Sun StorEdge ™ RAID Manager 6.22 Release Notes

For Sun StorEdge A1000, A3000, A3500, and A3500FC Subsystems

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CHAPTER 1

About These Release Notes

The *Sun StorEdge ™ RAID Manager 6.22 Release Notes* contain important information about the installation and operation of the Sun StorEdge RAID Manager software that was not available at the time the product documentation was published. Read all of these release notes before attempting to install or operate the Sun StorEdge RAID Manager 6.22 software on a Sun StorEdge A1000, Sun StorEdge A3000, or Sun StorEdge A3500, and Sun StorEdge A3500FC system. Unless the Sun StorEdge A3000 array or Sun StorEdge A3500 array is uniquely identified, both systems are referred to as Sun StorEdge *A3x00* array throughout this document.

For late-breaking news about the RAID Manager software (including required patches and patch revisions), the Sun StorEdge A1000 or A3*x*00 array, refer to the *Sun StorEdge A1000 and A3x00 Installation Supplement* on the Sun™ documentation web site:

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

CHAPTER 2

Late-Breaking Information

Much of the information in this chapter consists of late-breaking information. Some of the topics have appeared in earlier versions of the document and have been updated for this version. Other topics have not been updated, but they remain in this section due to their importance. The chapter covers the following topics:

Limitations in RAID Manager 6.22

The following are known caveats and issues with the RAID Manager 6.22 software.

- **Platforms no longer supported.** The following platforms are no longer supported in RAID Manager 6.22:
  - Sun Ultra™ 2 workstation
  - SPARCcenter™ 2000E/2000 and SPARCserver™ 1000E/1000 system
- **Sun StorEdge A3500FC array configuration.** Each Sun StorEdge A3500FC array controller should be on a separate host bus adapter. Check for limitations with your Sun representative regarding Field Information Notice (FIN) I0586-1.

Important – No storage device other than the Sun StorEdge A3500FC array should share the same loop with a Sun StorEdge A3500FC array.

Refer to the *Sun StorEdge A3500/A3500FC Hardware Configuration Guide* (805-4981) for information on configuring your Sun StorEdge A3500FC array system.

- **Bootability with Sun StorEdge A3000 and A3500 Arrays.** Bootability is now supported. The *Sun StorEdge RAID Manager 6.22 Installation and Support Guide* (805-7756) does not include instructions for installing the software on a RAID module boot device. Contact your local Sun solution center or your Sun service provider for information about installing the RAID Manager software on a RAID module boot device. Refer to FIN I0619.
- **LUNs created under RAID Manager 6.0 or 6.1.** After upgrading to RAID Manager 6.1.1 or compatible versions, you might notice that Sun StorEdge A3*x*00 LUNs created with firmware level 2.05.02 or compatible versions are smaller in capacity than LUNs created before the upgrade, even if the drive groups are the same size. This condition occurs when the LUNs you create use the maximum available capacity in the drive group. Firmware level 2.05.02 or compatible versions requires 40 Mbytes of DacStore disk space per drive, whereas earlier versions of firmware (2.04.04.01 or earlier) require only 2 Mbytes of DacStore disk space. To avoid this issue and to achieve uniform LUN capacity, refer to “Bug 4252057: Different Capacity Available After a Disk Replacement in a Sun StorEdge A3000 Array” on page 55.

▼ To Avoid Disk Space Issues and Achieve Uniform LUN Capacity

1. **Back up the data on existing LUNs.**

2. **Delete existing LUNs.**
3. **Create new LUNs.**
4. **Restore the data previously backed up on the new LUNs.**

   Refer to "Bug 4252057: Different Capacity Available After a Disk Replacement in a Sun StorEdge A3000 Array" on page 55 for more information.

- **Fibre Channel connections on Sun Enterprise™ 3*x*00 servers.** The use of onboard SOC+ devices with Sun StorEdge A3500FC array systems is now supported. For additional information, see "Onboard SOC+ Support for Sun StorEdge A3500FC Array" on page 11.
- **Moving drives between array subsystems.** Moving drives from one Sun StorEdge A1000, A3x00 or A3500FC array subsystem to another storage array is not supported when the systems are powered off. See "Moving Drives Between Sun StorEdge Array Subsystems" on page 14 for more information.
- **SunVTS™ diagnostic extensions no longer on RAID Manager CD-ROM.** In earlier versions of RAID Manager, the diagnostic extensions to the SunVTS product for the Sun StorEdge A1000 were available on the RAID Manager CD as the `SUNWvtsse` package. In RAID Manager 6.22, the `SUNWvtsse` package is no longer available on the RAID Manager CD.
- **LUN 0 should not be deleted.** Do *not* use the `-D all` option of the `raidutil` command on Sun StorEdge subsystem arrays. The `-D all` option removes all LUNs, including the default LUN 0. A LUN 0 must always exist on each controller as a requirement of the SCSI specification. For more information about this feature, refer to "Creating or Deleting LUNs" on page 18.
- **For multihost configurations**, make sure the same Solaris software versions and the same Sun StorEdge RAID Manager software versions are installed on both hosts. In addition, dual-hosting and multi-initiator configurations are only supported with Sun Cluster software.

Supported Solaris Environment Releases

The Sun StorEdge RAID Manager 6.22 software supports the Solaris 2.5.1, Solaris 2.6, Solaris 7, and Solaris 8 operating environments. Solaris 8 environment requires patch 108553. If you upgrade from the Solaris 2.6 environment to the Solaris 7 or 8 environment and have patch 108834-06 or compatible versions installed and then install patch 108553, you will see the following message:

```
WARNING: RM6 patch 108834 is installed on this system. This
patch must be removed and the patch required for this version
of Solaris installed in order for RM6 to operate correctly on
this version.
```

Earlier versions of the Solaris operating environments are not supported in this document or by the RAID Manager 6.22 software.

Required Patches

You can get a list of all required patches in Early Notifier 20029. The Early Notifier, which is a notice of late-breaking changes posted on the Web for customer support, provides an overview of the patches necessary to use this product on Solaris environment platforms. Patches are listed in the order in which they should be installed. Installing the Recommended and Security Patch Cluster is a good basis for your environment.

Caution – To avoid the possibility of data corruption, you must install all required patches for your configuration.

You can download the Early Notifier and patches from the SunSolve Online™ web site:

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

Make sure you download the latest revision level for each patch. If you have any questions, contact your local Sun solution center or Sun service provider for assistance in downloading the patches. To use Patch Pro, which helps determine which patches your system needs, select the Storage Product Patches link from the SunSolve home page, or you can use the URL:

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

Prior to starting the RAID Manager installation or upgrade procedure, apply and execute all hardware-specific patches (disk firmware downloaded, system board PROM updated, and so on).

Note – Apply the required patches from Early Notifier 20029 and other device driver patches applicable to your operating environment *before* downloading any RAID controller firmware or executing any hardware patches so that the installation or upgrade is successful.

Installing and Uninstalling RAID Manager 6.22

The following issues are specific to the installation and uninstallation of RAID Manager 6.22.

Installation Issues

- You must edit the `rmparams` file on systems with Fibre Channel loops with more than two Sun StorEdge A3500FC arrays or any system where the loop (SCSI) identifiers on the arrays are not the factory settings 4 and 5.

  The `rmparams` file specifies that hot adding of arrays is disabled for all but those arrays whose identifiers are listed. The manpage for `rmparams` says that `Rdac_HotAddDisabled=FALSE` is the default, but the default settings are `Rdac_HotAddDisabled=PARTIAL` and `Rdac_HotAddIDs:4:5`. The easiest way to correct this is to set `Rdac_HotAddDisabled=FALSE` for systems where the Fibre Channel arrays might have a variety of loop IDs. Then reboot the host system or restart the rdriver.

  However, on systems with SCSI Sun StorEdge A3x00 or A1000 arrays, add SCSI identifier numbers to the `rmparams` file list. For example, if your system has arrays with SCSI identifier 6 and 8, as well as 4 and 5, edit `rmparams` to say `Rdac_HotAddIDs:4:5:6:8`. Then, reboot the system for the new configuration to be active.

- The following error message occurs when you use RAID Manager 6.22 if you are adding LUNs or resetting the configuration:

```
drvconfig: driver failed to attach: ssd
```

  If your system has no Sun StorEdge A3500FC arrays, edit the `rmparams` file to speed booting and `hot_add`. To edit the file, remove `ssd:` from the line `Rdac_NativeScsiDrivers:sd:ssd:`

- The controllers must be in an optimal state before an installation. To determine the state of the controllers, see the *Sun StorEdge A3500 / A3500FC Controller Module Guide* to determine the meaning of the LED patterns. If the array controllers are not in optimal state, contact your service representative. A controller might go offline during installation of a Solaris operating system in a

Fibre Channel loop configuration. You can avoid this by detaching the arrays before beginning installation and then typing `boot -r` after you install the operating system.

- ASC / ASCQ 5D/80, for an anticipated drive failure, is normally reported only for the LUN containing the suspect drive, and then only once between Sun StorEdge A3500FC array reboots. However, when the Sun StorEdge A3500FC array is rebooted, it reports the PFA once for every LUN accessed on the controller owning the suspect drive.

Uninstallation Issues

- The `/kernel/drv/ap` file is not removed during the `pkgrm` of the RAID Manager 6 packages. Installing RAID Manager 6.22 creates file `/kernel/drv/ap` in order to prevent VERITAS DMP from being enabled inappropriately. If the length of `/kernel/drv/ap` is 0, remove the file so subsequent software installations will work properly.
- Some files are preserved when you remove the RAID Manager 6 packages. To completely remove any configuration information so that you can make a completely new installation next time, use the command `rm -rf /var/osa`. Files left in `/var/osa`, which the next installation picks up, are `mnf`, `rdnexus.conf`, `rdriver.conf`, `rmlog.log`, and `sd.conf`.

Warning About VxFS File System Corruption When Running With a Turned Off Array

When you turn off a Sun StorEdge A1000, A3*x*00 or A3500FC array under VERITAS File System, VxFS, this might eventually result in loss of data in the file system. Whenever you turn off an array, such as for maintenance, ensure that VxFS disables the file systems on that array. If VxFS does not disable the file systems automatically, you must manually disable them.

Upgrading Controller Firmware

Caution – When upgrading controller firmware, make sure that both controllers within a dual-controller system have the *same* firmware level.

You can use TABLE 2-1 to verify that the firmware level on your controller is supported by your installed version of RAID Manager software. Upgrade the controllers to the highest firmware level supported by your current version of RAID Manager.

Note – The array must be in an optimal state for an upgrade.

TABLE 2-1 Supported Controller Firmware Levels

Sun StorEdge RAID Manager Version	Controller Firmware Level
6.1	2.04.04.01†
6.1.1	2.05.02.09
6.1.1 Update 1	2.05.02.11
6.1.1 Update 1 with Patch ID 106513-02	2.05.02.14
6.1.1 Update 1 with Patch ID 106707-01	2.05.02.15
6.1.1 Update 2	2.05.02.32
6.1.1 Update 2 with Patch ID 106513-03	2.05.02.32
6.1.1 Update 2 with Patch ID 106513-04	2.05.06.33
6.1.1 Update 2 with Patch ID 106707-02	2.05.02.32
6.22	3.01.02.35‡
6.22 with Patch ID 108834-01	3.01.03.54
6.22 with Patch ID 108834-03	3.01.03.54
6.22 with Patch ID 108553-03	3.01.03.54

TABLE 2-1 Supported Controller Firmware Levels

Sun StorEdge RAID Manager Version	Controller Firmware Level
6.22 with Patch ID 108834-06	3.01.03.60
6.22 with Patch ID 108553-06	3.01.03.60

† If your controller firmware is below level 2.04.04.01, you must first upgrade to level 2.04.04.01 *before* upgrading to level 2.05.02.*xx*; level 2.04.04.01 is provided on the RAID Manager 6.22 CD.

‡ Before upgrading to level 3.01.02.*xx*, you must first upgrade to level 2.05.06.32; level 2.05.06.32 is provided on the RAID Manager 6.22 CD.

For a complete list of firmware levels supported by all earlier versions of Sun StorEdge RAID Manager software, see the *Sun StorEdge RAID Manager Installation 6.22 and Support Guide* (805-7756).

For detailed instructions on upgrading controller firmware, refer to the *Sun StorEdge RAID Manager 6.22 User's Guide* (806-0478).

Upgrading the Solaris Environment With RAID Manager 6.22 Already Installed

Note – Before upgrading to the Solaris 2.6 and higher operating environments, you must first complete the RAID Manager upgrade procedure as described in the *Sun StorEdge RAID Manager Installation and Support Guide for Solaris* (805-7756) or the *Sun StorEdge A3500FC Controller Upgrade Guide* (806-0479).

