



# Sun StorageTek™ Common Array Manager Software Release Notes

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Release 6.0.0

Sun Microsystems, Inc.  
www.sun.com

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# Sun StorageTek Common Array Manager Software Release Notes

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This document contains important information about Release 6.0.0 of the Sun StorageTek™ Common Array Manager software or information that was not available at the time the product documentation was published. Read this document so that you are aware of issues or requirements that can affect the installation and operation of the Common Array Manager software.

These release notes cover the software released on the Sun StorageTek Common Array Manager Software 6.0.0 CD.

The Release Notes consist of the following sections:

- [“Features in This Release” on page 2](#)
- [“System Requirements” on page 7](#)
- [“Installing Packages and Patches” on page 14](#)
- [“Known Issues” on page 19](#)
- [“Operational Information” on page 34](#)
- [“Release Documentation” on page 36](#)
- [“Firmware Files” on page 36](#)
- [“Service Contact Information” on page 41](#)
- [“Third-Party Web Sites” on page 41](#)

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# Features in This Release

This section describes the main features of the Sun StorageTek Common Array Manager software in the following sections:

- [“Supported Arrays” on page 2](#)
- [“Firmware Features in This Release” on page 2](#)
- [“Common Array Manager Software Features” on page 5](#)
- [“Release Contents” on page 6](#)
- [“Licenses For Optional Premium Features” on page 6](#)

## Supported Arrays

Common Array Manager software supports the following Sun storage systems:

- Sun StorageTek Flexline 240 Array
- Sun StorageTek Flexline 280 Array
- Sun StorageTek Flexline 380 Array
- Sun StorageTek 6540 Array
- Sun StorageTek 6140 Array
- Sun StorEdge 6130 Array
- Sun StorageTek 2540 Array
- Sun StorageTek 2530 Array

## Firmware Features in This Release

This section describes the main new features of the firmware, including the following:

- [“Firmware Version” on page 3](#)
- [“Array Expansion Module Support” on page 3](#)

## Firmware Version

The following is the firmware for this release of Sun StorageTek Common Array Manager software.

**TABLE 1** Release Firmware Level

Array	Firmware Version
Sun StorageTek 6540, 6140, and 6130 Arrays	06.19.25.16
Sun StorageTek 2500 Series Arrays	06.17.52.10
Sun StorageTek Flexline 240, 280, and 380 Arrays	06.19.25.26

Check the build notes file distributed with the software for the exact firmware build. The Sun StorageTek Common Array Manager software will support one prior version of the firmware for non-new features on previously supported arrays. (This does yet apply to the new Sun StorageTek 2500 Series Arrays).

The firmware files for each array are listed in [“Firmware Files” on page 36](#).

For information about how to upgrade firmware, see [“Upgrading Array Firmware” on page 16](#).

## Array Expansion Module Support

Controller firmware 06.19.x.x or higher allows tray mixing of 6540, 6140, 6130, FLX240, FLX280, and FLX280 array controllers modules and the Sun StorageTek CSM100, CSM200, FLA200, FLC200, and FLA3 Expansion Modules. After installing the firmware, 6130 controllers can use CSM200 expansion modules and CSM100 expansion modules can be used with 6540 and 6140 controllers.

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**Note** – To add trays with data already on them, contact your service representative for assistance to avoid data loss.

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Refer to [“Upgrading Firmware for Adding Expansion Trays” on page 17](#) for the procedure to upgrade trays without data.

### *CSM200 Best Practices*

When you add a new CSM200 expansion module to an existing array in a production or active environment, it is best practice to cable and add the trays while the RAID controller module is powered on, in order to avoid a variety of issues including those listed below.

Before connecting any replacement drive or additional expansion module to an existing functioning array, it is best practice to contact Sun Microsystems Support Services. One reason for this is to avoid issues related to DACstore, the configuration and status database maintained by the array firmware, that stores its information on each of the disk drives.

Affected arrays are:

- \* Sun StorEdge 6130 Array
- \* Sun StorageTek 6140 Array
- \* Sun StorageTek 6540 Array
- \* StorageTek FLX280 Array \* StorageTek FLX380 Array

Contact Sun Microsystems Support Services promptly upon experiencing any of the following symptoms:

- loss of management or data access
- inability to apply feature licenses
- inability to upgrade array firmware
- incorrect component details in the management tool
- host operating system reports the wrong product identifier
- array registration or discovery fails to complete
- persistent or unrecoverable multipathing failover

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**Note** – Because corrective actions for a DACstore issue may require a configuration restoration, it is important to maintain a current image of the configuration.

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And, as always, it is best practice to maintain recoverable backups of your data.

[TABLE 2](#) and [TABLE 3](#) list the supported expansion modules.

**TABLE 2** Supported Expansion Modules - 6000 Series Arrays

Array Controller	Original Supported Expansion Modules	Supported Expansion Modules with Controller Firmware 06.19.25.16
Sun StorageTek 6540 Array	CSM200	CSM100, CSM200, FLA200, FLC200, FLA300
Sun StorageTek 6140 Array	CSM200	CSM100, CSM200, FLA200, FLC200, FLA300
Sun StorageTek 6130 Array	CSM100	CSM100, CSM200, FLA200, FLC200, FLA300

The Sun StorageTek 2500 Series Array uses Controller Firmware 6.17.52.10 and supports the Sun StorageTek 2501 expansion module.

**TABLE 3** Supported Expansion Module - 2500 Series Array

<b>Array Controller</b>	<b>Supported Expansion Modules</b>
Sun StorageTek 2500 Series Arrays	2501

The Sun StorageTek FLX240, FLX280, and FLX380 arrays use Controller Firmware 6.19.25.26 and supports the CSM100, CSM200, FLA200, FLC200, and FLA300 expansion modules.

**TABLE 4** Supported Expansion Module - Sun StorageTek FLX240, FLX280, and FLX380 Arrays

<b>Array Controller</b>	<b>Supported Expansion Modules</b>
Sun StorageTek FLX240 Array	CSM100, CSM200, FLA200, FLC200, FLA300
Sun StorageTek FLX280 Array	CSM100, CSM200, FLA200, FLC200, FLA300
Sun StorageTek FLX380 Array	CSM100, CSM200, FLA200, FLC200, FLA300

## Common Array Manager Software Features

The Sun StorageTek Common Array Manager software provides you with an easy-to-use interface to configure, manage, and monitor Sun StorageTek storage arrays.

New features in Release 6.0.0:

- Enhancements to Auto Service Request (ASR) functionality
- Support for Sun StorageTek FLX240, FLX280, and FLX380 Arrays
- Changes in the firmware update procedure.
- Enhancements to Job Summary and Job Details pages
- Support for in-band management of Sun StorageTek 6130, 6140, 6540, and 2500 Series arrays

# Release Contents

TABLE 5 lists the version information for the software included in this release.

**TABLE 5** Sun StorageTek Common Array Manager CD Contents

Type	Version
Common Array Manager	6.0.0
Remote scripting CLI client	2.1.4
Java Web Console software	3.0.2
Java 2 Software Development Kit	1.5.0
Firmware files, as listed in <a href="#">“Firmware Files”</a> on page 36	06.19.25.16 06.17.52.10 06.19.25.26

## Licenses For Optional Premium Features

For optional premium features, you must purchase licenses. When you order premium feature licenses, the licenses will be sent to you with instructions on how to activate the features.

