Sun StorEdge™ 3900 and 6900 Series Version 1.1 Release Notes

Storage Service Processor Version 2.1.1

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Sun StorEdge 3900 and 6900 Series Version 1.1 Release Notes

The Sun StorEdge™ 3900 and 6900 series storage subsystems are complete preconfigured storage solutions. The Sun StorEdge 3900 and 6900 series provide two different configurations for the direct attach storage (DAS) and storage area network (SAN) environment.

This document is organized as follows:

General Information

All documentation that accompanies the Sun StorEdge 3900 and 6900 series storage subsystems has been written for Sun support and Sun trained personnel who are already familiar with Sun's hardware and software products.

Sun StorEdge 3900 and 6900 Series Features

Features of Sun StorEdge 3900 and 6900 series subsystems include:

- Modular storage elements that can be incrementally expanded in a predefined footprint.
- Sun tested, preconfigured storage system optimized for the Solaris™ operating environment
- Supports single or clustered Sun Enterprise™ and Sun Fire™ servers
- Dynamically scales to more than 29 Tbytes in a single system
- Logical unit (LUN) segmenting or carving for storage consolidation.
- LUN security access (masking) for the storage consolidation models.
- Fibre Channel interface
- A high degree of data availability in a unit that reduces cost of ownership

TABLE 1 summarizes Sun StorEdge 3900 and 6900 series features supported with each release of the Storage Service Processor software stack. Each version of the Storage Service Processor software stack is available on CD. Upgrade CDs are also available to upgrade a Sun StorEdge 3900 or 6900 series from one software version to the next. For example, you can upgrade your system from version 2.0.2 to version 2.0.3, and from 2.0.3 to version 2.1.1.

TABLE 1 Features Supported by Storage Service Processor Versions

Features	Version 2.0.2 (Feb. 02, 2002)	Version 2.0.3 (May 07, 2002)	Version 2.1.1 (Jun. 18, 2002)
Sun StorEdge T3+ array firmware version 2.0.1	X		
Virtualization engine firmware version 8.014	X		
Switch firmware version 2.04.62 (FC-switch FLASH 30462)	X	X	X
36 Gbyte and 72 Gbyte disk drive capacities	X	X	X
Solaris 8 operating environment (update 5, 07/01; or update 6, 10/01; or update 7, 02/02 required)	X	X	X

TABLE 1   Features Supported by Storage Service Processor Versions *(Continued)*

Features	Version 2.0.2 (Feb. 02, 2002)	Version 2.0.3 (May 07, 2002)	Version 2.1.1 (Jun. 18, 2002)
Sun StorEdge^{SM} Remote Response ready		X	X
Improved security for Sun StorEdge Remote Response		X	X
Increased disk drive capacity (181 Gbyte drives)		X	X
Sun StorEdge T3+ array firmware version 2.1 (fabric support)		X	X
Virtualization engine firmware version 8.017 supporting: • Improved performance (8K - 12K) • Failback without halting I/Os		X	X
Sun StorEdge SAN 3.2 support		X	X
Sun Cluster 3.0 support		X	X
Switchless configurations			X
Multiplatform support for Windows 2000, NT and LINUX			X
16 LUN configurations and LUN masking support			X
Multiple host support for Sun StorEdge 6900 series			X
Four-node cluster support for Sun StorEdge 3900 series			X
Sun StorEdge SAN 4.0 support			X
Solaris 9 operating environment			X

Product Updates

This section contains information on the following updated product features:

- "Storage Service Processor Software Update" on page 4
- "Changes to the Configuration Utilities" on page 4
- "Disk Drive Capacity Increase" on page 8
- "Switchless Sun StorEdge 3900 and 6900 Series Configurations Available" on page 10
- "Sun StorEdge SAN 4.0 Supported" on page 11
- "Multiplatform Support" on page 12
- "Sun StorEdge Remote Response Security" on page 12

Storage Service Processor Software Update

This release of the Sun StorEdge 3900 and 6900 Series includes an update to the software image on the Storage Service Processor to version 2.1.1. The software revision includes:

- Updates to the configuration utilities and bug fixes to the 2.0.3 Storage Service Processor software. See the following section, "Changes to the Configuration Utilities" on page 4, for more details on specific command updates.
- Upgraded Sun StorEdge T3+ array firmware to version 2.1. For more information on new features available in the Sun StorEdge T3+ array version 2.1 firmware, refer to the *Sun StorEdge T3+ Array Release Notes*, part number 816-4771-*xx*.
- Data aggregation support for Storage Automated Diagnostic Environment software. For more information on data aggregation support and Storage Automated Diagnostic Environment software, contact your SunService representative.

Changes to the Configuration Utilities

There were 16 new commands and many changes to existing configuration utilities for the Sun StorEdge 3900 and 6900 series Version 1.1 release. For complete descriptions of a command and its function, refer to the individual man(1) pages. The man pages are included with the software image located on the Storage Service Processor.

The configuration utilities menu driven interface and the graphical user interface have also changed to reflect the additions and changes to the command line utilities.

New Commands

The new utilities used to manage the Sun StorEdge network FC switch-8 and switch-16 switches are:

- `saveswitch`(1M)—Saves the current configuration of the specified switch to a file. The file can later be used to restore the switch configuration.
- `restoreswitch`(1M)—Restores the saved switch configuration from the *switch-name*`.map` file.
- `setswitchtl`(1M)—Configures a specified list of host-side switch ports to reverse TL mode. This command is valid only on Sun StorEdge 3900 series systems.
- `setswitchf`(1M)—Configures a specified list of device-side switch ports to full fabric F port mode. This command is valid only on Sun StorEdge 3900 series systems.
- `modifyswitch`(1M)—Modifies the front-end switch zones. This command is useful for four-node cluster support. All existing zone information will be cleared, and any ports not assigned to a zone in *newzones-file* will be orphaned. This command is valid only on Sun StorEdge 3900 series.