You can upgrade to a later version of Solaris software with the RAID Manager 6.22 software installed, that is, without uninstalling and reinstalling the RAID Manager software.

▼ To Upgrade the Solaris Environment With RAID Manager 6.22 Installed

1. **Save a copy of the `/kernel/drv/sd.conf` file to a safe place.**

   You might put the file in a home directory before starting the operating system upgrade procedure.

2. **After completing the upgrade procedure, restore the `/kernel/drv/sd.conf` file.**

3. **Reboot the system.**

Onboard SOC+ Support for Sun StorEdge A3500FC Array

Connection of Sun StorEdge A3500FC arrays to onboard SOC+ interfaces is supported. This section discusses the I/O boards with onboard SOC+ that are supported with Sun StorEdge A3500FC array.

Hardware and Fcode Requirements for Onboard SOC+

- Supported host platforms:
  - Sun Enterprise 3*X*00 system
  - Sun Enterprise 4*X*00 system
  - Sun Enterprise 5*X*00 system
  - Sun Enterprise 6*X*00 systems
- Supported types of I/O boards with Onboard SOC+
  - X2611 (501-4266-06) I/O type 4, 83-MHz Gigaplane
  - X2612 (501-4883-05) I/O type 4, 83/90/100-MHz Gigaplane
  - X2622 (501-4884-05) I/O type 5, 83/90/100-MHz Gigaplane
- Minimum Fcode requirement for supported I/O boards: 1.8.25

▼ To Repair /etc/system

If your boot disk is under VERITAS control, creating a LUN or using `hot_add` could remove the forceload of sd or ssd from the VERITAS section of `/etc/system`. This would mean that the next reboot of the host would fail. You would need to boot from your Solaris CD or network and repair `/etc/system`.

1. **Before you reboot, check if the line `forceload: drv/sd` is still in the `/etc/system` file.**
2. **Put the forceload in your `/etc/system` file in front of the RAID Manager 6 section in `/etc/system`, which is labeled `BEGIN RAID Manager addition`.**

   Do the same if your boot device used the ssd driver, restoring the line `forceload: drv/ssd`.

Sun StorEdge Volume Manager Issues

Dynamic Multi-Pathing and RAID Manager 6.22

The Dynamic Multi-Pathing (DMP) feature in VERITAS Volume Manager 2.*x* is *not* compatible with RAID Manager 6.22. By default DMP is disabled if you install Volume Manager 2.*x* after you have installed RAID Manager 6.22.

If you need to enable this feature for other storage devices, you must install Volume Manager 3.0.4 or compatible versions. If you are running Volume Manager 2.6, DMP must remain disabled.

If you want to enable or disable the DMP feature, reference the VERITAS DMP documentation for the correct procedures.

Refer to the *Sun StorEdge Volume Manager* 2.6 *Release Notes* (805-5708) for more information about DMP issues and to the *Sun StorEdge Volume Manager* 2.6 *System Administrator's Guide* (805-5706) for instructions on disabling DMP.

“Bug 4237490: VM DMP Interferes With Sun StorEdge A3x00 Array RDAC” on page 53 and “Bug 4247562: DMP Fails After A3x00 Controller Failover” on page 55 for more information.

Switching Cables on the Sun StorEdge A3*x*00 or A3500FC Array With Volume Manager Installed

After installing Volume Manager on your host computer, do *not* change the cables between the controllers in a RAID module. For more information about this issue, refer to“Bug 4180291: Changing The Cabling On a Sun StorEdge A3x00 Array With Volume Manager Installed Causes Volume Manager to Lose Configuration” on page 47.

Caution – Switching cables between controllers on your Sun StorEdge A3*x*00 or A3500FC RAID module can lead to data loss or corruption.

Multiple Paths on the Sun StorEdge A3*x*00 or A3500FC Array

The `vxinstall` utility can present multiple paths to the Sun StorEdge *A3x00* array. If controller failovers occur, Volume Manager might see multiple paths to the enclosure and treat them as independent devices. See “Bug 4252401: vxinstall Presents Multiple Paths to Sun StorEdge A3x00 Array LUNS” on page 57 for more information.

Caution – This scenario can lead to data loss or corruption.

To avoid this issue, `hot_add` immediately after installing the Volume Manager packages.

Device Links in `/dev/dsk`

Installing some Volume Manager packages, such as `VRTSvxvm`, on a host computer with RAID Manager 6.22 installed and with LUNs configured causes `devlinks` to run and both paths to the Sun Storage A3*x*00 or A3500FC RAID controllers to be listed by the `format(1m)` command. Under Fibre Channel configurations with Solaris 7 and later operating systems, sometimes additional device links for the

physical devices appear in `/dev/dsk` as well. These links might have large controller numbers greater than c64. The workaround is to run `rdac_disks` as soon as the problem appears because it hides the extra controller paths. (See **"Bug 4243870: New Devices Show Up in the format Command That Should Not" on page 54**.)

RAID Manager LUNs Under Volume Manager

When a RAID Manager LUN is *not* labeled, it might not be recognized as a Volume Manager volume and needs to be labeled. If you create a LUN in RAID Manager 6.22 and the LUN does not appear to have a label, run the `format` command and label all RAID LUNs. See "Bug 4223643: In RAID Manager 6.22 LUN Not Showing Up In Format After LUN Creation" on page 51 for more information.

Root Disk Group and RAID Manager LUNs

Volume Manager volumes configured using devices from the Sun StorEdge A3*x*00 or A3500FC array subsystem cannot be a part of the root disk group, `rootdg`. Configure Sun StorEdge A3*x*00 or A3500FC array devices to non-`rootdg` disk groups only.

Moving Drives Between Sun StorEdge Array Subsystems

Do not move drives from one RAID module to another (Sun StorEdge A1000 or A3*x*00) because this is not supported.

You can add drives to a Sun StorEdge A3*x*00 or A3500FC array 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, A3*x*00 or A3500FC system (or were once installed on another Sun StorEdge A1000, A3*x*00 or A3500FC array system), delete any LUNs configured on those drives (by physically reformatting the disk media) *before* the drives are installed.

Caution – Do not migrate data by transferring disks between systems. Migrating data might cause the array to become inaccessible, the wrong `nvsram` might be loaded from a foreign disk, or ghost drives might appear. Data migration is unsupported by RAID Manager 6.

Adding a drive to a powered-off Sun StorEdge A1000, A3*x*00 or A3500FC array from another Sun StorEdge A1000, A3*x*00, or A3500FC array transfers the DacStore information and confuses the controller. Phantom drives might be reported. You must use a serial port and run the serial command `sysWipe` to remove those drives and reset the array configuration. For more information, see “Bug 4224830: “Ghost” Failed Disk Being Reported on Sun StorEdge A1000 Array in a Non-Existent (4,1) Location” on page 51.

Dynamic Reconfiguration for Sun StorEdge A3*x*00 and A3500FCArrays

A facility new to RAID Manager 6 enables a Sun StorEdge A3*x*00 or A3500FC array device to be recognized in a new Sun Enterprise E10000 system domain without having to perform a reconfiguration reboot (`boot -r`). This facility is also included with RAID Manager 6.22.

▼ To Ensure a Module Is Recognized in a Domain Without Reboot

1. **Install and configure the RAID Manager software in both source and destination domains.**
2. **Attach a Sun StorEdge device that is a new domain.**
3. **Execute the following manual command in the new domain as superuser so that the RAID Manager software recognizes the device (without having to reboot the domain):**

```
# /usr/lib/osa/bin/hot_add
```

The `hot_add` command performs a system sanity check, and then it performs commands to ensure a Sun StorEdge system is recognized by the operating system without requiring a reboot.

If there are still other SCSI devices in a domain, but the last Sun StorEdge A3*x*00 array has been detached from the domain, there might 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.

Note – It is good practice to label configurations (that is, cables, RAID modules, and so on), especially in clustered configurations. This helps eliminate confusion when you remove or replace system devices. If you must detach a Sun StorEdge device from a large system, proper labeling makes it much easier to locate the correct device and also minimizes any chance of mistakes.

Before dynamically moving a Sun StorEdge device between domains, ensure 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 might end up having node names that conflict with other devices on the system. If no LUNs exist on a given controller, create a small LUN for that controller before performing these types of reconfiguration operations.

System downtime might be required to add entries in the `/etc/system` file that identify the rdriver as a Dynamic Reconfiguration safe device. Dynamic Reconfiguration detach of a system board that contains nonpageable memory might fail to quiesce the operating environment if it is configured with a Sun StorEdge A1000, A3*x*00 or A3500FC storage array, RAID Manager 6.1.1 or 6.22 raid controller software, and Solaris 2.5.1 or 2.6 operating environment software. For additional information and procedures, see the "Special Handling of Sun StorEdge A3000" section under Chapter 2 in the *Sun Enterprise 10000 Dynamic Reconfiguration User Guide*, 806-2249 for details.

Maximum LUN Support in Solaris 2.6 and Higher Environments

Support for RAID modules that have more than eight LUNs is available in the Solaris 2.6 5/98 and higher releases for SBus and PCI host adapters.

To support more than eight LUNs, you must run one of three possible scripts, add16lun.sh, add32lun.sh, or the genscsiconf(1) command. The `add16lun.sh` script, which is available in earlier versions of the RAID Manager software, and the

`add32lun.sh` script are available on the RAID Manager 6.22 CD. However, you can modify the `/etc/osa/rmparams` file and run the `genscsiconf(1)` command for your Sun StorEdge A1000, A3*x*00 or A3500FC array. For more information, see "Bug 4220148: Can't Create More Than Eight LUNs on a Sun StorEdge A3500FC Array Without Editing the /kernel/drv/sd.conf File" on page 50.

TABLE 2-2 lists the number of LUNs per RAID module on your Sun StorEdge A3*x*00 or A3500FC array that are supported for the various combinations of host interfaces, host adapters, Solaris operating environments, and patch levels.

TABLE 2-2 Maximum Numbers of LUNs Per RAID Module

Interface	Type of HBA (Part Number)	Solaris Operating Environment	Required Patch (if any)	Patch Description	Number of LUNs
SCSI	SBus (X1065A)	2.6 5/98	none		32
		7 8/99	none		32
		8	none		32
	PCI (X6541A)	2.6 5/98	105580-13 (or compatible revision level)†	`glm` device driver patch for PCI	32
		7 8/99	106925-05 (or compatible revision level)†	`glm` device driver patch for PCI	32
		8	none		
FC	SBus (X6730A)	2.6 5/98	105375-17 (or compatible revision level)†	`sf` and `socal` device drivers patch	32
		7 8/99	107469-04 (or compatible revision level)	`sf` and `socal` device drivers patch	32
		8	none		
	PCI (X6729A)	2.6 5/98	107280-04 (or compatible revision level)†	`ifp` device driver patch	16
		7 8/99	107292-03 (or compatible revision level)†	`ifp` device driver patch	16
		8	none		

† Contact your local Sun solution center or service provider to get the latest patch revision level and information about 32-LUN support.

Note – For best results, configure all 32 LUNs on your RAID modules if you make changes to support 32 LUNS. If you do not configure all the LUNs, you might notice system delays when you boot SCSI systems.

If you are moving RAID modules (with more than eight LUNs configured) to a host system that does not support more than eight LUNs (for example, a host system running the Solaris 2.5.1 environment), you will not be able to communicate with the RAID module or view the RAID module through the RAID Manager GUI. To work around this issue, you can archive and then delete all LUNs over the eight-LUN limit prior to moving the RAID modules.

Note – The more LUNs you have configured, the longer reconfiguration boots and `add_disks(1m)` will take.

Guidelines for Creating or Deleting LUNs

This section contains procedures for creating or deleting LUNs on a Sun StorEdge A3*x*00 and a A3500FC array and guidelines for resetting the configuration on a Sun StorEdge A3*x*00 array (SCSI) or a Sun StorEdge A3500FC array.

Creating or Deleting LUNs

Sun StorEdge A1000, A3*x*00, and A3500FC arrays require the existence of LUN 0 for proper operation. While RAID Manager 6 does allow a user to delete LUN 0, its removal causes unpredictable behavior, including communication problems through both the GUI and CLI with the array and loss of availability due to random LUN failures.

▼ To Avoid Problems Creating or Deleting LUNs

1. **If a host exhibits delays or an inability to recover from I/O faults or rebalance LUNs, look for the presence or absence of an optimal LUN 0.**
2. **On systems without a LUN 0, run RAID Manager 6 to add an optimal LUN 0 to the configuration.**

   On systems without disk space available, you must architect a workaround to allow for the addition of LUN 0 on a time and materials basis.

