



# Sun StorEdge™ RAID Manager 6.22.1 Release Notes

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

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Part No. 805-7758-14  
January 2003, [Revision A](#)

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## About These Release Notes

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The *Sun StorEdge™ RAID Manager 6.22.1 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 6.22.1 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 A3x00 array, refer to the *Sun StorEdge A1000 and A3x00 Installation Supplement* on the Sun™ documentation web site:

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





## Late-Breaking Information

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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.

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**Note** – If you are already running a version of RAID Manager earlier than 6.22, you must see the *Sun StorEdge RAID Manager 6.22.1 Upgrade Guide* for more information.

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The chapter covers the following topics:

- “Changes in RM 6.22.1” on page 4
- “Limitations in RAID Manager 6.22.1” on page 7
- “Required Patches” on page 9
- “Installing and Uninstalling RAID Manager 6.22.1” on page 11
- “Upgrading the Solaris Environment With RAID Manager 6.22.1 Already Installed” on page 15
- “Onboard SOC+ Support for Sun StorEdge A3500FC Array” on page 16
- “Sun StorEdge Volume Manager and Layered File System Issues” on page 16
- “Moving Drives Between Sun StorEdge Array Subsystems” on page 19
- “Dynamic Reconfiguration for Sun StorEdge A3x00 and A3500FCArrays” on page 20
- “Maximum LUN Support in Solaris 2.6 and Higher Environments” on page 21
- “Guidelines for Creating or Deleting LUNs” on page 23
- “LUN Segment Size Issues” on page 26
- “Power Sequencer Local/Remote Switch” on page 27

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# Changes in RM 6.22.1

## Upgrading RAID Manager

If you already have RAID Manager 6 installed, see the *Sun StorEdge RAID Manager 6.22.1 Upgrade Guide*. The guide provides a checklist to ensure a safe upgrade. The procedure is critical if you are upgrading from a version prior to RAID Manager 6.22. During the course of upgrading RAID Manager, you must also upgrade the NVSRAM. See the following section for more information.

## NVSRAM Installation for Upgrading and Installing RAID Manager

During installation of RAID Manager 6.22.1, as described in “Installing and Uninstalling RAID Manager 6.22.1” on page 11, you must install new NVSRAM. RAID Manager 6.22.1 contains a new NVSRAM for all Sun StorEdge A1000, A3x00 and A3500FC arrays. You must first install RAID Manager 6.22.1, then download the RAID Manager firmware, then download the NVSRAM, and finally reboot the system.

The NVSRAM not only fixes some problems but, in the case of SCSI arrays, ensures reporting of power supply and fan problems. You can use the `module profile` command to make the new NVSRAMs display an Inquiry Product Revision of 0003. TABLE 2-1 lists the new NVSRAM by array type.

TABLE 2-1 New NVSRAM for Arrays

NVSRAM file	Array Type
44072dn.dl	A3500FC RSM tray
44073dn.dl	A3500FC
sie3240c.dl	A1000
sie3621g.dl	A3000 RSM tray
sie3621h.dl	A3500

## ▼ To Install New NVSRAM with the RAID Manager 6.22.1 Upgrade

1. **Locate the NVSRAM appropriate for your array(s) according to TABLE 2-1.**

The NVSRAM files were put into the `/usr/lib/osa/fw` directory of your system during the RAID Manager installation or upgrade process as part of the `SUNWosanv` package.

2. **Launch the Configuration application of RAID Manager:**

```
# /etc/raid/bin/rm6
```

3. **Click Maintenance/Tuning -> the module name of your array-> Firmware Upgrade.**

Alternately, you can click the firmware upgrade button.

4. **When you see the Important Notes dialog, click OK.**

5. **In the Select Upgrade Type window, click Offline.**

6. **Enter `/usr/lib/osa/fw/NVSRAMfile` in the path field, where *NVSRAMfile* is the NVSRAM file from TABLE 2-1.**

Click OK in the Offline Firmware Upgrade dialog.

7. **Power cycle each controller to activate the new NVSRAM.**

Do not reboot the host computer; rebooting the host does not activate the NVSRAM.

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**Note** – After you download the RAID Manager’s firmware and NVSRAM, during a fresh installation or an upgrade, you can verify that the new NVSRAM is installed with the `raidutil -c device -i` command. The module profile should show a revision of 0003.

