Sun StorEdge™ 6320 System 1.0 Release Notes

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054 U.S.A.
650-960-1300

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Sun StorEdge 6320 System 1.0 Release Notes

The Sun StorEdge™ 6320 systems are complete preconfigured storage solutions.

The headings include:

Features In This Release

The Sun StorEdge 6320 system provides the following features:

- Support for 36 Gbyte, 73 Gbyte, or 146 Gbyte bidirectional, dual-ported Fibre Channel-Arbitrated Loop (FC-AL) disk drives
- Sun StorEdge Remote Response (SSRR) capability, which provides phone-home remote monitoring and support capability
- Embedded Storage Service Processor that provides the following:
  - Configuration of the Sun StorEdge 6020 arrays
  - Provides a platform for firmware and software system upgrades
  - Continuous monitoring of components in the Sun StorEdge 6320 system (once the SSRR software is enabled)
  - Diagnostic tools to troubleshoot problems
- Maximum of 10 Sun StorEdge 6020 arrays (trays) in the base Sun StorEdge Expansion Cabinet
- Maximum of 22 Sun StorEdge 6020 arrays (trays) using the base cabinet and a second Sun StorEdge Expansion Cabinet
- Each Sun StorEdge 6020 array is configured with one RAID 5 storage pool plus one standby hot spare
- Installation, configuration, and support services (optionally available)
- Remote power cycle and reboot so you can securely power on and off the entire system
- Logical unit number (LUN) security access for the storage consolidation models
- Hot swapping of all field-replaceable units (FRUs)
- Cluster and simultaneous independent host attach support

Product Changes

The following updates have been added to this product that were not included in the product documentation:

Array Configuration Changes

Sun StorEdge Configuration Service software supports adding and removing expansion units (that is, trays that do not contain controller cards) on existing array configurations using graphical-user-interface (GUI) wizards. This software supports the following array configuration changes:

- Adding expansion units to an existing array 2x2 or 2x4 HA configuration
- Removing expansion units from an existing array 2x4 or 2x6 HA configuration

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Note – If you use the management software to change the array configuration, make sure that the master controller unit is identified as Tray 0 before you begin. If the master controller unit has failed over, the alternate master controller unit assumes the master controller unit status. When this happens, the master controller unit tray number updates to the tray number of the alternate master controller unit. To change back to the original configuration and tray numbering, you must reset the array controller.

Figure 1 illustrates the HA configurations and the corresponding tray number in the Sun StorEdge Configuration Service software.

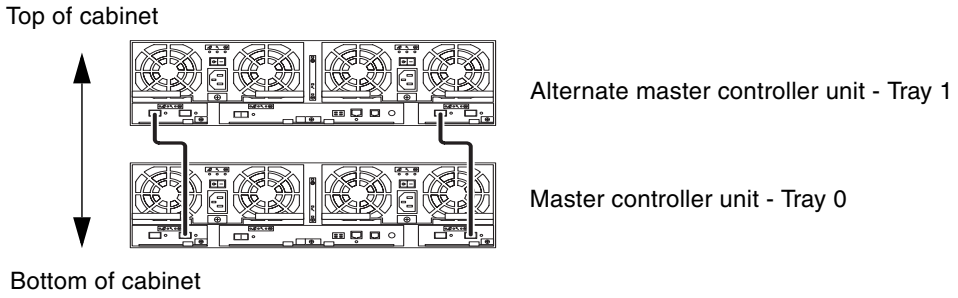

FIGURE 1 2x2 HA Configuration and Corresponding Tray Numbers

FIGURE 2 illustrates a Sun StorEdge 6020 array 2x4 HA Configuration and Corresponding Tray Numbers.

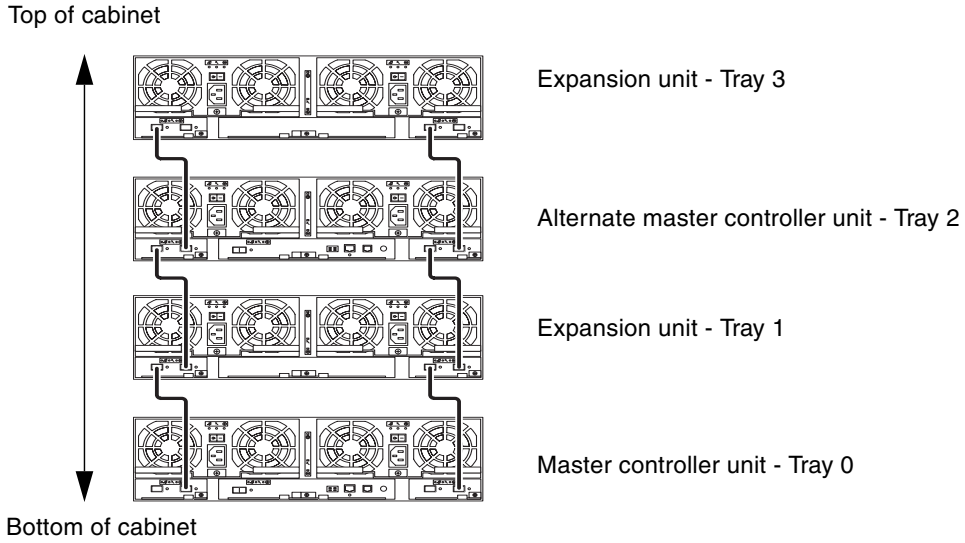

FIGURE 2 2x4 HA Configuration and Corresponding Tray Numbers

FIGURE 3 illustrates a Sun StorEdge 6020 array 2x6 HA Configuration and Corresponding Tray Numbers.

