

Sun StorEdge™ RAID Manager 6.1.1Update 2 Release Notes

For Sun StorEdge™ A1000, A3000, and A3500



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Sun StorEdge RAID Manager 6.1.1 Update 2 — Release Notes

This document contains important information about the installation and operation of the Sun StorEdge™ RAID Manager software that was not available at the time of the product's release. You should read the entire document before attempting to install or operate Sun StorEdge RAID Manager 6.1.1 Update 2 on a Sun StorEdge A1000, Sun StorEdge A3000, or Sun StorEdge A3500 system. (Unless the A3000 or A3500 is uniquely identified, both systems are referred to as "A3x00" throughout this document.)

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Solaris Releases Supported

Sun StorEdge RAID Manager 6.1.1 software supports the Solaris™ 2.5.1, Solaris 2.6, and Solaris 7 operating environments.

Required Patches

TABLE 1 provides an overview of the patches necessary to use this product on Solaris platforms at the time this manual was published.

You can download the actual patches from the SunSolve Online™ Public Patch Page Access Web site:

`http://sunsolve.sun.com/`

Be sure you download the latest revision level for each patch. If you have any questions, contact your local solution center for assistance in downloading the patches.

Note – It is important that the required `sd` patch applicable to your Solaris environment (in TABLE 1) be applied to the system *before* attempting to download the Sun StorEdge A1000 or Sun StorEdge A3x00 controller firmware.

Sun StorEdge A1000 is not supported for Solaris 2.5.1 generic (unbundled).

The `ses` driver patch is required in order to run `SunVTS™ encctest`, which allows access to the diagnostic capabilities of the Sun StorEdge A1000.

TABLE 1 Required Patches for Sun StorEdge RAID Manager 6.1.1

Solaris Version	Patch ID	Description
2.5.1	103640-(latest rev level) 103622-(latest rev level) 103934-(latest rev level) 104312-(latest rev level) (refer to patch web site)	kernel update patch sd driver patch isp patch format and fdisk patch ses driver patch
2.5.1 SHWP (4/97 HW1, 8/97 HW2, or 11/97 HW3)	103622-(latest rev level) 103934-(latest rev level) 103981-(latest rev level) 104312-(latest rev level) 105324-(latest rev level)	sd driver patch isp patch glm driver patch for PCI bus format and fdisk patch ses driver patch
2.6	105181-14 (or later rev level) 105580-(latest rev level) 105357-04 (or later rev level) 105600-07 (or later rev level) 105797-(latest rev level) 106125-(latest rev level) 106226-(latest rev level) 106655-02 (or later rev level)	kernel update patch glm driver patch for PCI bus ses driver patch isp patch sd driver patch patchadd format patch iostat/mpstat/vmstat patch
2.6 SHWP (3/98)	106125-(latest rev level) 105181-14 (or later rev level) 105580-(latest rev level) 105797-(latest rev level) 105600-05 (or later rev level) 106226-(latest rev level) 105357-04 (or later rev level)	patchadd kernel update patch glm driver patch for PCI bus sd driver patch isp patch format patch ses driver patch
2.6 SHWP (5/98)	105181-14 (or later rev level) 105580-(latest rev level) 105797-(latest rev level) 105600-05 (or later rev level) 106226-(latest rev level) 105357-04 (or later rev level)	kernel update patch glm driver patch for PCI bus sd driver patch isp patch format patch ses driver patch
Solaris 7 QU 8/99	106541-05 (or later rev level)	kernel update patch

TABLE 2 lists the patches that are not Solaris-specific.

TABLE 2 Non-Solaris Patches for Sun StorEdge RAID Manager 6.1.1

Patch ID	Description
106707-02 (or later rev level) ¹	firmware upgrade and A1000/A3x00 support for Sun Cluster 2.1 (see footnote below)
106552-03 (or later rev level) ²	Solaris 7 patch
106817-(latest rev level) ³	Seagate drive firmware patch

¹ This patch includes the new controller firmware file (`fwcompat.def`), plus other binaries. Install this patch *only* if you are running Sun Cluster software and previously installed patch ID 106707-01.

² Use this patch only if you plan to upgrade your operating environment to Solaris 7.

³ This patch is required only if you have installed Seagate drives on your system.

Sun StorEdge RAID Manager Upgrade Procedure

Customers who want to upgrade their current Sun StorEdge A1000 or Sun StorEdge A3x00 system to this version of Sun StorEdge RAID Manager software must follow the upgrade procedure outlined in Chapter 1 of the *Sun StorEdge RAID Manager Installation and Support Guide for Solaris*. As an overview, the upgrade procedure involves the following steps:

Note – Do not add any new peripherals or devices to your system until you have completed your Sun StorEdge RAID Manager upgrade.

1. **Save a copy of the current `/kernel/drv/sd.conf` file.**
2. **Record existing RAID Module names, serial numbers, and LUN/controller location information under the *current* version of Sun StorEdge RAID Manager.**

Tip – To ensure that the integrity of your device tree remains consistent, review Bug 4118532 in the “Known Limitations” section.

If you are upgrading from Sun StorEdge RAID Manager 6.0, the RAID Module numbers or names will change. In newer versions of the software, the module name is derived from the name of the host machine where the Sun StorEdge RAID Manager software is installed. Whereas older versions of this software labeled the modules as RAID Module XX, newer versions label the modules as `<hostname>_XXX`. For example, if the host machine running the storage management software is named `qualab133`, the RAID modules names are `qualab133_XXX`.

3. **Exit the Sun StorEdge RAID Manager software.**
Make sure that any earlier versions of Sun StorEdge RAID Manager software are not currently open or running.
4. **Remove the Sun StorEdge RAID Manager software packages using `pkgrm(1M)`.**
5. **Run the following command:**

```
# reboot
```

6. **Install all recommended patches as outlined in “Required Patches.”**

Note – If you want to support LUNs greater than 8, see “Maximum LUN Support on Solaris 2.6 5/98” on page 11.

7. **Install the Sun StorEdge RAID Manager 6.1.1 Update 2 software on the host system using `pkgadd(1M)`.**

Note – `SUNWosafw` is a firmware package introduced *after* Sun StorEdge RAID Manager 6.0. Do not forget to add this package.

8. **Reboot the host system (using the `boot` command).**
9. **Download the new Sun StorEdge RAID Manager 6.1.1 RAID Controller firmware to all Sun StorEdge controllers.**

Note – Refer to Bug 4117560 in “Known Limitations” before downloading firmware to Sun StorEdge A3x00 systems.

Tip – If you are upgrading from Sun StorEdge RAID Manager 6.0 to Sun StorEdge RAID Manager 6.1.1, you must update the battery age on both controller paths for write-cache to be enabled. (See Bug 4081809 in “Known Limitations.”)

Sun Enterprise Volume Manager Issues

Installing SEVM 2.6

When installing Sun Enterprise Volume Manager (SEVM) 2.6 software, you may encounter problems with the dynamic multi-pathing (DMP) feature in SEVM and with the Sun StorEdge RAID Manager software that cause the system to go down. (See Bug 4216620 in “Known Issues.”)

To avoid these problems, follow this installation sequence:

- install the Solaris 2.6 operating environment
- install Sun Enterprise Volume Manager 2.6 using the `pkgadd` utility
- disable the dynamic multi-pathing feature in SEVM as described in the following section
- install Sun StorEdge RAID Manager 6.1.1 Update 2 using the `pkgadd` utility

Disabling Dynamic Multi-Pathing

When the Sun Enterprise Volume Manager 2.6 software is installed, a default feature known as dynamic multi-pathing (DMP) is *active*. The Sun StorEdge RAID Manager software and the A3x00 RAID array do not support DMP. Redundant I/O pathing is maintained internally by the Sun StorEdge RAID Manager software. Therefore, you must disable the DMP feature in SEVM and reboot the system.