The following licenses for premium features are available from Sun:

**TABLE 6** Available Licenses for Premium Features, by Array

Premium Feature	6540 Array	6140 Array	6130 Array	2500 Arrays	FLX240 Array	FLX280 Array	FLX380 Array
Data Snapshot	X	X	X	X	X	X	X
Data Volume Copy	X	X	X		X	X	X
Data Replicator	X	X	X		X	X	X
4 Domains	X	X		X	X	X	X
Upgrade 4 to 8 Domains	X	X			X	X	X
8 Domains	X	X		X	X	X	X
Upgrade 8 to 16 Domains	X	X	X		X	X	X
16 Domains	X	X	X	X	X	X	X
Upgrade 16 to 64 Domains	X	X	X		X	X	X
64 Domains	X	X	X		X	X	X

**TABLE 6** Available Licenses for Premium Features, by Array (*Continued*)

Premium Feature	6540 Array	6140 Array	6130 Array	2500 Arrays	FLX240 Array	FLX280 Array	FLX380 Array
Combo Data Snapshot and 8 Domains	X	X				X	X
Combo Data Snapshot, Data Volume Copy, Data Replicator, and 64 Domains	X	X	X		X	X	X
Combo Data Snapshot, Data Volume Copy	X	X	X		X	X	X
Combo Data Snapshot, Data Volume Copy, and Data Replicator	X	X	X		X	X	X

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## System Requirements

The software and hardware products that have been tested and qualified to work with the Sun StorageTek Common Array Manager software are described in the following sections:

- [“Supported Platforms” on page 8](#)
- [“Supported Platforms for the Remote Scripting CLI Client” on page 12](#)
- [“Supported Web Browsers” on page 12](#)
- [“Supported Languages” on page 13](#)

# Supported Platforms

The management software runs on the platforms described in [TABLE 7](#).

**TABLE 7** Management Host Platforms

Platform	Operating System	CPU	Memory
SPARC server or workstation	Solaris 8 OS 4/01 Solaris 9 OS 8/03 Solaris 10 OS	UltraSPAR C 3 or better (750 MHz)	1 Gigabyte
Windows Servers	Windows 2000 with Service Pack 4 Windows 2003 with Service Pack 1 Windows XP Pro with Service Pack 2 *	1.5 GHz PC	500 Megabytes
x64 computer	Red Hat Enterprise Linux AS Release 4 (Nahant update 4) (x86_64) Red Hat Enterprise Linux AS Release 3 (Taroon update 8) (x86_64) SuSE Linux Enterprise Server 10 (x86_64) SuSE Linux Enterprise Server 9	x64	500 Megabytes
x86 computer	Solaris 10 OS	x86	1 Gigabyte

\* Windows XP Home is NOT supported.

[TABLE 8](#) lists Solaris packages that must be installed on your Solaris host. Installing the minimum Solaris operating system package as listed in [TABLE 7](#) will install all but the last four files. Those files are required by Java, but are not used by the management software.

**TABLE 8** Required Solaris Packages

File	Description
SUNWtcatu	Tomcat Servlet/JSP Container
SUNWcar	Core Architecture, (Root)
SUNWcsd	Core Solaris Devices
SUNWcsl	Core Solaris, (Shared Libs)
SUNWcsr	Core Solaris, (Root)
SUNWcsu	Core Solaris, (Usr)
SUNWkvm	Core Architecture, (Kvm)

**TABLE 8** Required Solaris Packages

<b>File</b>	<b>Description</b>
SUNWlibC	Sun Workshop Compilers Bundled libC
SUNWmfrun	Motif RunTime Kit
SUNWxwice	X Window System Inter-Client Exchange (ICE) Components
SUNWxwplt	X Window System platform software
SUNWxwrtl	X Window System & Graphics Runtime Library Links in /usr/lib

[TABLE 9](#) lists Linux packages and libraries that must be installed on your Linux host. The 32-bit versions of the packages and files are required.

**TABLE 9** Required Linux Packages

<b>File</b>	<b>Version</b>
fileutils	4.0-8
gawk	3.0.4-1
glibc	2.1.2-11
ld-linux.so.2	-
libc.so.6	-
libc.so.6	(GLIBC_2.0)
libc.so.6	(GLIBC_2.1)
libc.so.6	(GLIBC_2.1.2)
libc.so.6	(GLIBC_2.1.3)
libcrypt.so.1	-
libcrypt.so.1	(GLIBC_2.0)
libdl.so.2	-
libpam.so.0	-
sh-utils	2.0-1
textutils	2.0-2

# Required Patches

A new patch is required to resolve an issue with the online help. (Bug 6540170) The context-sensitive help will not display in the right-hand pane for systems when you use the fully-qualified name to access the management host. Instead, the default help title page displays.

Install the required patch to resolve this issue. Otherwise, navigate to the appropriate context-sensitive help page from the online help table of contents in the left-hand pane.

Patches are available from SunSolve (<http://www.sunsolve.sun.com>). [TABLE 10](#): lists the patch number and the corresponding platform.

**TABLE 10** Patch Number and Platform

Patch Number	Platform
125950-06	Solaris 9 Sparc
125951-06	Solaris 9 x86
125952-06	Solaris 10 Sparc
125953-06	Solaris 10 x86
125954-06	Linux
25955-06	Windows (JES only installations)
127534-02	Windows (standalone Lockhart deployments)
128270-01	Windows (2500 SATA Support Patch for 1530 and 1540 storage arrays)
128269-01	Solairs Sparc/x86/x64 (2500 SATA Support Patch for 1530 and 1540 storage arrays)
128271-01	Linux (2500 SATA Support Patch for 1530 and 1540 storage arrays)

# File Space Requirements

The following table lists the disk and directory space requirements of the management host software.

**TABLE 11** Sun StorageTek Common Array Manager File Space Requirements

Operating System	Disk Space	Directory Space
Solaris 8 OS 4/01	555 Mbytes	root – 5 Mbytes
Solaris 9 OS 8/03		/tmp – 120 Mbytes
Solaris 10 OS		/usr – 15 Mbytes
		/var – 100 Mbytes
	/opt – 405 Mbytes	
Windows 2000 with Service Pack 4	800 MBytes on system drive	Not Applicable
Windows 2003 with Service Pack 1		
Windows XP Pro with Service Pack 2 *		
Red Hat Enterprise Linux AS Release 3 and 4	560 Mbytes	root – 5 Mbytes
SuSE Linux 10 and 9		/tmp – 120 Mbytes
		/usr – 155 Mbytes
		/var – 100 Mbytes
	/opt – 345 Mbytes	

\* Windows XP Home is NOT supported.

## Open Ports Required on Management Host

Open the following ports for secure-by-default Solaris, Linux, and Windows platforms. In Windows, refer to your firewall documentation for instructions on how to open a port through the firewall.

### Incoming Ports

TCP 6788 - console HTTP port that redirects to 6789

TCP 6789 - console HTTPS port

### Outgoing Ports

TCP 25 - SMTP used for email event notification from FMS

UDP 161 - SNMP used for event notification traps from FMS

TCP 2463 - used for RPC (remote procedure calls) with the arrays

# Supported Platforms for the Remote Scripting CLI Client

The remote scripting CLI client sends commands to a management host, which in turn sends the commands to the array. [TABLE 12](#) lists remote platforms that can run the CLI client.