New commands used to manage the Sun StorEdge T3+ arrays that are attached to Sun StorEdge 3900 series include the following:

- `createt3slice`(1M)—Creates slices on a Sun StorEdge T3+array volume. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.
- `listt3slice`(1M)—Displays slice information about a Sun StorEdge T3+ array volume. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.
- `rmt3slice`(1M)—Deletes a specified slice from a Sun StorEdge T3+ array volume or all slices on a specified volume. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.
- `createt3group`(1M)—Creates a group on a Sun StorEdge T3+ array and associates a worldwide name (WWN) with that group. The group can then be used to mask LUN permissions. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.
- `rmt3group`(1M)—Removes a WWN group from a Sun StorEdge T3+ array group. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.

- `addtot3group`(1M)—Adds a WWN to a Sun StorEdge T3+ array group. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.

- `delfromt3group`(1M)—Deletes a WWN from a Sun StorEdge T3+ array group. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.

- `enablet3slicing`(1M)—Enables the volume slicing system parameter for the specified Sun StorEdge T3+ array. This command is valid only on Sun StorEdge 3900 series.

- `sett3lunperm`(1M)—Sets the permissions for a Sun StorEdge T3+ array LUN. You can set LUN permissions on an individual LUN, WWN, or group basis. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.

- `listt3map`(1M)—Lists various slice, volume, group, and WWN information about a Sun StorEdge T3+ array. This command is valid only on Sun StorEdge 3900 series that have volume slicing enabled.

The following is a new command that has been added to help manage the virtualization engines on the Sun StorEdge 6900 series:

- `failbackt3path`(1M)—Resets the active path through virtualization engines to Sun StorEdge T3+ arrays. When a virtualization engine loses its connection to a Sun StorEdge T3+ array, it routes all I/O traffic through the alternate port, which causes a failover on the Sun StorEdge T3+ array. After the path is restored, the virtualization engine continues to route I/O traffic through the alternate path. Use the `failbackt3path` command to restore the I/O path to the correct Sun StorEdge T3+ port.

Changed Commands

Changes to the existing commands used to manage Sun StorEdge network FC switch-8 and switch-16 switches include:

- `setupswitch`(1M), `setswitchsl`(1M), `setswitchflash`(1M)—These commands now call `saveswitch` when they exit successfully.

- `checkswitch`(1M)—A `-p` option was added which specifies a comparison of the current configuration with the saved map file. The default operating mode of this command (without the `-p` option) works as the previous version did. It will compare the current configuration to the switch defaults.

- `setswitchflash`(1M)—This command now accepts `all` for the `-s` *switch-name* argument. This makes it easier to update all switches with the new flash file. The Fibre Channel flash remains at the 30462 firmware level.

- The switch locking mechanism for all commands used to manage Sun switches has changed. Instead of an individual lock file per switch, there is now one common lock file for all switches. That enables you to operate on one switch at a time.

Changes to the existing commands used to managed Sun StorEdge T3+ arrays include:

- `modifyt3config`(1M)—This command now verifies that the Sun StorEdge T3+ array is running the 2.1.*n* firmware.
- `restoret3config`(1M) —This command now verifies that the Sun StorEdge T3+ array is running the 2.1.*n* firmware and restores LUN slices from the `volslice_list` snapshot file.
- `modifyt3params`(1M)—This command now verifies that the Sun StorEdge T3+ array is running the 2.1.*n* firmware and enables modification of the `-t` *fc_topology* parameter. The values for *fc_topology* can be one of `auto`, `loop`, or `fabric_p2p`.
- `savet3config`(1M)—This command now verifies that the Sun StorEdge T3+ array is running the 2.1.*n* firmware and saves the `volslice_list` and `lunperm_list` on Sun StorEdge 3900 series if `enable_volslice` is on.
- `checkt3config`(1M)—This command now verifies that the Sun StorEdge T3+ array is running the 2.1.*n* firmware and verifies the `volslice_list` and `lunperm_list` against the snapshot files on Sun StorEdge 3900 series if `enable_volslice` is on.
- `showt3`(1M)—This command now verifies that the Sun StorEdge T3+ array is running the 2.1.*n* firmware and saves the `volslice_list` and `lunperm_list` on Sun StorEdge 3900 series if `enable_volslice` is on.

Changes to the existing commands used to managed virtualization engines include:

- `createvezone`(1M)—The optional argument `-a` *alias-name* was added to enable users to create a unique alias name for the HBA. But the default, if not specified will remain as the zone name. This allows for multiple HBAs per zone in a cluster environment.
- `rmvezone`(1M)—This command now does a single `sliczone` remove instead of individually removing each VLUN from the zone first for improved performance.
- `addtovezone`(1M)—New optional arguments, `-w` *wwn* and `-a` *alias-name*, were added to allow you to add new multiple HBAs into the zone in addition to the current functionality to add VLUNs. This allows for multiple HBAs per zone in a cluster environment.
- `delfromvezone`(1M)—The optional argument `-a` *alias-name* was added to enable users to remove one HBA from a zone that contains several HBAs. You cannot remove the last HBA in a zone.
- `listvemap`(1M)—The following options were added to support clusters:
  - `listvemap -w -n` *ve-pair-name* `-c` *initiator-name* `-l` *zone-name*
    Lists the aliased host WWN numbers for a zone.

- ■ `listvemap -a -n` *ve-pair-name* `-c` *initiator-name*
  Lists the HBA alias names.
- ■ `listvemap -a -n` *ve-pair-name* `-c` *initiator-name* `-l` *zone-name*
  Lists the HBA alias names for each zone.

■ `addtovezone`(1M), `delfromvezone`(1M), `rmvlun`(1M), `createvlun`(1M)—A performance enhancement was made to do virtualization engine `sliczone` commands with 10 target IDs at one time. That means when adding to a zone, deleting from a zone, or actually removing VLUNs instead of passing the virtualization engine command one target ID, the commands now group up to 10 target IDs at one time.

■ `rmvezone`(1M), `addtovezone`(1M), `delfromvezone`(1M), `createvlun`(1M)—All of these commands now accept a comma-separated list of zones. Also, the two zone only restriction for VLUNs has been removed. This will allow support in a QFS environment.

Disk Drive Capacity Increase

Sun StorEdge 3900 and 6900 Series systems now support 181 Gbyte disk drives for additional storage capacity.

TABLE 2 and TABLE 3 contain information about the system defaults for Sun StorEdge 6910 and 6960 systems configured with 181 Gbyte drives. These tables supplement the information provided in Table 3-2 and Table 3-3 of the *Sun StorEdge 3900 and 6900 Series Reference Guide*.