To disable DMP, perform the following steps:

- 1. Unmount all file systems created on volume manager volumes**
- 2. Stop the Volume Manager (`vxdctl stop`)**
- 3. Remove the `vxdmp` driver by typing:**

```
rm /kernel/drv/vxdmp
```

- 4. Edit `/etc/system` and remove the `vxdmp` forceload as follows:**

```
vi /etc/system
```

```
forceload: drv/vxdmp
```

- 5. Remove the DMP files by typing:**

```
rm -rf /dev/vx/dmp
```

```
rm -rf /dev/vx/rdmp
```

6. Create symbolic links to dmp and rdmp by typing:

```
ln -s /dev/dsk /dev/vx/dmp
```

```
ln -s /dev/rdsk /dev/vx/rdmp
```

7. Reboot the system

Upgrading Controller Firmware

!Pubs Comment! - Please verify firmware level for 6.1.1 Update 2.

When upgrading firmware, be sure both controllers within a dual-controller system have the same level of firmware. As indicated in the following table, also verify that the firmware level is supported by your installed version of Sun StorEdge RAID Manager software. It is recommended that the controllers be upgraded to the highest firmware level supported by your installed version of Sun StorEdge RAID Manager.

TABLE 3 Supported Controller Firmware Levels

RAID Manager Versions	Controller Firmware Levels
6.0	2.4.1d
6.1	2.04.04.01
6.1.1	2.05.02.04
6.1.1 Update 1	2.05.02.11
6.1.1 Update 2	2.05.02.32

If your controller firmware is less than level 2.04.04, you must first upgrade to level 2.04.04 *before* upgrading to level 2.05.02. For your convenience, level 2.04.04 has been provided on the Sun StorEdge RAID Manager 6.1.1 Update 2 CD.

For details on upgrading controller firmware, refer to the *Sun StorEdge RAID Manager User's Guide*.

Solaris Upgrades with Sun StorEdge RAID Manager Installed

Note – Before upgrading to the Solaris 2.6 or the Solaris 7 environment, you must first complete the steps outlined in “Sun StorEdge RAID Manager Upgrade Procedure.”

It is possible to upgrade an existing version of Solaris with the Sun StorEdge RAID Manager 6.1.1 Update 2 software installed, without having to reinstall the Sun StorEdge RAID Manager software after the operating system upgrade. To do this, be sure to save a copy of the file `/kernel/drv/sd.conf` to a safe place (such as a home directory) before beginning the operating system upgrade. After the upgrade has completed, restore the `sd.conf` file and reboot the system.

Ultra E10000 Support — Dynamic Reconfiguration for Sun StorEdge A3x00

With Sun StorEdge RAID Manager 6.1, a new facility was built into the software that enables a Sun StorEdge A3x00 device to be recognized in a new E10000 domain without having to perform a reconfiguration reboot (`boot -r`). This facility is also included with Sun StorEdge RAID Manager 6.1.1. This procedure assumes the Sun StorEdge RAID Manager software has been previously installed and configured in both source and destination domains. When a Sun StorEdge device is attached to a new domain, the following manual commands must be executed in the new domain (as root) in order for that device to be recognized by the Sun StorEdge RAID Manager software (without having to reboot the domain):

```
# /etc/raid/bin/symdisks -r /dev/osa -d sd
# /etc/raid/bin/symconf > /kernel/drv/rdriver.conf
# drvconfig -i rdriver
# disks
```

Alternatively, you can execute the following script on your host system after copying it from the `/Tools` directory of the CD:

```
# dr_hotadd.sh
```

The `dr_hotadd.sh` script performs some sanity checking of the state of the system, and then performs the previous 4 commands to ensure a Sun StorEdge system is recognized in a domain without requiring a reboot.

If there are still other SCSI devices in a domain, but the last Sun StorEdge A3x00 has been detached from the domain, there may be occasional warning messages in the console window from the array monitoring software. These messages are warnings about the inability of the software to communicate with a Sun StorEdge device.

It is a good idea to label configurations (that is, cables, RAID modules, and so on), especially in clustered configurations. This helps eliminate confusion during live system removal and replace operations. Should the need arise to detach a Sun StorEdge device from a large system, proper labelling makes it much easier to locate the correct device, and also minimizes any chance of making mistakes.

Before dynamically moving a Sun StorEdge device between domains, be sure that at least one LUN is owned by each RAID controller. If a Sun StorEdge device is moved to a new domain and “hot added” to that domain, a controller that does not own any LUNs may end up having node names that conflict with other devices on the system. If no LUNs exist on a given controller, it is recommended that a small LUN be created for that controller before performing these types of reconfiguration operations.

Maximum LUN Support on Solaris 2.6 5/98

Support for LUNs greater than 8 is available in the Solaris 2.6 5/98 release for SBUS host bus adapters.

Support for PCI platforms is currently limited to 16 LUNs.

Note – Patch ID 105580-12 (or later rev level) provides support for up to 16 LUNs on PCI platforms.

If you have upgraded to Solaris 2.6 5/98 and want to support more than 8 LUNs on your Sun StorEdge A1000 or Sun StorEdge A3x00 system, you must be sure to enable the following setting in the `/usr/lib/osa/rmparams` configuration file:

```
System_MaxLunsPerController
```

This parameter can actually be set up to 16 LUNs (the default is 8). If this value is set under earlier Solaris releases, various anomalies may result in areas such as LUN balancing and controller failovers.

In addition, the `/kernel/drv/sd.conf` file must be updated with entries for the additional LUNs. If you see that the `sd.conf` file has not been updated with entries for LUN values beyond 7, then you can run the following script—which has been provided in the `/Tools` directory of the CD to help you automatically update the `sd.conf` file:

```
/Tools/add16lun.sh
```

If you are moving RAID Modules that have greater than 8 LUNs configured to a host system that does not support more than 8 LUNs (for example, a host system running Solaris 2.5.1), you will not be able to see the LUNs. You will need to archive and then delete all LUNs over the 8-LUN limit prior to the move.

Additional Sense Codes and Qualifiers

For a list of Additional Sense Code (ASC) and Additional Sense Code Qualifier (ASCQ) values returned by the array controller in the sense data, refer to the following file:

```
/usr/lib/osa/raidcode.txt
```

Known Limitations

Note – For multi-host configurations, be sure both hosts have the same Solaris versions and the same Sun StorEdge RAID Manager versions installed. In addition, dual-hosting and multi-initiator configurations are only supported with Sun Cluster software.

Note – Before attempting to download firmware or to upgrade your version of Sun StorEdge RAID Manager, be sure your RAID Modules are in an Optimal state.

- **Bug 1262802:** OpenBoot PROM `probe-scsi-all` Returns Unconfigured LUNs
It has been reported that all Sun StorEdge A1000 and Sun StorEdge A3x00 LUNs are reported with the `probe-scsi-all` OpenBoot™ utility, even though some of the LUNs may not be configured. Unconfigured LUNs are displayed as having a device type = 20. Only LUNs 0 through 7 are displayed.
- **Bug 1266503:** Using Sun StorEdge RAID Manager Under Common Desktop Environment (CDE)
It has been reported that extraneous font error messages are displayed on the console window when running Sun StorEdge RAID Manager under CDE. The messages appear to be similar to the following:

```
WARNING Font "-dt-interface system-medium-r-normal-s*-*-*-*-*-*-*-*: "
cannot be loaded. Loading default font instead while Initializing font
"DefFont"
```

These are harmless font warning messages, and only occur when a new screen under `rm6` is launched.