**TABLE 12** Remote CLI Client Platforms

OS	Version
Solaris 8 SPARC	4/01 or higher
Solaris 9 SPARC	8/03 or higher
Solaris 10 SPARC	any
Solaris 10 x86	any
Windows 2000 Server	Server (SP4) and Advanced Server (SP4)
Windows Server 2003	Standard/Web/Enterprise Edition; SP2
Windows XP	SP1
Red Hat Linux	3, 4
SuSE Linux	9, 10
IBM AIX	3.5
HP-UX	B.11.23

# Supported Web Browsers

The Sun StorageTek Common Array Manager software supports the Web browsers listed in [TABLE 13](#).

**TABLE 13** Supported Web Browsers

Browser	Minimum Version
Netscape Navigator	6.2
Mozilla	1.4
Firefox	1.0
Microsoft Internet Explorer	5.5 (7 is not supported)

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**Note** – The software requires that you enable pop-up windows in your Web browser.

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**Note** – On some browser configurations, if the Proxy setting is not disabled, the browser may appear to hang, time out, or generate incorrect error messages. To avoid these potential problems, specify No Proxy for the Common Array Manager host. On some browsers, you do this by going to Preferences > Advanced > Proxies and add the Common Array Manager management host name to the “No Proxy for:” section.

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## Supported Languages

The browser user interface for the Sun StorageTek Common Array Manager is available in:

For Solaris, Linux and Windows:

- English
- Simplified Chinese
- Japanese
- French

The command line interface is available in:

- English

The online help is available in:

- English
- Japanese
- Simplified Chinese

The the man pages are available in:

- English
- Japanese

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# Installing Packages and Patches

The array installation procedures are described in the *Sun StorageTek Common Array Manager Software Installation Guide* (part number 820-0213-nn). This section describes release-specific steps for firmware and management software patch upgrades that you must perform:

- “Before You Begin” on page 14
- “File Space Requirements” on page 11
- “Installing and Upgrading Common Array Manager Software” on page 16
- “Upgrading Array Firmware” on page 16
- “Upgrading Firmware for Adding Expansion Trays” on page 17

## Before You Begin

The management software is distributed on the Sun StorageTek Common Array Manager Software CD or is available from the Sun Download Center:

<http://www.sun.com/download/>

(look for Systems Administration > Storage Management).

Be sure to do the following before performing the upgrade:

- Verify that you have license certificates for all premium features, including storage domains. You must have licenses to use premium features.
- Read the installation instructions completely.
- Log in as `root` (Solaris and Linux) or as a user with administrator privilege (Windows) on the management host.

Before starting the installation script, the CD verifies host requirements, such as

- Unsupported versions of related software such as Common Array Manager 4.x, Storage Automated Diagnostic Environment 2.x and unsupported versions of the sscs CLI
- Unsupported versions of operating systems or software
- Insufficient disk space (see “Sun StorageTek Common Array Manager File Space Requirements” on page 11)

If the host meets the requirements, the script will search for earlier versions and determine if a new installation or an upgrade is necessary. If the script detects that there is no earlier version installed, it will perform a complete new installation.

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**Note** – For the latest SAS and firmware patches available for your system, check SunSolve (<http://www.sunsolve.sun.com>) .

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## Supported Upgrades

**Solaris:** Upgrade from CAM 5.0.0.8, 5.0.1.1, 5.0.2.1, 5.1.0.10, 5.1.0.11, 5.1.1.2, 5.1.2.2, and 5.1.3.2 to this release is supported. Uninstalling the existing CAM version is not required to install this release.

**Linux:** Upgrade to the initial release of the Linux version is not needed.

**Windows:** Upgrade to this build is not supported in 64-bit Windows 2003. Uninstall of previous CAM version is required before installing this build in 64-bit Windows 2003. In other Windows platforms, upgrade to this build is supported.

## Uninstalling a Previous CAM Version

This procedure uninstalls the previous CAM version if the upgrade to the current CAM version is not supported.

1. **Log into the CLI on the management host or using the remote CLI client as documented in the *Sun StorageTek Common Array Manager Software Installation Guide*.**

2. **Navigate to the appropriate directory for your operating system:**

For Windows, navigate to:

```
%systemdrive%\Sun\CommonArrayManager\Host_Software_6.0.0.10\bin\uninstall.bat
```

For Solaris and Linux, navigate to:

```
/var/opt/CommonArrayManager/Host_Software_6.0.0.10/bin/uninstall
```

For the Suse 9 platform, CLI uninstall requires the following rpm packages :

- libgcj-3.3.3-43.24.x86\_64.rpm
- getttext-0.1.14.1-30.1.x86\_64.rpm

3. **Enter the command `uninstall -f`.**

The command will remove the current installation.

## Installation Logs

Should an installation failure occur, be sure to check the available disk space again. Then consult the system log for more information.

Solaris: `/var/sadm/install/se6000/se6000_Host_SW.log`

Linux: `/var/opt/cam`

Windows: `\Program Files\Common Files\Sun Microsystems\se6000`

## Installing and Upgrading Common Array Manager Software

If you are installing the management software on a new host, follow the entire installation and configuration procedure described in the *Sun StorageTek Common Array Manager Software Installation Guide*.

After the initial installation and configuration, you will be able to upgrade the management software and firmware with each release.

The installer also installs the firmware update bundle on the host server. To upgrade the firmware on the array, see [“Upgrading Array Firmware” on page 16](#).

## Upgrading Array Firmware

The upgrade firmware function is available as a separate feature in the Sun StorageTek Common Array Manager software. The software prompts you if the array needs to update its firmware.

If you are adding new expansion trays, see [“Upgrading Firmware for Adding Expansion Trays” on page 17](#).

This procedure downloads the firmware binary on the management host to the array and upgrades the firmware running in the array. It is not necessary to uninstall the existing firmware.

1. **Log into the management software as documented in the *Sun StorageTek Common Array Manager Software Installation Guide*.**
2. **On the Java Web Console page, click Sun StorageTek Common Array Manager.**
3. **Go to the Storage System Summary page and select the arrays to be upgraded.**
4. **Click the Upgrade Firmware button.**
5. **Follow the prompts.**

---

**Note** – An upgrade will fail for an array in a degraded state.

---

## Upgrading Firmware for Adding Expansion Trays

Controller firmware 06.19.*nn.nn* allows tray mixing of array controllers modules and two versions of expansion modules for the Sun StorageTek 6130, 6140, and 6540 arrays, and the FLX240, FLX280, and FLX380 arrays.

---

**Note** – Mixing trays is not supported for the Sun StorageTek 2500 Series Arrays.

---

Refer to [TABLE 2](#), [TABLE 3](#), and [TABLE 4](#) for a list of a list of the supported modules for intermixing trays without data.

---

**Note** – To add trays with data already on them, contact your service representative for assistance to avoid data loss.

---

## Expansion Module Upgrade Overview

To add a newly supported expansion module to an existing array

- Before cabling the newly supported expansion module, first upgrade the existing controller and trays to Controller Firmware 06.19.xx.xx.
- Add the expansion module
- Upgrade the array again.