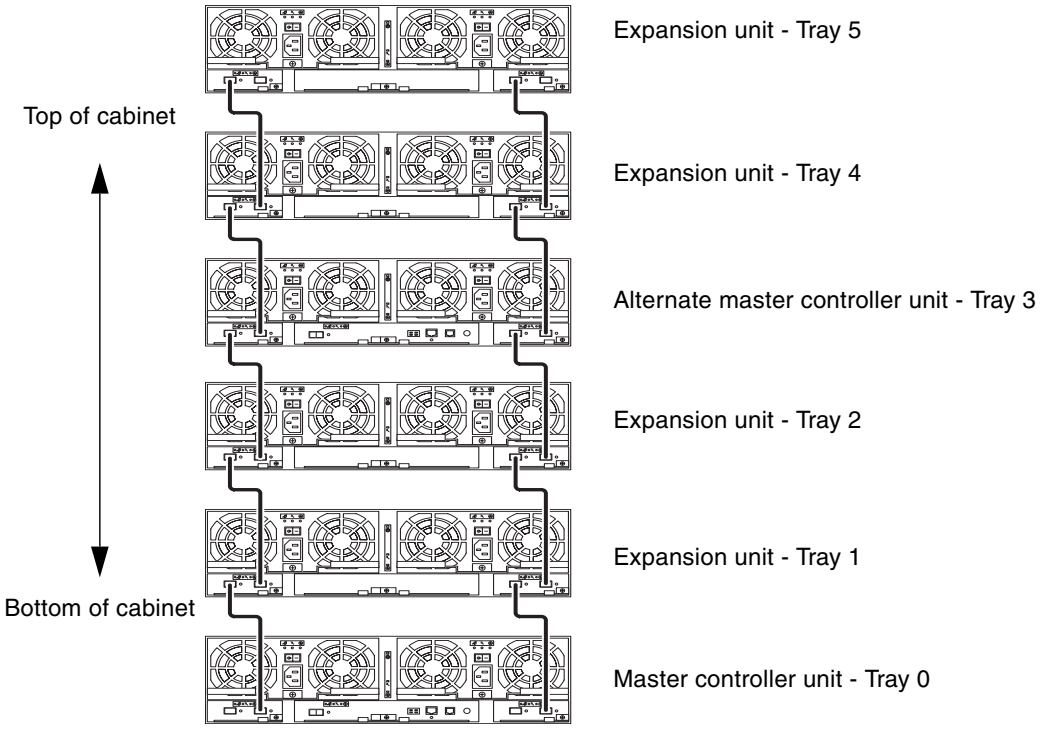

FIGURE 3 2x6 HA Configuration and Corresponding Tray Numbers

▼ To View the Add or Remove Expansion Online Help

For detailed instructions about adding and removing expansion units, follow these directions to access the online help.

1. **Click the online help link in the Sun StorEdge Configuration Service browser.**
2. **Navigate to Administering Your System → Array Details and Tray Reconfiguration.**
3. **Select one of the following options for instructions:**
   - To Add an Expansion Unit to an Array
   - To Remove an Expansion Unit from an Array

Thin-Scripting Client

A thin-scripting client is available for the Solaris operating environment as well as other hosts. The thin-scripting client provides a command-line interface (CLI) that enables access to Sun StorEdge 6320 system and management facilities. The client is available for download from:

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

You can navigate to the site that contains the scripting client files using either of the following methods:

▼ To Retrieve the Client From the Sun Download Center

1. **From the `http://www.sun.com` home page, click Downloads.**
2. **Under Browse Downloads by Category, click System Administration.**
3. **Under Storage Management, click Sun StorEdge 6320 System Software products.**
4. **Log in with the customer's user name and password.**
5. **Download the files for your operating system.**

   For example, the files for the Linux operating system would be:

   - `linux_se6x20.tar`
   - `linux_README.txt`

   The `README` file contains the installation instructions for the client.

▼ To Retrieve the Client From the Sun Storage Site

1. **From the** `http://www.sun.com` **home page, click Product & Services.**
2. **Under Browse Products, click Storage.**
3. **Under Hardware Storage, click Midrange Storage.**
4. **Under Midrange Storage, click Sun StorEdge 6000 Family.**
5. **Under Sun StorEdge 6000 Family, Click Sun StorEdge 6300 Series.**
6. **Under Sun StorEdge 6300 Series. click Sun StorEdge 6320 Series.**
7. **Under Software Download, Click Sun Storage 6000 Family Storage Products.**
8. **Log in with the customer's user name and password.**
9. **Download the files for your operating system.**

   For example, the files for the Linux operating system would be:

   - `linux_se6x20.tar`
   - `linux_README.txt`

   The `README` file contains the installation instructions for the client.