- **Bug 4006136:** Solaris/Sun StorEdge RAID Manager Capacity Reporting Differences
The LUN capacity reported by the Sun StorEdge RAID Manager software differs from that reported by Solaris (using, for example, the `format` and `devinfo` utilities). This is because the Sun StorEdge RAID Manager software reports LUN capacity before formatting. Once a LUN has been formatted, Solaris records backup labels on formatted drives or LUNs. Since `format` reserves 2 disk cylinders per LUN for backup labels etc., the `format` utility will always report 4 Mbytes (2 cyl x 64 hd x 64 sec x 512 bytes) less than the Sun StorEdge RAID Manager software.

For example, on a newly-created LUN, the capacity might show 81861 Mbytes under Sun StorEdge RAID Manager. For that specific LUN size, format would report the following:

```
Total disk cylinders available: 40928 + 2 (reserved cylinders)

PartTagFlagCylindersSizeBlocks
2 backupwu0 - 4092779.94GB (40928/0/0) 167641088
```

Running `newfs (1M)` on the LUN would show:

```
/dev/rdisk/c8t5d1s0:167641088 sectors in 40928 cylinders of 64 tracks,
64 sectors
81856.0MB in 2558 cyl groups (16 c/g, 32.00MB/g, 15360 i/g)
```

The difference in LUN sizes between Solaris and the Sun StorEdge RAID Manager software is explained by Sun StorEdge RAID Manager reporting the pre-formatted LUN size.

- **Bug 4009878:** LUN disappearance due to LUN locking needs more grace handling

During a manual parity check, LUN status will disappear from the GUI since it is busy (from the parity check). Rather than have the LUN information stop displaying, it would be better to indicate that the LUN is busy. A LUN doing automatic error/parity reconstruction does not disappear, but shows up as “degraded.”

Be aware that the LUN is just not available until the parity check completes. This may also be true for other background operations.

- **Bug 4014644:** VTOC is Not Updated and Labeled During a Default LUN Creation

There are several cases where a newly-created LUN 0 does not get automatically labeled. Specifically, when a default LUN is created by either of the following:

- a. when using the Sun StorEdge RAID Manager GUI Reset Configuration option (which clears all existing LUNs and creates a default LUN 0), followed by a reboot.

- b. when the host is rebooted with no LUNs on a given RAID module (the resulting LUN 0 that is created automatically by the RAID controller will not be labeled). When this happens, the following error message will appear in the console window during the reboot process:

```
corrupt label - wrong magic number
```

In this context, `corrupt label` merely means that no label exists. If the Solaris `format(1M)` utility is used to reference the LUN with no label, the `format` utility will warn that a label needs to be applied. Once the label has been written using `format(1M)`, the above warning message should no longer be observed during system reboots.

Aside from the warning messages in the console, there are no adverse side effects from not labeling these default LUNs.

■ **Bug 4017170:** Interrupt Characters Emit Warnings

Due to a facility found in the underlying GUI builder facility used with the Sun StorEdge RAID Manager software, if you type an interrupt character at the command line in the same window that was used to start the `rm6` process in the background, you may see error warnings such as the following:

```
----- TRACEBACK -----
Module "Err  " Message  0: file "err.c    " line 453
Module "Err  " Message  4: file "err.c    " line 1082
Module "Event" Message -1: file "event.c  " line 2735
Module "Err  " Message -1: file "err.c    " line 1489
-----
ERROR          Repeated interrupt (program might be in infinite loop
while          Interrupt
```

This may only occur if you type the `^c` character in the same window that was used to start `rm6`. Due to this anomaly, you should start the `rm6` facility from the console window.

■ **Bug 4019393:** Warning Messages During `SUNWosa pkgchk`

It has been reported that running the `pkgchk` utility on Sun StorEdge RAID Manager packages after the product has been installed will result in several warnings regarding file size changes of some configuration files. These warnings do *not* indicate a package problem nor a package installation problem, and should be interpreted as informational only.

- **Bug 4037747:** Reset buttons in the Create LUN Options screens do not return to the original settings.

For example, when the Reset button is selected in the LUN Capacity screen, the capacity returns to the previous LUN capacity instead of to the full capacity of the drive group.

To work around this issue, perform the following steps:

- a. **Exit the Options screen.**
- b. **Select the Options screen again from the Create LUN Main Screen.**
- c. **Click the Reset button to clear the condition.**

- **Bug 4037762:** When Creating a New LUN, Console Messages for Corrupt Labels are Displayed

Due to a change in the way the newer SCSI disk drivers work under Solaris, when creating LUNs under Sun StorEdge RAID Manager 6.1.1, you will see the following message displayed for each new LUN created:

```
corrupt label - wrong magic number
```

In this context, `corrupt label` merely means that no label exists. This message is displayed because the SCSI driver is attempting to determine attributes of the newly-created LUN when opening the device. Since the LUN is newly-created and has no label, the attempt to gather those attributes fails. However, upon completion of the LUN creation, the LUN is still labeled as intended.

- **Bug 4039716:** The GUI Does Not Report the Correct Capacity for the Unassigned Drive Group in Mixed Drive Size Configurations

In drive groups where disk drives of different capacities are installed, the Configuration Application under Sun StorEdge RAID Manager 6.1.1 will report the total capacity of the drive group, using the capacity of the smallest drive in the drive group times the number of drives. For example, in a drive group consisting of 10 disk drives (5 with capacities of 4 Gbytes and 5 with capacities of 9 Gbytes), the Configuration Application will report the total capacity of the drive group as approximately 40 Gbytes. The rationale for this is if one uses a mixed drive capacity drive group, the system will limit drive capacities to the smallest drives in the drive group, and hence, uses this same mechanism for reporting usable capacities.

For a more accurate picture of actual available drive space, leave the drives unassigned and use the Configuration Application to view the capacity of the unassigned drive group.

- **Bug 4044486:** Disconnecting SCSI Cables in Daisy Chained Configurations Will Cause I/O Problems

Due to the loss of SCSI termination that results from removal of a SCSI cable in a daisy-chained configuration, this technique (sometimes used to provoke RAID controller failovers) is not recommended. If you need this type of testing or evaluation with a daisy chain configuration, it is recommended that you instead pull one of the Sun StorEdge A3000 RAID controllers to induce the failover.

- **Bug 4044512:** SunInstall™ GUI Under Solaris 2.6 Fails With Sun StorEdge A1000 or Sun StorEdge A3x00 Present

- **Bug 4044512:** SunInstall™ GUI Under Solaris 2.6 Fails With Sun StorEdge A1000 or Sun StorEdge A3x00 Present

When installing Solaris 2.6 or upgrading to Solaris 2.6, SunInstall may have problems launching the device probing windows if any Sun StorEdge A1000 or Sun StorEdge A3x00 devices are physically hooked to the host system and powered on. If Solaris 2.6 is being installed using SunInstall, and the installation or upgrade procedure fails after clicking the Continue button on the Software Window, power off the Sun StorEdge A1000 or the Sun StorEdge A3x00 or disconnect the host SCSI bus before proceeding with the operating system installation.

Once Solaris 2.6 has been successfully installed to the host local disk drive, power on and/or reconnect the Sun StorEdge storage subsystem.

- **Bug 4047458:** Root Mailbox Fills with Redundant Raid Event Email Messages

It has been reported that under certain controller failure conditions, the Sun StorEdge RAID Manager software emails redundant notices to the `root` user. These messages can potentially fill the file system on which the local `root` mailbox resides, and this could cause a Sun server to fail.