To add an existing expansion tray to a new array, it is also safest to follow a similar procedure:

- Install the new controller and trays first
- Perform the firmware upgrade
- Add the existing expansion tray
- Upgrade the array again.

---

**Note** – Before discovering a Sun StorageTek FLX240, FLX280, FLX380 array using Common Array Manager and before performing any tray migration (for example, adding FLA300 expansion trays behind an existing 6130, 6140 or 6540 controller), you must use existing management software to upgrade Sun StorageTek FLX240, FLX280, FLX380 arrays and associated trays (FLA200, FLC200 and FLA300) to the firmware version 6.19.25.00. After you register the arrays using Common Array Manager, you can upgrade to the current baseline firmware, 6.19.25.26.

---

## Upgrading Firmware for Additional Expansion Modules

For adding trays to arrays managed by Sun StorageTek Common Array Manager Software:

1. **Do not cable the additional expansion tray.**
2. **Install the Common Array Manager release following the standard installation procedure.**

There are separate procedures for Solaris, Windows, and Linux management hosts. The software update places a copy of the latest firmware on the management software server.

3. **Register the array, if needed.**

---

**Note** – For CSM100 trays, the tray IDs need to be set manually.

---

4. **Upgrade the array firmware.**

After registering the arrays, the software prompts you if the array needs to update its firmware. Upgrade the array firmware from the Storage System Summary page or Array Administration page by clicking the Upgrade Firmware button.

5. **Accept the upgrade.**

The firmware is installed on the array.

6. **Use Service Advisor to cable the additional expansion tray and add it to the array.**
7. **Upgrade the array again to update the firmware on the new tray.**

---

# Known Issues

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

- [“Common Array Manager-Specific Issues” on page 19](#)
- [“In-band Array Management Issues” on page 21](#)
- [“Storage Configuration Issues” on page 26](#)
- [“Firmware Issues” on page 30](#)
- [“Solaris Issues” on page 30](#)
- [“Documentation Issues” on page 31](#)
- [“Localization Issues” on page 33](#)

If a recommended workaround is available for a bug, it follows the bug description.

## Common Array Manager-Specific Issues

### *Drive Order Cannot Be Specified During Volume Creation From Common Array Manager*

**Bug 6515237** –Common Array Manager does not allow the disk drive order to be specified during volume creation.

**Workaround** – Use the CLI to specify disk drive order.

### *Cannot Cancel Some Jobs*

**Bug 6600387** –Some jobs, like volume creation jobs, cannot be cancelled on the array once they have started. However, if multiple jobs are queued up for an array, any job in the queue can be cancelled before the array actually starts the job.

### *General Password Mismatch Errors*

**Bug 6590097, 6577775, 6592717, 6592703** –Using an invalid array password may result in configuration error messages.

**Workaround** – Use the correct array password.

### *Unique Identifier not Listed for 6130 Battery*

**Bug 6590617** –Since the Sun StorageTek 6130 array does not report asset data for the cache backup batteries, the management software inserts a dash (-) instead of a value in the Unique Identifier field on Component Summary for Battery page (Troubleshooting > FRUs > Battery).

### *Data Channels 3 and 4 not Managed via Service Advisor*

**Bug 6604026** –Data channels 3 and 4 cannot be managed using Service Advisor; only channels 1 and 2 are available for management.

**Workaround** – Use the sscs CLI service command to manage data channels 3 and 4.

### *Volumes with Persistent Reservations Cause Array Configuration Resets to Fail*

**Bug 6569930** –Attempting to reset the array configuration while a volume has a persistent reservation appears successful but, the job status displays as in error, indicating that the configuration reset failed.

**Workaround** – Release the persistent reservation on the volume and retry the array configuration reset.

### *Defragmentation Jobs may not Display in the Jobs Summary Page*

**Bug 6592811** –For small virtual disks, disk defragmentation jobs may complete too quickly for a job task to be created and listed on the Jobs Summary page. If an error does occur during execution, the user will be notified.

**Workaround** –Run defragmentation jobs using the CLI.

### *Service Advisor does not Contain Information about Disk Initialization*

**Bug 6602902** –When a virtual disk is in the failed state and the drive causing the failure has been replaced, for the recommended action the management software refers the user to access Service Advisor to initialize the disk. However, Service Advisor does not contain information about disk initialization and the link erroneously accesses the Collect Support Data page.

## *Misleading Error Message During Data Replication Configuration*

**Bug 6498717** –When creating a data replication set, if the primary array cannot communicate with the secondary array, a misleading error message displays stating that it is “unable to get volume candidate list from array.”

**Workaround** – Verify that the arrays can communicate before replicating data.

## *The Cache Stop % Cannot be Greater than Cache Start %*

**Bug 6590637** –Attempting to modify the Cache Start % and Cache Stop % parameters from the array’s Administration page so that the value assigned to Cache Stop % is greater than the value assigned to Cache Start % results in the error message “setCacheParams operation failed:43”.

**Workaround** – Use valid values. Since the Cache Stop % is the percentage of unwritten data in the cache that will stop a cache flush that is currently in progress, it must not be greater than the value for Cache Start %, which is the percentage of unwritten data in the cache that will trigger a cache flush.

## In-band Array Management Issues

---

**Note** – In-band management is supported on the Sun StorageTek 6130, 6140, 6540, and 2500 Series arrays.

---

## In Band Proxy Agent Overview

The in-band management proxy agent is a package which is added to a host (or group of hosts) which have in-band connectivity via Fibre Channel to the storage array. An external management station can then talk to this proxy host via an out-of-band connection and the management commands are then relayed to the storage device via the in-band path. This is a transparent proxy agent which simply converts the RPC request packets to UTM SCSI specific messages. The API CAM uses to manage the arrays is identical whether the array is managed via the in-band or out-of-band path.

Multiple in-band proxy hosts may be used to access the same array and many arrays are allowed behind a single proxy host.

Installation of the proxy agents is accomplished via the standard package addition tools inherent to the specific operating system. For example, the pkgadd(1M) command would be used to install the Solaris agent and the associated Java Runtime

package should also be installed. For Linux, the packages are RPM based and a runtime package is also needed. For windows, the installation packages are .exe files which include their own "Install Anywhere" installer.

---

**Note** – CAM 6.0.0 was only qualified with Solaris (SPARC) and Linux agents for the 6.0.0 Release.

---

### *CAM 6.0.0 In-Band Management Proxy Agents - External SDLC Link*

You can download CAM in-band proxy agents for Solaris (Sparc) and Linux from here:

<http://www.sun.com/download/products.xml?id=471e7573>

### Known Proxy Agent Limitations

A proxy agent restart is required after disruptive changes to the storage configuration. This does not apply to changes in volumes exposed from a single array but it does apply if storage arrays are re-cabled differently or if the storage array configuration has changed (i.e. Added new storage arrays to the configuration).

---

**Note** – The in-band proxy agents will start when the host boots but they will terminate if storage is not immediately seen. A restart of the agent (instructions below) will force a re-scan for storage arrays and if any are found, the agent will then remain running.

---

### Solaris: Checking the UTM LUN's and Start/Stop of the Proxy Agent

To verify the host sees the arrays management (UTM) LUN is accomplished as follows.

1. Start / Stop the Agent (Solaris):

To start the agent:

```
/opt/SMgr/agent/SMagent start
```

If the agent is already running, this will stop and then restart it.

