Sun StorEdge™ SAN Foundation Software 4.2 Release Notes

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Part No. 817-1246-11
July 2003, Revision A

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Contents

Contents i

Tables iii

Sun StorEdge SAN 4.2 Foundation Software Release Notes 1

Product Changes 1

Software Requirements 6

- Supported Hardware 6
  - Storage Devices 6
  - Server Configurations 9
- Operating Environment and Firmware Guidelines 10
  - Operating Environments Supported 10
  - Host Bus Adapter Firmware Requirements 10
  - Storage Device Firmware Levels 11
  - Switch Firmware Requirements 13

Bugs 14

Release Documentation 16

- Documentation Updates 16

Service Contact Information 16

Tables

TABLE 1 Comparison of the SAN 3.*x* and SAN 4.*x* Releases 2

TABLE 2 Sun StorEdge SAN Foundation Software Supported Hardware Matrix 7

TABLE 3 Sun StorEdge SAN Foundation Software Server Compatibility Matrix 9

TABLE 4 Sun StorEdge SAN Foundation Software Operating Environment Compatibility Matrix 10

TABLE 5 Sun StorEdge SAN Foundation Software HBA Firmware Matrix 10

TABLE 6 Sun StorEdge SAN Foundation Software Storage Device Firmware Matrix 11

TABLE 7 Sun StorEdge SAN Foundation Software Switch Firmware Matrix 13

TABLE 8 Updates to the *Sun StorEdge SAN Foundation Software 4.2 Configuration Guide* 16

Sun StorEdge SAN 4.2 Foundation Software Release Notes

This document contains the following topics:

- "Product Changes" on page 1
- "Software Requirements" on page 6
- "Bugs" on page 14
- "Release Documentation" on page 16
- "Service Contact Information" on page 16

Product Changes

The primary difference between the 3.x and 4.x releases is the migration from 1-Gb to 2-Gb switches. You now have more freedom to build more robust SANs with a greater variety of hardware devices and fewer configuration restrictions.

Some features and functions included in the Sun StorEdge 3.x release were carried over to the Sun StorEdge 4.x release, and others were not. The Sun StorEdge 4.x releases also added several new features. TABLE 1 compares the features and functionality between the SAN StorEdge 3.x and 4.x releases.

TABLE 1 Comparison of the SAN 3.*x* and SAN 4.*x* Releases

Feature	SAN 3.*x* Features Not Supported in SAN 4.*x*	SAN 3.x Features Included In SAN 4.*x*	SAN 4.*x* Features
Supported Configurations	Cascaded configurations limited to three linear connected switches, or two ISL links between switches.	N/A	Cascaded configuration limit increased to as many as eight linear connected switches, or seven ISL links between switches for Brocade and Sun switches. Two of the ISL links can use long-wave transceivers and cables. Configurations support up to 239 switches. Check with the vendor-specific switch documentation for details.
	SAN configurations limited to single-switch or simple cascades.	Support for local host and storage device attachment with short- or long-wave cables and transceivers for disaster tolerant configurations.	SAN configuration restrictions lifted. Meshes and other configurations are now possible.
	Limited partial fabric supported for connections between hosts and switches.	N/A	Full fabric support for connections between storage devices, hosts and switches.

TABLE 1 Comparison of the SAN 3.*x* and SAN 4.*x* Releases *(Continued)*

Feature	SAN 3.*x* Features Not Supported in SAN 4.*x*	SAN 3.x Features Included In SAN 4.*x*	SAN 4.*x* Features
Ports and Zones	Configurations limited to use of Segmented Loop (SL) or Name Server (NS) port-based zoning.	Port-based zoning supported for fabric capability.	WWN-based zoning supported for interoperability mode among FC-SW2 standard compliant switches.
	N / A	Overlapping port-based NS zones supported.	WWN-based zones supported on all switches.
	Nested port-based zoning supported.	N / A	Nested zoning, or placing zones inside zones, is supported but not required.
	Hard zones supported.	N / A	N / A
	SL port connections to arrays supported.	TL port connections to the Sun StorEdge T3 and T3+ arrays supported for fibre channel-arbitrated loop and fabric configurations.	G and GL ports supported for connections to arrays. (G and GL ports automatically negotiate in inter-switch connections to E ports. TL ports should be manually configured for loop connections to storage devices.)
	T ports used to connect switches.	N / A	E ports replace T ports for large switch-to-switch connections.
ISLs	N / A	Short- and long-wave cables and transceivers supported.	Same.
	Long-wave only 1-Gbit GBICs supported for connectivity.	N / A	Long-wave and short-wave Small Form-factor Plugable (SFP) 2-Gbit transceivers replace GBICs.
	Long-wave only SC-SC cables supported.	Long-wave and short-wave SC cables supported.	Long-wave and short-wave SC-SC, SC-LC, and LC-LC cables supported.