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## Non-root Access to Raw Partitions

To close a security hole described in bug 4352516 listed in the *Sun StorEdge RAID Manager 6.22 Release Notes* (805-7758-12), RAID Manager 6.22.1 does not allow users not logged in at the root level to open raw partitions. If you are using a database management system, such as Oracle or Sybase, or if you put logs, data or database data directly on partitions, you may have difficulty accessing your files. You can use one or more of the following workarounds:

- Put a volume manager on top of the raw partitions. You can use VERITAS Volume Manager or a file system, such as UFS, for a volume manager.
- If the system has only Sun StorEdge A1000 arrays on it, set `Rdac_SupportDisabled=TRUE` in the `/etc/raid/rmparams` directory and then reboot the system.
- If you are not using a database management system, you can also make root the owner of raw partitions, and then perform I/O at the root level or with a SUID program. For more information, see bug 4479887 in Chapter 3.

## Additional Sense Codes and Qualifiers

The array controller reports ASC/ASCQ combination 0x5d/80 as an AEN that indicates a drive has an excessive soft error rate, which suggests the drive might fail. Replace the drive within 12 hours to avoid failure. Previously, the controller reported 0x5d/80 as a unit attention error.

For a list of ASC/ASCQ values that the array controller returns in the sense data, refer to the file `/usr/lib/osa/raidcode.txt`.

## Parity Check

The default parity check setting, for the graphical user interface (GUI) is now set as Report With No Repair. When using the CLI, you can use the following new options:

- `-r` reports problems without repairing them. It is the default and you should use it when running a manual parity check. The reporting function makes sure you do not ignore problems because they will be reported for each run of `parityck` until you take explicit action to correct the problem.
- `-t` allows you to investigate potential problems when you combine it with `-r`. The option creates a trace file enumerating which blocks had problems that are described on the man page for `parityck (1m)`.
- `-R` reverses the default by repairing all problems.

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**Note** – The length of time to run `parityck` can vary considerably, by as much as 50 percent, depending on the drive model. The same factors that affect the length of time taken to run `parityck` directly also affect the amount of time required for LUN reconstruction.

---

## Recovery Guru Revive Option Is Removed

The Recovery Guru no longer allows you to revive drives while a LUN is degraded. The potentially dangerous Revive Drive option is not available when you choose the Options -> Manual Recovery -> Drives menu. You should only revive drives when a recovery procedure instructs you to do so.

The `drivutil -u` command allows the same dangerous action to be performed. Do not use `drivutil -u` to revive a drive in a degraded LUN as this causes data corruption. See bug 4481150.

## DacStore Script Checks LUN Capacity

The new script `/etc/raid/bin/dacdiscovery` allows you to check whether your arrays have old 2 Mbyte DacStore LUNs. See the section on LUNs in “Limitations in RAID Manager 6.22.1” on page 7.

---

## Limitations in RAID Manager 6.22.1

The following are known caveats and issues with the RAID Manager 6.22.1 software.

- **Platforms no longer supported.** The following platforms are no longer supported in RAID Manager 6.22.1:
  - 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.

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

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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. See FIN I0619. See also bug 4486082 in Chapter 3.

- **LUNs created under RAID Manager 6.0 or 6.1.** RAID Manager 6.22 and 6.22.1 do not support 2 Mbytes of DacStore. When an array is upgraded to 3.x 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.

After upgrading to RAID Manager 6.1.1 or compatible versions, you might notice that Sun StorEdge A3x00 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 Expand DacStore Space on Old LUNs

1. **Run the `dacdiscovery` script in `/etc/raid/bin` to check whether your arrays have old 2 Mbyte DacStore LUNs.**
  2. **Back up the data on existing LUNs that have 2 MByte DacStores.**
  3. **Delete existing LUNs.**
  4. **Create new LUNs.**
  5. **Restore the data previously backed up on the new LUNs.**
- **RAID Manager 6.22.1 does not support** Solaris operating environment 2.5.1 because that environment is now at end of life.
  - **Fibre Channel connections on Sun Enterprise™ 3x00 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 16.
  - **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 19 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 6.22.1, 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 one controller as a requirement of the SCSI specification. For more information about this feature, refer to “Creating or Deleting LUNs” on page 23.
- **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.
- **The `mpxio` parameter in the `scsi_vhci.conf` file** should not be used to enable multipathing on a system with RAID Manager 6.22.1. Extra physical paths show up in the `/dev/dsk` directory. See bugs 4488911, 4427441, 4492343, 4493133 in Chapter 3.