The problem can be avoided by not deleting LUN 0. LUN 0 comes from the factory on all arrays as a 10 Mbyte RAID 0 device, which is not a useful size. Historically, LUN 0 had to be resized to be used, but that is accomplished only by deleting it and recreating it. However, all Solaris drivers support multiple LUNs per array, so LUN 0 can be left alone.

▼ To Reset the Factory Default Configuration of the Entire Array

1. **Select Configuration->File->Reset Configuration in the GUI Reset Configuration.**

   This step leaves a default LUN 0 on controller A.

2. **Make sure you always use the path to a controller with at least one LUN on it when using the CLI version** `raidutil -c <module specifier> -X`**.**

   Do not use the command `raidutil -D all`.

▼ To Create a Default LUN 0

- **If the array gets into a state where there is no LUN 0, power the array off and back on, which causes it to go through Start of Day (SOD) processing.**

  SOD processing creates a default LUN 0. In this case, only the controller modules must be power cycled, not all the trays. A host reboot does not accomplish the same thing.

Resetting the Configuration

Follow these guidelines to reset the configuration on a Sun StorEdge A3*x*00 (SCSI) system or Sun StorEdge A3500FC system.

- Ensure that controller A owns at least one LUN.
- Resetting the configuration does not remove the device paths. When using the Solaris 7 11/99 operating system or a compatible version, using the Reset Configuration GUI command, the `/dev/dsk` and `/dev/rdsk` paths for the previously existing LUNs are not removed. The same is true when using the command-line version: `raidutil -X`. Format (`lm`) then accesses these LUNs, as described in Bug 4339704, giving errors. These error messages continue until the links are removed or each of the previously existing LUNs is re-created. You can remove the links using `boot -r` or possibly `devfsadm -C` in combination with `rdac_disks(lm)`.

▼ To Reset the Array Configuration

- **To reset the configuration with the command-line (CLI) interface, issue the following commands to controller A:**

```
# /usr/lib/osa/bin/lad
c3t4d0 1T71322073 LUNS: 0 2 4 6
c8t5d1 1T71322005 LUNS: 1 3 5 7
# rdacutil -i c3t4d0
turing72_001: dual-active
Active controller a (c8t5d1) units: 1 3 5 7
Active controller b (c3t4d0) units: 0 2 4 6
rdacutil succeeded!
# /usr/sbin/osa/raidutil -c c8t5d1 -X
# /usr/lib/osa/bin/lad
c3t4d0 1T71322073 LUNS:
c8t5d0 1T71322005 LUNS: 0
```

Note – Device links under `/dev/[r]dsk` of previously existing LUNs are not removed after the configuration is reset.

Removing RAID Modules

Removing an entire RAID module from RAID Manager 6.22 does not remove the modules from the Solaris environment. The individual LUN device links are not removed when you give RAID Manager 6 GUI command to Remove the Module. If format (lm) is called after the command to remove the RAID module is given, messages appear about the module:

```
The Array drive has failed a controller on A3000 due to an RDAC
open failure of LUN 0.
RDAC Failover failed on A3000, LUN 0 with status 0x5.
```

The workaround is to `boot -r` or delete the LUNs explicitly before removing the module that contains them.

LUN Segment Size Issues

The following sections describe issues that you might encounter when you set or change the segment size of LUNs. See the *Sun StorEdge RAID Manager User's Guide* for information on setting and changing the segment size of individual LUNs in a drive group.

Default Segment Size for RAID Five LUNs

When you create a LUN, the default segment size is the optimal size for that RAID level. Under Sun StorEdge RAID Manager 6.1.1 (including Update 1 and Update 2), the default segment size for RAID 5 LUNs is 32 blocks. Under RAID Manager 6.22, the default segment size for RAID 5 LUNs has been increased to 64 blocks. However, you can still select 32 blocks or other segment sizes when creating LUNs. In general, larger segment sizes might improve performance. In RAID Manager 6.22, partial I/O (that is, writes to only part of a segment) are more efficient than in earlier versions of the software.

Eight-Block Segment Size Not Supported in RAID Manager GUI

In earlier versions of Sun StorEdge RAID Manager software, eight blocks was the smallest segment size allowed for individual LUNs. Under RAID Manager 6.22, this segment size is not available in the GUI on the Segment Size screen or the Modify Segment Size screen.

▼ To Create LUNs With Eight-Block Segment Sizes

1. **Back up any data stored in the LUN.**
2. **Delete the LUN.**
3. **Use the CLI to create the LUN again and set the segment size as shown in the following example:**

```
# ./raidutil -q -c c1t0d0 -r fast -n 0 -l 5 -z 8 -s 34389 -g 10,20,11,21,22 &
```

4. **Reload that data on to the LUN.**

   For more information, refer to the *Sun StorEdge RAID Manager User's Guide.*

Dynamic Resizing Unavailable for LUNs Created in Earlier Versions of RAID Manager

Starting with Sun StorEdge RAID Manager 6.1.1 using 2.5 firmware, newly created LUNs are allocated 40 Mbyte of the disk for the DacStore region. Only 2 Mbyte of the DacStore region were being utilized.

When an array is upgraded to 03 firmware, upon the first reboot of the controller, the DacStore region is expanded to use the additional 38 Mbyte of the 40 Mbyte reserved area. If there is not the additional 38 Mbyte of space, the 2 Mbyte DacStore is left intact.

The following features are not supported with 2 Mbyte DacStore:

- Dynamic Expansion Capabilities
- Defragmenting the Drive Group
- Changing RAID Level
- Modifying Segment Size

If a user selects one of the above unsupported features for a LUN that has a 2 Mbyte DacStore, an error window pops up and displays:

```
Illegal Reconfiguration Request Legacy Constraint, Command
could not be completed due to Legacy configuration or
definition constraints.
```

There will also be an error logged in the RMLOG file and messages file with an `asc/ascq` of 91/51.

To avoid this issue and to achieve uniform LUN capacity, refer to "Bug 4252057: Different Capacity Available After a Disk Replacement in a Sun StorEdge A3000 Array" on page 55.

Note – Any LUNs you created under RAID Manager 6.0 and 6.1 of are accessible. You are required to delete and re-create these LUNs unless you want to use the dynamic expansion capabilities in the GUI.

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

Running Manual Parity Check

The *Sun StorEdge RAID Manager 6.22 User's Guide* incorrectly leads you to select the option Check With Repair when you are running a manual parity check. The option is in the Manual Parity Check / Repair Option Screen of the Maintenance and Tuning application for the Sun StorEdge RAID Manager 6 graphical user interface. You should select Check Without Repair instead.

▼ To Run Manual Parity Check

1. **Start the Recovery application.**
2. **Select the RAID Module containing the LUNs you want to check or select All RAID Modules.**
3. **Click the Manual Parity Check/Repair button or select Options -> Manual Parity Check/Repair from the drop-down menu.**
4. **Select the LUNs you want to check.**
5. **After you select the LUNs you want to check, click the Start Parity Check/ Repair button.**

   Click any of the other buttons to exit this screen without performing the check.
6. **Click Check Without Repair, then click OK.**

   As each LUN is checked, a histogram bar appears on the screen indicating the Parity Check/ Repair progress on that LUN.

Power Sequencer Local / Remote Switch

The Local / Remote switch on each power sequencer is factory set to Remote (default). This allows power on / off control of each power sequencer through the front key switch. If the Local / Remote switch is set to Local, the power on / off control of each power sequencer is controlled by each power sequencer's main power circuit breaker switch.

For further information regarding power sequencer configuration, refer to the *Sun StorEdge A3500/A3500FC Hardware Configuration Guide*.

CHAPTER 3

Known Issues

This chapter covers a variety of bugs you might encounter when using RAID Manager 6.22. They are listed according to general categories, and then listed numerically according to bug numbers.

Bug List by Type

The tables in this section summarize the known issues. For detailed information about each issue, including recommended workarounds (where known), refer to “Description of Known Issues” on page 32.

TABLE 3-1 LUN Issues

Bug ID	Page	Synopsis
4014644	33	VTOC Is Not Updated and Labeled During a Default LUN Creation
4071258	37	Serial Number Is Corrupted in AEN Message
4094428	38	Maximum of Seven LUNs Can Be Created in Parallel
4096131	39	Sun StorEdge A3*x*00 Array LUNs Have the Same Serial Number in Inquiry
4101848	39	RAID Manager Should Allow Deletion of Non-Optimal LUNs
4105771	39	Dead RAID 0 LUN Becomes Optimal When Failed Drive Is HotSwapped
4109707	40	Failing Two Drives in Same LUN Results in Only One Fault Light
4131805	43	LUN Goes From Reconstruct to Degraded Mode After Replacing Failed Drive

TABLE 3-1 LUN Issues *(Continued)*

Bug ID	Page	Synopsis
4133673	43	LUN Configuration Is Lost When Adding Drives From Second RAID Module and Cold-Starting the System
4180804	48	When a Boot Disk Is Encapsulated, SEVM Probes Disks Before Sun StorEdge A3000 Array LUNs Are Available
4213271	49	Different Segment Sizes Are No Longer Available For Creating LUNs in RAID Manager Graphical User Interface
4220148	50	Can't Create More Than Eight LUNs Sun StorEdge A3500FC Array Without Editing the `/kernel/drv/sd.conf` File
4222389	50	Delete All LUNs and Reboot Leads to Dead Controllers
4233621	52	RAID Manager 6.22 Sun StorEdge A3500FC Array - Multiple LUNs With "Corrupt Label - Wrong"
4240626	53	TX `kstat` Panic Running Load on FC-AL Sun StorEdge A3500 Array (Multi-LUN)
4252401	57	`vxinstall` Presents Multiple Paths to Sun StorEdge A3*x*00 Array LUNS
4272324	60	FC SBus Multiple LUN Creation Leads to Dead Controllers
4336225	61	All LUNs Owned by Sun StorEdge A3500FC Controller Report Same Predictive Failure Analysis Error

TABLE 3-2 Messages: Errors, Warnings, Reports, Logs

Bug ID	Page	Synopsis
1266503	32	Using Sun StorEdge RAID Manager Under Common Desktop Environment (CDE)
4006136	32	Solaris Environment /Sun StorEdge RAID Manager Capacity Reporting Differences
4017170	34	Interrupt Characters Emit Warnings
4252937	57	RAID Manager 6.22 `nvutil` Appears to Repeat Operation on Same Device
4254370	57	Date Codes Not Displayed for Seagate 9g and 18g Drives
4258441	58	`ssd`: Requeue of Command Fails (fffffffe)
4267281	59	`default.def` Sets Bits That Are Not Applicable to Both SCSI and FC-AL
4326273	61	Offlining an Array Can Result in File System Corruption
4362523	64	rdriver Tries to Attach ssd With No Fibre Channel Devices

TABLE 3-3 Graphical User Interface and Command Line Interface Issues

Bug ID	Page	Synopsis
4009878	33	LUN Disappearance Due to LUN Locking Needs More Graceful Handling
4037747	34	Reset Buttons in the Create LUN Options Screens Do Not Return to the Original Settings
4039716	34	GUI Does Not Report the Correct Capacity for the Unassigned Drive Group in Mixed Drive Size Configurations
4176887	46	Date Codes Are Not Shown For Non-Seagate Drives
4182449	48	In a Multi-Initiator Configuration, the GUI Erroneously Reports LUN Is Optimal On the Second Host
4185168	48	Using the CLI to Create a LUN Does Not Generate Notification in the Message Log
4224935	51	The `raidutil -S` Option Fails
4236492	53	CLI Healthcheck Command Does Not Display Detailed Output
4256151	57	Executing `raidutil` on the Command Line for 2x7 Configurations Fails
4262855	58	GUI Application Segmentation Violation and Must Be Restarted
4264190	58	`disks` Command Fails With Sun StorEdge A3500FC Array
4278722	60	`raidutil -D all` fails - Unknown Failure, `return value = 7,errno = 5 - I/O error`
4309504	61	RAID Manager GUI Is Slow On System With Degraded LUN
4343416	62	RAID Manager GUI and `healthck` Are Not Reporting Controller Fan Failure
4384184	65	RAID Manager 6 GUI Stuck Showing “Reconstructing” Status

TABLE 3-4 Configuration Issues

Bug ID	Page	Synopsis
4051085	35	Independent Controller Configurations Require Manual Cache Flushing Procedure

TABLE 3-4 Configuration Issues

Bug ID	Page	Synopsis
4052072	36	Cannot Configure Sun StorEdge A3*x*00 Array With Sun Enterprise SyMON™ Running in Background
4056110	36	Sun Enterprise 10000 System Multi-domain Needs Unique Names to Prevent Name Collisions
4346453	63	Need to Edit rmparams On Systems With Multiple Sun StorEdge A3500FC Arrays Or Where Loop (SCSI) IDs On Arrays Not 4 and 5