## 2. Check the status of the agent:

```
# ps -ef | grep SMagent | grep -v grep
root  5144      1    0 11:58:24 pts/3          0:01
/opt/SMgr/agent/jre/bin/java -classpath
/opt/SMgr/agent/SMagent.jar devmgr.launch
```

## Linux: Checking The UTM LUN's and Start/Stop of the Proxy Agent

### 1. Start/Stop Agent

```
[root@nsvr-150 agent]# /opt/SMgr/agent/SMagent start
Stopping Agent process 12632.
SMagent started.

[root@nsvr-150 agent]# SANtricity Storage Array Host Agent,
Version 09.17.A0.03

Built Tue Dec 05 14:52:38 CST 2006
Copyright (C) 1999-2006 LSI Logic Corporation. All rights
reserved.

Checking device /dev/sda (/dev/sg0) : Skipping
Checking device /dev/sdb (/dev/sg1) : Skipping
Checking device /dev/sdc (/dev/sg2) : Activating
Running...
```

### 2. Checking for UTM LUN

```
[root@nsvr-150 agent]# java -classpath
/opt/SMgr/agent/SMagent.jar
devmgr.versioned.agent.DeviceIdentifier | grep "Volume Access"
/dev/sdc

(/dev/sg2) [Storage Array fms-lca1, Volume Access, LUN 31,
Volume ID <600a0b80002fc07400000000000000000>]
```

## Windows: Checking The UTM LUN's and Start/Stop of the Proxy Agent

---

**Note** – Support for the Windows Proxy Agent is not Qualified in CAM 6.0.0

---

## 1. Start/Stop Agent

```
E:\Program Files (x86)\StorageManager\agent>net start
"SANtricity Storage Manager Agent"
```

The Storage Manager Agent service is starting.

The Storage Manager Agent service was started successfully.

## 2. Checking for UTM LUN

```
E:\Program Files (x86)\StorageManager\agent>C:\Java\jdk1.5.0_11\
bin\java -classpath SMagent.jar
devmgr.versioned.agent.DeviceIdentifier |
```

```
findstr Access
```

```
\\.\PHYSICALDRIVE0 [Storage Array fms-lca1, Volume Access, LUN
31, Volume ID <600a0b80002458d20000000000000000>]
```

```
\\.\PHYSICALDRIVE1 [Storage Array fms-lca1, Volume Access, LUN
31, Volume ID <600a0b80002fc074
```

## *In-Band Management Issues Present On All Platforms*

**Bugs 6610504, 6609734, 6609155, 6607104, 6609732, 6612120** –A problem exists where the in-band proxy agent may return the paths to the controllers in reverse order which is not properly accounted for in this release of CAM but will be correct in the next release.

This will not always occur but when it does, the net result is an immediate communications error. The error message will typically read as: " Error Could not communicate with the controller to complete this request. Possible causes include network or connection problems, controller problems, or no power to the host or storage array. Check these possible causes, then retry the operation".

This error may occur when performing the following operations:

- volume expansion
- snapshot copy, re-snap and disable
- virtual disk defragmentation

**Workaround** –Change the Current Volume Ownership when a "communication error" is encountered during volume expansion. Do this by selecting Volumes>Select the 'Specific Volume' and then change the value of the "Owning Controller".

---

**Note** – In these cases, a change to the Current Volume Ownership will create an Alarm that a volume is not on the preferred controller. Two options exist for this case. The first is to change the Volume back to the original owner after performing the desired command. The second option is to change the Preferred Volume Ownership of the desired volumes via SSCS(1m).

---

### *Network Address Column Shows Change from Out-of-band to In-band when Registering an In-band Array*

**Bug 6612214** –When one of the arrays behind an in-band management proxy is removed in Common Array Manager, the Common Array Manager software will change the management of the other arrays behind the proxy to out-of-band management if that path exists. An in-band discovery of the proxy agent would return them to in-band management in this case.

### *Correlating Access LUN with Host it is Mapped To*

**Bug 6584815** –When an access LUN is mapped to a proxy agent host for in-band management use, you can only correlate the mappings between the access LUNs and the host they are mapped to by using the format command at the UNIX prompt to get a listing of the access LUNs, and then get a listing of the array ports from the UI or the CLI, and comparing the results.

For example:

**a. format**

```
7. c8t0d31 <SUN-UniversalXport-9617 cyl 8 alt 2 hd 64 sec 64>
    /pci@8,700000/fibre-channel@2/fp@0,0/ssd@w200500a0b82fbc3c,1f
13. c9t0d31 <SUN-UniversalXport-9617 cyl 8 alt 2 hd 64 sec 64>
    /pci@8,700000/fibre-channel@2,1/fp@0,0/ssd@w200400a0b82fbc3c,1f
```

**b. List the array ports using the UI or CLI:**

```
A/1 A Up FC 2 Gbps 20:04:00:A0:B8:2F:BC:3B
A/2 A Up FC 2 Gbps 20:04:00:A0:B8:2F:BC:3C
B/1 B Up FC 2 Gbps 20:05:00:A0:B8:2F:BC:3B
B/2 B Up FC 2 Gbps 20:05:00:A0:B8:2F:BC:3C
```

**c. Correlate WWN's**

In this example, Port A/2 exposes c9t0d31 and Port B/2 exposes c8t0d31

### *Issues with Resetting the Controller on an In-band Managed Array*

**Bug 6603978** –The controller for an in-band managed array cannot not be reset even when physical connectivity between the array and the management host has been verified.

**Workaround** –If physical connectivity is valid, unregister and reregister the array.

### *In-band Managed Array Listed as Managed Out-of-band When Communication is Lost*

**Bug 6588699** –When an in-band managed array loses communication with management host, the network address listed in the Storage Summary page displays as an out-of-band address instead of an in-band address.

**Workaround** –If communication is lost with the array, view the alarms to determine if an in-band or out-of-band connection is lost.

### *Array Removal May Not Complete Successfully*

**Bug 6593318** – When a number of in-band managed arrays are selected for removal, the operation appears to complete successfully. However, when viewing the Storage Summary page, one array may still be listed on the Storage System Summary page.

## Storage Configuration Issues

This section describes known issues and bugs related to storage configuration.

### *Insufficient Reserve Space Fails Resnap*

**Bug 6523608** –Refreshing a snapshot does not update the filesystem if there is insufficient reserve space, yet a message displays indicating success. The array.s event log says the resnap completed successfully.

**Workaround** –In the snapshot feature of the management software, configure snapshots to fail if sufficient reserve space is not available. The fail message will prompt you to increase the reserve space.

### *Service Advisor Does Not Verify Disk is Ready to be Removed*

**Bug 6501029** –When the management software lists a disk as failed and the Service Advisor procedure for replacing drives is followed, the step to verify that the disk is ready to remove may not list the failed disk.

**Workaround** –Use an alternative menu option, Array Troubleshooting and Recovery, to view the status of the disk.

### *Firmware Upgrade can Lock Volumes While Appearing Completed and Array Showing Optimal State.*

**Bug 6595884** –A firmware upgrade can lock volumes longer than the upgrade process indicates. The array can report the upgrade completed and show an optimal state but the process can still lock the volumes.

The upgrade completion timing in the management software will be evaluated.