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## 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.



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

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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).

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**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.

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## FRU Replacement Guide Instructions Incomplete

The *Sun StorEdge A3x00 Controller FRU Replacement Guide (805-7854)* contains incorrect text in the procedure “To Determine Whether to Upgrade or Downgrade the New Controller Firmware.” The current instructions say you should upgrade the firmware. The text should say, “Earlier than the universal controller FRU, *downgrade* the controller firmware.” The statement that follows should say to “upgrade the controller firmware” instead of “downgrade the controller firmware.” For complete instructions, refer to FIN I0553.



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# Installing and Uninstalling RAID Manager 6.22.1

If you are jumpstarting RAID Manager 6.22.1 for the first time, the application gets NVSRAM warnings because the NVSRAM is not yet loaded. You can ignore these messages. For example:

```
The Status notification bit (disabled) NVSRAM field of controller
c2t5d0(1T93401584)at offset 0x1d is invalid, The value is 0x0 (the
valid value should be 0x80).

The Bus device reset message NVSRAM field of controller
c2t5d0(1T93401584)at offset 0x28 is invalid, The value is 0xc (the
valid value should be 0x2c).

The Product revision level NVSRAM field of controller
c2t5d0(1T93401584)at offset 0x33 is invalid, The value is 0x1 (the
valid value should be 0x5).

The incorrect NVSRAM settings of controller c2t5d0(1T93401584)
have been fixed. The new settings will not take effect until the
controller is reset. While the subsystem is idle, turn the
controller module off, then back on.
...
nvutil command succeeded.
```

## ▼ To Install RAID Manager 6.22.1

### 1. Install the appropriate packages with `pkgadd`.

Four of the five necessary packages and their loading instructions are described in the *Sun StorEdge RAID Manager 6.22 Installation and Support Guide for Solaris*. The newest package, `Sunosanv`, contains the NVSRAM files and is not listed in the guide and is necessary.

### 2. Download the RAID Manager firmware.

- If you are installing RAID Manager for the first time, refer to the *Sun StorEdge RAID Manager 6.22 Installation and Support Guide for Solaris* for procedures to download the firmware listed in Table 2-2 on page 14.

- If you are upgrading RAID Manager, refer to the *Sun StorEdge RAID Manager 6.22.1 Upgrade Guide* for procedures to download the firmware listed in Table 2-2 on page 14. Refer to bug 4488704 on page 31 for more information.

### 3. Download the NVSRAM and power cycle the controllers.

Refer to “To Install New NVSRAM with the RAID Manager 6.22.1 Upgrade” on page 5.

The following issues are specific to the installation of RAID Manager 6.22.1.

## 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 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 might occur when you use RAID Manager 6.22.1 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 a predictive drive failure (PFA), is normally reported only for the LUN containing the suspect drive, and then only once between array reboots. This error is now reported as an Asynchronous Event Notification (AEN). See the section on AEN and SNMP traps on p. 70 of the *Sun StorEdge RAID Manager 6.22 Installation and Support Guide*.
- If no arrays are connected to the host, or all of them are powered off during the installation, there may be a message in the log saying, “fwutil failed.” This is normal and you can ignore it. For more information, see bug 4488704 in Chapter 3.

## 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`.
  - 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 line in your `/etc/system` file in front of the RAID Manager 6 section, which is labeled `BEGIN RAID Manager addition`.**  
Restore the line `forceload: drv/ssd` if your boot device used the `ssd` driver.

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## Upgrading Controller Firmware




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

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You can use TABLE 2-2 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. If you are upgrading from RAID Manager 6.1.1 Update 2 or a compatible version, or if you have any 2.05.xx.yy firmware, see the *Sun StorEdge RAID Manager 6.22.1 Upgrade Guide*.

---

**TABLE 2-2** Supported Controller Firmware Levels

Sun StorEdge RAID Manager Version	Controller Firmware Appware Level
6.1	2.04.04.01 <sup>†</sup>
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 <sup>‡</sup>
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
6.22 with Patch ID 108834-07	3.01.03.60
6.22 with Patch ID 108553-07	3.01.03.60
6.22.1	3.01.04.68

<sup>†</sup> If your controller appware 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 6.22.1 CD.