TABLE 3-5 Documentation Issues

Bug ID	Page	Synopsis
4074201	37	"Unit Failure" Not Defined in User Documentation
4117047	40	"Quickly Advance" Doesn't Work On Help Glossary Window
4130820	42	No Documentation About the Delays in Enabling Cache When Recovering a Failed Controller
4150514	44	Recovery Guru Help Window Does Not Document All Possible Causes of Power Supply Failures

TABLE 3-6 Upgrading, Installing, and Uninstalling Issues

Bug ID	Page	Synopsis
4044512	35	SunInstall™ GUI Under Solaris 2.6 Environment Fails With Sun StorEdge A1000 or Sun StorEdge A3*x*00 Array Present
4081809	37	Upgrading From RAID Manager 6.0 to RAID Manager 6.22 Can Cause Write Back and Mirrored Caching to Be Disabled
4104191	39	Firmware Upgrade From 2.4.1d to 2.05.02 Causes Unknown Failure
4118532	41	Upgrading Sun StorEdge RAID Manager Could Cause Rearranging of Device Tree
4355827	63	RAID Manager Does Not Clean Up All Files When Uninstalling
4363869	64	Controllers Should Not Be Offline When Installing Solaris Environment or RAID Manager 6 in a Multihost Environment

TABLE 3-7 Firmware Issues

Bug ID	Page	Synopsis
4117560	40	Downloading Controller Firmware Causes Drives to Fail
4163706	45	Firmware Download Screen Does Not Highlight a Selected Independent Controller or Entire RAID Module Group
4170396	45	Recovery Guru Does Not Synchronize Controller Firmware Levels

TABLE 3-8 OpenBoot Prom and Booting Issues

Bug ID	Page	Synopsis
1262802	32	OpenBoot™ PROM `probe-scsi-all` Returns Unconfigured LUNs
4153014	45	`Probe-SCSI-All` On the Sun StorEdge A1000 Array With the UDWIS Card Leaves Some Trailing Characters
4166678	45	Initial Boot From Sun StorEdge A1000 Connected to US2D PCI Card Fails
4191694	49	E450 Reports “Fatal SCSI error at...” Error When Booting Off A RAID Device
4222386	50	WARNING: Forceload of `drv/rdriver` Failed
4234427	52	Cannot Boot A3500FC Devices Because Drivers Are Not in OS Release
4241759	53	Cannot Boot From a Sun StorEdge D1000 Array Configured With 16 LUNs
4253002	57	When the System Is Rebooted Random Disks Fail in Sun StorEdge A3*x*00 Array
4284739	60	RAID Manager 6 Takes Too Much Time During the Boot Sequence
4347418	63	`hot_add` Script Could Prevent Subsequent Reboot From VERITAS Disk

TABLE 3-9 Device Path Issues

Bug ID	Page	Synopsis
4198033	49	Device Node Names Inconsistent
4223643	51	RAID Manager 6.22 LUN Not Showing Up In Format After LUN Creation
4243870	54	New Devices Show Up in the `format` Command That Should Not

TABLE 3-9 Device Path Issues *(Continued)*

Bug ID	Page	Synopsis
4324194	61	RAID Manager 6 CLI Controller Restore Does Not Work As Expected
4327344	61	Removing an Entire RAID Module Does Not Remove Its Existence From Solaris Environment
4339704	62	Resetting the Configuration Does Not Remove the Device Paths
4368801	64	No `dev` Path if Controller Drops or Changes
4374861	65	Unused Devinfo Nodes Waste Memory and Confuse Ownership

TABLE 3-10 Power Issues

Bug ID	Page	Synopsis
4173199	46	Critical Overtemp Failure Caused Power Supply Failure
4369971	64	Power Cycle of Sun StorEdge A3500 Controller Module Is Required After Sun StorEdge D1000 Array Repair

TABLE 3-11 Other Issues

Bug ID	Page	Synopsis
4047458	35	Root Mailbox Fills With Redundant `RAID Event` Email Messages
4069553	37	Sun StorEdge RAID Manager 6.1.1 Does Not Register New Default Name for All Application
4085790	38	`iostat -xcn` Core Dumps if RSM2000 Attached
4085956	38	SNMP Notification Requires Name Service
4110686	40	`amdaemon` Reports the Incorrect OID Code With SNMP
4124130	42	RAID Manager 6 Holding `p_selock` For Long Durations Preventing DR
4150501	44	List/Locate Doesn't Light Sun StorEdge D1000 Array Tray LED
4171107	45	Errors From Pseudo Driver — Invalid Op (11) From `rdnexus4`
4175983	46	Loading RAID Manager Software in a System With a Sun StorEdge D1000 Array Attached Can Cause `isp` Resets
4176937	46	`rmscript` Fails to Detect and Notify User With Failed I/O From Sun StorEdge A3*x*00 Array
4176940	46	Panic() When Parsing `driver.conf` Greater Than 8 Kbytes

TABLE 3-11 Other Issues *(Continued)*

Bug ID	Page	Synopsis
4180291	47	Changing Cabling on a Sun StorEdge A3*x*00 Array With VM Installed Causes VM to Lose Configuration
4183009	48	RAID Manager 6 Incorrectly States RAID Implementation as 0+1 Instead of 1+0
4190277	49	RSM2000 Has Ghost 4,3 That Cannot Be Deleted
4198488	49	`iostat -n` Option Must Output *cxtxdxsx* Device Format For Sun StorEdge A1000/A3000 Array
4222419	50	`rdriver/rdnexus` Do Not Register the Correct `kstat` Names For Disk Drives
4224830	51	"Ghost" Failed Disk Being Reported on A1000 in a Non-Existent (4,1) Location
4230669	51	RAID Manager Can Create `rdriver.conf file`>8k, Panics System
4236166	52	WWN Changes When Both Controllers Are Cold-Swapped in RAID Manager 6.22 — Dual Cold-Swap Loses World-Wide Name (WWN)
4237490	53	Volume Manager DMP Interferes With Sun StorEdge A3*x*00 Array RDAC
4242670	54	RAID Manager 6 Parity Checking Process Maintains Opens on Sun StorEdge A3*x*00 Arrays — DR Detach Fails
4247562	55	DMP Fails After Sun StorEdge A3*x*00 Array Controller Failover
4251984	55	Sun StorEdge A1000 Array RAID Controller Is Inaccessible After Connecting As Multi-Initiator Device
4252057	55	Different Capacity Available After a Disk Replacement inSun StorEdge A3000 Array
4338906	62	`rdac` Takes Long Time to Disable Controller With Fiber Pull
4346466	63	Some Files Are Preserved After Removing RAID Manager 6 Packages

Description of Known Issues

Th is section explains the bugs that are known to exist in RAID Manager 6.22.

- **Bug 1262802**: OpenBoot PROM `probe-scsi-all` Returns Unconfigured LUNs

  The `probe-scsi-all` OpenBoot utility reports all Sun StorEdge A1000 and Sun StorEdge A3*x*00 array LUNs, even though some of the LUNs might 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 the Common Desktop Environment (CDE)

  Extraneous font error messages are displayed on the console window when running RAID Manager under CDE. The messages are 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 they occur only when a new screen is launched under RAID Manager 6.*x* software.

- **Bug 4006136**: Solaris Environment/Sun StorEdge RAID Manager Capacity Reporting Differences

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

  For example, on a newly created LUN, the capacity might show 81861 Mbytes under 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 the `newfs` (1M) command on the LUN would show:

```
/dev/rdsk/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)
```

- **Bug 4009878**: LUN Disappearance Due to LUN Locking Needs More Graceful Handling

  During a manual parity check, LUN status is busy and disappears from the GUI. 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."

  The LUN is not available until the parity check completes. This might 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 is not automatically labeled. Specifically, when a default LUN is created by either of the following:

  - When using the RAID Manager GUI Reset Configuration option, which clears all existing LUNs and creates a default LUN 0.
  - 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 is not labeled). When this happens, the following error message appears 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 environment `format` (1M) utility is used to reference the LUN with no label, the format utility warns that a label must 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 the default LUN.

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

  Due to a facility found in the underlying GUI builder facility used with the 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 might see error messages 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 might occur only 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 4037747**: Reset Buttons in the Create LUN Options Screens Do Not Return to the Original Settings

  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 reset option screen buttons:

1. **Exit the Options screen.**
2. **Select the Options screen again from the Create LUN Main Screen.**
3. **Click the Reset button to clear the condition.**

- **Bug 4039716**: 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 RAID Manager reports 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 (five with capacities of 4 Gbytes and five with capacities of 9 Gbytes), the Configuration application reports the total capacity of the drive group as approximately 40 Gbytes. The rationale for this is that if one uses a mixed drive capacity drive group, the system limits drive capacities to the smallest drives in the drive group and 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 4044512**: SunInstall GUI Under the Solaris 2.6 Environment Fails With Sun StorEdge A1000 or Sun StorEdge A3*x*00 Array Present

  When installing or upgrading to the Solaris 2.6 environment, the SunInstall utility might have problems launching the device probing windows if any Sun StorEdge A1000, A3*x*00 or A3500FC array devices are physically hooked to the host system and powered on. If the Solaris 2.6 environment is being installed using the SunInstall utility, and the installation or upgrade procedure fails after clicking the Continue button on the Software Window, power off the Sun StorEdge A1000, A3*x*00 or A3500FC array or disconnect the host SCSI bus or Fibre Channel loop before proceeding with the operating system installation.

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

- **Bug 4047458**: Root Mailbox Fills With Redundant `RAID Event` Email Messages

  Under certain controller failure conditions, the RAID Manager software sends redundant notices to the superuser. These messages could 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 array 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 A3*x*00 or A3500FC array 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 is not 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 RAID Manager 6 (GUI or CLI) from the host that is connected to the still-functioning controller. That controller then takes over the LUNs and flushes the data to media.

- **Bug 4052072:** Cannot Configure Sun StorEdge A3*x*00 Array With Sun Enterprise SyMON Running in Background

  If the Configuration application or any other RAID Manager applications hang when Sun Enterprise SyMON is running, ask your system administrator to stop the Sun Enterprise SyMON daemon in order to proceed with configuring the Sun StorEdge A3*x*00 or A3500FC array system. When you have completed configuration of the Sun StorEdge A3*x*00 or A3500FC array, the Sun Enterprise SyMON daemon can be restarted.

- **Bug 4056110**: Sun Enterprise 10000 System Multi-domain Needs Unique Names to Prevent Name Collisions

  As with RAID Manager 6.0, RAID Manager 6.22 automatically assigns default names to detected RAID modules found on the system. However, the default naming scheme in RAID Manager 6.22 uses the host system name instead of the previous default naming scheme, that is, `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 RAID Manager 6.22 software displays a dialog box that indicates the name collision and then attempts to append numeric digits to the end of the name to ensure uniqueness.

Tip – Avoid using period characters in RAID module names.

Administrators who are upgrading from RAID Manager 6.0 to 6.22 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 is automatically renamed using the hostname of the system to *hostname*`_001`. The administrator can choose to rename the module with a name that is more intuitive, if desired.

Because RAID Manager 6.22 can automatically rename modules found on the system, Sun StorEdge Administrators should document their existing RAID module names before installing the 6.22 software. Once the new software is installed and running, RAID modules can be relabeled using the old RAID module names, if desired.

- **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 (against recommendation) to name RAID modules, and a new RAID module is added to the system, each RAID Manager 6.1.1 Update 1 application (Configuration, Status, Recovery, and so on) generates a dialog box noting the addition of a new RAID module. This occurs only 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 is not displayed 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 occurs when one or more drives fail in a RAID 0 drive group, or when two or more drives fail in a RAID 1, 3, or 5 drive group (multiple drives might fail in a RAID 1 drive group as long as they are not both the data drive and the mirror drive). This condition appears to occur when recovering the failed drives with the Recovery Guru. The Unit Failure means you must reformat the Dead LUN before you can use it again.

- **Bug 4081809**: Upgrading From RAID Manager 6.0 to RAID Manager 6.22 Can Cause Write Back and Mirrored Caching to Be Disabled

  In some cases, after upgrading to RAID Manager 6.22, Fast Write Cache cannot be enabled. This has been traced to the RAID controller battery aging value being set incorrectly. Update the battery age on both controller paths for Write Cache to be enabled.

To update the battery age:

1. **If you have upgraded to RAID Manager 6.22 and find you can no longer enable cache, run the `raidutil`(1M) command.**

   Run the command on each Sun StorEdge A3000 array controller to reset the battery aging value:

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

2. **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 run 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.