System Requirements

Sun StorEdge 6320 system hardware and software platform requirements, and other supported software, are detailed in the *Sun StorEdge 6120 Array Installation Guide*. This section contains a list of additional software patches and packages required for this release.

Packages

You must install the following packages on the Sun StorEdge 6320 system management host or any network host connected to the array:

- Sun StorEdge 6000 Family Host Installation Software (also available on the product CD)
- VERITAS Array Support Library, required only for VERITAS Volume Manger support with the array

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Note – You must install the packages before you install the patches.

▼ To Download the Packages

1. **In a web browser, go to:**

   `http://www.sun.com/download`

2. **Under Browse All Products, click View All.**
3. **Click the Sun StorEdge 6320 system name.**
4. **Follow the instructions on the site to download the required packages.**

▼ To Install the Packages

- **Use the `pkgadd`(1M) command to install the Sun StorEdge 6320 system packages.**

  Refer to the package README file for detailed instructions.

Data Host Patches

TABLE 1 lists the minimum level patches necessary for the array. These patches must be installed on the data host.

TABLE 1 Patches

Platform	Patch Number	Patch Description
Solaris 9 operating system, first release or later	Refer to web site	Sun StorEdge SAN Foundation 4.2 software: Refer to the *Sun StorEdge SAN Foundation 4.2 Installation Guide* at `http://www.sun.com/storage/san` for patch and product information.
	112392-04 or later	VERITAS VxVM 3.5 general patch[1]
	113698-02	VERITAS VxVM 3.5 supplemental general patch* • VERITAS VxVM patches must be installed in the order listed. • If you install a later version of patch of 112392, such as the -05 revision, the supplemental patch (113698-02) is not required.
Solaris 8 operating system, Update 4 or later	Refer to web site	Sun StorEdge SAN Foundation 4.2 software: Refer to the *Sun StorEdge SAN Foundation 4.2 Installation Guide* at `http://www.sun.com/storage/san` for patch and product information.
	112392-04 or later	VERITAS VxVM 3.5 general patch*
	113698-02	VERITAS VxVM 3.5 supplemental general patch* • VERITAS VxVM patches must be installed in the order listed. • If you install a later version of patch of 112392, such as the -05 revision, the supplemental patch (113698-02) is not required.
Microsoft Windows NT operating systems	Available from Microsoft	Microsoft Windows NT Service Pack, SP 6A
		Sun StorEdge Traffic Manager 3.0 NT
Microsoft Windows 2000 Server and Advanced Server	Available from Microsoft	Microsoft Windows 2000 Service Pack, SP 3
		Sun StorEdge Traffic Manager 3.0 Win2K
IBM AIX 4.3.3	Available from IBM	ML 10
		Sun StorEdge Traffic Manager 3.0 AIX
IBM AIX 5.1 32 and 64 bit	Available from IBM	ML 03
		Sun StorEdge Traffic Manager 3.0 AIX

TABLE 1 Patches *(Continued)*

Platform	Patch Number	Patch Description
HP-UX 11.00 and 11.i	Available from Hewlett-Packard	Patch set, September 2002
		Sun StorEdge Traffic Manager 3.0 HP-UX
Red Hat Linux 7.2 (single-path support only)	Available from Red Hat Linux	Version 2.4.7-10

1 Required only for systems running VERITAS Volume Manager with the array.

▼ To Download the Patches

1. **Go to** `http://www.sunsolve.sun.com`**.**
2. **Download the patches listed in** TABLE 1**.**

   You can access these patches by navigating the links Patch Pro → Network Storage Products.

▼ To Install the Patches

Note – Install the packages before you install the patches.

- **Use the** `patchadd`**(1M) command to install the patches in** TABLE 1**.**

  Refer to the patch README files for more patch information

Known Issues and Bugs

The following sections provide information about known issues and bugs filed against this product release:

Known Issues

This section includes known issues about this product that are not categorized by Sun bug ID number.This section contains the following topics:

General Issues

The following are general known issues with the Sun StorEdge 6320 series 1.0 release.

- Secure shell (SSH) through a Sun StorEdge Remote Response/Point-to-Point Protocol interface is supported. However, the customer LAN SSH connections are not allowed.
- You cannot use an authenticated proxy server, which requires a proxy user name and password, to connect to the internet and access the Sun external patch distribution server.

- **Remote Shutdown Problem Can Cause Restart**

  If you power off the Sun StorEdge 6120 array or the Sun StorEdge 6320 system arrays remotely using the command `shutdown -y`, and you do not also physically switch off the Power Cooling Unit switches, the arrays could possibly restart themselves.

  Normally, the array trays would not restart and the probability of doing so is low. The problem, however, arises due to excessive electrical "noise" in the power supply switch line. *There are no safety concerns due to this condition and data remains available.*

  Workaround: Physically turn off the Power Cooling Unit power switches when you use the remote command `shutdown -y`.