To redirect the notices to an address other than `root`, edit the file `/usr/lib/osa/bin/rmscript` and substitute your new chosen email address in place of `root`. For example, the following line:

```
echo "\nGo to the Message Log in the Status Application for details" ) | \  
mailx -s "raid Event" root
```

can be changed to:

```
echo "\nGo to the Message Log in the Status Application for details" ) | \  
mailx -s "raid Event" sysadmin@network
```

- **Bug 4051085:** Independent Controller Configurations Require Manual Cache Flushing Procedure

The Sun StorEdge A3000 RAID controllers have a built-in data cache mirroring facility that uses a section of data cache in each alternate controller for cache mirroring. If one controller fails in a conventional dual controller Sun StorEdge A3x00 configuration, the alternate controller cache mirror is automatically referenced, thereby preventing cache data loss.

In an independent controller configuration, where each controller is physically connected to a separate host, cache mirroring can still be enabled and used. In the event of a controller failure, the cache data in that failed controller is maintained in the alternate controller's cache. However, unlike the case of a dual controller/single host configuration, the cache will not be automatically flushed to media from the alternate controller in the event of a controller failure. To avoid this situation, if a controller in an independent controller configuration fails, you need to manually fail the alternate controller using Sun StorEdge RAID Manager 6.1.1 (GUI or CLI) from the host that is connected to the still-functioning controller. That controller will then take over the LUNs and flush the data to media.

- **Bug 4056110:** E10000 Multi-domain Needs Unique Names to Prevent Name Collisions

As with Sun StorEdge RAID Manager 6.0, Sun StorEdge RAID Manager 6.1.1 will automatically assign default names to detected RAID Modules found on the system. However, the default naming scheme in Sun StorEdge RAID Manager 6.1.1 uses the host system name instead of the previous default naming scheme of RAID Module XX. Administrators are also now allowed to assign RAID Module names that are more intuitive. However, Administrators must ensure they provide unique module names to prevent name collisions. In the event of a name collision, the Sun StorEdge RAID Manager 6.1.1 software will display a dialog box that indicates the name collision and will then attempt to append numeric digits to the end of the name, to ensure uniqueness.

Tip – Avoid using period characters in RAID module names; see Bug ID 4101694.

Administrators who are upgrading from Sun StorEdge RAID Manager 6.0 to 6.1.1 will see their RAID Module names change automatically when the new software is started. Therefore, a RAID Module called RAID Module 01 under version 6.0 will automatically be renamed using the host name of the system to *hostname_001*. The Administrator can choose to rename the module back to something more intuitive, if desired.

Because Sun StorEdge RAID Manager 6.1.1 can automatically rename modules found on the system, it is recommended that Sun StorEdge Administrators document their existing RAID Module names before installing the 6.1.1 software. Once the new software is installed and running, RAID Modules can be relabeled using the old RAID Module names, if desired.

- **Bug 4064363:** LUN Creation Options Menu Does Not Reflect What Capacity Is Available

When you attempt to configure a LUN via the Configuration Application by choosing Create LUN → Options → Drive Selection, and you move designated Selected Drives to Unselected Drives, the window will not reflect the original LUN drive capacities after choosing the Reset button. It is recommended that you exit and then restart the application to obtain the correct drive capacities.

- **Bug 4064491:** Simultaneous LUN Creation without Optimal State LUN Causes Problems

The Sun StorEdge RAID Manager 6.1.1 GUI allows the deletion of all LUNs, as well as the simultaneous creation of multiple new LUNs. However, if an Optimal state LUN is not created first, the LUNs are sometimes created without labels, the system receives vtoc errors, and the Recovery Guru may display an “Unknown failure” message.

- **Bug 4068643:** Sun StorEdge RAID Manager 6.1.1 GUI Applications Fail to Start When `rmllog` Threshold is Reached

It has been reported that if you are running CDE on your local desktop and attempt to remotely display the Sun StorEdge RAID Manager GUI from a system that has reached its `rmllog.log` file size threshold, the intended applications may not launch successfully (after the dialog box is displayed, warning of the threshold level). The work-around to this is to move the `rmllog.log` file on the host system to another file name and to raise the log file size threshold.

Note – To avoid problems in accessing the `rmllog.log` file on the host system, use the `mv` command within a shell window to rename the file.

- **Bug 4069553:** Sun StorEdge RAID Manager 6.1.1 Does Not Register New Default Name for All Applications

If you decide to use the default naming scheme (not recommended by Sun) to name RAID Modules, and add a new RAID Module to the system, the following may occur: each Sun StorEdge RAID Manager 6.1.1 Update 2 application (Configuration, Status, Recovery, and so on) generates a dialog box noting the addition of the new RAID Module. Note that this only occurs when each application is launched for the first time after the new hardware has been added.

- **Bug 4071258:** Serial Number is Corrupted in AEN Message

Each LUN that is created is assigned a unique serial number. This feature is for quorum devices in a clustering environment. Some Solaris system utilities have a difficult time translating this number to a readable format. Consequently, in certain situations when you expect a serial number to be returned, the number will not display in readable format. For example (serial number = &5HJ):

```
Apr 30 13:01:30 b02b unix: WARNING: /pci@1f,4000/scsi@4,1/sd@2,1 (sd419):
Apr 30 13:01:30 b02b unix:      Error for Command: write                      Error
Level: Retryable
Apr 30 13:01:30 b02b unix:      Requested Block: 142096                      Error
Block: 90539
Apr 30 13:01:30 b02b unix:      Vendor: Symbios
Serial Number:      &5HJ
Apr 30 13:01:30 b02b unix:      Sense Key: Hardware Error
Apr 30 13:01:30 b02b unix:      ASC: 0xc (<vendor unique code 0xc>), ASCQ: 0x81,
FRU: 0x0
```

- **Bug 4074201:** “Unit Failure” Not Defined in User Documentation

A “Unit Failure” is defined as a Dead LUN. This condition can be observed by having one or more drives fail in a RAID 0 drive group, or by having two or more drives fail in a RAID 1, 3, or 5 drive group (multiple drives may fail in a RAID 1 drive group as long as they are not both the data drive and the mirror drive). This is observed when recovering the failed drives with the Recovery Guru. The Unit Failure will force the user to reformat the Dead LUN prior to it being usable again.

- **Bug 4080130:** `iostat -x` reports negative numbers for RSM2000 LUNs

This bug applies only to Solaris 2.5.1; see also Bug 4222419 and Bug 4085790.

- **Bug 4080249:** Cable Pull in Daisy Chain Environment Experiences GUI Refresh Problem

It has been reported that after you pull a data cable on a live daisy chain-configured system undergoing heavy IO, the Sun StorEdge RAID Manager GUI can become sluggish and take considerable time to correctly update. In some cases, the Configuration Application screen will not reflect the true status of the system until it is cancelled and relaunched. This is due to a GUI refresh problem and appears to be isolated to cases of cable-pull testing in daisy chain configurations. Performing RAID controller pulls (also used to cause data path failovers) does not result in the same GUI refresh anomalies.

- **Bug 4081809:** Upgrading from RM6.0 to RM6.1.1 Can Cause Write Back and Mirrored Caching to be Disabled

It has been reported in some cases that after upgrading to Sun StorEdge RAID Manager 6.1.1, fast write cache cannot be enabled. This has been traced to a problem with the RAID controller battery aging value being set incorrectly. You must update the battery age on both controller paths for write-cache to be enabled.

If you have upgraded to Sun StorEdge RAID Manager 6.1.1 and find you can no longer enable cache, you must run the following `raidutil(1M)` command on each Sun StorEdge A3000 controller to reset the battery aging value:

```
raidutil -c controller -R
```

You should then issue the following command to ensure the age was reset properly:

```
raidutil -c controller -B
```

Output from this command should indicate the battery age is between 0 and 90 days.

