webdesk.central
- APAC = http://webdesk.singapore
- EMEA = http://webdesk.holland

STEP 1:

Select 0 JBOD

Part Number Format Description

The basic system configuration can be determined from the components of each part number. Here is an example part number, with each component explained.

Example part number = XTA3120R01A0R292

X = X-option

T = Sun StorEdge product designator

A = Revision level

3120 = Model number

T = Physical configuration: T = tabletop, R = rack ready

01 = Number of arrays in a rack

A = Power supply: A = AC, D = DC

0 = Number of controllers per array: 0 = JBOD/Expansion

R = Drive size and rpm: R = 3.5-inch, 10000-rpm

436 = Capacity: 72 = 2 x 36-GB disks, 145 = 4 x 36-GB disks, 292 = 4 x 73-GB disks, 584 = 4 x 146-GB disks

Sun StorEdge 3120 SCSI Array JBOD AC Part Numbers

Part Number	Description
XTA3120R01A0S72	Sun StorEdge 3120 SCSI array, rack ready, 72 GB (2 x 36.4-GB 15000-rpm disks), Ultra320 SCSI-JBOD, and two AC power supplies
XTA3120R01A0S145	Sun StorEdge 3120 SCSI array, rack ready, 145 GB (4 x 36.4-GB 15000-rpm disks), Ultra320 SCSI-JBOD, and two AC power supplies
XTA3120R01A0T146	Sun StorEdge 3120 SCSI array, rack ready, 146 GB (2 x 73-GB 10000-rpm disks), Ultra320 SCSI-JBOD, and two AC power supplies
XTA3120R01A0T292	Sun StorEdge 3120 SCSI array, rack ready, 292 GB (4 x 73-GB 10000-rpm disks), Ultra320 SCSI-JBOD, and two AC power supplies
XTA3120R01A0V146	Sun StorEdge 3120 SCSI array, rack ready, 146 GB (2 x 73-GB 15000-rpm disks), Ultra320 SCSI-JBOD, and two AC power supplies
XTA3120R01A0V292	Sun StorEdge 3120 SCSI array, rack ready, 292 GB (4 x 73-GB 15000-rpm disks), Ultra320 SCSI-JBOD, and two AC power supplies
XTA3120R01A0U292	Sun StorEdge 3120 SCSI array, rack ready, 292 GB (2 x 146-GB 10000-rpm disks), Ultra320 SCSI-JBOD, and two AC power supplies
XTA3120R01A0U584	Sun StorEdge 3120 SCSI array, rack ready, 584 GB (4 x 146-GB 10000-rpm disks), Ultra320 SCSI-JBOD, and two AC power supplies

Sun StorEdge 3120 SCSI Array JBOD DC Part Numbers

Part Number	Description
XTA3120R01D0S72	Sun StorEdge 3120 SCSI array, rack ready, 72 GB (2 x 36.4-GB 15000-rpm disks), Ultra320 SCSI-JBOD, and two DC power supplies
XTA3120R01D0S145	Sun StorEdge 3120 SCSI array, rack ready, 145 GB (4 x 36.4-GB 15000-rpm disks), Ultra320 SCSI-JBOD, and two DC power supplies
XTA3120R01D0T146	Sun StorEdge 3120 SCSI array, rack ready, 146 GB (2 x 73-GB 10000-rpm disks), Ultra320 SCSI-JBOD, and two DC power supplies
XTA3120R01D0T292	Sun StorEdge 3120 SCSI array, rack ready, 292 GB (4 x 73-GB 10000-rpm disks), Ultra320 SCSI-JBOD, and two DC power supplies
XTA3120R01D0V146	Sun StorEdge 3120 SCSI array, rack ready, 146 GB (2 x 73-GB 15000-rpm disks), Ultra320 SCSI-JBOD, and two DC power supplies
XTA3120R01D0V292	Sun StorEdge 3120 SCSI array, rack ready, 292 GB (4 x 73-GB 15000-rpm disks), Ultra320 SCSI-JBOD, and two DC power supplies
XTA3120R01D0U292	Sun StorEdge 3120 SCSI array, rack ready, 292 GB (2 x 146-GB 10000-rpm disks), Ultra320 SCSI-JBOD, and two DC power supplies
XTA3120R01D0U584	Sun StorEdge 3120 SCSI array, rack ready, 584 GB (4 x 146-GB 10000-rpm disks), Ultra320 SCSI-JBOD, and two DC power supplies