  See the following documentation for proper shutdown procedures and information about remote power shutdown:

  Sun StorEdge 6020 and 6120 Arrays System Manual (817-0200)
  Sun StorEdge 6120 Array Installation Guide (817-0199)
  Sun StorEdge 6320 System 1.0 Installation Guide (816-7878)

Sun StorEdge Configuration Service Issues

- There is an issue with Netscape™ version 4.79. Double clicking on the top bar of the browser or resizing the window causes loss of context on the screen. If this happens, bring up the window menu and select Reload.
- The Sun StorEdge 6320 systems can be managed through either a browser-based GUI interface, or through a native host thin scripting client which provides a command line interface. To use the thin scripting client, the Sun StorEdge Configuration Service host CD-ROM must be installed on a supported host system on the Customer LAN.
- If you are administering the Sun StorEdge 6320 system using an older generation (HTTP 1.0-based) web browser such as Netscape 4.x or earlier, you could experience time out conditions from the browser when configuring large Sun StorEdge 6320 systems. In large configurations, more time is needed to calculate capacities, and older browsers time-out before those calculations are complete. In these cases, you might need to reload the browser page to continue working with the system.

  If this becomes an issue, update your browser to a version that supports HTTP 1.1 (Netscape 6 or higher). This issue affects browser-based administration only and does not affect the Sun StorEdge Configuration Service command-line administration, using the thin scripting client.

Documentation Issues

- The index and search facilities for the online help do not work correctly in localized versions.
- Several commands were added to the Sun StorEdge Configuration Service that were not listed in the documentation. These include:
  - **Listing the Array Status**

    This command displays the status information about arrays. The `sscs list arraypower` command-line syntax is shown below.

```
# sscs list -a array-name arraypower
```

    TABLE 2 describes the arguments associated with the `list arraypower` subcommand.

TABLE 2 `sscs list arraypower` Command-Line Arguments

Argument	Description
`-a,--array` *array-name*	Specifies an *array-name* up to 40 characters long.

  - **Modifying Power for an Array**

    This command modifies power for an individual array. The `sscs modify arraypower` command-line syntax is shown below.

```
# sscs modify -a array-name arraypower { off | restart | rad }
```

    TABLE 3 describes the arguments associated with the `modify arraypower` subcommand.

TABLE 3 `sscs modify arraypower` Command-Line Arguments

Argument	Description
`-a,--array` *array-name*	Specifies an *array-name* up to 40 characters long.
`arraypower` *value*	Where *value* can be either `off` (shutdown the array), `restart` (restart the array), or `rad` (restore the array default values).

- **Modifying Tray**

  This command is used to disable, enable, or unconfigure a controller. The `sscs modify tray` command-line syntax is shown below.

```
# sscs modify -a array-name -d tray-name
```

TABLE 4 describes the arguments associated with the `modify tray` subcommand.

TABLE 4 `sscs modify tray` Command-Line Arguments

Argument	Description
`-a, --array` *array-name*	Specifies an *array-name* up to 40 characters long.
`-u, --unconfigure` *tray-name*	Unconfigures a tray.
`-d, --disable` *tray-name*	Disables a tray.
`-e, --enable` *tray-name*	Enables a tray.

Multiplatform Issue

- Qlogic host bus adapters (HBAs) require host-specific Flash code. Due to different host platform behaviors with Fibre Channel devices, a Sun supported Qlogic HBA could require a Flash image update on the HBA, which is dependent on the type of platform. TABLE 5 shows the Flash image required for each supported platform.

TABLE 5 Qlogic Flash Images by Platform

Platform	Flash Image	HBA Device Driver
qlc + Win 2K	Qlogic x86 Flash Image	Sun supported driver
qlc + Win NT	Qlogic x86 Flash Image	Sun supported driver
qlc + Solaris SPARC host	Sun supplied Qlogic HBA	n/a
qlc + Linux	Qlogic x86 Flash Image	Red Hat 7.2

Should a Flash update be required for your given operating system, contact your Sun Authorized Service Representative for details on obtaining the Flash update image.

Bugs

The following is primarily a list of the priority 1, 2, and 3 bugs associated with Sun StorEdge 6320 systems and associated software and hardware. The BugID number is followed by the priority and severity of the bugs in parentheses.

This section is broken into the following categories:

VERITAS Bug

- **Bug 4800446 (P3/S4):** The `vxinstall`(1M) command fails occasionally to partition some volumes. On rare occasions, the `vxinstall` command in Volume Manager 3.5 fails in its attempt to partition a Sun StorEdge 6020 array volume.

  Workaround: Run a subsequent `vxinstall` command to partition the missing volumes.

  An alternate workaround is to run the following Volume Manager command, which will partition only the specified device.

```
# /etc/vx/bin/vxdisksetup -i cntndn
```

Sun StorEdge SAN Foundation Software Bugs

- **Bug 4820203 (P3/S3):** Extended boot time delay and configure failures occur with a large number of configured volumes. In some cases, VERITAS volumes can become disabled due to some LUNs being inaccessible by the Volume Manager script while mounting volumes in the startup script. This can occurs when one of the paths to an array volume is in standby mode.