**Workaround** –Wait an extra 5 to 10 minutes and retry.

### *Disabled Snapshot can be Reenabled after a Firmware Update*

**Bug 6529172** –A snapshot volume that is disabled can be automatically reenabled after a firmware update occurs. If the snapshot volume is full, it can start generating warning events.

**Workaround**–Disable the snapshot again after the firmware update.

### *sscs Manpage Delivered on the Solaris Platform Only*

**Bug 661094** –The sscs manpage was delivered only on the Solaris platform.

**Workaround** –Refer to the *CLI Quick Reference Guide* for a command list and command syntax.

### *Changing the Segment Size Associated with a Volume Requires a New Profile with a Variable Number of Disks*

**Bug 6599933** –Changing a volume created with a one segment size to one with a different segment size requires that you create a new profile with the desired segment size, create a pool using that profile, and apply the new pool to the volume. However, if the original profile was created using a fixed number of disks instead of a variable number of disks, then an error is returned.

**Workaround** –Adjust the new profile so that the number of disks is variable instead of fixed.

### *Members of Write Consistency Group Not All Consistent*

**Bug 6598844** –Members of a replication write consistency group should all have matching attributes and roles.

### *Communication Test May Return False Results*

**Bug 6597344** –Clicking the Test Communications button for an offline controller may erroneously report that the communications test has passed.

**Workaround** –Verify a controller’s offline state by viewing its alarms.

### *Primary Volume in a Replication Set Cannot Exceed the Size of the Secondary Volume*

**Bug 6596281** – If a data replication set is created between two volume with the primary volume having size less than the secondary volume, the primary volume can be expanded till it reaches the size of the secondary volume.

### *The Replication Status May be Listed Incorrectly when the Primary Volume Fails*

**Bug 6561709** –When the primary volume in a replication set fails, the management software may incorrectly list the volume as replicating.

### *Snapshot Volumes do not Support Readahead*

**Bug 6560461** –Although both the base volume and the snapshot reserve volume support readahead, the snapshot volume itself does not support readahead. As a result, the Readahead Enabled Option is set to False on the Snapshot Details page.

### *Access Volume Cannot be Mapped Using the CLI*

**Bug 6577194** –The sscs CLI client does not allow mapping to the access volume for in-band management.

**Workaround** –To map the access volume, use the Common Array Manager.

### *Primary Volume Create Commands do not Display*

**Bug 6608890** –The array is limited in commands it can process simultaneously and CAM is not doing validation and queuing of (primarily volume create) commands.

**Workaround** –Check scripts for volume modification status before you issue new volume modification commands.

### *Event List Shows Different Events but Alarms are Consistent*

**Bug 6612858** –The Event list from two different hosts against the same array shows different events, even though the alarms generated are consistent.

**Workaround** –To display results based on the polling frequency and polling times of the arrays, select the Advanced Aggregation Filter option from the CAM Events page. When this option is de-selected, all hosts show consistent output. Therefore, this is working as designed.

### *Remote Login to CLI May Fail Using NIS*

**Bug 659945** –Logging into the sscs CLI client remotely may fail when a Solaris machine is configured to use NIS for name resolution if the login host is not contained in the NIS map.

### *sscs list fru Command does not list FLX240 and FLX280 Fans*

**Bug 6587666** –The CLI command sscs list fru does not list the number of fans installed on the Sun StorageTek FLX240 and FLX280 arrays.

**Workaround** –Use the Common Array Manager to view the number of fans installed.

### *CLI command sscs switch type command options not yet implemented*

**Bug 6584193** –Although type generic and type vlac are listed as options are listed as options with the CLI sscs switch command, these options are not yet implemented.

### *For CLI commands, Special Characters Enclosed in Quotes*

**Bug 654985** –In the sscs CLI, special shell characters or phrases that use them have to be enclosed in double quotes.

For Windows only, the comma (,) is a special character. Options separated by commas should be enclosed in quotes, as shown in the following example:

```
sscs create -p Default -s 100MB -d "t1d01, t1d02, t1d03" volume dhamo_new_vdisk
```

## Firmware Issues

### *Firmware Upgrade Wizard May Display a False Warning*

**Bug 6593508** – The review step of firmware upgrade wizard may display a false warning that the array health is not optimal.

**Workaround** –Check the Alarm Summary page to verify the alarm.

### *Forcing a Firmware Upgrade May Produce Contradictory Information*

**Bug 6593883** –When attempting to force a firmware upgrade from the Firmware Upgrade wizard when without hard disk drive (HDD) firmware, the wizard action reads that "no disks" will be upgraded, but the warning reads "Forced upgrade on all components including disks".

## Solaris Issues

### *SES vs. SD paths for UTM LUN's*

**Bug 6500605** –For Solaris 10u4, Solaris 8 and 9, the host cannot see the storage device's management UTM LUN.

**Workaround** –Perform the following commands on the data host:

```
# setenv LD_LIBRARY_PATH /opt/SMgr/agent
# java -classpath /opt/SMgr/agent/SMagent.jar
devmgr.versioned.agent.DeviceIdentifier | grep "Volume Access"
```

You should then output like the following which indicates which arrays have access LUNs visible to the agent:

```
/dev/rdisk/c5t200600A0B82458D4d31s2 [Storage Array fms-lca1,
Volume
```

```
Access, LUN 31, Volume ID <600a0b80002458d20000000000000000>]
/dev/rdsk/c5t200700A0B82458D3d31s2 [Storage Array fms-lca1,
Volume
```

```
Access, LUN 31, Volume ID <600a0b80002fc07400000000000000000>]
```

## *UTM LUN's Controlled by "Solaris Traffic Manager"*

**Bug 6594360** –When upgrading to S10U3 (or later) a problem may occur the in-band management UTM LUN's will now fall under control of Solaris Traffic Manager (MPxIO). In-band management will not fail for most cases but it is important for a few types of management, that the UTM LUN's are -not- controlled by MPxIO.

**Workaround** –Use the `format inquire` command to get the Vendor and Product IDs. (The VID needs to be 8 characters.)

### 1. Edit the file `/kernel/drv/scsi_vhci.conf`

The following line should read:

```
device-type-scsi-options-list = "SUN    Universal Xport", "disable-option"; disable-
option = 0x7000000
```

### 2. Run the `stmsboot -u` command.

Respond to the prompts as follows:

WARNING: This operation will require a reboot.

Do you want to continue ? [y/n] (default: y) y

The changes will come into effect after rebooting the system.

Reboot the system now ? [y/n] (default: y) y

## Documentation Issues

### *Changes to `sscs map initiator` and `sscs map snapshot` CLI Commands*

**Bug 6599146** –Although the CLI command `sscs map initiator` is listed in the CLI manpage, it is not implemented. And, although the CLI manpage lists the `-i` option for use with the CLI commands `sscs map volume` and `sscs map initiator`, this option is not yet implemented.

### *The `sscs modify firmware C ommand -p` option Requires the File Path of the Firmware Image*

The CLI Quick Reference Guide and the CLI manpage do not specify that when using the `-p` option with the `sscs modify firmware` command, you must supply the file path of the firmware image file.