Cables

The total length of all SCSI cables on any one bus should not exceed 12 meters (point-to-point). The customer must order VHDCI cables if needed. Available cables are listed in the table below.

Part Number	Description
X3831A	10-meter SCSI LVD cable, HD-68/VHDCI
X3830A	4-meter SCSI LVD cable, HD-68/VHDCI
X3832A	2-meter SCSI LVD cable, HD-68/VHDCI
X1135A	1.2-meter SCSI LVD cable, HD-68/VHDCI
X1132A	0.8-meter SCSI LVD cable, HD-68/VHDCI
X3831B	10-meter SCSI LVD cable, VHDCI/VHDCI

Part Number	Description
X3830B	4-meter SCSI LVD cable, VHDCI/VHDCI
X1138A	2-meter SCSI LVD cable, VHDCI/VHDCI
X1137A	1.2-meter SCSI LVD cable, VHDCI/VHDCI
X1136A	0.8-meter SCSI LVD cable, VHDCI/VHDCI

Options

The table below lists options available for the Sun StorEdge 3120 SCSI array.

Option Number	Description
XTA-SC1NC-146G10K	Drive in SE3000 carrier, 146GB 10K RPM, U320 SCSI LVD
XTA-SC1NC-36G15K	Drive in SE3000 carrier, 36GB 15K RPM, U320 SCSI LVD
XTA-SC1NC-73G10K	Drive in SE3000 carrier, 73GB 10K RPM, U320 SCSI LVD
XTA-SC1NC-73G15K	Drive in SE3000 carrier, 73GB 15K RPM, U320 SCSI LVD
XTA-3000-1URK-19U	Sun StorEdge ™ 3000 1U universal rack, sliding rail kit for 19" cabinet
XTA-3000-1URK-19C	Sun StorEdge ™ 3000 1U Telco center mount rack kit for 19" cabinet
XTA-3000-1URK-19F	Sun StorEdge ™ 3000 1U Telco front mount rack kit for 19" cabinet
XTA-3000-1UAC-KIT	1U AC Power Supply/Fan Module
XTA-3000-1UDC-KIT	1U DC Power Supply/Fan Module
X2222A[1]	Dual Ultra-2 SCSI/Dual Fast Ethernet PCI Adapter HBA
X4422A[1]	PCI Adapter w/2 GbE and 2 Ultra2LVD SCSI Interfaces
X6758A[1]	PCI Dual Channel Ultra160 LVD SCSI Host Adapter
X9265A[2]	Ultra320 SCSI Dual Channel PCI-X Host Adapter

Note 1 - HBA to be used with only Solaris 8 and 9

Note 2 - HBA can only be used with the Sun Fire V20z and Microsoft Windows 2000/2003 and Red Hat Linux AS 2.1/3.0

Configuration Guide

This section provides a summary of the configurations available for the Sun StorEdge 3120 SCSI array.

Feature	Sun StorEdge 3120 SCSI Array Specifications
Product Description	One Ultra320 SCSI External Storage array
Operating System Support	•Solaris 8/9 Operating Environment •Microsoft Windows 2000 and 2003 •Red Hat Linux AS 2.1 and 3.0 •Novell NetWare 5.1 and 6.5 •IBM AIX 5.1 •HP-UX 11i •SuSE Linux Enterprise Server 8 for x86
Disk Capacity/Types	•Ultra320 SCSI LVD 36-GB 15000-rpm, 1-inch (low profile) •Ultra320 SCSI LVD 73-GB 10000-rpm, 1-inch high (low Profile) •Ultra320 SCSI LVD 73-GB 15000-rpm, 1-inch (low profile) •Ultra320 SCSI LVD 146-GB 10000-rpm, 1-inch high (low Profile)
Number of Disks	•4 maximum per drive array •2 drive or 4 drive configurations • 64 per 72-inch Sun StorEdge cabinet (16 arrays)
Max. Raw Capacity	584 GB per drive array (4x146GB)