You must issue the `raidutil` command to reset the battery age in order to enable cache. The battery age can only be reset to a value of 0. However, doing so does not mean the battery life has been extended. For the existing installed base, you need to verify the battery age on the date code label on the front of the battery field-replaceable unit (FRU). If the battery date of the manufacturer indicates that the battery is *less than* six months old, follow the age that was reported online. If the battery date of the manufacturer indicates that the battery is *more than* six months old, follow the label for your replacement due date.

- **Bug 4084662:** Guru Cannot Recover from Unresponsive Drive

Given the limited circumstance that a LUN is operating in Degraded mode (one drive failure in RAID 1, 3, 5 LUN), and a second drive in that LUN drive group stops responding to SCSI selection (drive marked as Unresponsive), the LUN is physically Dead (two hardware failures in the same drive group). The GUI will not see the LUN as Dead, and some data *may* be retrievable, but is not suggested. Use the command line utility `drivutil` to fail the Unresponsive drive (refer to the `drivutil` man page). Replace the two faulty drives, reformat the LUNs, and recover your data from your backup archive.

- **Bug 4085790:** `iostat -xcn` core dumps if RSM2000 attached

To work around this issue, install patch 106655-02 for Solaris 2.6; refer to “Required Patches” on page 2. See also Bug 4080130.

- **Bug 4098199:** Configuration Application Generates Wrong Values for LUN Capacities During Reconstruct

When a drive fails in either the Sun StorEdge A1000 or Sun StorEdge A3x00, and the Global Hot Spare has been integrated to start reconstruction of the data from parity, invalid values have been observed in the Configuration Application under the Total Capacity and Remaining Capacity columns. This is simply a display error during this failure condition. The values will be corrected either when the reconstruction of the data to the GHS is complete, or when the failed drive is replaced and the data is copied back to the new drive from the GHS.

- **Bug 4101694:** Hostnames with Period Characters Cause Software to Function Incorrectly

Sun StorEdge RAID Manager assigns alpha-numeric module names that reflect the host system name; however, if the hostname contains reserved characters (for example, the periods in a host system named `v4d-1000b.test.com` or an IP address such as `<user>.124.000.02.002`), the corresponding module names will cause some CLI commands to fail and the Sun StorEdge RAID Manager GUI windows to display incorrectly. Refer to the `storutil` man page for details on renaming modules.

- **Bug 4101848:** RAID Manager should allow deletion of non-optimal LUNs

You cannot delete non-optimal LUNs through the RAID Manager graphical user interface. To delete a non-optimal LUN, use the command line utility:

```
raidutil -D
```

- **Bug 4104191:** Firmware Upgrade from 2.4.1d to 2.05.02 Causes Unknown Failure

If your controller firmware is less than level 2.04.04, you must first upgrade to level 2.04.04 *before* upgrading to level 2.05.02.

Use the Maintenance/Tuning Application to install new controller firmware as detailed in the *Sun StorEdge RAID Manager User's Guide*.

- **Bug 4104481:** Sun StorEdge RAID Manager 6.1.1 Displays Event Dates Out of Sequence in Status Log

The Sun StorEdge RAID Manager 6.1.1 Status menu displays dates that do not reflect a true chronological order after Sun StorEdge RAID Manager logs events. This only occurs when transitioning from December to January.

As an example, the Status menu may display events for December 1997 at the top, followed by recent events for January 1998, followed by older events for January 1998.

- **Bug 4105771:** Dead RAID 0 LUN Becomes Optimal When Failed Drive is Hot-Swapped

When a drive fails in a RAID 0 LUN, the LUN changes to a Dead state, and the data on the LUN is not guaranteed to be valid. If the failed drive is hot-swapped, the LUN automatically returns to an Optimal state; however, the data is lost.

The LUN must be manually reformatted before attempting to use the LUN again. When using the hot-swap method of recovery instead of using the Recovery Guru, Sun StorEdge RAID Manager 6.1.1 will not force you to reformat, so you are responsible for reformatting the LUN.

To do this, start the Sun StorEdge RAID Manager 6.1.1 GUI. Open the Recovery Guru and select the RAID Module with the previously-dead LUN. Select Options → Manual → LUNs. Highlight the previously-failed LUN, and select Format. When the Format completes, the LUN is ready to be used again. The data must be reloaded from backup.

- **Bug 4109707:** Failing Two Drives in Same LUN Results in Only One Fault Light
In a RAID 1, 3, or 5 configuration, there is a possibility that only one fault light will illuminate on the front of the RAID Module if two drives are failed simultaneously in a LUN. This scenario was simulated by pulling two drives from the same LUN simultaneously while I/Os were occurring on the LUN. Sun StorEdge RAID Manager 6.1.1 reported that two drives had failed and the LUN state was changed from Optimal to Dead. However, the fault light was only turned on for one failed drive. To ensure that only one drive has failed on a RAID Module, query the RAID Module by using the Sun StorEdge RAID Manager 6.1.1 GUI or CLI applications as noted in the *Sun StorEdge RAID Manager User's Guide*.

- **Bug 4114213:** SCSI Transport errors due to “timeouts” lower system performance. Under heavy load SCSI timeouts may occur, for example, the console messages first show *reset* messages, followed by *timeout* messages. For example:

```
Feb 24 11:31:10 turing71 unix: WARNING: /sbus@2,0/QLGC,isp@2,10000/sd@4,1
(sd152):
Feb 24 11:31:10 turing71          SCSI transport failed: reason 'reset':
retrying command
Feb 24 11:31:10 turing71
Feb 24 11:32:26 turing71 unix: WARNING: /sbus@2,0/QLGC,isp@2,10000/sd@4,1
(sd152):
Feb 24 11:32:26 turing71          SCSI transport failed: reason 'timeout':
retrying command
Feb 24 11:32:26 turing71
Feb 24 11:32:26 turing71 unix: WARNING: /sbus@2,0/QLGC,isp@2,10000/sd@4,0
(sd19):
Feb 24 11:32:26 turing71          SCSI transport failed: reason 'reset':
retrying command
```

The driver throttle value can be lowered by editing the `/kernel/drv/sd.conf` file. The following lines must be appended to the file:

```
sd-config-list=
    "SYMBIOS", "symbios-data",
    "Symbios", "symbios-data";
symbios-data= 1,0x5,8,0,12,0,0;
```

Then, reboot the system or run the `dr_hotadd.sh` script so that the `/kernel/drv/sd.conf` file can be read again.

These steps reduce the throttle to 8 and fix the timeout messages, but the reset messages may be seen occasionally.

- **Bug 4117560:** Downloading Firmware Causes Drives to Fail

When downloading firmware updates to a Sun StorEdge A3000 system, it has been noted that drives within the unit may appear to fail. To limit the potential impact of such a failure, you should upgrade each Sun StorEdge A3000 array individually by using the following procedure:

- a. Record which LUNs are assigned to each of the target Sun StorEdge A3000 unit's controllers.

- b. Disable SEN card polling on the target A3000 by using the script provided in the `/Tools` directory of the Sun StorEdge RAID Manager 6.1.1 Update 2 CD:

```
polling.sh off
```

Enter `<ctd>` for the target A3000 when prompted.

- c. Run the controller update script provided in the `/Tools` directory of the Sun StorEdge RAID Manager 6.1.1 Update 2 CD to upgrade the firmware:

```
controller.sh <ctd> load <firmware_file>
```

Note – If you are upgrading from Sun StorEdge RAID Manager 6.0 (firmware revision level 2.4.1d), you should perform this operation twice—the first time by specifying the path to the `02040401.apd` firmware file, and the second time by specifying the path to the `02050232.apd` firmware file.