<sup>‡</sup> 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 6.22.1 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) and the *Sun StorEdge RAID Manager 6.22 and 6.22.1 Upgrade Guide* (806-7792).

---

## Upgrading the Solaris Environment With RAID Manager 6.22.1 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 6.22.1 software installed, that is, without uninstalling and reinstalling the RAID Manager software.

### ▼ To Upgrade the Solaris Environment With RAID Manager 6.22.1 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.**

If you use the `glm` driver and you are upgrading from Solaris operating environment 2.5.1 or 2.6, you must modify `glm.conf`. See the FIN I0589.

3. **Reboot the system.**

---

**Note** – If you are upgrading to the Solaris 8 operating environment, there are several issues to consider. See the latest revision of FIN I0685.

---

---

# 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 3X00 system
  - Sun Enterprise 4X00 system
  - Sun Enterprise 5X00 system
  - Sun Enterprise 6X00 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

---

## Sun StorEdge Volume Manager and Layered File System Issues

- “Switching Cables on the Sun StorEdge A3x00 or A3500FC Array With Volume Manager Installed” on page 17
- “Multiple Paths on the Sun StorEdge A3x00 or A3500FC Array” on page 17
- “Device Links in `/dev/dsk`” on page 18
- “RAID Manager LUNs Under Volume Manager” on page 18
- “Root Disk Group and RAID Manager LUNs” on page 18

- “Warning About VxFS File System Corruption When Running With a Turned Off Array” on page 18
- “RAID 0 LUN Disk Replacement Warning” on page 19

## Dynamic Multi-Pathing and RAID Manager 6.22.1

The Dynamic Multi-Pathing (DMP) feature in VERITAS Volume Manager 2.x is *not* compatible with RAID Manager 6.22.1. By default DMP is disabled if you install Volume Manager 2.x after you have installed RAID Manager 6.22.1.

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.

## Switching Cables on the Sun StorEdge A3x00 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.



---

**Caution** – Switching cables between controllers on your Sun StorEdge A3x00 or A3500FC RAID module can lead to data loss or corruption.

---

## Multiple Paths on the Sun StorEdge A3x00 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. 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 `VRTSvxxvm`, on a host computer with RAID Manager 6.22.1 installed and with LUNs configured causes `devlinks` to run and both paths to the Sun Storage A3x00 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.

## 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 6.22.1 and the LUN does not appear to have a label, run the `format` command and label all RAID LUNs.

## Root Disk Group and RAID Manager LUNs

Volume Manager volumes configured using devices from the Sun StorEdge A3x00 or A3500FC array subsystem cannot be a part of the root disk group, `rootdg`. Configure Sun StorEdge A3x00 or A3500FC array devices to `non-rootdg` disk groups only.

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

When you turn off a Sun StorEdge A1000, A3x00 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.



## RAID 0 LUN Disk Replacement Warning

According to bug 4465193 listed in the *Sun StorEdge RAID Manager 6.22 Release Notes* (805-7758-12), RAID 0 LUNs do not reformat after you replace a drive. When a disk drive in a RAID 0 LUN fails, data is lost because the definition of RAID 0 is that there is no redundancy. Users often provide redundancy by mirroring the LUN with a volume manager. When a drive fails in such a LUN, you can replace the drive and RAID Manager 6 notices the new drive and marks the LUN optimal. The optimal designation only means the drive is ready for reformatting and reloading of the data. However, if the volume manager is running, but not accessing the LUN with the failed drive, it might not be aware the data was lost. Do not let the volume manager continue to run while the drive is replaced because it might never be aware of the data loss and could access the new data on the replaced drive *before it is reformatted and reloaded*, causing corruption of the data in the mirror.

---

## Moving Drives Between Sun StorEdge Array Subsystems

Do not move drives from one RAID module to another (Sun StorEdge A1000 or A3x00) because this is not supported.

You can add drives to a Sun StorEdge A3x00 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, A3x00 or A3500FC system (or were once installed on another Sun StorEdge A1000, A3x00 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, A3x00 or A3500FC array from another Sun StorEdge A1000, A3x00, or A3500FC array transfers the `DacStore` information and confuses the controller. Phantom drives might be reported. Contact your service representative to remove the phantom drives if they are reported.