Feature	Sun StorEdge 3120 SCSI Array Specifications
Host Interface	Ultra320 SCSI LVD
Cluster Support	•Sun Cluster 3.0 •VERITAS Cluster (VCS) 3.2 and 3.5 •MS Cluster Service (MSCS) Windows 2000 Server, Windows 2003 Server
Dimension	Rack ready = H 1.75" x W 19.0" x D 21" (to back of power supply handle)
Footprint	1U high rack mount
Power Supplies	Two hot-swap/redundant, AC or DC option
Warranty	2-year: First year – Second business day on-site Second year – 15-day parts exchange
Host Bus Adapter Options	Solaris 8 and 9: X6758A = PCI Ultra160 SCSI host adapter X2222A = Dual Ultra-2 SCSI/Dual Fast Ethernet PCI Adapter HBA X4422A = PCI Adapter w/2 GbE and 2 Ultra2 LVD SCSI I/F Microsoft Windows 2000 and 2003, Red Hat Linux AS 2.1 and 3.0: X9265A = Ultra320 SCSI Dual Channel PCI-X Host Adapter HP-UX 11i: HP A6829A = HP Ultra 160 SCSI Adapter IBM AIX 5.1: LSI SYM53C1010 = Dual Channel PCI Ultra3 SCSI Adapter
Cable Options (VHDCI to VHDCI)	SCSI LVD cables, VHDCI to VHDCI •X3831B = 10-meter cable •X3830B = 4-meter cable •X1138A = 2-meter cable •X1137A = 1.2-meter cable •X1136A = 0.8-meter cable
Cable Options (HD-68 to VHDCI)	SCSI LVD cables, HD-68 to VHDCI •X3831A = 10-meter cable •X3830A = 4-meter cable •X3832A = 2-meter cable •X1135A = 1.2-meter cable •X1132A = 0.8-meter cable

Frequently Asked Questions

This section summarizes some of the most frequently asked questions for the Sun StorEdge™ 3120 array. Additional details can be found throughout this JTF document.

Question 1. What does the Sun StorEdge 3120 SCSI array ship with?

A. Aside from the associated configuration specific components, (# of HDDs, # of controllers, etc.) here are some important notes regarding the Sun StorEdge 3120 SCSI array:

1. All Sun StorEdge 3120 SCSI array configurations ship with documentation on a CD. There is NO hard copy documentation.

2. All Sun StorEdge 3120 SCSI array configurations ship with dual redundant power supplies standard. Customers can order either AC or DC equipped versions.

3. All Sun StorEdge 3120 SCSI array configurations ship with the nameplate "Sun StorEdge 3100" affixed on the front bezel.

4. For 2-drive configurations of the Sun StorEdge 3120 SCSI array, 2 corresponding drive carriers are included installed with the drives in the array. The remaining two empty drive bays do NOT come with empty drive carriers. These empty drive bays are populated with air management sleds. Customers can purchase additional Sun StorEdge 3120 SCSI array specific X option drives, which do come with drive carriers.

5. The Sun StorEdge 3120 SCSI array drive carriers are UNIQUE. The drive carriers for other storage products (T3, A/D1000, D2, etc.) CANNOT be used in the Sun StorEdge 3120 SCSI array.

6. All Sun StorEdge 3120 SCSI array configurations ship with a cable that enables the array to be configured for single or dual SCSI bus operation.

Question 2. Do the rack-ready configurations come with rackmount rail-kits?