  Workaround: Add a sleep delay of 8 seconds per LUN at the beginning of the `/etc/rcS.d/S85vxvmstartup2` script and reboot the system.

- **Bug 4816283 (P3/S3):** The `fc_topology auto` mode on the Sun StorEdge 6020 arrays can get out of sync with Fibre Channel switch settings.

  Workaround: On Sun StorEdge 6020 arrays, do not use the `sys fc_topology auto` setting. Set the array `fc_topology` to `loop` for arrays that are connected directly to hosts, or to `fabric_p2p` mode for array-to-switch connections.

- **Bug 4844391 (P4/S3) and Bug 4841099 (P4/S4):** When performing a DR Attach operation or a hot-plug operation on a host connected directly to a Sun StorEdge 6120 array, the host will fail to configure the array if the array `fc_topology` mode is set to the `auto`.

  Workaround: For Sun StorEdge 6020 arrays in direct host-attach configurations, use the `sys fc_topology` loop command to change the mode to loop.

Multiplatform Bugs

This section is organized as follows:

Microsoft Windows NT and Microsoft Windows 2000 Platforms

- **Bug 4811507 (P4/S3):** If a Sun StorEdge Traffic Manager multipathing graphical user interface (GUI) is started during a failover, the GUI does not display information on failover devices. This occurs in Microsoft Windows NT 4.0 operating environments during a failover, even when the devices are active and functioning properly.

  Workaround: To see an accurate view of all devices on the system, restart the multipathing GUI after failover has completed, and the failover devices display properly.

- **Bug 4816964 (P4/S2):** The Microsoft Windows 2000 multipathing management GUI currently allows users to disable all paths to a given HBA. Although the GUI warns the user that disabling all paths to all HBAs is an unsupported operation, there are cases where the underlying drivers proceed with the users request and all paths are disabled. Loss of all paths to a given storage device can result in an unstable operating system environment. The Windows 2000 system hangs in cases where both paths to a given Sun StorEdge 6020 array have been disabled.

  Workaround: Never disable all paths to both HBAs connected to a Sun StorEdge 6020 array. To remove an array from a configuration, use the Windows Install Wizard to disable the connected HBA first.

IBM AIX Platforms

- **Bug 4815527 (P1/S2):** and Bug 4743016 (4/2) On AIX systems where the `cfgmgr` utility is used to add Sun storage devices to a configuration, the AIX host system can hang. This problem has been isolated by Sun to an AIX host problem, and this issue has been reported to IBM under tracking ID PMR 04186-004. Further information on this issue will be posted as it becomes available.
- **Bug 4814660 (P2/S3):** There is a known issue with the multipathing driver management GUI under IBM AIX 5.1 where the disk device name does not display properly. This problem appears to be specific to this platform environment.

  Workaround: A fix is currently in progress. For more information, contact your Sun Authorized Service Representative.

Sun StorEdge Configuration Service Bugs

- **Bug 4863467 (P2/S2):** When using the Sun StorEdge Configuration Service wizards to add or remove expansion trays in a storage array, after the wizard directs you to physically remove or add the required expansion trays, recable and power on the newly configured storage array allowing enough time for the storage array to completely boot before clicking the Next button in the wizard. If you proceed to the next screen before the newly configured storage array boots completely, the wizard can time out due to its inability to communicate with the storage array. If a timeout occurs, this might indicate that the storage array was not ready to communicate over the Ethernet connection.

  Workaround: If the wizard times out before the array fully boots, click the Retry button in the wizard to re-attempt communication with the array. If the wizard is unable to communicate with the storage array, and you do not initiate a retry, eventually the wizard will log off. If the wizard logs off during a tray addition procedure, and if storage pools existed in the original configuration, those pools will not be placed online automatically by the wizard. Should this occur, you must manually place the storage pools online using the Sun StorEdge Configuration Service tool *after* the array has booted completely.

- **Bug 4854361 (P3/S2):** When using the Sun StorEdge Configuration Service to perform a duplicate tray operation (for example, creating storage pools on more than one tray at a time), it is possible that the duplication operation will affect only the first tray, but not the remaining trays. No error message or failed job message is displayed.

  Workaround: Continue to use the duplication operation for each remaining tray.

- **Bug 4818658 (P3/S2):** Initiators in `initgroup` can sometimes detect a volume where specific access permission has not been allowed. Although an unauthorized initiator may be able to detect these volumes, data access permission to the volume is not allowed unless that initiator has been given specific access to the volume.

  Workaround: A fix is in progress. For assistance with this issue, contact your Sun Authorized Service representative.

- **Bug 4825610 (P3/S3):** Adding one volume in multiple volume groups or one initiator in multiple initiator groups can cause unintended host permission. For example, configuration of a given volume into multiple volume groups, followed by granting access by an initiator group to the same two volume groups, can result in multiple types of access being granted. If you later remove the association between the initiator group and one of the volume groups, the access between the initiator group and the specific volume is accidentally removed entirely. This situation only occurs if in the following two instances:

  a. The same initiator group is granted access to two volume groups that contain the same volume.

  b. The same volume group is granted access to two initiator groups that contain the same initiator.