3. **For the existing installed base, you must 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 4085790:** `iostat -xcn` Core Dumps if RSM2000 Attached

     To work around this issue, install patch 106655-02 for the Solaris 2.6 software; refer to “Required Patches” on page 6. See also Bug 4080130 and Bug 4222419.

   - **RFE 4085956**: SNMP Notification Requires Name Service

     You are required to have DNS running to send SNMP traps. Your host system must be able to perform DNS name resolution.

     As a workaround, use the DNS name service in the `/etc/nsswitch.conf` file and create a `/etc/resolv.conf` file that points to the DNS name servers.

   - **Bug 4094428**: Maximum of Seven LUNs Can Be Created in Parallel

     Due to a limitation in the Sun StorEdge A1000, A3*x*00 and A3500FC array controller firmware, only seven LUNs can be created in parallel at any one time. This is an issue only in the Solaris 2.6 environment and compatible versions with 16-LUN support enabled.

- **Bug 4096131:** Sun StorEdge A3*x*00 Array LUNs Have Identical Serial Numbers in Inquiry

  If you are upgrading from RAID Manager 6.*x* to RAID Manager 6.22 and want to support the Sun Cluster software with the quorum device on the Sun StorEdge A3*x*00 or A3500FC array, you must create a new LUN and assign it as the quorum device after you have completed your upgrade.

- **Bug 4101848**: RAID Manager Should Allow Deletion of Non-Optimal LUNs

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

```
# 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 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, RAID Manager 6.22 does not force you to reformat, so you are responsible for reformatting the LUN.

To reformat the LUN:

1. **Start the RAID Manager 6.22 GUI.**
2. **Open the Recovery Guru and select the RAID module with the previously-dead LUN.**
3. **Select Options -> Manual ->LUNS.**
4. **Highlight the previously-failed LUN, and select** `Format`**.**

   When the Format process completes, the LUN is ready to be used again.

5. **Reload the data from backup.**

- **Bug 4109707**: Failing Two Drives in Same LUN Results in Only One Fault Light

  In a RAID 1, 3, or 5 configuration, only one fault light might illuminate on the front of the RAID module if two drives are manually 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. 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 RAID Manager 6.1.1 GUI or CLI applications as noted in the *Sun StorEdge RAID Manager User's Guide*.

- **Bug 4110686**: The `amdaemon` Reports the Incorrect OID Code With SNMP

  Stopping the `amdaemon` when SNMP traps are being reported gives the incorrect identifier "entObjID 23," which is the Novell identifier. The `amdaemon` is only stopped for package remove, system shutdown, and Dynamic Reconfiguration (DR) operations.

- **Bug 4117047:** "Quickly Advance" Doesn't Work On Help Glossary Window

  The quickly advance option does not work on the help glossary windows, but it does work on the help contents windows. Use the arrow, home, and end keys to move through the help glossary window.

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

  When downloading firmware updates to each Sun StorEdge A3000 array, drives within the unit might appear to fail. To limit the potential impact of such a failure, upgrade each Sun StorEdge A3000 array individually.

To upgrade individual arrays:

1. **Record the `ctd` number of the LUNs that are assigned to each of the target Sun StorEdge A3000 array unit's controllers.**

2. **Disable SEN card polling on the target Sun StorEdge A3000 array by using the script provided in the `/Tools` directory of the RAID Manager 6.22 CD:**

```
# polling.sh off
```

   Enter the value for the *ctd* for the target Sun StorEdge A3000 array when prompted.

3. **Run the controller update script provided in the `/Tools` directory of the RAID Manager 6.22 CD to upgrade the firmware:**

```
# controller.sh <ctd> load firmware-file
```

Note – If you are upgrading from 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. Use the associated `bwd` files.

4. **Enable SEN card polling on the target Sun StorEdge A3000 array, again by using the script located in the `/Tools` directory of the RAID Manager 6.22 CD:**

```
# polling.sh on
```

Enter <*ctd*> for the target Sun StorEdge A3000 array when prompted.

5. **Run the controller update script to restore SEN card polling:**

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

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

- **Bug 4118532**: Upgrading RAID Manager Could Cause Rearranging of Device Tree

  Ensure that the current configuration of the server (including the number of controller cards, RAID modules, and other SCSI devices) is consistent with the installation of the last version of RAID Manager on your system. If it is not, record the current device tree information and the `mnf` file (located in the `/etc/osa` directory) and save a copy of the current `/etc/path_to_inst` file *before* upgrading to the new version of RAID Manager. This ensures 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 A3*x*00 array systems. 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 A3*x*00 systems. It just so happens that the updated sysboard (`Brd 0`) is first in the scan tree. Therefore, your device tree arrangement becomes similar to the following:

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

After an upgrade of the software, RAID Manager rescans the devices and rebuilds the device tree (because when the older version of RAID Manager is removed, no history of the current configuration is preserved). Since `Brd 0` is first in the scan, your device tree arrangement becomes the following after the upgrade:

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

To allow you to recover from rearrangement of the device driver tree by RDAC components during an upgrade, preserve the `/etc/path_to_inst` file *before* you upgrade to a new version of RAID Manager.

To preserve the `/etc/path_to_inst` file:

1. **Save a copy of the current `/etc/path_to_inst` file *before* you upgrade to a new version of RAID Manager.**
2. **After completing an upgrade procedure, replace the `/etc/path_to_inst` file with the copy you saved previously.**
3. **Reboot the system by typing:**

```
# boot -r
```

- **Bug 4124130**: RAID Manager 6 Holding `p_selock` For Long Durations Preventing DR

  Since the RAID Manager 6.*x* graphical user interface (GUI) accesses the arrays every five seconds, DR is inhibited while the GUI is open. The workaround is to close all RAID Manager 6.*x* GUI instances before attempting any DR operations. Refer to “Dynamic Reconfiguration for Sun StorEdge A3x00 and A3500FCArrays” on page 15 for more information.

- **Bug 4130820**: No Documentation About the Delays in Enabling Cache When Recovering a Failed Controller

When a controller is placed online again, the cache might not be re-enabled for up to 20 minutes. This situation applies to manual controller failback either through the graphical user interface or with the `rdacutil` command-line utility as shown in the following examples.

```
# rdacutil -u
```

or

```
# rdacutil -U
```

- **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 terminates 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 array subsystem to another is neither recommended nor supported when the systems are powered off.

  If you have moved drives from one Sun StorEdge array subsystem to another and cold-started the system, the configuration information on the new drives might 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 see a problem after adding drives (that is, not seeing previously configured LUNs) and cold-starting the system, remove the drives and add them again in the proper manner.

To troubleshoot added drives:

1. **Remove the newly added drives.**
2. **Restart the system.**

3. **Add the drives one at a time.**

4. **To move drives from one Sun StorEdge A1000,** A3*x*00 **or A3500FC array system to another, follow these guidelines:**
   - Add the drives while the system is up and running.
   - Do not cold-start the system.
   - **Bug 4150501**: List/Locate Doesn't Light Sun StorEdge D1000 Array Tray LED

     If the `List/Locate` → `All Drives` option is selected for any RAID 0, 1, 3, or 5 set, the resulting activity LED sequence is too fast to be detected and displayed by the Sun StorEdge D1000 array tray LED circuitry. However, the Sun StorEdge D1000 array tray LED circuitry *is* able to properly detect and display this LED activity if disks are in the Unassigned group or are selected individually.

   To view the disks being located:

   Use one of the following procedures.

- **Open the front drive panel of the Sun StorEdge D1000 array tray on the Sun StorEdge A3500 array or Sun StorEdge A1000 array and View the drive LEDs directly.**

  or

- **Select individual disks or disks in the Unassigned group. The LED states for these disks cycle ON and OFF in equal time increments, providing ample time for the Sun StorEdge D1000 array tray LED to present a visible sequence.**
  - **Bug 4150514**: Recovery Guru Help Window Does Not Document All Possible Causes of Power Supply Failures

    If there is a single line power failure to a dual AC box, the Health Check process correctly senses the power failure. The Recovery Guru, however, fails to mention numerous possible causes for the failure, including:
    - The AC box could be faulty
    - The connection could be loose
    - More than one power supply could have simultaneously failed

      The Recovery Guru simply instructs you to replace all failed supplies individually.

      If you experience multiple power supply failures, there may be a loss of AC power to the affected area. This is particularly true if all supplies on only one side of each Sun StorEdge A3*x*00 or A3500 array are reported as failed.

- **Bug 4153014:** Probe-SCSI-All On The Sun StorEdge A1000 Array With The UDWIS Card Leaves Some Trailing Characters

  When a Sun StorEdge A1000 array is connected to a Sun Ultra 2 system via the X1065A (370-2443-01) UDWIS SBus interface, and the `probe-scsi-all` command is executed, the following meaningless characters appear at the end of each line after 0205:

```
)5Xo+
```

  These characters are the binary serial number and can be safely ignored.

- **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 Sun StorEdge A1000 Array 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 array fails with “Drive not ready” and Trap 3e. This problem occurs after a soft reset or power on. The first attempt to boot fails, but if you boot again, it succeeds.

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

- **Bug 4170396:** Recovery Guru Does Not Synchronize Controller Firmware Levels

  When replacing a Sun StorEdge A3*x*00 or A3500FC array 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 firmware levels that are not synchronized when bringing the replaced controller online. If the RAID module runs with controllers whose firmware levels are not synchronized, intermittent errors occur. Worse, data could 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 might encounter messages like the following that are harmless and can be ignored:

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

- **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 prior 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 Sun StorEdge D1000 System Attached Can Cause *isp* Resets

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

  There is an issue with the Seagate ST39173W disk drives in the Sun StorEdge D1000 trays, running with firmware 5084. After upgrading to disk drive firmware revision 7063, the *isp* resets do not occur. To work around this issue, install patch 106817-*xx* (latest rev level) which includes the firmware revision 7063.

- **Bug 4176887:** Date Codes Are Not Shown For Non-Seagate Drives

  Some disk drives do not show the proper date code through the RAID Manager 6 GUI, for example, when you select Maintenance and Tuning → Module Profile → Drives. The Module Profile can be accessed from the Configuration, Recovery, or Maintenance windows.

  The workaround is to look at the label on the outside of the drive; it contains the date code.

- **Bug 4176937:** `rmscript` Fails to Detect and Notify User With Failed I/O From Sun StorEdge A3*x*00 Array

  You cannot use `rmscript` to detect regular errors because the Sun StorEdge A3*x*00 or A3500FC array automatically catches and repairs errors.

- **Bug 4176940:** Panic() When Parsing `driver.conf` Greater Than 8 Kbytes

  See patch ID 105181-16 (Solaris 2.6 environment) and patch ID 106541-07 (Solaris 7 environment) in the list of required patches for RAID Manager 6.22 (see http://sunsolve.sun.com); see also Bug 4230669.

- **Bug 4180291**: Changing The Cabling On a Sun StorEdge A3*x*00 Array With Volume Manager Installed Causes Volume Manager to Lose Configuration

  If the configuration has two host adapters that are connected to both controllers in a Sun StorEdge A3*x*00 or A3500FC array system and SEVM is also running, the data might appear lost if the cables are reversed.

To prevent loss of volume manager configuration:

1. **Edit the** `/etc/vfstab` **file and comment all volumes built on Sun StorEdge A3500 array systems.**
2. **Unmount all Sun StorEdge A3500 array file systems.**
3. **Deport DG.**
4. **Type the following:**

```
# init 0
```

5. **Swap cables.**
6. **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 balanced.

The `vxdisk` list might also show some disks with "altused" status.

7. **Use Recovery Guru to fix the "Failed Data Paths."**
8. **Clean the device tree by removing all Sun StorEdge A3500 array devices.**

Do not remove the boot device.