A. Rack-ready configurations of the Sun StorEdge 3120 SCSI array do NOT come with any rack mount rail kits. Customers need to order one of the following, depending on their needs:

- *XTA-3000-1URK-19U Universal Rail Kit for Sun Racks and industry standard 19" RETMA racks*
- *XTA-3000-1URK-19C 19" TELCO rack, center mount rail kit*
- *XTA-3000-1URK-19F 19" TELCO rack, front mount rail kit*

Question 3. How many host connections are supported for a single or split bus configuration?

A. Four configurations are supported in either single or split bus configurations:
- Split Bus - 2 JBOD - 1 Host – 8 drives total
- Single Bus - 2 JBOD - 1 Host – 8 drives total
- Split Bus - 1 JBOD - 2 Hosts – 4 drives total
- Single Bus - 1 JBOD - 2 Hosts – 4 drives total

Question 4. What are the hot-swappable components contained in the Sun StorEdge 3120 SCSI Array?

A. The disk drive sled assemblies and power supply/fan assemblies are all hot-swappable, field-replaceable units (FRUs). All FRUs are accessible from the front or rear of the array.

Question 5. How can I purchase extra AC power supplies?

A. Please order P/N: XTA-3000-1UAC-KIT: 1U AC Power Supply/Fan Module

Question 6. What is the maximum point-to-point cable length for the Sun StorEdge 3120 on any one bus?

A. 10 meters point-to-point.

Question 7. Can a single power supply power up and support a fully populated array?

A. Yes, it can. However, there is a risk of significant downtime if that single power supply fails.

Question 8. Are the fan modules a different FRU (Field replaceable unit)?

A. No, the fan modules are incorporated into the power supply FRUs.

Question 9. How many agents (servers attached to Sun StorEdge 3120 array) can a single Sun StorEdge Configuration Server Console manage?

A. There is no limit to the number of servers it can manage.

Question 10. How many power supply inputs are there for each power supply module?

A. Each power supply module has one power supply input.

Question 11. How many hosts can a SE3120 support simultaneously?

A. The Sun StorEdge 3120 array supports up to two hosts simultaneously.

Question 12. Can AC-powered versions of the Sun StorEdge 3120 be converted to DC-powered?

A. Yes, users can convert the AC-powered Sun StorEdge 3120 SCSI arrays to DC power using the conversion kit, XTA-3000-1UDC-KIT.

Warranty

The Sun StorEdge™ 3120 SCSI array comes with a 2-year warranty: 1st year, second business day, on-site. 2nd year, 15-day parts exchange.

Support Contracts

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.

SunSpectrum program support contracts are available both during and after the warranty program. Customers may choose to uplift the service and support agreement to meet their business needs by purchasing a SunSpectrum contract. For more information on the SunSpectrum program offerings refer to the following URL:

```
http://service.central/TS/ESP/SunSpectrum/Feature_Matrix/index.html.
```

The four levels of SunSpectrum support contracts are outlined below.

SunSpectrum Program Support

Program	Description
Mission-Critical SunSpectrum Platinum℠ Support	Designed to support client-server, mission critical solutions by focusing on failure prevention, rapid recovery and year round technical services planning. Support is provided 24 x 7.
Business-Critical SunSpectrum Gold℠ Support	Includes a complete package of proactive and responsive services for customers who require maximum uptime for their strategic business-critical systems. Support is provided 24 x 7.
System Coverage SunSpectrum Silver℠ Support	Combines the service expertise, responsive on-site support and technical support by telephone and SunSolve™ CD/on-line services. Support is provided 8 a.m. to 8 p.m. Mon. through Fri.
Self-Directed SunSpectrum Bronze℠ Support	Provided for customers who rely primarily upon their own in-house service capabilities. Enables customers to deliver high quality service by giving them access to UNIX® expertise, Sun certified replacement parts, software releases and technical tools. Support is provided 8 a.m. to 5 p.m. Mon. through Fri.