  Workaround: To avoid this situation, before adding a volume to a volume group, make sure that the volume does not already belong to another volume group. Likewise, before adding an initiator to an initiator group make sure that the initiator does not already belong to another initiator group. If a volume has already been added to two volume groups, quiesce I/Os from all initiators using the volume, remove the volume from both volume groups, and re-add the volume to the desired volume group. If an initiator has been added to multiple initiator groups, quiesce I/Os from the initiator, remove the initiator from both initiator groups, and re-add the initiator to the desired initiator group.

- **Bug 4657035 (P3/S4):** When a Sun StorEdge 6020 array is administered using the configuration service GUI, and when there are no storage pools configured on the array, the array controller can be disabled. Sun factory configurations have configured storage pools, and occurs only if there are no storage pools on the array and you perform other administrative tasks.

  Workaround: To avoid this problem, make sure that there is at least one storage pool configured on each Sun StorEdge 6320 system configured in a storage array system. You can also re-enable the array controller using the Sun StorEdge Configuration Service `sscs modify --enable -a array 00 tray 0` command.

- **Request for Enhancement (RFE) 4804942:** When using the Sun StorEdge Configuration Service in the Sun StorEdge 6320 system environments, the issued commands are queued for processing at the Storage Service Processor. If a Sun StorEdge 6320 system error occurs (such as a reboot of the Storage Service Processor), the Sun StorEdge Configuration Service does not maintain the state of the internal queue.

  Workaround: In these cases, reissue commands to initiate GUI operations.

- **Bug 4863940 (P5/S5)** In the localized versions of the Sun StorEdge Configuration Service software, the link "Help in Adobe Acrobat PDF Format" to the `help.pdf` file is not available.

  Workaround: Refer to the online help by individual section title. The `help.pdf` file is a consolidated version of all online help files in PDF format.

Sun StorEdge 6020 Array Bugs

- **Bug 4862463 (P1/S1)** Reconstruction of data from a standby drive to a replaced drive is performed at a high reconstruction rate, regardless of the global reconstruction rate setting on the array. This behavior results in increased host I/O latency during the copy-back operation from the standby drive as the array conducts this operation in the shortest amount of time. After the copy-back operation has completed, array response to host I/Os resumes to normal performance levels. Reconstruction of data on the array to the standby disk (after the initial drive failure is detected), does respond correctly to the reconstruction rate tunables configured on the array.

  Workaround: Schedule a drive replacement procedure during an array maintenance period to avoid impacting array performance during normal operations.

- **Bug 4840853 (P1/S3):** The `boot -w` command or the equivalent of this operation in the Sun StorEdge Configuration Service software can cause array errors that abort the operation. You can perform a boot -w operation in several ways, including use of the:
  - "Remove an Expansion Tray" procedure in the Sun StorEdge Configuration Service user interface (UI),
  - "Restore Array Defaults" feature in the CLI, and
  - "Restore Array Defaults" button on the GUI.

  The management software is not able to detect a failure of the underlying `boot -w` operation during any of the procedures above. If such a failure occurs, the management software is not able to contact the array to perform any follow-up operations, because the management software no longer knows the correct array password.

  Workaround: If this type of failure occurs while you are performing a tray removal procedure using the Sun StorEdge Configuration Service software do the following:

1. **Log out of the management software application.**
2. **Log in to the Storage Automated Diagnostic Environment.**
3. **Go to the Administration → Services → Configure Devices page.**
4. **Unconfigure the array on which the error occurred.**
5. **Reconfigure the array on which the error occurred.**
6. **Open the management software application and retry the procedure.**

   This procedure reminds the management software application of the array password, which enables the application to complete the procedure.

Note – Before you begin any tray removal procedure using the Sun StorEdge Configuration Service software, you can minimize the chances of this issue occurring by rebooting the storage array before performing the tray removal procedure.

- **Bug 4827533 (P2/S3):** the Power-on-self-test or built-in-self-test (POST/BIST) firmware does not light the amber LED when a hardware problem is detected. During the process of booting an array controller, if either the POST/BIST firmware detects a fatal problem with the hardware, the system will prevent the faulty controller from going online. If this occurs, the amber LED on the controller card (normally used to indicating the hardware is faulty) does not light.

  Workaround: Allow enough time for the newly inserted controller card to boot, and verify that the controller card is healthy by checking its status using the Sun Storage Configuration Service software. If a controller does not come online, it could be that the inserted controller card is bad and needs to be replaced.

- **Bug 4812670 (P2/S4):** Controller failure might cause only one blue LED to light. In some cases of a controller failure, both the blue Ready-to-Replace LED and amber Fault Warning LED should be illuminated. However, only the blue LED is lit.

  Workaround: If a blue LED is illuminated on a controller card FRU, consider the notification of a controller card failure, as well as the status indicating that the controller is ready to be replaced. If this happens, replace the controller card as soon as possible. To confirm a failed controller card status, verify the status using either the Sun StorEdge Configuration Service interface.