TABLE 1 Comparison of the SAN 3.*x* and SAN 4.*x* Releases *(Continued)*

Feature	SAN 3.*x* Features Not Supported in SAN 4.*x*	SAN 3.x Features Included In SAN 4.*x*	SAN 4.*x* Features
Supported Switches	Switch hardware limited to Sun 1-Gbit 8- and 16-port switches. • Sun Network 1 Gb FC switch-8 • Sun Network 1 Gb FC switch-16	SAN 3.0 switches can be upgraded with the SAN 4.0 firmware. If you do not upgrade the firmware, the 1-Gbit switches can exist on the same host as the 2-Gbit switches, but they can not connect to each other.	New 2-Gbit switches introduced: • Sun StorEdge Network Brocade SilkWorm 2 Gb 3200, 3800, 3900, and 12000 switches • Sun StorEdge Network 2 Gb McDATA Sphereon 4500 switch • Sun StorEdge Network 2 Gb McDATA 6064/6164 Intrepid switch
Tools	SANbox switch management application manages the 1-Gbit switches with old firmware only.	N/A	New switch management tools are available. See the vendor-specific documentation for details.
	N/A	Multipathing and load balancing supported with the Sun StorEdge Traffic Manager application.	Multipathing and load balancing through the Sun StorEdge Traffic Manager application with SunCluster 3.0 or VERITAS Cluster Server.
Bootability	Loop boot only.	Loop boot only.	Bootability from both fabric and non-fabric devices on a SAN is supported.
HBAs	N/A	1-Gbit HBAs supported include: • Sun StorEdge PCI Dual Fibre Channel Network Adapter • Sun StorEdge PCI Single Fibre Channel Network Adapter, • Sun StorEdge CPCI Dual Fibre Channel Network Adapter • Sun StorEdge SBus Dual Fibre Channel Network Adapter	Newly supported host bus adapters include: • Sun Sun StorEdge 2G FC PCI Single Channel Network Adapter card • Sun StorEdge 2G FC PCI Dual Channel Network Adapter card

TABLE 1 Comparison of the SAN 3.*x* and SAN 4.*x* Releases *(Continued)*

Feature	SAN 3.*x* Features Not Supported in SAN 4.*x*	SAN 3.x Features Included In SAN 4.*x*	SAN 4.*x* Features
Supported Storage Devices	Sun StorEdge A5200 and A3500FC arrays supported.	Sun StorEdge T3 and T3+ arrays supported.	New Sun StorEdge T3+ array firmware is supported. The following storage devices are supported: • Sun StorEdge 3510 arrays • Sun StorEdge 39x0 storage series • Sun StorEdge 6120 and 6320 arrays • Sun StorEdge 69x0 series • Sun StorEdge 99x0 series The following tape drives are supported: • Sun StorEdge L180 tape drive • Sun StorEdge L700 tape drive • Sun StorEdge L5500 tape drive • Sun StorEdge 600 tape drive • Sun StorEdge 9840b tape drive • Sun StorEdge 9840b tape drive • StorageTek 9940b tape drive • LTO Gen 2 Fibre channel tape drive
Switch Standards Compliance	N / A	N / A	Interoperability compliance with FC-SW2 mode on the new switches.
	N / A	N / A	Sun switches now support FC-SW2 compliant 1 Gb and 2 Gb ISLs.