---

# Dynamic Reconfiguration for Sun StorEdge A3x00 and A3500FC Arrays

RAID Manager 6 enables a Sun StorEdge A3x00 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 6.22.1.

## ▼ 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 A3x00 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, A3x00 or A3500FC storage array, RAID Manager 6.1.1 or 6.22.1 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 6.22.1 CD. However, you can modify the `/etc/osa/rmparms` file and run the `genscsiconf(1)` command for your Sun StorEdge A1000, A3x00 or A3500FC array.

TABLE 2-3 lists the number of LUNs per RAID module on your Sun StorEdge A3x00 or A3500FC array that are supported for the various combinations of host interfaces, host adapters, Solaris operating environments, and patch levels.

**TABLE 2-3** 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) <sup>†</sup>	g1m device driver patch for PCI	32
		7 8/99	106925-05 (or compatible revision level) <sup>†</sup>	g1m device driver patch for PCI	32
		8	none		
FC	SBus (X6730A)	2.6 5/98	105375-17 (or compatible revision level) <sup>†</sup>	sf and soca1 device drivers patch	32
		7 8/99	107469-04 (or compatible revision level)	sf and soca1 device drivers patch	32
		8	none		
	PCI (X6729A)	2.6 5/98	107280-04 (or compatible revision level) <sup>†</sup>	ifp device driver patch	16
		7 8/99	107292-03 (or compatible revision level) <sup>†</sup>	ifp device driver patch	16
		8	none		
<sup>†</sup> 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 A3x00 and a A3500FC array and guidelines for resetting the configuration on a Sun StorEdge A3x00 array (SCSI) or a Sun StorEdge A3500FC array.

### Creating or Deleting LUNs

Sun StorEdge A1000, A3x00, 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 A3x00 (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/rdisk` paths for the previously existing LUNs are not removed. The same is true when using the command-line version: `raidutil -X`. Format (1m) then accesses these LUNs and gives errors, as described in bug 4339704 listed in the *Sun StorEdge RAID Manager 6.22 Release Notes* (805-7758-12). These error messages continue until the links are removed or each of the previously existing LUNs is re-created.

## ▼ 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]disk` of previously existing LUNs are not removed after the configuration is reset.

---

## Removing RAID Modules

Removing an entire RAID module from RAID Manager 6.22.1 does not remove the modules 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. If `format (1m)` is called after the command to remove the RAID module, 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 6.22.1, 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 6.22.1, 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 6.22.1, 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*.

---

## 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*.



## Known Issues

---

This chapter contains the latest bugs. For a complete list of bugs from earlier versions of RAID Manager, refer to the *Sun StorEdge RAID Manager 6.22 Release Notes*. (805-7758-12). Topics in this chapter include:

- “Late Breaking Bugs” on page 29
- “Resolved Bugs Listed by Priority” on page 33

### Late Breaking Bugs

The following is a list of new bugs you might encounter and recommended actions when using RAID Manager 6.22.1.

- **Bug 4381439: Logical Links Not Cleaned Up Under /dev/(r)dsk Directory.**  
When you delete LUNs, the RAID Manager does not remove their paths in the /dev directory. Do not be concerned; the `open(2)` system call and commands like `format(1m)` discover there is no device behind the path and the commands fail appropriately. The commands fail even if you use the CLI `raidutil -x` or the GUI setting, which is Configuration ->File ->Reset Configuration.
- **Bug 4399135: Write Cache Mirroring With Independent Controller Configuration Not Supported.**  
When two controllers in a control module are configured in independent controller mode, you can still enable write cache mirroring. This is not supported, so do not do it.
- **4459961 System Response Degrades When a Drive Fails In a LUN With a Single CPU.**  
On small servers where there is only one CPU, a degraded LUN can cause much reduced response times for the user at the console. This is particularly true when VxVM is also in use.
- **4477099 For the A3500 array, RAID 5 Reconstruction Fails to Spare a Disk.**

When a RAID 5 LUN is being reconstructed, a read error might occur on the remaining part of the LUN. Read errors are not reported normally, but the read can not be completed because the LUN is already degraded. In order to complete reconstruction, perform a surface check to determine which drive has the problem:

```
# dd if=/dev/rdisk/c6t4d1s2 of=/dev/null bs=512k
```

- 4471208 RAID Manager 6 Causes a Mismatch In Controller Numbers In /dev/cfg.