- **Bug 4808119 (P3/S1):** In some cases, when a disabled alternate master controller is re-enabled from the master controller, before the alternate master controller has completed booting, it can be disabled by the array master controller. Because the alternate master controller has not completed the boot cycle and has not begun accepting I/Os, the system state remains the same with one controller online, and the other disabled. Alternate master controllers are disabled and re-enabled during the Sun StorEdge 6020 array online firmware update procedure. If the master controller is unable to re-enable an alternate master controller, the online firmware update procedure will not complete and this procedure must be followed to bring the alternate master controller online.

  Workaround: If a controller doesn't appear to have come back online when it should have, the controller can be enabled using the Sun StorEdge Configuration Service (`sscs`(1M)) command line interface using the a command sequence similar to the following:

```
# sscs modify --enable -a array00 tray 0
```

Note – This sample command shows how you can enable the bottom tray in the first storage array located in the Sun StorEdge 6320 system (array00). To use the Sun StorEdge Configuration Service command line, you must install the thin scripting client software on a management host located on a Customer LAN with Ethernet connectivity to the Sun StorEdge 6320 system you are administering.

- **Bug 4821680 (P3/S2)** If loop 2 on the array is disabled while you are attempting to add or remove a volume can take an extended period of time to complete (approximately 15 minutes) this operation.

  Workaround: Resolve the condition that caused the back-end loop to be disabled before proceeding with additional volume changes.

- **Bug 4827709 (P3/S3):** If you physically remove a drive from a Sun StorEdge 6020 array and then insert the drive back into the array, the drive status is reported as missing until volume reconstruction of the drive has completed. This occurs only when you have a standby drive in the array configuration.

  Workaround: Wait until the volume reconstruction of the drive has completed before verifying the drive state.

- **Bug 4835912 (P3/S3):** Because array system dates are synchronized to the system date of the Storage Service Processor, changing the Storage Service Processor system date backwards by more than one week can result in this bug.

  Workaround: If you reset the date backwards by more than one week, you must reboot all the Sun StorEdge 6020 arrays in the system.

- **Bug 4857818 (P3/S3):** Fractional volume creations are not supported when using the Sun StorEdge Configuration Service.

  Workaround: Either avoid using fractions and use whole numbers when setting the volume size parameter, or convert the Gbyte value to an Mbyte value (x1024) and specify the slice size in Mbytes.

- **Bug 4784375 (P3/S3):** The Sun StorEdge 6020 array automatically calculates when it was last reset, and a system date change will affect the last restart date that the array reports. The array calculates the date it was last reset as follows:

```
System Last Reset Date = Current System Date - Time System Has Been Running
```

  Because of the way this is calculated, any change to the Current System Date will change the value reported by the System Last Reset Date.

  Workaround: There is no workaround required.

- **Bug 4831459 (P3/S3):** If the master interconnect card in a master controller unit (`u1l1`) should fail, you cannot enable a disabled controller in the array.

  Workaround: If the controller card system health is reported as failed, replace the controller card.

- **Bug 4754382 (P3/S4):** On some Sun StorEdge 6020 array configurations using a non-GMT time zone setting, the timestamp used by the alternate master controller unit may not match the timestamp of the master controller unit.

  Workaround: This issue is currently under investigation. Aside from mismatched time stamps in a given array's `syslog` file, there are no known side effects resulting from this issue.

- **Bug 4830120 (P3/S4):** With all PCUs charging, cache mode stays in write behind when set to auto. Sun StorEdge 6020 arrays that have experienced a power loss and have depleted batteries that flush cached data to disk will, upon restoration of AC power, start charging internal batteries. When this occurs, those arrays might incorrectly leave the cache state in write behind mode, even when the cache mode is set to `auto`. This can create a level of risk if a second power failure occurs before the batteries have been adequately recharged.

  Workaround: Using the Sun StorEdge Configuration Service, set the cache mode to write through on each array until battery recharging has completed.

- **Bug 4746269 (P4/S1):** On rare occasions, a Sun StorEdge 6020 array might hang in the boot cycle during the network route initialization stage. This occurs only during boot cycles when the array is not yet online accepting I/Os, so no host data I/Os are affected.

  Workaround: Power cycle the hung array controller. If a Sun StorEdge 6020 array hangs during boot, this will be reported by the Storage Automated Diagnostic Environment. After booting a Sun StorEdge 6320 system, check with the Storage Automated Diagnostic Environment to check the health of all arrays.

- **Bug 4810779 (P4/S3):** Warning messages in the `syslog` file during a boot sequence incorrectly imply a failover and faulty FRU. A Sun StorEdge 6020 array with no FRU failures or loop problems displays the following types of messages in the `syslog` file:

```
Jan 30 12:03:02 ISR1[1]: W: u2d01 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:02 ISR1[1]: W: u2d02 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:02 ISR1[1]: W: u2d04 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:02 ISR1[1]: W: u2d05 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:02 ISR1[1]: W: u2d07 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:02 ISR1[1]: W: u2d08 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:02 ISR1[1]: W: u2d10 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:02 ISR1[1]: W: u2d11 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:02 ISR1[1]: W: u2d13 SVD_PATH_FAILOVER: path_id = 0
Jan 30 12:03:03 ISR1[1]: W: u2d14 SVD_PATH_FAILOVER: path_id = 0
```

  These types of warnings are generated as a result of the back-end split loop configuration process that automatically occurs as the array configures itself during boot for optimal performance.