- d. Enable SEN card polling on the target A3000, again by using the script located in the `/Tools` directory:

```
polling.sh on
```

Enter `<ctd>` for the target A3000 when prompted.

- e. Run the controller update script to restore SEN card polling:

```
controller.sh <ctd> poll
```

- f. (Optionally) restore LUN ownership between the two Sun StorEdge A3000 controllers as recorded during the first step of this procedure.

■ **Bug 4118532:** Upgrading Sun StorEdge RAID Manager Could Cause Rearranging of Device Tree

Ensure that the current configuration of the server (including number of controller cards, RAID Modules, and other SCSI devices) is consistent with the installation of the last version of Sun StorEdge RAID Manager that is on your system. If it is not, record the current device tree information and the `mnf` file (located in `/etc/osa`) before upgrading to this version of Sun StorEdge RAID Manager. This will ensure that you have the necessary information to update applications, in case upgrading to the newest version causes changes in node names and your current device tree.

Here is one typical scenario: one sysboard (`Brd 0`) has disks and tape drives, while another (`Brd 1`) has Sun StorEdge A3000s. You start with the following:

```
Brd 0: No Sun StorEdge A3000 Devices
Brd 1: c1t5d0s0, c2t4d1s0
```

The sysboard with disks and tape drives is updated to store additional purchased A3000s. It just so happens that the updated sysboard (`Brd 0`) is first in the scan tree. Therefore, you end up with something similar to the following:

```
Brd 0: c3t5d0s0, c4t4d1s0
Brd 1: c1t5d0s0, c2t4d1s0
```

After an upgrade of the software, Sun StorEdge RAID Manager will rescan the devices and rebuild the device tree (because when the older version of Sun StorEdge RAID Manager is removed, no history of the current configuration is preserved). Since `Brd 0` is first in the scan, you will end up with the following after the upgrade:

```
Brd 0: c1t5d0s0, c2t4d1s0
Brd 1: c3t5d0s0, c4t4d1s0
```

If you need to recover from rearrangement of the device driver tree by RDAC components during an upgrade, it is recommended that you perform the following steps *before* you upgrade to a new version of Sun StorEdge RAID Manager:

- Save a copy of the current `/etc/path_to_inst` file *before* you upgrade to a new version of Sun StorEdge RAID Manager.
- After completing an upgrade procedure, replace the `/etc/path_to_inst` file with the copy you saved previously.

- Reboot the system by typing:

```
boot -r
```

- **EOU 4120457:** Sun StorEdge RAID Manager 6.1.1 Truncates Drive Serial Number and Date Code

The serial number and date code for certain types of disk drives are truncated by Sun StorEdge RAID Manager 6.1.1. This does not affect the availability or integrity of these drives. Refer to the physical label on the drive for the complete number and code.

- **EOU 4124793:** Controller Replacement Causes Data Lost Message

When you attempt to recover a failed controller that has data in its cache, the module may wait up to 15 minutes before enabling cache, in certain situations. The message in `rmlog.log` states that data has been lost and recommends you restore the LUN from backup tape.

The ASC/ASCQ code recorded for this event is designated as 0C/00, which is noted in the `/usr/lib/osa/raidcode.txt` file as follows:

ASC	ASCQ	Sense Key
0C	00	4,(6)
Unrecoverable Write Error		

In this case, the message is merely indicating that the recovered controller has discarded the stale information from its cache, but no loss of data has actually occurred.

- **Bug 4131805:** LUN Goes From Reconstruct to Degraded Mode After Replacing Failed Drive

In the event that one drive fails and a second drive has used up its allocation of spare sectors, a RAID 3 or RAID 5 LUN reconstruction process will terminate prematurely and return the LUN status to Degraded mode.

To prevent data loss (due to two drive failures), immediately back up your data from the Degraded LUN.

To recognize that a drive has excessive, grown media defects, and has reached its limit of spare sectors, you can look for Recoverable Soft Error messages in the console and in the `/var/adm/messages` file.

Also, the RAID Module should be set up with more than one hot spare drive.

- **Bug 4133673:** LUN Configuration is Lost When Adding Drives from Second RAID Module and Cold-Starting the System

Moving drives from one Sun StorEdge A3x00 system to another is neither recommended nor supported when the systems are powered off.

If you have moved drives from one Sun StorEdge A3x00 system to another and cold-started the system, there is a possibility that the configuration information on the new drives will confuse the controllers as to the configuration of the Raid Module, which can result in an apparent loss of data and/or LUN configuration. This situation has only been confirmed when the number of drives added is equal to or greater than the original number of configured drives, but this has happened with as few as five additional drives.

If you do see a problem after adding drives (that is, not seeing previously configured LUNs) and cold-starting the system, it is recommended that you remove the newly-added drives, restart the system, and then add the drives one at a time.

To move drives from one Sun StorEdge A3x00 system to another, follow these guidelines:

- Add the drives while the system is up and running.
- Do not cold-start the system.
- **Bug 4155147:** Configuration Manager screen may not refresh with the proper status when the Recovery Guru changes the configuration

If the Configuration Manager window is open when the Recovery Guru makes changes to the configuration (for example, if a controller in a redundant configuration fails, is replaced with a new one, and then is manually activated), the Configuration Manager window is not refreshed.

To work around this issue, exit and restart the Configuration application to reflect the current configuration.

- **Bug 4163706:** Firmware download screen does not highlight a selected independent controller or entire Raid Module group

When you select an independent controller during the procedure for downloading NVSRAM or firmware files, the firmware download screen does not highlight that controller.

Currently, there is no solution to this issue. You can only ignore the lack of highlighting and proceed with the download procedure, that is, select the appropriate files and click OK.

- **Bug 4166678:** Initial boot from A1000 (Dilbert) connected to US2D PCI card fails
On Sun™ Ultra™ 30 and Sun™ Ultra™ 60 systems with the US2D (Ultra SCSI Dual channel Differential) PCI card, attempting to boot from the Sun StorEdge A1000 fails with "Drive not ready" and Trap 3e. This problem occurs after a soft reset or power on. The first attempt to boot will fail, but if you boot again, it succeeds.

Executing the `probe-scsi-all` command before you boot from the Sun StorEdge A1000 also works.

- **Bug 4170396:** Recovery Guru does not sync controller FW levels

When replacing a Sonoma controller, Recovery Guru should check to ensure that the firmware level of the new controller and the firmware level of the other controller are the same. However, Recovery Guru does not detect unsynchronized firmware levels when bringing the replaced controller online. If the RAID module is allowed to be used with the controllers out of sync, intermittent errors occur. Worse, data could possibly be lost.

To work around this issue, manually download the current firmware to the new controller and make sure both controllers have the same firmware level.

- **Bug 4171107:** Errors from pseudo driver -- invalid op (11) from rdnexus4

You may encounter messages like the following which are harmless and can be ignored:

Aug 17 16:18:57 mhmail unix: pseudo0: invalid op (11) from rdnexus53)

- **Bug 4173165:** RM6 says LUN is "optimal" instead of "formatting" after controller failure

If a controller, or cable to a controller, fails while a LUN owned by the controller is formatting, the LUN continues to format but the RAID Manager GUI reports that the LUN is *optimal* even after the controller is fixed. To work around this issue, reformat the LUN to make sure there are no further inconsistencies in what the RAID Manager GUI reports.

- **Bug 4173199:** Critical overtemp failure caused power supplies to be inoperable

Some of the older power supplies (from Martech) cannot handle over-temperature conditions. If your power supply has a date previous to 1998, you should replace it. The newer power supplies have a date code of 9844 or later, which is the first of the 105 degree C- safe power supplies.