### *Up to 1022 Volumes Supported on the Sun StorageTek 6130 Array*

**Bug 6540170** – Common Array Manager can be used to create up to 1022 volumes (volumes 0 through 1021) on the Sun StorageTek 6130 array. However, if the Access LUN is in use, up to 1023 volumes (volumes 0-1022) can be created. Therefore, when attempting to create more than the supported number of volumes, an error message is returned.

### *Disk Drive Failure Affects Volume Group Redundancy*

**Bug 6592877**–When a drive fails, the volume group to which it belongs is no longer redundant. A stand-by hot-spare drive is chosen and integrated into that volume group automatically if possible.

The drive is chosen to satisfy the following conditions:

- The chosen drive must be <PRESENT, STANDBY-HOT-SPARE, OPTIMAL>.
- The chosen drive must be of the same technology (FC, SATA, SAS) as the FAILED drive.
- The chosen drive must have adequate capacity to contain the piece(s) of the volume(s) defined on that volume group in addition to all required metadata.
- The chosen drive should match the spindle speed of other drives in the volume group if possible.
- If the volume group the failed drive belongs to had Tray-Loss Protection (TLP), choose a hot spare drive that provides TLP for the volume group if possible.

### *Online Help Does not Define the Type Field on the Snapshot Summary Page*

**Bug 6593949** –The online help does not provide a description for the Type field on the Snapshot Summary page. The Type field refers to the model number of the array. For example, 6140, 6130, 6540, 2530, 2540, FLX240, FLX280, FLX380, etc.

### *Correction to CLI `sscs modify volume` Command*

**Bug 6592776** – The manpage for the CLI command `sscs modify volume` should define the usage for the `-c` option, which enables you to select a controller, as follows:

```
[ -c,--controller A | B ]
```

### *Installation Guide says “Solaris” instead of “SSCS” on page 44*

Page 44 of the Sun StorageTek Common Array Manager Software Installation Guide, v.6.0 should state:

“...remotely logging in to a management software station or by using the SSCS remote client on a remote host.” The Installation Guide currently says “Solaris” instead of “SSCS.”

## Localization Issues

This section describes known issues and bugs related to localization.

### *Copyright and License Information Issues in French*

**Bug 6490238** –When installing the French version of Common Array Manager on Solaris and LINUX platforms, non-ASCII characters display as garbled text in the copyright and license sections when the correct locale is not used.

**Workaround** –Use the correct locale (for example, `fr_CA.ISO8859-1` for Solaris and `fr_FR.iso88591` for LINUX) or use the browser in the English locale.

### *Installer UI issues in Chinese and Japanese on SuSE Linux*

**Bug 6495952** –When installing Chinese and Japanese version of Common Array Manager on SuSE Linux platforms, non-English characters are displayed as squares.

**Workaround** –Use English locale on SuSE Linux to install the software.

---

# Operational Information

This section provides useful operational information not documented elsewhere.

## *Using Operating System Features for Firmware Rollbacks*

Each release or patch of the Sun StorageTek Common Array Manager software spools the latest firmware on the management host during the software or patch installation. When you register an array with the management software, it notifies you if an array's firmware needs to be upgraded by sending an alarm that the array firmware is not at the firmware baseline. You can choose when and if to upgrade an array's firmware using the Upgrade Firmware button from the Storage System Summary page or Array Administration page.

In the unlikely event that updating the firmware on an array results in a performance or operational issue, you may want to revert back to the previous version of the array firmware by either rolling back to the previous version of the management software or backing out the firmware patch and then performing the update array function.

Such rollbacks or backouts must be planned in advance and implemented using tools and functions of the operating system on the management software host.

Each host platform that supports the Sun StorageTek Common Array Manager software offers its own facilities and methods (some by third party) for applying and backing out updates to installed software. On Solaris, for example, Live Upgrade can be used to perform upgrades of installed software such that the user can revert back to the previous version of the software by re-activating the previous environment and rebooting. Solaris also can apply and backout patches through the use of the `patchadd` and `patchrm` commands.

Refer to the operating system documentation for more information about implementing software rollback features. Such practices should be part of comprehensive software lifecycle management procedures and policies for your production environment.

## *Firefox And Mozilla Browsers Share Session Information*

Firefox and Mozilla browsers on the same machine share session information among multiple tabs or browser windows when pointed to the Common Array Manager URL. For example, if you log in to Common Array Manager and then open another browser instance or tab pointed to the same URL, you access it through the same

user session and you do not have to log in again. The Current Logins field in the Common Array Manager does not increment to include the new window as another login.

If you require a different user session, you must define a different profile or log in from a different machine. This does not happen with Microsoft Internet Explorer browsers, so you could also open a new session that way.

### *When Performing an Array Import Using the CLI, Do Not Modify Management Objects*

If you create management objects while an “import array” job is running, it might interfere with the import. Be sure that everyone who uses the destination array does not modify or create any objects (including volumes, initiators, mappings, and so on) while the import is in progress.

### *Registration Page Displays Upon Initial Installation*

When you install the Common Array Manager software for the first time, upon logging into the browser user interface, a registration page will display. Fill out the information before continuing.

During the initial storage array registration process, Common Array Manager prompts you to register with the Auto Service Request service by displaying the Auto Service Request (ASR) Setup page. This page continues to display until you either fill out the page and click OK, or click Decline to either decline or defer ASR service registration.

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**Note** – You must must register the array with ASR before using the Test button.

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# Release Documentation

Following is a list of documents related to the Sun StorageTek Common Array Manager. For any document number with *nn* as a version suffix, use the most current version available.

Application	Title	Part Number
CLI command reference	<i>Sun StorageTek Common Array Manager sscs (1M) CLI Quick Reference</i>	820-0029- <i>nn</i>
Installation and initial configuration instructions	<i>Sun StorageTek Common Array Manager Software Installation Guide</i>	820-0213- <i>nn</i>

In addition, the Common Array Manager software includes online help and man pages for CLI commands.

For hardware information, refer to the array's release notes and hardware installation guide.

You can search for this documentation at  
<http://www.sun.com/documentation>.

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## Firmware Files

This section lists the firmware files included in the Common Array Manager 6.0.0, by array type.

Common Array Manager software is installed in the following locations

- Solaris: /opt/SUNWstkcam/share/fw
- Windows: <system drive>\Program Files\Sun\Common Array Manager\Component\SunStorageTekArrayFirmware\
- Linux: /opt/sun/cam/share/fw/

Within the directory where you installed the Common Array Manager software, a README file for each array type define the firmware baseline.

- README\_2500.txt defines the firmware baseline for the Sun StorageTek 2500 Series Arrays.
- README\_6000.txt defines the firmware baseline for the Sun StorageTek 6130, 6140, 6540, FLX240, FLX280, and FLX380 arrays.

Firmware files are located in the `/images` subdirectory.

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**Note** – In the following tables, the file path listed in the Firmware File column (for example, `nge/RC_0617xxx.dlp`) is the relative path to the `/images` subdirectory where the firmware files are located.

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## Sun StorageTek 2500 Series Array and Disk Firmware Version Information

[TABLE 14](#) lists the controller information for the Sun StorageTek 2540 and 2530 arrays.