TABLE 2   Sun StorEdge 6910 System Defaults for 181 Gbyte Drives

Sun StorEdge 6910 Default System - One Virtualization Engine Map (`v1a`, `v1b` Virtualization Engine Pair)		
Disk Pool	**Number of VLUNs**	**VLUN Size (181-Gbytes drives)**
t3b00	1	506 Gbytes
t3b01	1	506 Gbytes
t3b02	1	506 Gbytes
t3b03	1	506 Gbytes
t3b10	1	506 Gbytes
t3b11	1	506 Gbytes
t3b12	1	506 Gbytes
t3b13	1	506 Gbytes
t3b20	1	506 Gbytes

TABLE 2   Sun StorEdge 6910 System Defaults for 181 Gbyte Drives

Sun StorEdge 6910 Default System - One Virtualization Engine Map (`v1a`, `v1b` Virtualization Engine Pair)		
Disk Pool	**Number of VLUNs**	**VLUN Size (181-Gbytes drives)**
t3b21	1	506 Gbytes
t3b22	1	506 Gbytes
t3b23	1	506 Gbytes

TABLE 3   Sun StorEdge 6960 System Defaults for 181 Gbyte Drives

Sun StorEdge 6960 System - Two Virtualization Engine Maps		
(`v1a`, `v1b` **Virtualization Engine Pair**)		
Disk Pool	**Number of VLUNs**	**VLUN Size (181 Gbyte drives)**
t3b00	1	506 Gbytes
t3b01	1	506 Gbytes
t3b02	1	506 Gbytes
t3b03	1	506 Gbytes
t3b20	1	506 Gbytes
t3b21	1	506 Gbytes
t3b22	1	506 Gbytes
t3b23	1	506 Gbytes
t3be10	1	506 Gbytes
t3be11	1	506 Gbytes
t3be12	1	506 Gbytes
t3be13	1	506 Gbytes
t3be30	1	506 Gbytes
t3be31	1	506 Gbytes
t3be32	1	506 Gbytes
t3be33	1	506 Gbytes
(`v2a`, `v2b` **Virtualization Engine Pair**)		
Disk Pool	**Number of VLUNs**	**VLUN Size (181 Gbyte drives)**
t3b10	1	506 Gbytes
t3b11	1	506 Gbytes

TABLE 3   Sun StorEdge 6960 System Defaults for 181 Gbyte Drives *(Continued)*

Sun StorEdge 6960 System - Two Virtualization Engine Maps		
(`v1a`, `v1b` **Virtualization Engine Pair**)		
Disk Pool	Number of VLUNs	VLUN Size (181 Gbyte drives)
t3b12	1	506 Gbytes
t3b13	1	506 Gbytes
t3be00	1	506 Gbytes
t3be01	1	506 Gbytes
t3be02	1	506 Gbytes
t3be03	1	506 Gbytes
t3be20	1	506 Gbytes
t3be21	1	506 Gbytes
t3be22	1	506 Gbytes
t3be23	1	506 Gbytes
t3be40	1	506 Gbytes
t3be41	1	506 Gbytes
t3be42	1	506 Gbytes
t3be43	1	506 Gbytes

Switchless Sun StorEdge 3900 and 6900 Series Configurations Available

Sun StorEdge 3900 and 6900 series systems are now orderable without built-in front-end switches. The Sun StorEdge 3900SL, 6910SL, and 6960SL series systems (switchless configurations) are for customers who want to install these systems into existing SAN environments that are built using third-party (non Sun) switches. When purchasing a switchless configuration, the following items apply:

- Sun provides prime input power cords (two each) for mounting a pair of third-party switches in the front end of a Sun StorEdge 3900 or 6900 cabinet.
- For the Sun StorEdge 3900SL system, Sun provides Fibre Channel cable connectivity for up to nine Sun StorEdge T3+ arrays.
- For the Sun StorEdge 6910SL system, Sun provides two Fibre Channel cables to connect to two virtualization engines.
- For the Sun StorEdge 6969SL system, Sun provides four Fibre Channel cables to connect to four virtualization engines.

- Customers are responsible for providing:
  - All host Fibre Channel cable connections
  - The Ethernet cable connection between the third-party switches and the local SAN maintenance console for monitoring and diagnostic reporting. (The customer-supplied switches are not part of or monitored by the internal service processor of the Sun StorEdge 3900SL or 6900SL series system.)

Note – A customer-supplied switch installed in a Sun StorEdge 3900SL or 6900SL system cannot be connected to the internal LAN of the system. The customer-supplied switch must be managed from an outside Ethernet connection.

Brocade and McData switches are "operable" with the switchless Sun StorEdge 3900 and 6900 series systems under the SAN 4.0 rules. Sun support for the Brocade switches (2400, 2800 & 3800) is dependent upon Sun Professional Services[SM] implementation and an Enterprise Services support services agreement.

The McData switches are not currently supported by Enterprise Services unless they are part of a Sun StorEdge 9900 configuration. The switches in the SAN must be homogeneous (all SUN or all Brocade or all McData). It is Sun's intent to support heterogeneous interoperability between switches at a later date.

Sun StorEdge SAN 4.0 Supported

The Sun StorEdge SAN 4.0 release is Sun's latest full fabric, open heterogeneous SAN featuring:

- New Sun 2Gbyte HBAs and switch
- Operability with the Brocade SilkWorm 16-port 2 Gbyte 3800 Fibre Channel Switch, and SilkWorm 64-port 2Gbyte 12000 Fibre Channel Core Fabric Switch, and Mcdata Intrepid 6064 Director
- New Sun StorEdge Diagnostic Expert software
- New Sun StorEdge™ Resource Manager Suite 6.0
- New Sun StorEdge™ Availability Suite 3.1
- Sun StorEdge™ Traffic Manager
- Sun StorEdge™ Performance and Utilization Suites
- Support for open heterogeneous SANs with fabric support for Linux, Windows NT 4.0, Windows 2000, HP/UX and IBM AIX based servers
- Support for large, complex SANs with support for up to 7 inter-switch hops, up to 64 switches, and both core fabric switches and directors