- **Bug 4175983:** Loading the RAID Manager software in a system with a D1000 attached can cause *isp* resets

After adding two Sun StorEdge A1000 systems with a D1000 attached (the system was booting from a disk in the D1000) and loading RAID Manager 6.1.1 to support the A1000s, *isp* resets occur for the two DWIS controllers on the D1000.

There is an issue with the Seagate ST39173W disks in the D1000 trays, running with firmware 5084. After upgrading to disk firmware revision 7063, the *isp* resets do not occur. To work around this issue, install patch 106817-xx which includes the Seagate disk firmware revision 7063.
- **Bug 4176887:** Date codes are not shown for non-Seagate drives

Some disk drives will not show the proper date code when using the Maintenance and Tuning → Module Profile → Drives command. The workaround is to look at the label on the outside of the drive.
- **Bug 4176937:** `rmscript` fails to detect and notify user with failed I/O from A3x00

Be aware that you cannot use `rmscript` to detect regular errors because the A3x00 automatically catches and repairs errors.
- **Bug 4176940:** Panic() when parsing `driver.conf` greater than 8 KB

See patch 105181-13 (Solaris 2.6) and patch 106541-03 (Solaris 7) in the list of required patches for RM 6.22 (TABLE 1 on page 3); see also Bug 4230669.
- **Bug 4180291:** Changing cabling around on a A3x00 with VM installed will cause VM to lose its configuration

If the configuration has two host adapters that are connected to both controllers in an A3x00 system and SEVM is also running, the data may appear lost if the cables are reversed. To work around this situation, follow these steps:

 - i. Edit `/etc/vfstab` and comment all volumes built on A3500s.
 - ii. Unmount all A3500 file systems,
 - iii. Deport DG.
 - iv. Type the following:

```
init 0
```

 - v. Swap cables
 - vi. Type the following:

```
boot -r
```

At this point, both controller modules display amber lights and Healthcheck reports “Failed Data Paths.”

Additionally, the `format` and `lad` commands are not in sync. Most likely, redundant devices are displayed with the `format` command and the LUNS are not be balanced.

The `vxdisk list` may also show some disks with “altused” status.

vii. Use Recovery Guru to fix the “Failed Data Paths.”

viii. Clean the device tree by removing all A3500 devices. Do *not* remove the boot device.

```
rm dev/(r)disk/c# (exclude the boot disk)
rm -rf /dev/osa
rm -rf /devices/sbus@##* (exclude the boot disk)
mv /etc/path_to_inst and /etc/path_to_inst.old
rm -rf /devices/pseudo/rdnex*
```

ix. Run the following command:

```
reboot -- -r
```

After this reboot, RAID Manager 6.x and the operating system are in sync. However, SEVM will point to phantom disks, and so on. The best way to clear up this confusion is to perform a simple reboot.

x. Run the following command:

```
boot
```

xi. Verify that the output from the `lad` and `format` commands are consistent:

Pay attention to controller numbers.

Verify SEVM with the `vxdisk list` command.

Import DG.

Verify that all volumes are started (Enabled Active).

Mount all file systems.

- **Bug 4180804:** When a boot disk is encapsulated, SEVM probes disks before A3000 LUNs are available

To avoid this issue: Do *not* encapsulate A1000/A3x00 boot disks.

- **Bug 4183009:** RAID Manager 6 incorrectly states RAID implementation as 0+1 instead of 1+0

You can use the Create LUN main screen to set the RAID level for a LUN you are creating. In Sun StorEdge RAID Manager 6.1.1, the description for RAID 1 incorrectly shows mirroring as RAID 0+1, instead of as 1+0. In spite of this inconsistency in nomenclature, it does not affect how the storage management software implements RAID 1.

- **Bug 4185168:** Using the CLI to create a LUN does not generate notification in the Message Log

When using the RAID Manager GUI, the `rmlog.log` file is updated. When using the `raidutil` command line utility, the `rmlog.log` is not updated.

- **Bug 4191694:** E450 reports “Fatal SCSI error at...” error when booting off a RAID device

Booting an A1000 or A3x00 array connected to a PCI host bus adapter produces error messages. However, after waiting for the 20 or so messages, the bootstrap process proceeds normally. Booting from arrays is only supported as described on the Technical Marketing Web site.

- **Bug 4198488:** `iostat -n` option needs to output `cxtxdxsx` device format for A1000/A3000

A series of bugs have been filed against `iostat` issues with A3x00 and other OSA devices. All of these involve the correlation of controller names as given in `/dev/dsk` and `/dev/osa/dev/dsk` with `kstats`, which are named by device name and instance number. A patched version of `iostat` is in process and should be available soon. `iostat` has been fixed in Solaris 7 5/99 and Solaris 8. See also Bug 4222419.

- **Bug 4211786:** A3x00/A1000 RAID 0 LUN recovery requires stopping I/O to the LUN

When a RAID 0 LUN with a mounted file system experiences a failure, a “dead” LUN status occurs and the recovery procedure needs to be augmented. If the Recovery Guru is unable to unmount the file system, the recovery will not complete, even though there is a message indicating the recovery can proceed with mounted file systems. Note that RAID 0 LUNs behave like non-RAID devices.

The processes doing I/O to the dead LUN need to be stopped and Recovery Guru re-run so the unmount will complete and the recovery can proceed. The `fuser` command should be used to identify the processes doing I/O to the LUN, for

example, `fuser -c <mounted_file_system>` or `fuser <ctd_name>`. The mounted file system name is shown in column 1 by `df(1)` when accessing the `ctd_name` given by Recovery Guru, for example:

If Recovery Guru shows `/dev/dsk/c4t7d0s0`, the mounted file system name is `/mnt/myfilesys`.

```
% df /dev/dsk/c4t7d0s0
/mnt/myfilesys  (/dev/dsk/c4t7d0s0 ):1434610 blocks 362108 files
```

Since the LUN is dead, the I/O these processes are doing can never complete successfully anyway. Therefore, the processes will have some error condition and killing them is logical. One way to stop the processes is to use the `fuser(1m)` command with the `-k` option as described in the man page. The processes may not respond to kill if they are in the kernel. If nothing else works, use the `reboot` command to kill all processes.

In a similar situation where the LUN definition does get removed and the file system associated with it is still mounted, the Recovery Guru recreates the LUN but the underlying device is not shown through format. Try using the `dr_hotadd.sh` script to get the device recognized. If that is not sufficient, the alternative is to `boot -r`. (See also FIN #10505-1.)

- **Bug 4222419:** `rdriver/rdnexus` do not register the correct `kstat` name

The `iostat -n` command does not show the proper device names, making it difficult to find the device being described. The device names are those shown under `/dev/osa/dsk`. This issue is fixed in Solaris 8.

See also Bug 4080130 for RSM2000 LUNs and Bug 4198488 for A1000/A3x00 LUNs.

- **Bug 4230669:** RM 6 can create `rdriver.conf` file > 8k, panics system unless patched for 4176940

In order for RAID Manager 6 software to configure multiple LUNs, it adds entries to the `sd.conf` and the `rdriver.conf` files. The `add16lun.sh` script is a case in point as it enlarges the `sd.conf` for 16 LUNs for all targets. However, there is bug in the Solaris kernel that sometimes causes a panic if a `*.conf` file is greater than 8k (8192) bytes.

For sample error messages, see Bug 4176940 on the SunSolve Online Web site:

<http://sunsolve.sun.com/>

The above mentioned problem often occurs during `boot -r`, (the first `boot -r`) after adding hardware. However, its occurrence is known to vary and therefore the bug is often mistaken for a hardware problem. Furthermore, a core file can be difficult to obtain when it occurs.

This problem has the potential to cause invisible kernel corruption during driver loading after the `boot -r` command is run, and its timing mimics a hardware problem so seamlessly that even a very experienced Sun service provider may not be able to determine in a timely manner that it is a software bug.