**TABLE 14** Sun StorageTek 2540 and 2530 Array Controller Information

Controller	Version	Firmware File
2530	06.17.52.10	<code>nge/RC_06175210_appaloosa_apollo_133x.dlp</code>
2540	06.17.52.10	<code>nge/RC_06175210_appaloosa_apollo_1932.dlp</code>

[TABLE 15](#) lists the controller information for the 2500 Series Arrays

**TABLE 15** Sun StorageTek 2530 Array NVSRAM Information

NVSRAM	Version	Firmware File
2530	N133X-617843-003	<code>nge/N133X-617843-003.dlp</code>
2530-Simplex	N133X-617843-904	<code>nge/N133X-617843-904.dlp</code>

[TABLE 16](#) lists the controller information for the 2500 Series Arrays

**TABLE 16** Sun StorageTek 2540 Array NVSRAM Information

NVSRAM	Version	Firmware File
2540	N1932-617843-002	<code>nge/N1932-617843-002.dlp</code>
2540-Simplex	N1932-617843-903	<code>nge/N1932-617843-903.dlp</code>

TABLE 17 lists the IOM information for the 2500 Series Arrays

**TABLE 17** Sun StorageTek 2540 and 2530 Array IOM Information

IOM	Version	Firmware File
2500 SAS	0166	nge/esm0166.esm

TABLE 18 lists the disk drive information for the 2500 Series Array

**TABLE 18** Sun StorageTek 2540 and 2530 Array Disk Drive Information

Disk Drive	Version	Firmware File
ST314655SSUN146G	0791	sun/D_ST314655SSUN146G_0791.dlp
ST330055SSUN300G	0791	sun/D_ST330055SSUN300G_0791.dlp
ST373455SSUN72G	0791	sun/D_ST373455SSUN72G_0791.dlp

## Sun StorageTek 6130, 6140, 6540, FLX240, FLX280, and FLX380 Array and Disk Firmware Version Information

TABLE 19 lists the controller information for the 2Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 arrays.

**TABLE 19** Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 Array Controller Information

Controller	Version	Firmware File
6130	06.19.25.16	nge/RC_06192516_amethyst3_apollo_288x.dlp
6140	06.19.25.16	nge/RC_06192516_amethyst3_apollo_399x.dlp
6540	06.19.25.16	nge/RC_06192516_amethyst3_apollo_6091.dlp
FLX240	06.19.25.26	nge/RC_06192526_amethyst3_silverado_288x.dlp
FLX280	06.19.25.26	nge/RC_06192526_amethyst3_silverado_588x_06190200.dlp
FLX380	06.19.25.26	nge/RC_06192526_amethyst3_silverado_6091.dlp

TABLE 20 lists the NVSRAM information for the 2Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 arrays.

**TABLE 20** Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 Array NVSRAM Information

NVSRAM	Version	Firmware File
6130	N2882-619843-001	nge/N2882-619843-001.dlp
6140	N399X-619843-004	nge/N399X-619843-004.dlp
6540	N6091-619843-002	nge/N6091-619843-002.dlp
FLX240	N288X-619855-002	nge/N288X-619855-002.dlp
FLX280	N588X-619855-002	nge/N588X-619855-002.dlp
FLX380	N6091-619855-002	nge/N6091-619855-002.dlp

**TABLE 21** lists the IOM information for the 2Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 arrays.

**TABLE 21** Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 Array IOM Information

IOM	Version	Firmware File
6130 FC	9643	nge/esm9643.s3r
6130 iSATA	9726	nge/esm9726.dl
6140	9887	nge/esm9887.esm
FLA300	9643	nge/esm9643.s3r
FLA200	9330	nge/esm9330.s3r
FLC200 iSATA	9726	nge/esm9726.dl
FLC200 dSATA	9565	nge/esm9565.dl

**TABLE 22** lists the disk drive information for the Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 arrays.

**TABLE 22** Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 Array Disk Drive Information

Disk Drive	Version	Firmware File
HDS7225SCSUN250G	0603 (LP1153-A5DA)	sun/D_HDS7225SCSUN250G_0603.dlp
HDS7240SBSUN400G	AC7A	sun/D_HDS7240SBSUN400G_AC7A.dlp

**TABLE 22** Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 Array Disk Drive Information

Disk Drive	Version	Firmware File
HDS7250SASUN500G	0604 (LP1153-AJ0A)	sun/D_HDS7250SASUN500G_0604.dlp
HUS1014FASUN146G	2A08	sun/D_HUS1014FASUN146G_2A08.dlp
HUS1030FASUN300G	2A08	sun/D_HUS1030FASUN300G_2A08.dlp
HUS1073FASUN72G	2A08	sun/D_HUS1073FASUN72G_2A08.dlp
MAT3073F SUN72G	1403	sun/D_MAT3073FSUN72G_1403.dlp
MAT3147F SUN146G	1403	sun/D_MAT3147FSUN146G_1403.dlp
MAT3300F SUN300G	1403	sun/D_MAT3300FSUN300G_1403.dlp
MAW3073FCSUN72G	1303	sun/D_MAW3073FCSUN72G_1303.dlp
MAW3147FCSUN146G	1303	sun/D_MAW3147FCSUN146G_1303.dlp
MAW3300FCSUN300G	1303	sun/D_MAW3300FCSUN300G_1303.dlp
MAX3073FDSUN72G	0403	sun/D_MAX3073FDSUN72G_0403.dlp
MAX3147FDSUN146G	0403	sun/D_MAX3147FDSUN146G_0403.dlp
ST314655FSUN146G	0691	sun/D_ST314655FSUN146G_0691.dlp
ST314670FSUN146G	055A	sun/D_ST314670FSUN146G_055A.dlp
ST314680FSUN146G	0407	sun/D_ST314680FSUN146G_0407.dlp
ST314685FSUN146G	042D	sun/D_ST314685FSUN146G_042D.dlp
ST314695FSUN146G	0409	sun/D_ST314695FSUN146G_0409.dlp
ST32500NSSUN250G	0604 (LP1153-.AZK)	sun/D_ST32500NSSUN250G_0604.dlp
ST330000FSUN300G	055A	sun/D_ST330000FSUN300G_055A.dlp
ST330055FSUN300G	0691	sun/D_ST330055FSUN300G_0691.dlp
ST35000NSSUN500G	0604 (LP1153-.AZK)	sun/D_ST35000NSSUN500G_0604.dlp
ST373207FSUN72G	055A	sun/D_ST373207FSUN72G_055A.dlp
ST373307FSUN72G	0407	sun/D_ST373307FSUN72G_0407.dlp
ST373453FSUN72G	0449	sun/D_ST373453FSUN72G_0449.dlp
ST373454FSUN72G	042D	sun/D_ST373454FSUN72G_042D.dlp

**TABLE 22** Sun StorageTek 6130, 5140, 6540, FLX240, FLX280, and FLX380 Array Disk Drive Information

Disk Drive	Version	Firmware File
ST373455FSUN72G	0691	sun/D_ST373455FSUN72G_0691.dlp
ST373554FSUN72G	0409	sun/D_ST373554FSUN72G_0409.dlp
ST37500NSSUN750G	0604 (LP1153-.AZK)	sun/D_ST37500NSSUN750G_0604.dlp

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**Note** – For the latest SAS and firmware patches available for your system, check SunSolve (<http://www.sunsolve.sun.com>) .

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## Service Contact Information

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

<http://www.sun.com/service/contacting>

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**Note** – For the latest SAS and firmware patches available for your system, check SunSolve (<http://www.sunsolve.sun.com>).

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## Third-Party Web Sites

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