Software Requirements

The Sun StorEdge SAN 4.2 Foundation software supports various servers, adapters, and storage devices. This section contains the following topics:

- "Supported Hardware" on page 6
- "Operating Environment and Firmware Guidelines" on page 10

Supported Hardware

This section contains the following topics on hardware supported in the Sun StorEdge SAN Foundation software release 4.2:

- "Storage Devices" on page 6
- "Server Configurations" on page 9

Storage Devices

The switches and drivers in the SAN Foundation software function with the following fabric-capable storage devices:

- Sun StorEdge T3 andT3+ arrays
- Sun StorEdge 3510 arrays
- Sun StorEdge 39*x*0 series
- Sun StorEdge 6120 and 6320 arrays
- Sun StorEdge 69*x*0 series
- Sun StorEdge 99x0 series
- Sun StorEdge 9840b FC tape drive for the L180, L700, L5500 and L6000 tape libraries
- Sun StorEdge 9940b FC tape drive for the L700, L5500 and L6000 tape libraries

The Sun StorEdge SAN Foundation software obsoletes some older hardware, such as the Sun StorEdge A3500 and the A5x00, as well as some FC tape drives. Hardware components and the part numbers on the Sun price list that the switch supports are listed in TABLE 2. Check with your service representative for updates to this list.

TABLE 2 Sun StorEdge SAN Foundation Software Supported Hardware Matrix

Model, Part Number or System Code	Description
T3BES, T3BWG	Sun StorEdge T3 and T3+ arrays
3510	Sun StorEdge 3310 and 3510 arrays
3910, 3960	Sun StorEdge 39x0 storage series
6120, 6320	Sun StorEdge 6120 and 6320 arrays
6910, 6960	Sun StorEdge 69x0 storage series
9910, 9960, 9970, 9980	Sun StorEdge 99x0 storage series
SG-XTAP9840FC-DRV	Sun StorEdge 9840A tape drive for the Sun StorEdge L180/L700 tape libraries
SG-XTAP9840BFC-DRV	Sun StorEdge 9840b tape drive for the Sun StorEdge L180/L700 tape libraries
SG-XL6000-9840FC	Sun StorEdge 9840A tape drive for the Sun StorEdge L5500/L6000 tape libraries
SG-XL5500-9840BFC	Sun StorEdge 9840b tape drive for the Sun StorEdge L5500/L6000 tape libraries
SG-XL5500-9940BFCI	Sun StorEdge 9940b tape drive for the Sun StorEdge L700 and L5500/L6000 tape libraries
X6799A	Sun StorEdge PCI Single Fibre Channel Network Adapter
X6727A	Sun StorEdge PCI Dual Fibre Channel Network Adapter
X6748A	Sun StorEdge CPCI Dual Fibre Channel Network Adapter
X6757A	Sun StorEdge SBus Dual Fibre Channel Host Bus adapter
X6767A	Sun StorEdge 2G FC PCI Single Channel Network Adapter
X6768A	Sun StorEdge 2G FC PCI Dual Channel Network Adapter
XSFP-SW-2Gb	Short-wave SFP
XSFP-LW-2Gb	Long-wave SFP (up to 10 km with no modifications to the switch)*
x973A	Two-meter fiber-optic cable (SC-SC)
x9715A	Five-meter fiber-optic cable (SC-SC)
X978A	15-meter fiber-optic cable (SC-SC)
X9720A	SC-SC cable coupler
X9721A	0.4 meter fiber cable (LC-SC)

TABLE 2 Sun StorEdge SAN Foundation Software Supported Hardware Matrix *(Continued)*

Model, Part Number or System Code	Description
X9722A	two-meter fiber cable (LC-SC)
X9723A	five-meter fiber cable (LC-SC)
X9724A	15-meter fiber cable (LC-SC)
X9732a	two-meter fiber cable (LC-LC)
X9733a	five-meter fiber cable (LC-LC)
X9734a	15-meter fiber cable (LC-LC)

* Use long-wave SFPs and fibre cables to cascade more than 500 meters in 1-Gbit mode or 300 meters in 2-Gbit mode.

Server Configurations

TABLE 3 outlines which servers, bus types, HBAs, physical connections and software patches and packages are required for the SAN Foundation software.