Sun customers and authorized Sun service providers can avoid this software problem by applying patch 105181-xx and rebooting the system; refer to "Required Patches" on page 2.

Note – A reconfiguration boot is not necessary or recommended.

(See also FIN #I0509-1.)

- **Bug 4251984:** A1000 RAID controller is inaccessible after connecting as multi-initiator device

If an A1000 system, and presumably an A3x00 system, is connected to two hosts, the A1000 becomes unusable unless the following steps are performed first.

Note – You must change the SCSI initiator-ID on one of the systems in order for multi-host configurations to work.

To set Host 2 to SCSI ID 3, type the following at the OK prompt:

```
ok show-devs
ok nvedit nvramrc
0: " /Sbus@1f,0/QLGC,isp@1,10000" select-dev
1: 3 encode-int " scsi-initiator-id" property
2: " /Sbus@1f,0/QLGC,isp@0,10000" select-dev
3: 3 encode-int " scsi-initiator-id" property
4: ^c
ok nvstore
ok setenv use-nvramrc? true
ok reset-all
```

Or, to set the *entire* host at SCSI ID 3, type the following:

```
ok setenv scsi-initiator-id 3
ok reset-all
```

Frequently Asked Questions

Note – For additional listings of Frequently Asked Questions, refer to the *Sun StorEdge RAID Manager Installation and Support Guide for Solaris* and the *Sun StorEdge RAID Manager User's Guide*.

\$PATH Update Required After Sun StorEdge RAID Manager Installation

Question: What environment variables do I need to update after installing the Sun StorEdge RAID Manager software?

Answer: After installing the Sun StorEdge RAID Manager software, you must include the following location in your \$PATH environment variable to enable command-line access to the various tools and utilities:

```
/usr/sbin/osa
```

Default Configuration Scripts

Question: Are there any automation tools for building and configuring my Sun StorEdge A3x00 system?

Answer: A set of configuration scripts has been included in this product to help you set up RAID configurations. The scripts are used as templates for building your own custom configurations. These scripts and an associated README can be found in the following directory on the CD:

```
/Tools/default_configs
```

Note – These scripts are designed specifically for use with Seagate ST15230W 4.2 Gbyte disk drives on Sun StorEdge A3x00. The scripts will need to be modified if different capacity disk drives are used in the configuration.

These scripts are applicable only to Sun StorEdge A3x00 systems, and they do not apply to Sun StorEdge A1000 systems. The scripts should *not* be used to simultaneously create LUNs on multiple RAID Modules.

Man Page Recognition

Question: I have installed the SUNWosamn package, yet I cannot get man to reference any Sun StorEdge RAID Manager utilities. What should I do?

Answer: To have the man pages recognized on your system, the man page indexes must be rebuilt after the SUNWosamn package has been installed. To do this, run the catman(1M) utility as follows:

```
# catman -w
```

Screen Refresh in Multiple Module Configurations

Question: In a multiple RAID Module configuration, why doesn't the first configuration window refresh when I switch to a different module?

Answer: A data path to the RAID controllers is initialized when at least 1 LUN has been created. On a system with either no LUN or a first LUN still formatting, the configuration window will only update when the LUN creation has completed. This condition only affects the configuration window. Normal operation should continue on all other screens.

Host with Both Sun StorEdge A1000 and Sun StorEdge A3x00

Question: Can I connect a Sun StorEdge A1000 system to a host that has a Sun StorEdge A3x00 system already attached?

Answer: Yes, but you must be running Sun StorEdge RAID Manager 6.1.1 Update 2, and the host must be supported by both Sun StorEdge A1000 and Sun StorEdge A3x00 platforms.

Note – Sun StorEdge A1000 requires support on Solaris 2.5.1 SHWP 4/97 or later.

TABLE 4 provides a list of platforms currently supported for the Sun StorEdge A1000 and Sun StorEdge A3x00 systems during the time of this publication.

TABLE 4 Supported Platforms for Sun StorEdge A1000, A3000, and A3500

Sun StorEdge A1000	Sun StorEdge A3000	Sun StorEdge A3500
Sun™ Ultra™ 1	Sun Ultra 2	Sun Ultra 2
Sun Ultra 2	Ultra E450	Ultra E3000
Sun Ultra 5 S	Ultra E3000	Ultra E4000
Sun Ultra 10	Ultra E4000	Ultra E5000
Sun Ultra 30	Ultra E5000	Ultra E6000
Ultra E250	Ultra E6000	Ultra E10000
Ultra E450	Ultra E10000	SC 2000E / 2000
Ultra E3000	SC 2000E / 2000	SS 1000E / 1000
Ultra E4000	SS 1000E / 1000	
Ultra E5000		
Ultra E6000		

Caution Using `boot -r` Command With Failed Controllers

Question: If my system experiences a failover and is running on one good controller, can I take the system down to perform other system maintenance without replacing the bad controller?

Answer: The Sun StorEdge A3x00 system has been designed to recover from severe hardware failures. In the case of a failed controller, the system will automatically move LUNs to the remaining good controller. As long as the system is not rebooted, this failover process will ensure that applications running on the system formerly using data from the failed controller can continue to access the same data from the alternate controller using the old device name.

However, if you reboot the system using the `boot -r` command after the failover has occurred, device paths to LUNs previously located on the failed controller will change. Many applications that are configured to look on a specific device may, therefore, stop functioning. This problem has been fixed in the Solaris 2.5.1

and Solaris 2.6 operating environments by patch ID 107665-xx. For details on obtaining downloading patches from the SunSolve Online™ Public Patch Page Access Web site, see “Required Patches” on page 2.

In the case of a single controller failure, you should replace the failed controller as soon as possible. Other system administration tasks that would normally require a `boot -r` (such as after adding a new SCSI device) should be deferred until the failed controller has been replaced and brought back online, and all LUNs have been balanced back to the state in which they existed when the failover occurred.

Sun StorEdge A3x00 Support for Dual-hosting and Multi-initiator Configurations

Question: Are dual-hosting and multi-initiator configurations supported?

Answer: Dual-hosting and multi-initiator configurations are only supported with Sun™ Cluster software.

Sun StorEdge A1000/A3x00 systems are qualified with Sun Cluster version 2.1 and 2.2 software. You will need to refer to the Sun Enterprise Hardware Planning and Installation Guide for cabling your Sun StorEdge A3x00 to the nodes. You should also refer to the Sun Cluster Software Planning and Installation Guide for multi-initiator issues.

For the Sun StorEdge A3x00, make sure you have the latest versions of `sd` and `isp` drivers and have controller firmware level 2.05.02 or higher.

Also, you must install Patch ID 106707-02 (or later rev level) to support dual-hosting.

Note – This is different from "independent controller configurations", in which each node owns one of the A3000 controllers and the LUNs on that controller. No special software is required for independent controller configurations, other than the setup via Sun StorEdge RAID Manager.

Moving Drives Between Sun StorEdge A3x00 Systems

Question: Can I move disk drives between two Sun StorEdge A3x00 systems?

Answer: Moving drives from one Sun StorEdge A3x00 system to another is neither recommended nor supported when the systems are powered off.

You can add drives to a Sun StorEdge A3x00 system that is *already running* for the purpose of adding disk capacity. However, if the added drives are being moved from another Sun StorEdge A1000 or Sun StorEdge A3x00 system (or were once installed on another Sun StorEdge A1000 or Sun StorEdge A3x00 system), then you should delete any LUNs configured on those drives *before* they are removed.



Caution – Do not attempt to migrate data by transferring disks between systems. Attempting to do so may cause various anomalies unsupported by Sun StorEdge RAID Manager 6.1.1.