Information on Sun StorEdge SAN 4.0 is available at the following web site:

```
http://www.sun.com/storage/san
```

Multiplatform Support

Sun StorEdge 3900 and 6900 series systems are supported on the following operating environments with the Storage Service Processor 2.1.1 release:

- Microsoft Windows NT service pack 6 or later
- Microsoft Windows 2000 service pack 2 or later
- Red Hat Linux ver. 7.2 or later

For more information on multiplatform support, refer to the following web site:

```
http://www.sun.com/san/multiplatform_support.html
```

Sun StorEdge Remote Response Security

The Sun StorEdge Remote Response service provides remote monitoring and serviceability. Sun provides as safe an environment as possible for its Sun StorEdge Remote Response service through the use of security software installed on the Storage Service Processor. Sun uses Secure SHell (SSH) software for the connection between the dial-up line and the Storage Service Processor, which adds encryption and some authentication. Once access to the Storage Service Processor is established using PPP and CHAP, the OPIE authentication tool requires the user to call the SunService Center and provide a unique login challenge. SunService, after authenticating the caller, provides the authentication key to allow connection to the Service Processor. Additionally, TCP/IP wrappers are included to provide additional security of network traffic. When the user accesses the Storage Service Processor by way of the Storage Automated Diagnostic Environment GUI, the GUI software contains an authentication process requiring a login and password that can be tuned for specific users to have specific capabilities. Secure Socket Layer (SSL) encryption is employed between the Storage Service Processor and the customer's network connection to prevent snooping. Through the Storage Automated Diagnostic Environment, only ports 7654 (exclusively managed by this software environment) and port 443 (SSH) are enabled; telnet and FTP are disabled.

For customers who activate the Sun StorEdge Remote Response service and want to access the Storage Service Processor through their local LAN, Sun suggests using an additional ethernet router/hub for this use. The optional ethernet router/hub will provide additional firewall functionality to protect the customer LAN from unauthorized access.

Contact your SunService[SM] provider to activate the Sun StorEdge Remote Response service.

Known Bugs

The following is a list of the priority 1, 2, and 3 bugs associated with Sun StorEdge 3900 and 6900 series subsystems. The BugID number is followed by the priority and severity of the bugs in parentheses.

- 4671617 (P2/S2) - The virtualization engine daemon cannot be restarted because of a residual status (semaphore with ID 0) that is left behind after a termination sequence. This occurs when using the `sdushutdown` command to initiate the termination sequence. The following is an example of the message that displays on the service processor when this occurs:

```
host# Error initializing semaphore for error logging
    semget: File exists
The semaphore already exists and/or the SLIC daemon 'slicd' is
already running
```

  Workaround: Refer to the procedure "To Restart the `SLIC` Daemon" in the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* (part number 816-4290-*xx*), This document can be obtained from Sun's internal edist web site.

- 4666764 (P2/S3), 4633323 (P3/S3), and 4666199 (P3/S3) - Upgrading virtualization engine firmware using the `sdnld` command can result in the firmware download not completing successfully.
  Workaround: Upgrade the virtualization engine firmware using the following procedure.

1. **Establish an ftp connection from the service processor to the virtualization engine that is being upgraded (**`v1a`**,** `v1b`**,** `v2a`**, or** `v2b`*).*

2. **At the** *username* **prompt, type** `vicomftp`**.**

3. **At the** *password* **prompt, type your password.**

4. **Type** `binary` **to set the transfer mode.**
   The data format must be set to binary.

5. **Type** `put` *filename* **to download the file to the virtualization engine.**

- `/opt/svengine/firmware/fw8_17.ima` is the file name for version 8.17 firmware.

- `/svengine/sdus/FCFC3SUN.ima` is the file name for version 8.014 firmware.

Before the file data is loaded into flash memory, checks are performed to ensure that the file contains valid microcode in the correct format. When this completes, the virtualization engine will reboot.

6. **Type** `bye` **to end the ftp session.**

Note – If you are running the latest version of the Storage Service Processor software (version 2.0.3), you do not need to upgrade virtualization engine firmware.

- 4676641 (P3/S3) and 4699058 (P4/S3) - The Storage Automated Diagnostic Environment Revision Checking feature can report incorrect information when it is used to check Sun StorEdge T3+ array firmware levels. The feature does check firmware version levels for each array, but the report does not indicate if the array is configured correctly for a Sun StorEdge 3900 or 6900 series system, version 1.1. There are two possible outputs for the Revision Checking report:

  - If the array firmware level is correctly configured in the storage system, the tool reports the firmware as UPLEVEL, which is the expected behavior.

  - If the array in the storage system contains downlevel firmware, the tool reports the firmware as PASSED, which is expected behavior.

  Workaround: Verify the Sun StorEdge T3+ array firmware level to make sure it is the correct version in the Sun StorEdge 3900 and 6900 series, version 1.1 configuration using the following procedure:

1. **Log in to the Storage Service Processor.**

2. **Telnet to the Sun StorEdge T3+ array.**

   For example:

   ```
   # /bin/telnet t3b0
   login: root
   Password: Return

   T3B Release 2.01.00 2002/03/22 18:35:03 (192.168.0.40)
   Copyright (C) 1997-2001 Sun Microsystems, Inc.
   All Rights Reserved.
   ```

   In this example, the firmware version is displayed in the first line of the array login message as T3B Release 2.01.00, which is the level of firmware required for full functionality with the Sun StorEdge 3900 and 6900 series, version 1.1. If the login message reports a different array firmware level, then upgrade or downgrade the

array firmware to this version. The 2.01.00 array firmware is part of the Storage Service Processor software stack, which is available on an the Sun StorEdge 3900 and 6900 Upgrade CD.