TABLE 3 Sun StorEdge SAN Foundation Software Server Compatibility Matrix

Server	Bus Architecture	HBAs	Physical Connection	Required Sun Software Packages and Patches
Sun Enterprise 3x00 - 6x00, and 10000 servers	SBus	X6757A*	1-Gbit FC	Sun StorEdge SAN Foundation Software 4.2 or later with the following unbundled packages: • SUNWsan • SUNWcfpl • SUNWcfplx • SUNWcfclr • SUNWcfcl • SUNWcfclx • SUNWfchbr • SUNWfchba • SUNWfchbx • SUNWfcsm • SUNWfcsmx found at the Download Center: http://www.sun.com/storage To find all required patches: http://sunsolve.Sun.COM/ → Product Patches → PatchPro: • → Network Storage Products and • → Solaris Recommended Patch Cluster Describe your system, then click Generate Patch List.
	PCI	X6799A† X6727A‡	1-Gbit FC	
	PCI	X6767A§ X6768A**	2-Gbit FC	
Sun Fire 3800 server	cPCI	X6748A††	1-Gbit FC	
Sun Fire 4800—6800 server	cPCI	X6748A	1-Gbit FC	
	PCI	X6799A X6727A	1-Gbit FC	
		X6767A X6768A	2-Gbit FC	
• SunBlade 1000 and 2000 servers • Sun Enterprise 250, 450, 220, 420 servers • Sun Fire V210, V240, 280R, 480, V880, V1280, 15000 and 12000 servers • Sun Netra 1125 and 140X servers • Sun Ultra 60/80 servers	PCI	X6799A X6727A	1-Gbit FC	
		X6767A X6768A	2-Gbit FC	

* Sun StorEdge SBus Dual Fibre Channel Host Bus Adapter

† Sun StorEdge PCI Single Fibre Channel Network Adapter

‡ Sun StorEdge PCI Dual Fibre Channel Network Adapter+

§ Sun StorEdge 2G FC PCI Single Channel Network Adapter

** Sun StorEdge 2G FC PCI Dual Channel Network Adapter

††Sun StorEdge cPCI Dual Fibre Channel Network Adapter

Operating Environment and Firmware Guidelines

This section outlines operating environments and host configurations for the SAN Foundation software.

- "Operating Environments Supported" on page 10
- "Host Bus Adapter Firmware Requirements" on page 10
- "Storage Device Firmware Levels" on page 11
- "Switch Firmware Requirements" on page 13

Operating Environments Supported

TABLE 4 lists which SAN versions run on various Solaris operating environments.

TABLE 4 Sun StorEdge SAN Foundation Software Operating Environment Compatibility Matrix

Operating Environment	Version	Notes
Sun Solaris 2.6		Not supported
Sun Solaris 7		Not supported
Sun Solaris 8	Update 04/01 or later	Supported
Sun Solaris 9		Supported

All Solaris hosts in a zone must be running the Solaris 8 release update 4 or later operating environment with all appropriate patches installed. You can download the patches from the following web site:

`http://sunsolve.Sun.COM/pub-cgi/show.pl?target=patches/patch-access`

Host Bus Adapter Firmware Requirements

TABLE 5 lists the firmware versions required for various HBAs and I/O boards. Use the patch id's below to ensure fabric boot support with a switch port set to F-port.

TABLE 5 Sun StorEdge SAN Foundation Software HBA Firmware Matrix

FW-Code Levels for HBAs and I/O Boards	Version	Patch
X6757A, Sun StorEdge SBus Dual Fibre Channel Host Bus Adapter	1.14 or higher	`112244-03`
X6799A, Sun StorEdge PCI Single Fibre Channel Network Adapter	1.14 or higher	`111853-02`

TABLE 5 Sun StorEdge SAN Foundation Software HBA Firmware Matrix *(Continued)*

X6727A, Sun StorEdge PCI Dual Fibre Channel Network Adapter+	1.14 or higher	111853-02
X6767A, Sun StorEdge 2G FC PCI Single Channel Network Adapter	1.14.01 or higher	114873-01
X6768A, Sun StorEdge 2G FC PCI Dual Channel Network Adapter	1.14.01 or higher	114874-01
X6748A, Sun StorEdge cPCI Dual Fibre Channel Network Adapter	1.14 or higher	111853-02

Storage Device Firmware Levels

TABLE 6 lists firmware levels requirements for supported storage devices.