```
# rm dev/(r)dsk/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
# ln -s /devices /dev/osa/devices
# rm -rf /devices/pseudo/rdnex*
```

To complete preserving the volume manager configuration:

1. **Run the following command:**

```
# reboot -- -r
```

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

2. **Run the following command:**

```
# boot
```

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

   a. **Pay attention to controller numbers.**

   b. **Verify SEVM with the `vxdisk list` command.**

   c. **Import DG.**

   d. **Verify that all volumes are started (Enabled Active).**

   e. **Mount all file systems.**

- **Bug 4180804**: When a Boot Disk Is Encapsulated, SEVM Probes Disks Before Sun StorEdge A3000 Array LUNs Are Available

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

- **Bug 4182449:** In a Multi-Initiator Configuration, the GUI Erroneously Reports LUN Is Optimal On the Second Host

  Using the RAID Manager GUI on two hosts simultaneously shows incorrect and confusing information because this feature is not supported. RAID Manager 6.22 prevents the user from running the Configuration application on more than one terminal on the same host. This should be prevented on multiple hosts as well.

- **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 6.22, 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. Note that this is not a change in the behavior of the RAID Manager software.

- **Bug 4190277:** RSM2000 Has Ghost 4,3 That Cannot Be Deleted

  Moving disks from one drive tray to another can cause one of several anomalies. This bug describes "ghost" drives that appear after shuffling drives. Sometimes the only way to remove these drives is to call your local Sun solution center or Sun service provider.

  See also "Moving Drives Between Sun StorEdge Array Subsystems" on page 14 in this document.

- **Bug 4191694:** E450 Reports "Fatal SCSI error at..." Error When Booting Off a RAID Device

  Booting a Sun StorEdge A1000 or A3*x*00 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.

- **Bug 4198033:** Device Node Names Inconsistent

  With Sun StorEdge RAID Manager 6.22, the RDAC address does not change after you create a LUN. For example, if you create 32 LUNs on your Sun StorEdge A3*x*00 or A3500FC array system (17 LUNs on Controller A and 15 LUNs on Controller B) and execute the `format` command, only the 17 LUNs under Controller A are listed. In this case, the devices listed by the `format` command do not match your configuration, and the RAID Manager software does not appear to recognize your devices.

  To work around this issue, edit the `/etc/raid/rdac_address` file and execute the following command as superuser:

```
# /usr/lib/osa/bin/hot_add
```

- **Bug 4198488:** `iostat -n` Option Must Be Output *`cxtxdxsx`* Device Format For Sun StorEdge A1000/A3000 Array

  A series of bugs have been filed against `iostat` issues with the Sun StorEdge A1000, A3*x*00, and A3500FC arrays. 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. See also Bug 4080130 for RSM2000 LUNs, Bug 4085790, and Bug 4222419.

- **Bug 4213271:** Different Segment Sizes Are No Longer Available For Creating LUNs In RAID Manager GUI

  See "Eight-Block Segment Size Not Supported in RAID Manager GUI" on page 21 for details on the limitations of LUNs with 8-block segment sizes.

See also “Dynamic Multi-Pathing and RAID Manager 6.22” on page 12. Note that the dynamic expansion features available in the graphical user interface (GUI) are not supported for LUNs with 8-block segment sizes.

- **Bug 4220148:** Can’t Create More Than Eight LUNs on a Sun StorEdge A3500FC Array Without Editing the `/kernel/drv/sd.conf` File

  If the recommended procedure for more than eight LUNs is not followed, then the system cannot be used until restoration work is performed. If more than eight LUNs are desired, run the `genscsiconf(1m)` command as described in “Maximum LUN Support in Solaris 2.6 and Higher Environments” on page 16. See also “Setting the LUN Limit” (using `genscsiconf`) in the *Sun StorEdge RAID Manager Installation and Support Guide*.

Note – The add16.un.sh script, whic is available in earlier versions of the RAID Manager software, and the add32lun.sh script are available on the RAID Manager 6.22 CD. However, you can run the renscsiconf(1) command as described in “Maximum LUN Support in Solaris 2.6 and Higher Environments” on page 16 to support more than eight LUNs on your Sun StorEdge A1000 , A3*x*00 or A3500FC system.

- **Bug 4222386:** WARNING: Forceload of `drv/rdriver` Failed

  Once in a while the following message is displayed during bootstrap:

```
WARNING: forceload of drv/rdriver failed
```

  This message is harmless and should be ignored. `rdriver` automatically loads itself at the end of the `init` process so no connectivity is lost and all operations proceed normally.

- **Bug 4222389:** Delete All LUNs and Reboot Leads to Dead Controllers

  If all LUNs are deleted explicitly and the host is rebooted, the controllers go dead. Using Reset Configuration prevents this problem. This problem occurs when there is no LUN 0 to issue commands to, that is, to communicate with the host machine. The workaround is to power cycle the array just before rebooting the host.

- **Bug 4222419:** `rdriver/rdnexus` Do Not Register the Correct `kstat` Names For Disk Drives

  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/dev/dsk`. This issue is resolved in the Solaris 8 environment.

  See also Bug 4085790 wherein `iostat -n` causes a panic that is fixed by patch 106655-02; refer to “Required Patches” on page 6.

- **Bug 4223643:** In RAID Manager 6.22 LUN Not Showing Up In Format After LUN Creation

  Very rarely, a LUN does not show up in the list of disks that the `format` command displays. If this problem does not occur, you might ignore the information in Table 6-7 in the *Sun StorEdge RAID Manager 6.22 Installation and Support Guide for Solaris*, 805-7756. However, if the problem does occur, the workaround is to manually run `add_disk` in the RAID Manager 6 `bin` directory. A second option is to remove the `mnf` file in `/etc/osa/mnf` and run the `lad` command.

- **Bug 4224830:** "Ghost" Failed Disk Being Reported on Sun StorEdge A1000 Array in a Non-Existent (4,1) Location

  A nonexistent, 0 capacity ghost drive might be reported at location 4,1 by the RAID Manager 6.*x* GUI or the CLI commands such as `healthck -a` or `drivutil` (as shown in the following example).

```
# drivutil -u
Drive Information for engultra1_002
Location  Capacity   Status     Vendor  Product          Firmware     Serial
            (MB)                        ID             Version      Number
[1,0]     8637       Optimal      FUJITSU MAB3091S SUN9.0G 1806         00D27366
[2,0]     8637       Optimal      FUJITSU MAB3091S SUN9.0G 1806          00D2726
[1,1]     8637       Optimal      FUJITSU MAB3091S SUN9.0G 1806          00K6758
[2,1]     8637       Optimal      FUJITSU MAB3091S SUN9.0G 1806         00K67242
[4,1]     0          Failed
```

  This problem is caused by moving a drive from one enclosure to another enclosure while the array is powered off.

- **Bug 4224935:** The `raidutil -S` Option Fails

  Setting the cache segment size with the `-S` option fails if any existing LUN has a segment size of less than 32 blocks. Note that the default LUN 0 has a segment size of 16 blocks. Normally, the default LUN 0 is discarded and re-created. It should be re-created with a segment size of 32 blocks or more.

  The workaround is to set the cache segment size explicitly using `nvutil -o 34=9`, thereby setting the cache block size on a "per controller" basis.

- **Bug 4230669:** RAID Manager Can Create `rdriver.conf file`>8k, Panics System

  When RAID Manager 6.*x* software configures multiple LUNs, it adds entries to the `/kernel/drv/sd.conf` file and the `/kernel/drv/rdriver.conf` file. The `add16lun.sh` script is a case in point, as it enlarges the

`/kernel/drv/sd.conf` file for 16 LUNs for all targets. However, there is bug in the Solaris environment kernel that sometimes causes a panic if a `*.conf` file is greater than 8 (8192) Kbytes.

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 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 seamless that even a very experienced Sun service provider might not be able to determine in a timely manner that it is a software bug.

Note – A reconfiguration boot is not necessary or recommended.

In the Solaris 8 environment, this bug is fixed. In the Solaris 2.6 and 7 environments, apply patch ID 105181-16 (or later rev level) and patch ID 106541-07 (or later rev level) respectively to avoid this problem. See `http://sunsolve.sun.com` for a list of required patches.

See also FIN #I0509-1 for more information about this issue; see also Bug 4176940.

- **Bug 4233621:** RAID Manager 6.22 Sun StorEdge A3500FC Array - Multiple LUNs With “Corrupt Label - Wrong”

  Sometimes when multiple LUNs are created in more than one drive group at the same time, the label is not finished correctly. This situation can easily be repaired with the `format` (1m) command. You should repair only one drive group at a time.

- **Bug 4234427:** Cannot Boot Sun StorEdge A3500FC Array Devices Because Drivers Are Not in Operating Environment Release

  Until the drivers for the Sun StorEdge A3500FC array are a part of the Solaris 7 environment installation CD in the mini-root, you cannot install the Solaris operating environment on a Sun StorEdge A3500FC array system.

- **Bug 4236166:** World-Wide Number (WWN) Changes When Both Controllers Are Cold-Swapped in RAID Manager 6.22 — Dual Cold-Swap Loses WWN

  If both controllers in a Sun StorEdge A3*x*00 or A3500FC array system must be replaced, they should be hot- or warm-swapped. Changing both controllers while the Sun StorEdge A3*x*00 array is offline causes the port and node-WWN of both controllers to change. When this occurs, the host might need to be rebooted in order to recognize the controllers.

Also, swapping both controllers from one Sun StorEdge A3*x*00 or A3500FC array to another Sun StorEdge A3*x*00 or A3500FC array on the same bus or loop might cause data corruption. This is true for SCSI or FC-AL because the host bus adapter (HBA) driver finds the controllers in their new place and assume the data underneath those controllers moved with the controller. When only one controller is swapped, the other controller keeps track of the WWNs of its twin.

- **Bug 4236492:** CLI Healthcheck Command Does Not Display Detailed Output

  Healthcheck does not show which drive failed in messages like the following:

```
healthck c1t5d2
Health Check Summary Information
turing42_001:             Unresponsive Drives - In LUN
```

  The workaround is to look in `rmlog.log`, which shows the following:

```
Drive at [4,2] A drive failed because it experienced a write failure
```

- **Bug 4237490:** VM DMP Interferes With Sun StorEdge A3*x*00 Array RDAC

  When dynamic pathing is active in Volume Manager 2.6, there is conflict between the RDAC path handling and Dynamic Multi-Pathing (DMP). Therefore, DMP must be disabled; refer to "Dynamic Multi-Pathing and RAID Manager 6.22" on page 12 in this document.

- **Bug 4240626:** TX `kstat` Panic Running Load on FC-AL Sun StorEdge A3500 Array (Multi-LUN)

  Under load condition or conditions when SCSI target resets are generated, the system might fail with a panic and display the following message:

```
kstat_q_exit: qlen == 0
```

  Running an old, unsupported host bus adapter like the SBus FC-AL adapter (501-3060) can cause this panic. Refer to `http://sunsolve.sun.com` for information about Patch 105356-10 (Solaris 2.6 environment) and Patch 107458-05 (Solaris 7 environment); either patch corrects this problem.

- **Bug 4241759:** Cannot Boot From a Sun StorEdge D1000 System Configured With 16 LUNs

  On the Sun StorEdge D1000 system, the SCSI targets 14 and 15 are used for the on-board GEM chips that perform environmental sense monitoring and report over the SCSI bus to each SCSI channel. This circuitry resides inside the Sun StorEdge D1000 and on the same SCSI bus as the hard drives.

Running the `add16lun.sh` script creates entries for targets 14 and 15 in `sd.conf` that should be removed to avoid this conflict. In fact, all entries for targets that are not used should be removed from `sd.conf` to improve boot time. See `genscsiconf` (1m).

- **Bug 4242670:** RAID Manager 6 Parity Checking Process Maintains Opens on Sun StorEdge A3*x*00 Array Systems — DR Detach Fails

  The `parityck` command opens the array device every few seconds, which prevents Dynamic Reconfiguration from detaching. In order for Dynamic Reconfiguration to work, `parityck` must not be running or must be stopped. Refer to "Dynamic Reconfiguration for Sun StorEdge A3x00 and A3500FCArrays" on page 15 for more information.

- **Bug 4243832:** Offline Controller Causes "Transport Rejections" After Failover Is Successful

  In the event of a controller failover, once the I/Os are retried down the alternate path (after the LUNs are moved) and are returning successful, driver transport rejection error messages are still echoed to the console and to the `/var/adm/messages` file. In earlier releases of RAID Manager 6.x, device driver error messages occurred up until the failover was complete, and after that time were no longer displayed for any reason (except recovering from the failed controller).

  In RAID Manager 6.22 with a FC-AL host connection, when the controller has finished failing over and re-routed I/Os, and whenever a RAID Manager 6.22 utility is used, a transport rejection message is sent to the console and to the messages file. For example, running the `lad` command while a controller is held in reset returns one "transport rejected -2" message for each LUN on the entire array (because two LUNs are now owned by an alternate controller, resulting in two messages for each RAID Manager 6.22 utility used).

  The transport reject message is reported once every five seconds only under the following conditions:

  - A controller is failed over.
  - The Configuration window is open.

  Add patch Solaris 2.6 105356 or Solaris 7 107458-07.

- **Bug 4243870:** New Devices Show Up in the `format` Command That Should Not

  Installing `VRTSvxvm`, running `luxadm insert`, or doing other procedures that cause `disks(1m)` to be run on a host computer with RAID Manager 6.22 installed and with LUNs configured causes `devlinks` to run and both paths to the Sun StorEdge A3*x*00 or A3500FC array RAID controllers to be listed by the `format(1m)` command. The problem is because the device links are in `/dev/dsk`. The workaround is to run `rdac_disks` immediately after installing the Volume Manager packages, which hides the extra controller paths by having the `disks(1m)` command remove them from `/dev/dsk`.

- **Bug 4247562:** DMP Fails After A3*x*00 Controller Failover

  When dynamic pathing is active in Volume Manager 2.6, there is conflict between the RDAC changing paths to devices internally after a controller goes offline. Therefore, Dynamic Multi-Pathing (DMP) must be disabled; refer to "Dynamic Multi-Pathing and RAID Manager 6.22" on page 12 in this document.

- **Bug 4251984**: Sun StorEdge A1000 Array RAID Controller Is Inaccessible After Connecting As Multi-Initiator Device

  If a Sun StorEdge A1000 array, and presumably a Sun StorEdge A3*x*00 or A3500FC array, is connected to two hosts, the Sun StorEdge A1000 array 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
```

- **Bug 4252057:** Different Capacity Available After a Disk Replacement in a Sun StorEdge A3000 Array

  This bug applies only if:

  - You have configured RSM disk trays on a Sun StorEdge A3000 array or you have a RSM array 2000 product.
  - You created LUNs with RAID Manager 6.0 or 6.1.
  - The capacity remaining in any drive group is less than 40 Mbytes per drive.