- 4691480 (P3/S3) - Using the Storage Automated Diagnostic Environment, some configuration utility sections do not work for the Sun StorEdge 3900SL, 6910SL and 6960SL series switchless models.
Workaround: Change the model numbers under the Storage Automated Diagnostic Environment so that the configuration utilities can recognize the switchless models. To change the model numbers in the Storage Automated Diagnostic Environment:

1. **Log in to the Storage Service Processor.**

2. **Use the** `/opt/SUNWstade/bin/config_solution` **command to set the model type to** `3900SL`**,** `6910SL`**, or** `6960SL`**.**

3. **Edit the** `/opt/SUNWstade/DATA/rasagent.conf` **file as follows:**

   Change the `solution_model` from:

   - `3900SL` to `3960` or `3910`
   - `6910SL` to `6910`
   - `6960SL` to `6960`

- 4697033 (P3/S3) - In the Storage Automated Diagnostic Environment, if you use the `createvlun -z` command to create multiple VLUNs that specify zones, the command executes without adding the VLUNs to the zone; that is, the `-z` option is ignored.
Workaround: There are three options you can use:

  - Use the CLI to `runsecfg` to create multiple VLUNs, or

  - Use the Storage Automated Diagnostic Environment GUI to create multiple VLUNs without adding them to zones. After creating the VLUNs, use the menu option "Add Components to Virtualization Engine Zone" to add the VLUNs to the appropriate zones, or

  - Use the Storage Automated Diagnostic Environment GUI to create VLUNs in a single diskpool.

- 4666611 (P3/S4) - If you are using a browser such as Netscape in a Sun Ray™ environment to display the SAN topology, an error is displayed and the topology fails to build. The following is an example of this error:

```
#error The certificate issuer for this server is not recognized by Netscape.
The security certificate may or may not valid.
Netscape refuses to connect to this server (-8179) java40.tar/ifc11.jar
java.lang.SecurityExcpetion: system classes not signed
```

Workaround: To resolve this error, use the following procedure.

1. **Exit Netscape.**

   Make sure all Netscape windows are closed.

2. **Type the following commands as appropriate for your operating environment.**

   ■ In a Solaris operating environment:

   ```
   cd .netscape
   mv key3.db key3.bad
   mv cert7.db cert7.bad
   ```

   ■ In a Windows environment:

   ```
   C:/Program Files/Netscape/Users/username/
   rename key3.db key3.bad
   rename cert7.db cert7.bad
   ```

3. **Restart Netscape.**

   ■ 4671151 (P3/S4) - In the Storage Automated Diagnostic Environment, version 2.0.6.010, the Monitor-->Devices section reports the incorrect number of host bus adapters (HBAs) per virtual engine.
   Workaround: Ignore this message; the HBAs reported are not connected to the virtual engine.

   ■ 4669397 (P3/S5) - If you use the Storage Automated Diagnostic Environment Command `config_solution` on a Sun StorEdge 6900 series system that is not fully populated with Sun StorEdge T3+ arrays, a warning message is displayed that the system cannot ping an array IP address.
   Workaround: This warning message is misleading if the system rack is not fully configured with Sun StorEdge T3+ arrays. If your system displays this message and it is not fully populated with arrays, ignore the message.

Usage Notes

This section contains information about the behavior of the Sun StorEdge 3900 and 6900 series subsystems.

This subsection is organized as follows:

Security Notes

- The Sun factory does not set a root password on the Sun StorEdge 3900 and 6900 series.

- You can log in as root only at the console port of the Storage Service Processor. A generic service login has been provided with this version of the software to accommodate logging in through a telnet(1) session. The new login is: cmdadm, instead of root. The password for the cmdadm login is sun1. Do not alter this password or remote access will be affected. If necessary, you can su(1M) to root once you have logged on to the Storage Service Processor.

- On the Sun StorEdge 6900 series systems, the virtualization engine can cause a device naming problem when you are using earlier versions of VERITAS VxVM. Because of this, the only supported version of VERITAS is VxVM version 3.2 with patch level 1, which includes patches 111909-04 and 111904-04 or greater.

▼ To Connect an External Serial Terminal to the Storage Service Processor

1. **Connect the serial communications port of the terminal to the Serial Console port of the Service Panel using the RJ45-DB9 DTE adaptor (part number 530-3100-01) and a standard CAT5 cable (part number 530-2093-01).**

2. **Using the terminal emulator of your choice, configure the emulator with the following parameters:**

```
# of Bits:8
Stop Bits:1
Parity:None
Flow Control:None
Baud Rate: 9600 BPS
```

3. **Follow the steps appropriate for your software to complete the serial connection to the Storage Service Processor.**

▼ To Gain Access to the Serial Port of the Storage Service Processor

- If you are *not* using the Sun StorEdge Remote Response service:
    - If you receive the following prompt, login as usual.

```
msp0 console login:
```

    - If the prompt is not as shown above, type:

```
tty
```

You should see the following output:

```
/dev/console
```

This output indicates that the last login was not properly terminated. You can now perform the functions you need to perform.

- If you are using the Sun StorEdge Remote Response service:
    - When the connection is complete, the following prompt is displayed:

```
annex:
```

1. **Type:**

```
annex: telnet 10.0.0.3
```

Note – If the Storage Service Processor LAN has been reconfigured to a domain other than 10.0.0.*n*, you must obtain the valid Ethernet address from the administrator of the new domain.

```
Trying 10.0.0.3...
Connected to 10.0.0.3.
Escape character is '^]'
```

2. **Type:**

```
2
```

The "2" is the port of the annex where the Storage Service Processor console is attached. The following login prompt is displayed.

```
msp0 console login:
```

If the prompt is not as shown above, type:

```
tty
```

The following output is displayed:

```
/dev/console
```

This output indicates that the last login was not properly terminated. You can now perform the functions you need to perform.

▼ To Make an Ethernet Terminal Connection

1. **Configure your Ethernet terminal software so the terminal appears as IP address 10.0.0.n, subnet mask 255.0.0.0, no DNS, no gateway.**

Note – If the Storage Service Processor LAN has been reconfigured to a domain other than 10.0.0.n, you must obtain the valid Ethernet address from the administrator of the new domain.

If a Storage Service Processor LAN hub exists, connect the Ethernet port of the terminal to the Ethernet hub using a standard CAT5 Ethernet cable. If no hub exists, connect the Ethernet port of the terminal to the SP LAN port on the service panel using the Ethernet crossover cable (part number 530-2149-01).

Note – The 530-2149-01 part number is an industry standard Ethernet crossover cable. If the cable is not available, you should be able to use any standard Ethernet crossover cable, which is available at most electronic component outlets.