TABLE 6 Sun StorEdge SAN Foundation Software Storage Device Firmware Matrix

Storage Devices	Firmware Version	Notes
Sun StorEdge T3 array	1.18.02 or later controller firmware	Requires translated loop (TL) switch mode
Sun StorEdge T3+ array	2.01.04 or later controller firmware	Requires TL or fabric switch mode
Sun StorEdge 3510 arrays	3.27M or later	Requires fabric (F) or fabric loop (FL)
Sun StorEdge 39x0 array	2.01.04 or later controller firmware	Requires fabric switch mode
Sun StorEdge 6120/6320 arrays	3.0.5 or later	
Sun StorEdge 69x0 array	service processor 2.3.1 or later	Requires switch hardware or firmware upgrade to use SFS capabilities.
Sun StorEdge 9910/9960 arrays	01-18-09-00/00 or later	Requires loop or fabric mode
Sun StorEdge 9970/9980 arrays	21-04-32-00/00 or later	Requires loop or fabric mode
Storage Devices	**Firmware Version**	**Notes**
StorageTek 9840b tape drive	1.30.322 or later	
StorageTek 9940b tape drive	1.32.421	
Sun StorEdge 9840A tape drive	1.30.112 or later	Requires Sun StorEdge L180/L700 or L5500/L6000 tape libraries supported with the 1-Gb switch only with SL ports.

TABLE 6 Sun StorEdge SAN Foundation Software Storage Device Firmware Matrix

Sun StorEdge 9840b tape drive	1.30.122 or later	Requires Sun StorEdge L180/L700 tape libraries supported on 2-Gb switches with F ports. Requires Sun StorEdge L5500/L6000 tape libraries supported on 1-Gb switches with SL ports and on 2-Gb switches on F ports.
Sun StorEdge 9940b tape drive	1.32.421 or later	Requires Sun StorEdge L700, L5500 and L6000 tape libraries. Supported on 2-Gb switches with F ports.
Sun StorEdge L180/L700 tape libraries	3.04.03 or later	Supported on 1-Gb switches with LS ports and on 2-Gb switches with FL ports.
Sun StorEdge L5500 tape libraries	LMU=1.9.23 LCU=4.01.02 ACSLS=6.1.1 or later	
Sun StorEdge L6000 tape libraries	LMU=2.5.08 LCU=4.5.10 ACSLS=6.1.1 or later	
LTO Gen 2 Fibre Channel tape drive	327 or later	SANbox 1 - 4.02.38 or later SANbox 2 - 1.5.0.07 or later

Switch Firmware Requirements

TABLE 7 lists the firmware versions required for various switches.

TABLE 7 Sun StorEdge SAN Foundation Software Switch Firmware Matrix

FW-Code Levels for Switches	Switch Management Software	Firmware Version
SANbox 1	Qlogic SANbox Manager 1.5.14	4.02.38 or later
SANbox 2	Qlogic SANbox Manager 1.5.14	1.5.0.07 or later
Brocade 2400 / 2800	Brocade Fabric Manager 3.0.2C	2.6.1
Brocade SilkWorm 2 Gb 3200 / 3800	Brocade Fabric Manager 3.0.2C	3.1.0
Brocade SilkWorm 2 Gb3900 / 12000	Brocade Fabric Manager 3.0.2C	4.1.0
McDATA Sphereon 4500	McDATA EFCM 6.3.00	4.01.00
McDATA Intrepid 6064 Director	McDATA EFCM 6.3.00	4.01.00
McDATA Intrepid 6140 Director	McDATA EFCM 6.03.00	4.01.00

Bugs

- **Bug 4744293**: Hosts can't ping each other with FCIP configured and mixed 1 Gb and 2 Gb switches.

  FCIP works in a fabric made of 2 Gb switches only; it does not work in a fabric with mixed 1 Gb and 2 Gb switches.

  FCIP works in a fabric of 1 Gb switches if the 1 Gb switches are using the older (03462) firmware. The new 1 Gb firmware (4.02.33) allows a mixed fabric of 1 Gb and 2 Gb switches but without FCIP.