In Sun StorEdge RAID Manager 6.0 or RAID Manager 6.1, the DacStore size on a disk drive is 2 Mbytes.

In Sun StorEdge RAID Manager 6.1.1 or RAID Manager 6.22, the DacStore size on a disk drive is 40 Mbytes.

Note – The DacStore size is 40 MB if you have done a fresh installation of the software. If you upgraded from Sun StorEdge RAID Manager 6.0 or 6.1, the DacStore size could be 2 MB or 40 MB.

If you are upgrading from RAID Manager 6.1/FW 02.04.04.01 or earlier versions of RAID Manager, you *must* do the following:

- Back up your data.
- Re-createe the LUNs after performing the upgrade procedure to bring the DacStore size to 40 Mbytes.
- Restore the data.

Using 2 MB Dacstor LUNs under RAID Manager 6.22 is not supported.

If you previously upgraded from earlier versions of RAID Manager, you can verify the DacStore size by doing some simple calculations as shown below. If the DacStore size is verified to be 2 Mbytes, the customer should re-configure the LUNs to 40 Mbytes DacStore.

To determine the DacStore size:

1. **Find the raw disk capacity on a drive.**

   Choose Configuration → Module Profile → Drives.

   The Module Profile screen displays detailed drive information for the RAID module you selected on the Configuration screen. Raw disk capacity on each drive is displayed under *Capacity* in megabytes (Mbytes).

2. **Find the data capacity per drive.**

   Select `Configuration.`

   The Configuration Application main screen displays the total capacity of each drive group under *Total* in megabytes (Mbytes).

   Data capacity per drive = Total capacity of a drive group / Number of data disks

   - The number of data disks = Number of drives in a RAID 0 drive group.
   - The number of data disks = Number of drives minus 1 in a RAID 3 drive group.
   - The number of data disks = Number of drives minus 1 in a RAID 5 drive group.

- **Bug 4252401:** `vxinstall` Presents Multiple Paths to Sun StorEdge A3*x*00 Array LUNS

  The `vxinstall` utility can present multiple paths to a Sun StorEdge A3*x*00 or A3500FC array. If controller failovers occur, Volume Manager might see multiple paths to the enclosure and treat them as independent devices.

Caution – This scenario can lead to data loss or corruption.

  Refer to “Multiple Paths on the Sun StorEdge A3x00 or A3500FC Array” on page 13.

- **Bug 4252937:** RAID Manager 6.22 `nvutil` Appears to Repeat Operation on Same Device

  Multiple instances of the same message are being echoed to the console during the reboot after the installation of RAID Manager 6.22. These messages seem to repeat themselves twice. `nvutil` is checking the Sun StorEdge A3*x*00 or A3500FC controllers to see if they meet the 3.0 firmware requirement to run RAID Manager 6.22 software. When this check fails, there should only be one instance of notification for each controller that fails to meet the 3.0 firmware requirement. The operation that `nvutil` issues to check the NVSRAM settings seems to be correct, in that it was executed to each device only once.

- **Bug 4253002:** When the System Is Rebooted, Random Disks Fail in the Sun StorEdge A3*x*00 Array

  Rebooting the host falsely reports a drive failure in a Sun StorEdge A3*x*00 or A3500FC array enclosure. Another false random drive failure might be indicated in a subsequent reboot. A possible explanation is that the drive did not become ready in time. To work around this issue, revive the drive through the Recovery Guru. Make sure you have the latest RAID Manager 6.22 patches.

- **Bug 4254370:** Date Codes Not Displayed for Seagate 9g and 18g Drives

  Some of the newer disk drives do not show date information in the Module Profile.

- **Bug 4256151:** Executing `raidutil` on the Command Line for 2x7 Configurations Fails

  Sometimes, in order to create a LUN on a controller (A or B), there must be at least one optimal LUN on that controller. The only time this is a problem is when creating multiple LUNs using scripts after all the LUNs have been removed. Even in the default configuration, LUN 0 exists on controller A. If you need to create multiple LUNs from a script, create one LUN on each controller waiting for it to complete. Then, the creation of the remaining LUNs can be performed in parallel.

- **Bug 4258441:** ssd: Requeue of Command Fails (fffffffe)

  While a Fibre Channel controller is offline, I/O proceeds normally through the other controller. However, any direct access to the offline controller path produces “transport rejected” messages in the system log, which is typically `/var/adm/messages`. You can ignore these messages; see also Bug 4243832. Also, the following message might appear as described in Bug 4258441:

```
ssd: requeue of command fails (fffffffe)
```

- **Bug 4262855:** GUI Application Segmentation Violation And Must Be Restarted

  A segmentation violation dialogue box might appear if the `rmparams` file is modified while one of the RAID Manager 6.*x* application windows is open. The RAID Manager applications can be restarted without any problem. To avoid the segmentation violation, close all GUI application windows before editing the `rmparams` file.

- **Bug 4264190:** `Disks` Command Fails With the Sun StorEdge A3500FC Array

  If the `disks` command fails as shown in the following example, the entries must be cleaned up in `/dev/rdsk` and in `/dev/dsk`.

```
root@turing41-20> disks
Logical controller c3 contains links to two different
controllers:
../../devices/sbus@2,0/SUNW,socal@2,0/sf@0,0
../../devices/pseudo/rdnexus@3
```

  The following is an excerpt from the `disk(1m)` man page: If running the `disks` command uncovers entries of a particular logical controller linked to different physical controllers, it prints an error message and exits without making any changes to the `/dev` directory, since it cannot determine which of the two alternative logical-to-physical mappings is correct. The links should be manually corrected or removed before another reconfiguration boot is performed.

  If you see this message after a reboot, logical controller *c3* contains links to two different controllers:

```
../../devices/sbus@2,0/SUNW,socal@2,0/sf@0,0
../../devices/pseudo/rdnexus@3
```

To avoid disks command failure:

Note – Perform this procedure before you start I/O to the devices:

---

1. **Determine your root device and any other mounted devices by running:**

```
# df -lk
```

2. **Remove any unmounted OEM devices not detected in Step 1 for** `/dev/rdsk` **and for** `/dev/dsk`.

3. **Run the following:**

```
# drvconfig;disks
```

This should rebuild the device tree. If the `disks` command generates an error, you must remove the devices associated with the error and run `drvconfig;disks` again.

- **Bug 4267281:** `default.def` Sets Bits That Are Not Applicable to Both SCSI and FC-AL

  When you reboot your host system, you might see the following messages:

```
The Don't report UA for report LUNs NVSRAM field of controller
c1t5d0(1T92100604 at offset 0x34 is invalid, The value is 0x0 (the
valid value should be 0x1).

The incorrect NVSRAM settings of controller c1t5d0(1T92100604)
have been fixed. Reboot the system for the new settings to take
effect.
```

  The messages are caused by one or more Sun StorEdge A3*x*00/A1000 controllers on your system having non-FC NVSRAM.

  If you have only SCSI-attached arrays, ignore the messages. There is no need to reboot your system for the settings to take effect, nor is there harm after your host system is rebooted.

  If you have an RSM array 2000 system, you might see messages about SCSI-wide negotiation failing because the RSM array 2000 system does not support SCSI-wide data transfer, yet the NVSRAM settings now active in your RSM array 2000 system requests it. The purpose of negotiation is to allow two devices to agree on what transfer width and rate to use, so this is a normal part of establishing communication after a reboot or reset.

If you have only FC-attached arrays and you see these messages, the wrong NVSRAM is installed in the indicated controllers. Please contact your local Sun solution center or Sun service provider for assistance.

If you have a mixture of SCSI- and FC-attached arrays, you need to examine the messages carefully and make sure the controllers indicated are only for SCSI-attached arrays. As explained above, the messages can be ignored if you have only SCSI-attached arrays.

- **Bug 4272324:** FC SBus Multiple LUN Creation Leads to Dead Controllers

  During testing of RAID Manager 6.22 with the Fibre Channel interconnect, there were cases when other errors would lead to this problem. The root causes have been corrected, but if you encounter this situation, perform the following steps.

To recover controllers and LUNs:

1. **Force a LIP (loop initiation process) on both ports of the FC-AL loops connected to a controller.**

   There are two ways to force a LIP. Although both methods are described below, choose *only one* of the following methods:

   - One way to generate a LIP is to pull the fiber cables located on the front of the Sun StorEdge A3500FC array controller. To avoid mixing connections, it is best to pull and reinsert the cables one at a time. Leaving a cable disconnected for more than 30 seconds might cause other errors.
   - If you know the device path, another way to force a LIP is by using the `luxadm -e forcelip` command. Make sure you issue one command for each FC-AL loop.

2. **Run the `hot_add` command.**

- **Bug 4278722:** `raidutil -D all` fails - Unknown Failure, Return Value = 7

  Using the `-D all` option of the `raidutil` command-line utility causes the FC-AL array to be *unreachable*. You can remedy this problem by power cycling the array, thereby re-createing the default LUN 0. Since the `-D all` option is used to remove all LUNs, power-cycling should not cause any further loss of use.

  Because FC-AL arrays do not go through SOD (Start of Day) at bus or target reset, FC-AL arrays are different than SCSI connected arrays. Instead of using the `raidutil -D all`command for cleaning up the array, use the graphical user interface: select `Configuration` → `File` → `Reset Configuration`. This operation can also be accomplished from the command line with the `raidutil -X command`.

- **Bug 4284739:** RAID Manager 6 Takes Too Much Time During the Boot Sequence

When RAID Manager 6.*x* is running on a Sun Enterprise 10000 server and booting off a SSA drive, the following problem has occurred in the Solaris 7 environment (8/99 and 11/99 releases). The initial boot of the Sun Enterprise 10000 system gets a timeout from the System Service Processor (SSP) after 10 minutes. If Alternate Pathing is installed, the alternate path is tried. Eventually, the Sun Enterprise 10000 system boots from the original path.

- **Bug 4309504:** RAID Manager GUI Is Slow On System With Degraded LUN

  Operations can easily take 5 to 10 minutes, which makes it hard to accomplish anything in a timely matter. The command line interface is much quicker in this situation.

- **Bug 4324194:** RAID Manager 6 CLI Controller Restore Doesn't Work as Expected

  The `rdacutil -u` command is used to unfail controllers, but it does not heed the `rmparams system_LunReDistribution` flag. This creates problems when you want to make a controller accessible again after diagnosis or replacement, but you do not want to put it into service by having the LUNs moved back over to it. Use the GUI command to unfail the controller properly.

- **Bug 432673:** Offlining an Array Can Result in File System Corruption

  Turning off a Sun StorEdge A1000, A3*x*00 or A3500FC array under VERITAS File System, VxFS, control might eventually result in loss of data in the file system. Whenever you turn off an array, such as for maintenance, ensure that VxFS disables the file systems on that array. If VxFS does not disable the file systems automatically, you must manually disable them. See "Warning About VxFS File System Corruption When Running With a Turned Off Array" on page 8.

- **Bug 4336225:** All LUNs Owned by Sun StorEdge A3500FC Controller Report Same Predictive Failure Analysis (PFA) Error

  ASC / ASCQ 5D/80, for an anticipated drive failure, is normally reported only for the LUN containing the suspect drive, and then only once between Sun StorEdge A3500FC array reboots. However, when the Sun StorEdge A3500FC array is rebooted, it reports the PFA once for every LUN accessed on the controller owning the suspect drive.