2. Type:

```
telnet 10.0.0.n
```

Note – If the Storage Service Processor LAN has been reconfigured to a domain other than 10.0.0.n, you must obtain the valid Ethernet address from the administrator of the new domain.

The following output is displayed:

```
Trying 10.0.0.x...
Connected to 10.0.0.x.
Escape character is '^]'.

SunOS 5.8

login:
```

3. Login as cmdadm**.**

```
login: cmdadm
Password: sun1
```

If the Sun StorEdge Remote Response service is installed, refer to the *Sun StorEdge 3900 and 6900 Series Reference Manual* for instructions on responding to the OPIE challenge.

▼ To Make an Ethernet Connection to the Console Port of the Storage Service Processor

This option is available only if the Sun StorEdge Remote Response service is installed on the subsystem.

1. Configure your Ethernet terminal software so the terminal appears as IP address 10.0.0.n, subnet mask 255.0.0.0, no DNS, no gateway.

Connect the Ethernet port of the terminal to the NTC ENET port on the service panel using the Ethernet crossover cable (part number 530-2149-01).

2. **Type:**

```
telnet 10.0.0.3
```

The following output is displayed:

```
Trying 10.0.0.3...
Connected to 10.0.0.3.
Escape character is '^]
```

3. **Type:**

```
2
```

The "2" is the port of the annex where the Storage Service Processor console is attached. The following login prompt is displayed.

```
msp0 console login:
Password
```

Refer to the *Sun StorEdge 3900 and 6900 Series Reference Manual* for instructions on responding to the OPIE challenge.

4. **If the prompt is not as shown above and is not the** OK **prompt, type:**

```
tty
```

The following output is displayed:

```
/dev/console
```

This output indicates that the last login was not properly terminated. You can now perform the functions you need to perform.

If the OK prompt displays, refer to the *Netra X1 Server User's Guide* for the troubleshooting procedure.

▼ To Add a Cabinet In the Field

Note – The following procedure supersedes the "Adding a Cabinet In the Field" procedure documented in the *Sun StorEdge 3900 and 6900 Series Reference Manual.*

Use this procedure to add a second cabinet to a single Sun StorEdge 3900 or 6900 series system.

Note – The names of the Sun StorEdge T3+ arrays in the second cabinet are shown in FIGURE 1-10 of the *Sun StorEdge 3900 and 6900 Series Reference Manual.*

1. **Set up the second cabinet and connect the cables as described in the** *Sun StorEdge 3900 and 6900 Series Installation Guide.*

2. **Locate the media access control (MAC) address of the Sun StorEdge T3+ array(s).**

   The MAC address is located on the inside of the front cover of the device.

3. **Log in to the Storage Service Processor.**

   Refer to the procedure, "To Service the Storage Service Processor" on page 105 of the *Sun StorEdge 3900 and 6900 Series Reference Manual* for instructions.

4. **Add the new MAC address of the Sun StorEdge T3+ array(s) to the** `/etc/ethers` **file on the Storage Service Processor.**

   Refer to FIGURE 10-1 in the *Sun StorEdge 3900 and 6900 Series Reference Manual* for specific array locations and naming conventions to ensure that the name correctly corresponds to the location in the cabinet.

   For example:

   ```
   00:20:f2:00:06:3b  array-name
   ```

   See the `ethers(4)` man page for more details.

5. **Make sure the reverse address resolution protocol (RARP) daemon (`in.rarpd(1M)`) is running on the Storage Service Processor.**

   ```
   msp0# ps -eaf | grep rarpd
   root    317   314   0    Sep 28 ?       0:00 /usr/sbin/in.rarpd dmfe 1
   msp0#
   ```

   If the RARP daemon is not running, start it as follows:

   ```
   msp0# /usr/sbin/in.rarpd dmfe 1
   ```

6. **Reset the Sun StorEdge T3+ array to see the new IP address.**

7. **Start a telnet session to the new Sun StorEdge T3+ array.**

   ```
   # /bin/telnet t3b0
   login: root
   Password: Return

   T3B Release 2.01.00 2002/03/22 18:35:03 (192.168.0.40)
   Copyright (C) 1997-2001 Sun Microsystems, Inc.
   All Rights Reserved.
   ```

8. **Set a password on the Sun StorEdge T3+ array if it has not already been done.**

   Note – For Sun StorEdge 3900 and 6900 series systems, all Sun StorEdge T3+ arrays in a cabinet must use the same password. If one of the other arrays already has a password set, you must use the same password for the new array.

```
:/:<1> passwd
OLD password: Return
NEW password: new password
NEW password (confirm): new password
:/:<2>
```

9. **Type** `quit` **to exit the telnet session.**

10. **Type the following to transfer the** `syslog.conf` **file to the array:**

```
msp0# ftp t3b0
Connected to t3b0.
220 192.168.0.40 FTP server ready.
Name (t3b0:root): root
331 Password required for root.
Password: password
230 User root logged in.
ftp> put /opt/SUNWsecfg/etc/syslog.conf /etc/syslog.conf
200 PORT command successful.
150 Opening ASCII mode data connection for /etc/syslog.conf
226 Transfer complete.
local: /opt/SUNWsecfg/etc/syslog.conf remote: /etc/syslog.conf
242 bytes sent in 0.00072 seconds (328.23 Kbytes/s)
> quit
```

11. **Type:**

```
msp0# /opt/SUNWstade/bin/config_solution
```

The following arguments are used with the `config_solution` command:

- `-m` *model-number* : 3910 | 3960 | 6910 | 6960 | 3900SL | 6910SL | 6960SL
- `-i` *prefix* : enter a different subnet prefix. Default is `ifconfig` for `dmfe1` (optional in an Sun StorEdge 3900 or 6900 series)
- `-p` *password* : VE password (optional)
- `-h` : help (optional)

12. **Start the Storage Automated Diagnostic Environment tool and rediscover the new cabinet.**

   Refer to the Storage Automated Diagnostic Environment User's Guide for detailed instructions on discovery.

   To set up the configuration of the Sun StorEdge T3+ array(s) in the cabinet that was just added, continue with the following steps.