Using `cfgadm` shows incorrect controller numbers when you install RAID Manager 6.22 or 6.22.1. RAID Manager 6 does not update the `/dev/cfg` directory links with its controller numbers. The output of `cfgadm` shows a wrong controller number in the first column, but the device paths are correct.

- 4477032 Solaris 8 10/00 With RAID Manager 6.22 Generates High Controller Numbers

If you have controller numbers for RAID Manager 6 LUN(s) above 63, for example `c72t4d0s0`, then these LUNs will not behave properly. Correct entries in `/dev/dsk`, which are for RAID Manager 6 LUNs, show `rdnexus` in the device path when you use the command `ls -l`. For example:

```
# ls /dev/dsk/c0t5d0s0
lrwxrwxrwx 1 root  root 44 Jul 18 16:27 c0t5d0s0 ->
../../../../devices/pseudo/rdnexus@0/rdriver@5,0:a
```

Any `/dev/dsk` or `/dev/rdsk` entry which does not contain `rdnexus` is not usable.

- 4479887 RDAC Open Failure Messages When an Oracle or Sybase RDBMS Accesses Raw LUN Devices

Access to raw partitions can only be safely accomplished by user 0 (root). By default, the raw partitions belong to root. If their ownership has been changed to a non-root user, access by that user causes error messages. Further, failover does not occur properly in all cases on these partitions.

Databases or data base logs are sometimes configured on top of raw RAID Manager 6 disk partitions. RAID Manager 6.22.1 and RAID Manager 6.22 with patch 108853-03 or 108834-03 closed a security hole as described in bug 4336484. It is possible to get permission denied messages or log message about access failures. You might see a message saying, "I/O to invalid geometry" when a non-root user opens a raw partition. Other messages might be about failover attempts, but failover does not actually occur. See "Non-root Access to Raw Partitions" on page 5.

- 4480763 RAID Manager 6.22.1 GUI Shows Garbage With the Controller Mode Option With the Sun StorEdge A1000 Array

When a system has only a Sun StorEdge A1000 array installed, the Maintenance application does not label the display column properly. This is only cosmetic. Under maintenance, select "All RAID Modules" for RAID Module and select Options -> Controller mode. You see:

```
RAID Module Controller A y?eA1000 Active No Controller
```

You should see Controller B instead of seeing y?e.

- 4485449 RAID Manager Does Not Correctly Report LUN Numbers With PFAs.

Because RAID Manager 6.22.1 reports predicted drive failure alerts (PFAs) are reported in `rmlog` as AENs, there is no LUN information. The error code ASC/ASCQ is 5D/80. RAID Manager 6 used to report PFAs as unit attentions on check conditions and put them on the console log. You can ignore the LUN number in all PFA reports. Replace the failing drive within 12 hours to avoid having a single point of failure, where one drive in a LUN is bad.

- 4486082 RAID Manager 6.22 Installation On the Boot Device Fails.

In some cases, you can not install the Solaris operating environment or RAID Manager 6.22 and 6.22.1 on the boot device. This applies if the boot device is the Sun StorEdge A1000, A3x00, or A3500FC array. After installing the operating system and RAID Manager 6.22.x on the new boot device, you might get the following error:

```
panic[cpu0]/thread=10404000: vfs_mountroot: cannot mount root
```

The error indicates the path for the root device is not set up correctly. The workaround is to not boot off the Sun StorEdge A1000, A3x00, or A3500FC array.

- 4488704 RAID Manager 6.22.1 Build 53 Shows `fwutil` Failed Messages At Boot Time When the Array Is Not Connected.

If you reboot the host with RAID Manager 6.22.1 installed and all the Sun StorEdge A1000 and A3x00 arrays are disconnected or powered off, the message "fwutil failed" appears in the log. The message indicates the `fwutil` (1m) could not connect to any array. It does not indicate any other problem and you can ignore it. You can use the arrays when they are powered up.

- 4488911 Physical Paths Are Seen After Rebooting Or `cfgadm -c configure`.

When you set `mpxio-disable="no"` in the `scsi_vhci.conf` file, a simple reboot causes extra device paths to appear in `/dev/dsk`. The command `reboot -r` corrects the problem. The extra paths in `/dev/dsk` and `/dev/rdsk` point to physical devices and you should never use them. Correct device paths for the Sun

StorEdge A1000, A3x00 and A3500FC arrays have `rdnexus` in them. Do not enable the `mpxio` setting in any way, as described on page 9 under the section “Limitations in RAID Manager 6.22.1” on page 7.