Professional Services

Sun StorEdge Array Installation Service

This service includes site preparation review, installation planning, installation, configuration verification, and system turnover for one Sun StorEdge SE3120 array product. The specific tasks and deliverables included in this service are:

- Site preparation review including environmental states.

- On-site installation planning including schedule and resources.

- Development of System Installation Specification including RAID characteristics and recommendations.

- Verify supported configuration and customer sign-off to start installation.

- Installation of array hardware and cabling.

- Installation of array software and patches.

- Configuration and customization of the array including RAID levels and logical volumes.

- Verification of installation and array functionality.

- System turnover.

Glossary

Active Termination, Regulated	Terminates the SCSI bus with a series of resistors tied to +5 volts. The terminator is labeled Regulated but is often referred to as an Active Terminator.
Bandwidth	A measure of the capacity of a communication channel, usually specified in MB/second.
Cache	Memory on the RAID controller card which permits intermediate storage of read and write data without physically reading/writing from/to the disk, which can increase overall performance under certain conditions.
CLI	Command line interface.
Concatenated Channel	Inside the same drive array enclosure, a single contiguous drive channel supporting 12 drives concurrently
Device Name	Software device address that identifies the controller/LUN, such as cXtYdZs0, where X is the host bus adapter, Y is the controller, and Z is the LUN. s0 slice number is used by the system, not by RAID Manager.
Disk Array	Two or more drives configured as a Drive Group (see next).
Drive Group	A physical set of drives configured as an array. Drive groups are defined during configuration.
Expansion Drive Array	An enclosure containing a group of drives, power supplies, cooling fans, I/O cards, and midplanes (no RAID controller/controllers); generally, an external drive array that is used to daisy-chain to an existing hardware-based RAID configuration.
Fast Write	Allows disk write commands to be safely acknowledged to the host before the data is actually written to the disk media. This can be enabled/disabled through the storage management software.
Fast/wide SCSI	Data transfer rate of 20 MB/sec. Wide devices can be connected to a standard SCSI interface but the extra data lines need to be terminated.
Full-Duplex	Data transmission in both directions at the same time. See also Half-duplex and Simplex.
Half-Duplex	Refers to an interface, such as SCSI, that can transmit data in only one direction at a time. See also Full-duplex and Simplex.
Host Bus Adapter	A card that connects a peripheral device to the computer system's I/O bus.
Hot Plug	The ability to remove, replace, or add a device while current I/O processes continue.
Hot-serviceable	The ability to remove, replace or add a device while power is still applied but all I/O processes are suspended.
Hot Spare or Hot Sparing	A drive in an array that is held in reserve to replace any other drive that fails. After a reconstruction, the hot-spare drive is returned to the standby status.
Hot-swap or Hot-swappable	A specific case of hot-plug which involves replacing a device with another of the same size, type, and layout, without any notification to the operating environment.
IOPS	Input/output operations per second. A measure of I/O performance, this is usually used to quote random I/O performance. See throughput.
JBOD	Just a Bunch Of Disks. JBOD refers to a group of drives without an embedded RAID controller; generally, such a group is used without RAID formatting, with a host-based hardware RAID controller, or with RAID formatting from host software (with no hardware-base RAID controller)