   Note – Refer to FIGURE 10-1 in the *Sun StorEdge 3900 and 6900 Series Reference Manual* for specific array locations and naming conventions to ensure that the name correctly corresponds to the location in the cabinet.

   ---

13. **Run the** `runsecfg(1M)` **command to start the character user interface.**

14. **Select the T3+ Configuration Utility from the Main menu.**

15. **When prompted, type the password for the Sun StorEdge T3+ array.**

16. **Select the Configure T3+ option.**

17. **Select the host name(s) of the Sun StorEdge T3+ array(s) that you added.**

18. **Select the Default or Custom option to configure the new Sun StorEdge T3+ array.**

   This step takes approximately two to three hours depending on the configuration of the Sun StorEdge T3+ array.

▼ To Add a Sun StorEdge T3+ Array

Note – The following procedure supersedes the "Adding a Sun StorEdge T3+ Array" procedure documented in the *Sun StorEdge 3900 and 6900 Series Reference Manual.*

This section describes how to add a Sun StorEdge T3+ array to a Sun StorEdge 3900 or 6900 series system. For additional information about upgrading Sun StorEdge T3+ arrays, refer to the *Sun StorEdge T3+ Array Installation, Operation, and Service Manual* and the *Sun StorEdge 3900 and 6900 Series Installation and Service Manual.*

1. **Determine which Sun StorEdge T3+ array you are adding.**

   This refers to the position the array occupies in the cabinet.

> **Note –** Refer to FIGURE 10-1 in the *Sun StorEdge 3900 and 6900 Series Reference Manual* for specific array locations and naming conventions to ensure that the name correctly corresponds to the location in the cabinet.

2. **Locate the MAC address for the new Sun StorEdge T3+ array.**

   The MAC address is located on the inside of the front cover of the device.

3. **Log in to the Storage Service Processor.**

   Refer to the procedure, "To Service the Storage Service Processor" on page 105 of the *Sun StorEdge 3900 and 6900 Series Reference Manual* for instructions.

4. **Add the new MAC address of the Sun StorEdge T3+ array to the** `/etc/ethers` **file on the Storage Service Processor.**

   For example:

   ```
   00:20:f2:00:06:3b array-name
   ```

   See the `ethers(4)` man page for more details.

5. **Make sure the reverse address resolution protocol (RARP) daemon (`in.rarpd(1M)`) is running on the Storage Service Processor.**

   ```
   msp0# ps -eaf | grep rarpd
   root    317   314   0    Sep 28 ?      0:00 /usr/sbin/in.rarpd dmfe 1
   msp0#
   ```

   If the RARP daemon is not running, start it as follows:

   ```
   msp0# /usr/sbin/in.rarpd dmfe 1
   ```

6. **Install the new Sun StorEdge T3+ array and power on the array.**

7. **Start a telnet session to the new Sun StorEdge T3+ array.**

   ```
   # /bin/telnet t3b0
   login: root
   Password: Return

   T3B Release 2.01.00 2002/03/22 18:35:03 (192.168.0.40)
   Copyright (C) 1997-2001 Sun Microsystems, Inc.
   All Rights Reserved.
   ```

8. **Set a password on the Sun StorEdge T3+ array if it has not already been done.**

Note – For Sun StorEdge 3900 and 6900 series systems, all Sun StorEdge T3+ arrays in a cabinet must use the same password. If one of the other arrays already has a password set, you must use the same password for the new array.

```
:/:<1> passwd
OLD password: Return
NEW password: new password
NEW password (confirm): new password
:/:<2>
```

9. **Type** `exit` **to exit the telnet session.**

10. **Type the following to transfer the** `syslog.conf` **file to the array:**

```
msp0# ftp t3b0
Connected to t3b0.
220 192.168.0.40 FTP server ready.
Name (t3b0:root): root
331 Password required for root.
Password: password
230 User root logged in.
ftp> put /opt/SUNWsecfg/etc/syslog.conf /etc/syslog.conf
200 PORT command successful.
150 Opening ASCII mode data connection for /etc/syslog.conf
226 Transfer complete.
local: /opt/SUNWsecfg/etc/syslog.conf remote: /etc/syslog.conf
242 bytes sent in 0.00072 seconds (328.23 Kbytes/s)
> quit
```

11. **Run the** `runsecfg(1M)` **command to start the character user interface.**

12. **Select the T3+ Configuration Utility from the Main menu.**

13. **When prompted, type the password for the Sun StorEdge T3+ array.**

14. **Select the Configure T3+ option.**

15. **Select the host name of the Sun StorEdge T3+ array that you added.**

16. **Select the Default or Custom option to configure the new Sun StorEdge T3+ array.**

17. **Type:**

```
msp0# /opt/SUNWstade/bin/config_solution
```

The following arguments are used with the `config_solution` command:

- `-m` *model-number* : 3910 | 3960 | 6910 | 6960 | 3900SL | 6910SL | 6960SL
- `-i` *ip-prefix* : enter a different subnet prefix. Default is `ifconfig` for `dmfe1` (optional in an 3900/6900 series)
- `-p` *password* : VE password (optional)
- `-h` : help (optional)

18. **Start the Storage Automated Diagnostic Environment tool and rediscover the new cabinet.**

Refer to the Storage Automated Diagnostic Environment User's Guide for detailed instructions on discovery.

Upgrading to Use Sun StorEdge SAN 4.0 Release Switches from Servers

This section explains the procedure for upgrading the switches attached to your server to the Sun StorEdge SAN 4.0 Release firmware. Once the upgrade is made, the switches will be compliant with the FC-SW-2 standard.

In the Sun StorEdge 3900 and 6900 series, the front-end switches that are connected to the internal Storage Service Processor LAN can never be upgraded to the Sun StorEdge SAN 4.0 Release switch firmware. However, in a switchless configuration you can upgrade the switches that are connected to your server to the Sun StorEdge SAN 4.0 Release firmware. For a list of the supported switches visit the `http://www.sun.com` web site.

Caution – Do not add software to the Storage Service Processor. This procedure applies to the adding software to the server that is external to the Sun StorEdge 3900 or 6900 series.

Direct attachment to the StorEdge 3900 and 6900 Series arrays with 1 Gbit or 2 Gbit HBAs require no changes (provided the Sun StorEdge 3900 and 6900 series is outside of a SAN 4.0 environment).