- **Bug 4764752**: Host doesn't see newly created LUNs without a LIP.

  Workaround:

  i. **Disconnect and reconnect the fibre cable connected to the path(s) on which you are adding LUNs.**

  ii. **Display available paths to the HBAs with the** `luxadm -e port` **command.**

  iii. **With the path from the output, issue a** `luxadm -e forcelip` *path* **command**

  iv. **Display devices with the** `cfgadm -al` **command.**

```
# cfgadm -al
c7                             fc-fabric    connected    configured   unknown
c7::50020f2300003096           disk         connected    unconfigured unknown
```

  v. **Bring fabric devices back onto the system.**

  Using the above example, the following command would be used.

```
# cfgadm -c configure c7
```

- **Bug 4769757**: Device node may be offline if LUN access permission is changed through LUN masking.

  Workaround: Use the `cfgadm` command to unconfigure and reconfigure the device. Alternatively, you can reboot.

- **Bug 4783080**: Using the `cfgadm -la` command with the `-o` option did not display the LUN information for newly added device.

  Workaround: If a new WWN is added to the zone set working area and the zone set has been activated, run the `cfgadm -c configure cX` command on the controller where the new device has been added and verify that the `cfgadm -al -o show_FCP_dev` command displays new LUNs.

- **Bug 4811430**: Inband communication incompatibilities.

  Workaround: See bug 4769757 above.

- **Bug 4811576**: When using WWN zoning to move a switch from one host to another within the same fabric, the host may panic. There is a low probability of encountering this error.
- **Bug 4825717**: It is possible to have a narrow race condition during SNIA's SCSI pass through ioctls, if at the same time a Fibre Channel error recovery is also in progress. There is low probability of encountering this problem.
- **Bug 4830148**: Qlogic 2300 firmware cannot handle multiple target resets: I/Os can fail. There is a low probability of encountering this error.
- **Bug 4831083**: After resetting a link, a HBA may go temporarily offline. There is a low probability of encountering this error.
- **Bug 4631419:** When removing a slice (LUN) on a Sun StorEdge T3+ array and adding it back without unconfiguring it on the host, `cfgadm` still lists the slice as unusable. There is a low probability of encountering this error.

  Workaround: remove slices on a Sun StorEdge T3+ with the following procedure:

  i. Unconfigure the device.

  ii. Remove the slice.

  iii. Add the slice back.

  iv. Configure the device.

- **Bug 4810591:** Unconfiguring the last path in the multipath configuration causes I/O to fail and produces I/O errors even though the unconfigure operation fails.

  Workaround: do not unconfigure last path in the multipath configuration.

- **Bug 4813056:** First 8 LUNs failover process hangs and eventually stops I/O

  This can be encountered after pulling host cables. There is a low probability of encountering this error.

- **Bug 4818871:** Luxadm Error: Invalid pathname - `/devices/scsi_vhci` seen when fabric booted

  This error is encountered when using the luxadm display command on a Sun StorEdge Traffic Manager enabled system that is booted from a fabric device. There is a low probability of encountering this error.

- **Bug 4830157:** Reservation conflict panic during LIP with metasets

  With heavy I/O on SVM metasets and continuous lips at regular intervals, a reservation conflict panic can be seen after 36 hours. There is a low probability of encountering this error.

Release Documentation

See the *Sun StorEdge SAN Foundation Software 4.2 Guide to Documentation* for other SAN Foundation Software documents.

This document is available at:

`http://docsun.eng/products-n-solutions/hardware/docs/Network_Storage_Solutions/SAN/index.html`

Documentation Updates

TABLE 8 summarizes updates to the *Sun StorEdge SAN Foundation Software 4.2 Configuration Guide.*

TABLE 8 Updates to the *Sun StorEdge SAN Foundation Software 4.2 Configuration Guide*

Page	Section	Modification
5	Name Server Zones	The Sun StorEdge 3510 array supports GL ports.
5	Name Server Zones	FL ports are also supported for the Sun StorEdge 3510 array.
6	Port Types	GL and FL ports are supported for the Sun StorEdge 3510 array.

Service Contact Information

If you need help installing or using this product, call 1-800-USA-4SUN, or go to:

`http://www.sun.com/service/contacting/index.html`