  Workaround: You can ignore these messages in a `syslog` file as they occur during a boot cycle. Note that the number of messages logged depends on the size of the configuration. The more arrays present in the system configuration will result in more drives on the loops being reconfigured and more `syslog` entries at boot time.

Sun StorEdge SAM-FS Bug

- **Bug 4838778 (P2/S1):** If you experience a double-path failure while using Sun StorEdge SAM-FS software, a host panic could occur. Because this problem occurs only with a double-path failure, resolve any single path failure as quickly as possible to ensure a fully redundant configuration.

Storage Automated Diagnostic Environment Bug

- **Bug 4864266 (P3/S3):** If the Sun StorEdge 6320 system consists of multiple Sun StorEdge 6020 arrays that have different root passwords, the non-default password used must be changed to allow management software access to the storage array. (The default password is `sun1`.)

  Workaround: To change the password within the Storage Automated Diagnostic Environment, use the Manage → Utilities → Array Passwords Devices GUI page. This screen also prompts you for the array's old password for the array. When the password change facility is executed, output is generated that may lead the user to believe the password change was not successful. This is caused by the fact that the Storage Automated Diagnostic Environment is attempting to connect to every array in the configuration using the previous password. As expected, this login attempt fails for all but the storage array targeted for the password change. In spite of the login attempt failures for other arrays in the Sun StorEdge 6320 system, the Storage Automated Diagnostic Environment repeats the password change process for every array in the configuration, successfully changing the password on arrays that have the specified old password. Once the password has been changed, you must inform the management software. Go to the Manage → Service → Configure Devices and update the appropriate array.

Documentation Bug

- **Bug 4842713 (P3/S3):** The localized Help search function does not work correctly. The online help Search and Index tabs use ASCII text to return search results and enable you to view index entries. The information usually available from the Search and Index tabs do not work correctly for non-ASCII character locales such as Japanese and Chinese.

  Workaround: There is no workaround for this bug.

Release Documentation

TABLE 6 lists the documentation for the Sun StorEdge 6320 system and related products. This documentation is available online at:

`http://www.sun.com/documentation`

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 6320 series documents are also available at:

`http://docs.sun.com`

TABLE 6 Sun StorEdge 6320 System and Related Documentation

Part Number	Title
816-7878-10	*Sun StorEdge 6320 Series 1.0 Installation Guide*
816-7879-10	*Sun StorEdge 6320 Series 1.0 Reference and Service Manual*
816-7877-10	*Sun StorEdge 6320 Series 1.0 Site Prep Guide*
816-7876-10	*Sun StorEdge 6320 Series 1.0 Regulatory and Compliance Guide*
816-7875-10	*Sun StorEdge 6320 Series 1.0 Start Here*
817-0198-10	*Sun StorEdge 6020 and 6120 Array Start Here*
817-0201-10	*Sun StorEdge 6020 and 6120 Array Release Notes*
817-0961-10	*Sun StorEdge 6020 and 6120 Array Site Preparation Guide*
817-0961-10	*Sun StorEdge 6020 and 6120 Array Regulatory and Safety Compliance Manual*
817-0199-10	*Sun StorEdge 6020 and 6120 Array Installation Guide*
817-0200-10	*Sun StorEdge 6020 and 6120 Array System Manual*
817-0822-*nn*	*Storage Automated Diagnostic Environment 2.2 User's Guide -- Device Edition*
817-0823-*nn*	*Storage Automated Diagnostic Environment 2.2 Device Edition Release Notes*
817-1246-*nn*	*Sun StorEdge SAN Foundation 4.2 Release Notes*
805-3067-*nn*	*Sun StorEdge Expansion Cabinet Installation and Service Manual*

Sun StorEdge 6320 System Terminology

The Storage Networking Industry Association (SNIA) is currently developing a standard set of terminology. When it has been totally adopted by all storage manufacturers, this terminology standard will make it easier for customers because all vendors will work from a common set of terms.

Sun Microsystems is making a move to adopt the SNIA terms now. The first storage product to use the new SNIA terminology is the Sun StorEdge 6320 system.

TABLE 7 shows a comparison (mapping) of the terms used by the Sun StorEdge 6020 arrays to the terms used by the Sun StorEdge 6320 system.

TABLE 7 Sun StorEdge 6320 Terminology

Sun StorEdge 6020 Terminology[1]	Sun StorEdge 6320 Terminology
Volume	Storage Pool
Slice	Volume
LUN	Volume
Administrative Domain	Storage Array
Partner Group	Storage Array
Array	Tray
Enclosure	Tray
Expansion Unit	Expansion Unit

1—This is the Telnet based terminology used on the Sun StorEdge 6020 and 6120 arrays.

Service Contact Information

If you need help installing or using this product go to:

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