- 4492436 LUNS Of New Sun StorEdge A1000 Arrays Are Not Seen From `format` When You Use Just `hot_add` On the Solaris 8 Operating Environment.

Adding a Sun StorEdge A1000 array to a host and using `hot_add(1m)` is not sufficient to make `format` see the array’s LUNs using the Solaris 8 operating environment. The RAID Manager 6 commands work, but the device paths in `/dev/dsk` are not correct, causing `format` and other user accesses to fail. Do a reconfiguration reboot of the host after the `hot_add` command to repair the device paths in `/dev/[r]dsk`.

- 4494030 The RAID Manager 6.22 Recovery Guru Battery Replacement Procedure Is Incorrect.

The battery replacement text in the Recovery Guru has not been updated to reflect the new battery replacement procedure. The current text says the RAID module should be powered off when the battery is removed and replaced. The following two procedures explain how to replace old and new batteries. New batteries, unlike old ones, are hot swappable and have LEDs on the front.

## ▼ To Replace Old Batteries

1. **Stop all I/O activity to the controller and turn off the power to the RAID module.**
2. **Remove the battery canister and replace it with a new one.**
3. **Record the current date of the installation and the new replacement date on the label.**

The replacement date is two years from the installation date.

4. **Turn on the power to the RAID module.**
5. **Reset the battery age for each controller device:**

```
# raidutil -c device_name -R
```

If you need information on the device name, select Module Profile and look at the Summary Information screen.

6. **Wait 15 minutes and re-run the Recovery Guru to verify that the failure has been fixed.**

If the system reports a battery alert or failure again, verify that you reset the battery age on each controller.

## ▼ To Replace New Batteries

1. **Turn off the cache and verify the cache LED is off before changing the battery.**  
The controller module can still be on because new batteries are hot swappable.
2. **Remove the battery canister and replace it with a new one.**
3. **Record the current date of the installation and the new replacement date on the label.**  
The replacement date is two years from the installation date.
4. **Reset the battery age for each controller device:**

```
# raidutil -c device_name -R
```

If you need information on the device name, select Module Profile and look at the Summary Information screen.

5. **Wait 15 minutes and re-run the Recovery Guru to verify that the failure has been fixed.**  
If the system reports a battery alert or failure again, verify that you reset the battery age on each controller.
6. **Enable the cache again after you replace the battery.**  
Write cache should become active within 12 hours after the battery is fully charged.

## Resolved Bugs Listed by Priority

The following is a list of bugs that have been fixed in the 6.22.1 release.

### Priority One

- 4405242 Customer lost connectivity to an entire raid module until a controller was removed.

### Priority Two

- 4345621 The RAID Manager 6.22 panics on install on s81\_15.
- 4345987 The RAID Manager 6.22 `rdacutil`, `raidutil` and `drivutil` commands return exit status 0 (successful completion) when invalid arguments are given.

- 4347418 After executing the `/usr/lib/osa/bin/hot_add` command the system could not be rebooted if the boot disks are under VERITAS control.
- 4388578 The firmware `03010300.bwd/03010354.apd` and `03010304.bwd/03010360.apd` break root boot functionality on the A1000 and A3x00 arrays.
- 4396584 The RAID Manager 6.1.1\_Update2 `parityck` command with correction could mask or exacerbate data corruption.
- 4412025 A Segmentation Fault is displayed with a RAID Manager 6 core dump when used with long WWN's.
- 4453774 The `healthck` command is continually identifying unresponsive drives randomly.
- 4470238 The five minute bus reset causes the controller to be offline with RAID Manager 6.22.1 to be offline after three or four hours.