- **Bug 4327344:** Removing an entire RAID Module from RAID Manager 6.22 Does Not Remove Its Existence from the Solaris Environment.

  The individual LUN device links are not removed when you give the RAID Manager 6 GUI command to Remove the Module. When you delete each LUN separately, the links are removed. If `format` (lm) is called after the command to remove the RAID Module is given, messages appear about the module:

```
The Array drive has failed a controller on A3000 due to an RDAC
open failure of LUN 0.
RDAC Failover failed on A3000, LUN 0 with status 0x5.
```

The workaround is to `boot -r` or delete the LUNs explicitly before removing the module that contains them. For more information, see “Guidelines for Creating or Deleting LUNs” on page 18.

- **Bug 4338906:** `rdac` Takes a Long Time to Disable a Controller With Fiber Pull

  There is a problem with recognizing Fibre Channel disconnections when a Vixel 100 hub is between the cable problem and the host. This has been addressed by various patches in the `qlc`, `sf`, and `ifp` drivers. Make sure the latest patches are installed.

  A second problem is that failover appears to take too long. The specification says 120 seconds, and failover typically takes 10 to 20 seconds to complete. The failover period starts when the host resolution daemon determines that a controller is not working and goes until the failover is finished, so that the second path is operational and I/O is proceeding. However, the time for individual I/O processes to complete can be 20 minutes. The individual I/O processes pile up during error investigation and resolution daemon analysis, bounce around the driver stack, and then finally drain.

- **Bug 4339704:** Resetting the Configuration Does Not Remove the Device Paths

  If your operating environment is the Solaris environment 7 11/99 and you type the Reset Configuration command, the `/dev/dsk` and`/dev/rdsk` paths for the previously existing LUNs are not removed. The same is true when using the command-line version: `raidutil -X`. `format` (lm) then accesses these LUNs, as described in Bug 4339704, giving errors. These error messages continues until the links are removed or each of the previously existing LUNs is re-createed. The links can be removed using `boot -r` or possibly `devfsadm -C` in combination with `rdac_disks`(lm).

  For more information about resetting the configuration, see “Resetting the Configuration” on page 19.

- **Bug 4343416:** RAID Manager GUI and healthck Are Not Reporting Controller Fan Failure

  The GUI and `healthchk` command are not displaying various component failures. The GUI and command are not showing fan and power supply pulls sometimes. The log and console always report the failures.

- **Bug 434360:** ssd: WARNING: kstat rcnt == 0 when exiting runq, please check

  The warning message appears occasionally, especially when VERITAS Volume Manager is controlling LUNs on a Sun StorEdge A3*x*00 or A3500FC array. The message is only a warning and does not indicate any problem. The word `kstat` refers to kernel statistics.

- **Bug 4346453:** Need to Edit rmparams On Systems With Multiple Sun StorEdge A3500FC Arrays Or Where Loop (SCSI) IDs On Arrays Not 4 and 5

  The `rmparams` file specifies that "hot-adding" of arrays is disabled for all but those arrays whose identifiers are listed. The man page for `rmparams` says that `Rdac_HotAddDisabled=FALSE` is the default, but the default settings are `Rdac_HotAddDisabled=PARTIAL` and `Rdac_HotAddIDs:4:5`. The easiest way to correct this is to set `Rdac_HotAddDisabled=FALSE` for systems where the Fibre Channel arrays might have a variety of loop IDs. Then reboot the host system or restart the rdriver.

  However, on systems with SCSI Sun StorEdge A3*x*00 or A1000 arrays, you should add SCSI identifier numbers to the `rmparams` file list. For example, if your system has arrays with SCSI identifier 6 and 8, as well as 4 and 5, edit `rmparams` to say `Rdac_HotAddIDs:4:5:6:8`. Then, reboot the system for the new configuration to be active. See "Installing and Uninstalling RAID Manager 6.22" on page 7.

- **Bug 4346466:** Some Files Are Preserved When You Remove RAID Manager 6 Packages

  To completely remove any configuration information for a completely fresh new installation, use the command `rm -rf /var/osa`. Files left in `/var/osa`, which the next installation picks up, are `mnf`, `rdnexus.conf`, `rdriver.conf`, `rmlog.log`, and `sd.conf`. See "Uninstallation Issues" on page 8.

- **Bug 4347418:** `hot_add` Script Could Prevent Subsequent Reboot from VERITAS Disk

  If your boot disk is under VERITAS control, creating a LUN using `hot_add` might remove the `forceload` of `sd` or `ssd` from the VERITAS section of `/etc/system`. This would mean that the next reboot of the host would fail. Should that happen, boot from your the Solaris environment CD or network and repair `/etc/system` as follows:

  Before you reboot, check the line `forceload: drv/sd` is still in the file `/etc/system`. The workaround is to put the forceload in your `/etc/system` file in front of the RAID Manager 6 section in `/etc/system`, which is labeled "* BEGIN RAID Manager addition." Do the same if your boot device used the `ssd` driver, restoring the line `forceload: drv/ssd`. For more information, see "Guidelines for Creating or Deleting LUNs" on page 18.

- **Bug 4355827:** RAID Manager 6.22 `pkgrm` Does Not Clean Up All Files When Uninstalling

  The `/kernel/drv/ap` file is not repaired during the `pkgrm` of the RAID Manager 6 packages. Installing RAID Manager 6.22 creates file `/kernel/drv/ap` in order to prevent VERITAS DMP from being enabled inappropriately. If the length of `/kernel/drv/ap` is 0, remove the file so subsequent software installations works properly. See "Installing and Uninstalling RAID Manager 6.22" on page 7 for more information.

- **Bug 4362523:** `rdriver` Tries to Attach `ssd` With No Fibre Channel Devices

  An error message can occur when you use RAID Manager 6.22 if you are adding LUNs or resetting the configuration. The error message is:

```
drvconfig: driver failed to attach: ssd
```

  If your system has no Sun StorEdge A3500FC arrays, edit the `rmparams` file to speed booting and hot_add. To edit the file, remove `ssd:` from the line `Rdac_NativeScsiDrivers:sd:ssd`

  For more information, see "Installing and Uninstalling RAID Manager 6.22" on page 7.

- **Bug 4363869:** Controllers Should Not Be Offline When Installing the Solaris Environment or RAID Manager 6 in a Multihost Environment

  The controller must be specifically brought online on each host if any controllers are offline during installation of the operating system or RAID Manager 6. An installation should not be started with any controllers offline. A controller can even go offline during installation of a Solaris operating system in a Fibre Channel loop configuration. Avoid this by detaching the arrays before beginning installation and then doing `boot -r` after you install the operating system. See "Installing and Uninstalling RAID Manager 6.22" on page 7.

- **Bug 4368801:** No `dev` Path if Controller Drops or Changes

  If a controller is offline and the device links are not present on a host, you must bring the controller online on all hosts missing the device links before the controller reverts to offline.

  When adding a new device or controller path to a host or set of hosts that have not had the Sun StorEdge A3500FC array path initiated previously, use RAID Manager 6 on each host to recover the controller to an online state.

  As one host brings the controller online, the other host labels the controller as unresponsive. If the controller is left in the unresponsive state, eventually the controller returns to an offline state. However, if you go to each host and bring the controller online from each host, the `/dev` links is created properly, and recovery behaves as expected; each host registers proper status.

- **Bug 4369971:** Power Cycle of Sun StorEdge A3500 Controller Module Is Required After Sun StorEdge D1000 Array Repair

  Any procedure that requires powering off a Sun StorEdge D1000 array tray in a Sun StorEdge A3500 array should be followed by power cycling the controller module to ensure all drives are spun up and recognized.

- **Bug 4374861:** Unused `devinfo` Nodes Waste Memory and Confuse Ownership

  Unused `devinfo` nodes cause a problem with NetBackup that can prevent `sg` devices from attaching. `rdriver` owns too many `devinfo` nodes. On the Solaris 8 environment, there are 15 `sd` nodes under each of the 64 instances of `rdnexus` and there are 16 instances of `rdriver` instances under each physical `hba`.

  The workaround involves editing two system files, and it is temporary in nature because `rdriver.conf` is rebuilt by each `boot -r` and `hot_add`. The workaround is to delete the `rdnexus` line in `/etc/driver_classes` and change the line `class="scsi"` in `rdriver.conf` to `parent="rdnexus"`.

  The other problem is a waste of kernel memory for nodes that are never expected to attach. The file `rdnexus.conf` pre-reserves 64 possible controller `rdnexus` instances, one on each of its 64 lines.

- **Bug 4378682:** `healthck -a` Fails to Catch Deadlocked Controllers

  The `healthck` command-line utility does not detect a controller in a loop, where the controller is deadlocked. The RAID Manager 6 recovery application shows the problem.

- **Bug 4384184:** RAID Manager GUI Is Stuck Showing “Reconstructing” Status

  If you open the RAID Manager 6.22 application, the GUI shows a LUN is in the reconstructing state during its rebuilding after a failure. However, when the reconstruction finishes, the GUI never updates the status. The workaround is to restart RAID Manager 6.

CHAPTER 4

Frequently Asked Questions

This chapter covers the following issues:

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 RAID Manager Installation

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

Answer: You must include the following location in your $PATH environment variable to enable command-line access to the various tools and utilities:

```
/etc/raid/bin
```

Default Configuration Scripts

Question: Are there any automation tools for building and configuring my Sun StorEdge A3*x*00 or A3500FC array 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. You can view these scripts and an associated `README` file on the RAID Manager CD by typing:

```
# ls /cdrom/cdrom0/Tools
```

The configuration scripts are in the directory named `Tools`.

Note – These scripts are designed specifically for use with Seagate ST15230W 4.2-Gbyte disk drives on a Sun StorEdge A3*x*00 or A3500Fc array system. The scripts must be modified if different capacity disk drives are used in the configuration.

The scripts are applicable only to Sun StorEdge A3*x*00 and A3500FC array systems; they do not apply to Sun StorEdge A1000 array systems. The scripts should *not* be used to simultaneously create LUNs on multiple RAID modules.

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man Page Recognition

Question: I have installed the `SUNWosamn` package, yet I cannot get the `man` command to reference any 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(lm)` 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 one LUN has been created. On a system with either no LUN or a first LUN still being formatted, the configuration window updates only when the LUN creation has completed. This condition affects only the configuration window. Normal operation should continue on all other screens.

Host With Sun StorEdge A1000, A3*x*00 and A3500FC Systems

Question: Can I connect a Sun StorEdge A1000 system to a host that has a Sun StorEdge A3*x*00 and A3500FC system already attached?

Answer: Yes, but you must be running RAID Manager 6.1.1 Update 1 or Update 2, or RAID Manager 6.22, and the host must be supported by both Sun StorEdge A1000 and A3*x*00, and A3500FC platforms.

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

The following is a list of platforms currently supported for the Sun StorEdge A1000, A3000 and A3500FC systems at the time this manual was published.

- Sun StorEdge A1000 array
  - Sun Ultra 10 system
  - Sun Ultra 30 system
  - Ultra Enterprise 250 system
  - Ultra Enterprise 450 system
  - Ultra Enterprise 3000 system
  - Ultra Enterprise 4000 system
  - Ultra Enterprise 5000 system

- Ultra Enterprise 6000 system
- Sun StorEdge A3000 Array
  - Ultra Enterprise 450 system
  - Ultra Enterprise 3000 system
  - Ultra Enterprise 4000 system
  - Ultra Enterprise 5000 system
  - Ultra Enterprise 6000 system
  - Ultra Enterprise 10000 system
- Sun StorEdge A3500/A3500FC Array
  - Sun Enterprise 250 system
  - Sun Enterprise 450 system
  - Sun Enterprise 3000/3500 system
  - Sun Enterprise 4000/4500 system
  - Sun Enterprise 5000/5500 system
  - Sun Enterprise 6000/6500 system
  - Sun Enterprise 10000 system

Sun StorEdge A3*x*00 and A3500FC 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 2.1 and 2.2 software.

Sun StorEdge A1000, A3500FC, and A3*x*00 systems are qualified with Sun Cluster software. Refer to the *Sun Enterprise Hardware Planning and Installation Guide* for instructions on cabling your Sun StorEdge A3*x*00 or A3500FC systems to the nodes and to the *Sun Cluster Software Planning and Installation Guide* for multi-initiator issues. For Sun StorEdge A3*x*00 systems, you must update your `sd` and `isp` drivers.

Note – This is different from “independent controller configurations,” in which each node owns one of the Sun StorEdge A3*x*00 or A3500FC controllers and the LUNs on that controller. No special software is required for independent controller configurations, other than the setup through RAID Manager.