LUN	Logical unit number. A LUN is a set of physical drives in a RAID configuration which are seen by the operating system as one virtual drive.
MTBF	Mean time between failures. A measure of reliability, this is the average expected time between failures of equipment, usually measured in operating hours.
MTBDL	Mean time between data loss. In a RAID system, this is the average expected time between two rapid disk failures that would cause irreparable data loss.
MTTR	Mean time to repair. A measure of availability, this is the average time the system is out of commission to complete a repair process.
Parity	Additional information stored along with the data that allows the controller to reconstruct lost data on RAID 3 or 5 LUNs if a single drive fails.
Reconstruction	Process used to restore a degraded RAID 1, 3, or 5 LUN to its original state after replacing a single failed drive.
RDAC	Redundant disk array controller. The RDAC driver is included in the RAID Manager software, and manages the rerouting of active I/O operations when a controller fails.
RAID	Redundant Array of Independent Disks. A RAID is a set of disk drives appearing as a single logical disk drive to a system host. Different RAID levels provide different capacity, performance, availability, and cost characteristics.
RAID Controller Drive Array	An enclosure containing one or two RAID controllers, a group of drives, power supplies, cooling fans, I/O cards, and midplanes.
RAS	Reliability, availability, and serviceability. Features that enhance these attributes, including hot-pluggable capability and redundancy, are important for keeping mission-critical applications and data on-line.
SAF-TE	SCSI Accessed Fault-Tolerant Enclosures.
SCA	Single connector attachment. A SCSI disk connector technology co-invented by Sun Microsystems. The SCA provides all SCSI, power, and control signals in a single connector, and enables easy servicing and highly reliable, pluggable disk drives.
SCSI Address	The octal representation of the unique address (0–7) assigned to a narrow device; or hex representation of the unique address (0–15) assigned to a wide SCSI device.
Simplex	Transmission in one preassigned direction only. See also Full-duplex and Half-duplex.
SNMP	Simple network management protocol. SNMP enables RAID events to be remotely monitored by designated network management stations.
Split Channel	Inside the same drive array enclosure, when the drive channel is evenly divided into two separate channels; for example, when a 12-drive channel is cleaved into two independent channels
Striping	Spreading, or interleaving, logically contiguous blocks of data across multiple independent disk spindles. The amount of data written on each disk before moving to the next drive is the stripe width.
Throughput	A measure of sequential I/O performance, quoted in MB/sec. See IOPS.

Volume	In VERITAS Volume Manager software, a volume is a virtual disk partition into which a file system, DBMS, or other application can place data. A volume can physically be a single disk partition or multiple disk partitions on one or more physical disk drives. Applications that use volumes do not need to be aware of their underlying physical structure. The VERITAS Volume Manager software handles mapping of virtual partition addresses to physical addresses.
Warm Plug	The ability to remove, replace or add a device while power is still applied but all I/O processes are suspended.
Ultra320 SCSI LVD	Ultra 3 SCSI command set plus a raw data rate of 160 MB/sec. plus the ability to connect up to a distance of 12m (Low Voltage Differential)
XOR	eXclusive OR. A binary mathematical operation performed on data to produce parity information. In RAID levels 3 and 5, parity is generated from the user data, stored, and used to regenerate lost data if a drive failure occurs.

Materials Abstract

All materials are available on SunWIN, except where noted otherwise.

Collateral	Description	Purpose	Distribution	Token # or COMAC Order #
Product Literature				
–Sun StorEdge 3000 SCSI Arrays Customer Presentation	Customer Presentation and Slide Notes	Sales Tool	SunWIN, Reseller Web	350982
–Sun StorEdge 3000 SCSI Arrays Technical Presentation	Customer Presentation and Slide Notes	Sales Tool	SunWIN, Reseller Web	361210
–Sun StorEdge 3120 Array Data Sheet	Two-page Color Data Sheet	Sales Tool	SunWIN, Reseller Web, COMAC	406137
–Sun StorEdge 3120 Array Pocket Facts	Quick Reference Card	Sales Tool	SunWIN, First Resort, Reseller Web	407082
–Sun StorEdge 3120 Array What Works With What	WWWW Matrix	Sales Tool	SunWIN, First Resort, Reseller Web	407322
External Web Sites				
–Sun StorEdge Array Information Site	`http://www.sun.com/storage/workgroup/3000/3100/3120scsi/`			
–Technical Documentation	`http://www.sun.com/products_n_solutions/hardware/docs`			
–Upgrades Information	`http://www.sun.com/ibb`			
Internal Web Sites				
–Storage Products Business Unit Web Site	`http://webhome.ebay/networkstorage/products/`			
–Specifications Sheet	`http://webhome.east/workgroupserverstorage/Carmel_ESM_Spec.pdf`			
–Upgrades Information	`http://ibb.eng/upgrades`			