### Priority Three

- 4241406 Upgrading from RAID Manager 6.1.x fails if Volume Manager is installed on the system.
- 4252937 The RAID Manager 6.22 `nvutil` command repeats an operation on same device two or three times.
- 4273276 LUN creation can cause repeating error dialogue boxes.
- 4305815 A3000 array PFA Unit Attentions sense data become `sd/isp` fatal errors.
- 4307048 The user cannot boot the D1000 array if RAID Manager 6 is removed and re-installed.
- 4324194 RAID Manager 6 CLI controller restore doesn't work as expected.
- 4343416 When the system administrator uses the RAID Manager 6 GUI and `healthck` command, the system does not report controller fan failures.
- 4345328 The `fwutil` command shows the wrong message for a firmware revision request even though the firmware 3.1.x is installed.
- 4346453 The default `rmparams` entry for `Rdac_HotAddDisabled` is wrong for Fibre Channel loops.
- 4365391 RAID Manager 6.1.1 Update2 `rmparams` is lost when the system is hung or panics.
- 4374861 Unused `devinfo` nodes under `rdnexus` waste memory and confuse ownership.
- 4378760 Invoking `drivutil -p` with an unrecognized LUN parameter displays the status or reconstruction progress for LUN 0 instead of the usage information.
- 4392597 `ASC/ASCQ 3F/0E` is unknown and not in `raidcode.txt`.
- 4392601 RAID Manager 6 needs to co-exist with SYMSm7 on the same host.
- 4402798 The `healthck` command does not report a power failure if there is no I/O to the device.
- 4408321 `s8U4_b4` and later failed to show RAID Manager 6 LUNs under `format` using `jumpstart`.
- 4418101 How to restart a daemon after changes to `rmparams` is not clearly documented.



- 4420965 The RAID Manager 6.22 GUI miscalculates the available capacity of drive groups.

## Priority Four

- 4237586 The `pkgrm` for RAID Manager 6.22 leaves the `rdriver.conf` file in the `/kernel/drv/sparcv9` directory.
- 4332283 RAID Manager 6 reports faults at the Power Supply Unit differently between RAID modules.
- 4382087 The RAID Manager 6 recovery guru procedure for the ESM card replacement is incorrect.
- 4396049 RAID Manager needs a mechanism in the GUI or CLI to display the NVSRAM name or revision.
- 4399135 Write cache mirroring with independent controller configuration is not supported.
- 4432750 The documents should show that parity check and reconstruction times can vary with different disks.
- 4447988 The RAID Manager 6.22 `rmparams.4` cluster setting for the `Rdac_NoAltOffline` entry is `TRUE`.
- 4468699 `rmlogs` shows excessive 9501 RAID ASC/ASCQ RAID events occurring during normal running.



## Frequently Asked Questions

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This chapter covers the following issues:

- “\$PATH Update Required After RAID Manager Installation” on page 37
- “man Page Recognition” on page 38
- “Screen Refresh in Multiple Module Configurations” on page 38
- “Host With Sun StorEdge A1000, A3x00 and A3500FC Systems” on page 38
- “Sun StorEdge A3x00 and A3500FC Support for Dual Hosting and Multi-Initiator Configurations” on page 40

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*.

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### \$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
```

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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.

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## Host With Sun StorEdge A1000, A3x00 and A3500FC Systems

*Question:* Can I connect a Sun StorEdge A1000 system to a host that has a Sun StorEdge A3x00 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 A3x00, and A3500FC platforms.

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

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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
  - Ultra 10 system
  - 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
  - Ultra Enterprise 3800/4800/4810
- Sun StorEdge A3000 Array
  - Ultra Enterprise 250 system
  - Ultra Enterprise 450 system
  - Ultra Enterprise 3000 system
  - Ultra Enterprise 3800/4800/4810
  - Ultra Enterprise 4000 system
  - Ultra Enterprise 5000 system
  - Ultra Enterprise 6000 system
  - Ultra Enterprise 10000 system
- Sun StorEdge A3500/A3500FC Array
  - Ultra Enterprise 250 system
  - Ultra Enterprise 450 system
  - Ultra Enterprise 3000/3500 system
  - Ultra Enterprise 3800/4800/4810
  - Ultra Enterprise 4000/4500 system
  - Ultra Enterprise 5000/5500 system
  - Ultra Enterprise 6000/6500 system
  - Ultra Enterprise 10000 system

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# Sun StorEdge A3x00 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 A3x00 systems are qualified with Sun Cluster software. Refer to the *Sun Enterprise Hardware Planning and Installation Guide* for instructions on cabling your Sun StorEdge A3x00 or A3500FC systems to the nodes and to the *Sun Cluster Software Planning and Installation Guide* for multi-initiator issues. For Sun StorEdge A3x00 systems, you must update your `sd` and `isp` drivers.

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**Note** – This is different from “independent controller configurations,” in which each node owns one of the Sun StorEdge A3x00 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.

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