Before making any changes to the Sun StorEdge 3900 or 6900 series, you must have a Sun StorEdge SAN 4.0 infrastructure already in place and functional. This includes at a minimum:

■ A Solaris host on the SAN management network loaded with SANbox2 Manager.

■ Sun StorEdge 2 Gbit 16-port switch network configured in desired topology (ring, star, mesh, cascade) with healthy ISL links.

The switch firmware upgrade also includes steps performed on the Service Processor as explained below.

Converting a Sun StorEdge 3900 or 6900 Series to Sun StorEdge SAN 4.0 Release

The Sun StorEdge SAN 4.0 Release management network must be prepared for the transition of internal 1 Gbit switches.

1. **You must assign IP addresses and optionally configure RARP for each new switch on the network.**

   If the switches are going to use static addressing, the switches must be manually configured (using the SANSurfer graphical user interface (GUI) from the service processor) with the new IP addresses prior to removal from the private 192.168 network.

2. **Follow the instructions to disable the monitoring on the front end switches (`sw1a` and `sw1b`).**

   Remove the front end switches from the Storage Automated Diagnostic Environment configuration, then unplug the Ethernet connections of those switches from the Ethernet hub on the 192.168 private net inside the Sun StorEdge 3900 and 6900 series.

3. **Plug the Ethernet connections from the Sun StorEdge network FC switch-8 or switch-16 switches into the customer Ethernet LAN.**

   These are the switch connections former known as `sw1a` and `sw1b`. The switches are managed by the Solaris server on the customer LAN instead of by the Storage Service Processor.

4. **Once the Ethernet connections have been switched, power cycle the 1 Gbit switches and verify network connectivity to the switches on the new network using the `ping`(1) command from the SAN 4.0 management workstation.**

   Configuration and management of the modified switches is now accomplished through SANbox Manager GUI as described in the download and upgrade instructions.

Obtaining the Sun StorEdge SAN 4.0 Release Switch Firmware

The necessary patches to upgrade the front-end switches in the Sun StorEdge 3900 and 6900 series arrays can be found at the following URL:

```
http://jsecom15b.sun.com:80/ECom/EComActionServlet?StoreId=
8&PartDetailId=StoreEdgeSw-4.0-G-F&TransactionId=
Try&LMLoadBalanced=
```

You must login to the above URL, register with Sun, accept the license agreement, and download either the Solaris 8 or Solaris 9 operating environment `tar`(1) file.

Upgrade and Downgrade for 1 Gbit Switch

This section tells how to upgrade and downgrade for the 1 Gbit switch to and from the FC-SW-2 standard.

Switches that are to be mixed in a 1 Gbit and 2 Gbit environment must be assigned domain ID values between 0 and 15. Select Domain ID values for each of your switches to be added to the Sun StorEdge SAN 4.0 fabric before continuing. Be sure to select unique values from those already used for the 2 Gbit switches.

Before beginning this procedure, you must download the `E_portUpgrade/DowngradeUtility` file to your Solaris host server from the following URL:

```
http://jsecom15b.sun.com:80/ECom/EComActionServlet?StoreId=
8&PartDetailId=StoreEdgeSw-4.0-G-F&TransactionId=
Try&LMLoadBalanced=
```

There are three files used for the purpose of upgrading and downgrading the 402*nn* and 304*nn* firmware:

- `sbutil`
- `sb1_downgrade`
- `sb1_upgrade`

The procedure follows:

1. **Install the latest** `SUNWsmgr2` **package (**`1.3.32b` **or later).**

2. **Copy the three files listed above to the same directory.**

3. **To upgrade from 304***nn* **type the following:**

```
# sb1_upgrade switch-IP-address domain_ID
```

4. **To downgrade from 402***nn* **to 304***nn* **type:**

```
# sb1_downgrade switch-IP-address
```

Note – If you execute the scripts without parameters they will tell you what is necessary for them to run.

The firmware upgrade and downgrade procedure can also be accomplished by using the SANbox Manager GUI from the SAN 4.0 management workstation. The firmware files for 1 Gbit switches are located in the `/usr/opt/SUNWsmgr2/firmware/SANbox1` directory.

Additional details of this process can be found in the *SANbox2 Installer/User's Manual* manual. Information about "Choosing a domain ID" is also available in this manual.

Accessing the Sun StorEdge 3900 and 6900 Series Documentation

The documentation for Sun StorEdge 3900 and 6900 series systems is provided online. There are also online `man`(1) pages for all configuration utilities.

To retrieve all the documentation:

1. **Open a browser window.**

2. **Type the following URL:**

```
http://docs.sun.com
```

3. **Type** `3900 and 6900` **in the search string field and click on the box next to the "Search book titles only" option.**

You can also search for the documents by part number, using the following list.

Part Number	Title
816-3242-11	*Sun StorEdge 3900 and 6900 Series Site Preparation Guide*
816-3243-11	*Sun StorEdge 3900 and 6900 Series Regulatory and Safety Compliance Manual*
816-3244-10	*Sun StorEdge 3900 and 6900 Series Installation and Service Manual*
816-3245-10	*Sun StorEdge 3900 and 6900 Series Reference Manual*
816-3142-10	*Storage Automated Diagnostic Environment User's Guide*

4. **Click on "Go" to initiate the search.**

The search result displays related book titles as live links.

5. **Click on one of the book title links.**

6. **Click on the "Download PDF" link.**

Book titles and related links to PDF files are displayed.

7. **Click on the link for the PDF file you want to download.**

If you have your Netscape browser set to display PDF, when you click on the link a PDF version of the file displays in the browser.

Tip – You can download the PDF files to your home directory by placing your cursor over the file you want to download, pressing and holding down the Shift key, and then clicking the left mouse button.

Sun StorEdge 3900 and 6900 Series documents are also available at:

```
http://www.sun.com/products-n-solutions/hardware/docs/
Network_Storage_Solutions/
```

Note – Solutions_Products/Documentation on Sun StorEdge Remote Response is available to Sun support and Sun trained personnel on Sun's internal edist web site and can be obtained by searching for the *Sun StorEdge Remote Response Field Installation Guide*, part number 816-3644-10.