Sun StorageTek™ 6540 Array Release Notes

Release 1.0

Sun Microsystems, Inc.
www.sun.com

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Contents

Sun StorageTek 6540 Array Release Notes, Release 1.0

This document contains important release information about the Sun StorageTek™ 6540 Array or information that was unavailable 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 Sun StorageTek 6540 Array.

These Release Notes cover the Sun StorageTek 6540 Array and related hardware issues. For information about the management software for the array, see the latest *Common Array Manager Software Release Notes*. Also, make sure you look for the latest patches pertaining to your environment. Select Patches & Updates from the following site:

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

The Release Notes consist of the following sections:

Features in This Release

This section describes the main features of the Sun StorageTek 6540 Array, including the following:

New Features

The following new features are available for the Sun StorageTek 6540 Array

- Auto Service Request

Auto Service Request (ASR) is a new feature of the array management software that monitors the array system health and performance and automatically notifies the Sun Technical Support Center when critical events occur. Critical alarms generate an automatic Service Request case. The notifications enable Sun Service to respond faster and more accurately to critical on-site issues.

The Auto Service Request capability in Sun StorageTek Common Array Manager software allows you to register devices to participate in the ASR service. Refer to the *Sun StorageTek Common Array Manager Release Notes, Release 5.1.3* or higher, for more information.

- Array Expansion Module Support

Controller firmware 06.19.25.10 or higher allows tray mixing of 6540, 6140 and 6130 array controllers modules and the Sun StorageTek CSM100, CSM200, FLA200, FLC200, and FLA300 Expansion Modules.

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

Refer to "Upgrading Firmware for Adding Expansion Trays" in the Sun StorageTek Common Array Manager Release Notes, v.5.1.3 or higher, for more information on the procedure to upgrade trays without data. Also refer to "Best Practices for Adding Expansion Modules" on page 3

TABLE 1 lists the supported expansion modules.

TABLE 1 Supported Expansion Modules - 6540 Array

Array Controller	Original Supported Expansion Modules	Supported Expansion Modules with Controller Firmware 06.19.25.10 or higher
Sun StorageTek 6540 Array	CSM200	CSM100, CSM200, FLA200, FLC200, FLA300

Best Practices for Adding Expansion Modules

Only Sun Service should install expansion modules with data. Refer to the *Sun StorageTek Common Array Manager Release Notes, Release 5.1.3* or higher, for more information about supported expansion modules by array.

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.

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

Note – Because corrective actions for a DACstore issue may require a configuration restoration, it is important to maintain a current image of the configuration. It is always a best practice to maintain recoverable backups of your data.

Sun StorageTek 6540 Array Features

The Sun StorageTek 6540 Array is a 4-Gb/2-Gb/1-Gb Fibre Channel (FC) array that offers both direct attached and storage attached network (SAN) access. The Sun StorageTek 6540 Array includes the following features:

- Eight FC host interfaces (four per controller)
- 4-Gbits/sec, 2-Gbits/sec, and 1-Gbit/sec host interface speed
- Dual redundant controllers
- FC and Serial Advanced Technology Attachment (SATA)-2 disk drive support
- Support of up to 14 expansion trays with one controller tray
- Switched drive tray (contains an FC switch)
- A maximum of 224 drives (14 trays with up to 16 drives each)
- Fault management support

The Sun StorageTek 6540 Array is available in a 4-Gbyte-cache, an 8-Gbyte-cache, and a 16-Gbyte-cache configuration, compared in TABLE 2.

TABLE 2 Comparison of 4-Gbyte-cache, 8-Gbyte-cache, and 16-Gbyte-cache Array Configurations

	4 Gbyte Cache	8 Gbyte Cache	16 Gbyte Cache
Total cache size per array	2 Gbytes	4 Gbytes	16 Gbytes
Number of host ports (4 Gbits/sec) per array	8	8	8
Maximum number of drives supported	224	224	224
Maximum array configuration	1x15	1x15	1x15
Maximum RAW capacity (224 x 500 GB)	112 Tbytes	112 Tbytes	112 Tbytes
Optional number of additional storage domains supported	4/8/16/64	4/8/16/64	4/8/16/64

Firmware Files

Refer to the Sun StorageTek Common Array Manager Software Release Notes that came with your array or to match an software upgrade for the list of firmware files.

System Requirements

The software and hardware products that have been tested and qualified to work with the Sun StorageTek 6540 Array are described in the following sections:

- "Disk Drives and Tray Capacity" on page 5
- "Data Host Requirements" on page 5

You must have Sun StorageTek Common Array Manager, v5.00 or later software.

Disk Drives and Tray Capacity

TABLE 3 lists the size, speed, and tray capacity for the supported FC and SATA disk drives in the Sun StorageTek 6540 Array.

TABLE 3 Supported Disk Drives

Drive	Description
FC 73G15K	73-Gbyte 15,000-RPM FC drives (4 Gbits/sec); 1168 Gbytes per tray
FC 146G10K	146-Gbyte 10,000-RPM FC drives (2 Gbits/sec); 2044 Gbytes per tray
FC 146G15K	146-Gbyte 15,000-RPM FC drives (4 Gbits/sec); 2336 Gbytes per tray
FC 300G10K	300-Gbyte 10,000-RPM FC drives (2 Gbits/sec); 4800 Gbytes per tray
SATA 2, 500G7.2K	500-Gbyte 7,200-RPM SATA drives (3 Gbits/sec); 8000 Gbytes per tray

Data Host Requirements

TABLE 4 lists the supported host bus adapters (HBAs) and multipathing kits for the Solaris 8, 9, and 10 Operating Systems (OSs). HBAs must be ordered separately from Sun or its respective manufacturers. Sun HBAs can be ordered from:

`/www.sun.com/storagetek/storage_networking/hba/`

Note – Solaris OS 10 data hosts must be updated to Solaris patch Update 2 (SPARC: 118833-20; x86: 118855-16).
Solaris 8 data hosts require Solaris patch 108974-49 or higher.
Solaris 9 data hosts require Solaris patch 113277-44 or higher.
These patches are not included in Sun StorageTek 6540 Array software releases and must be downloaded separately.

You must install multipathing software on each data host that communicates with the Sun StorageTek 6540 Array. For Solaris OS 8 and 9 data hosts, the multipathing software is part of the Sun StorageTek SAN Foundation software. Solaris OS 10 includes the multipathing software. For data hosts running the Solaris OS, follow the instructions in the *Sun StorageTek 6540 Array Hardware Installation Guide* to download and install the software from the Sun Download Center.

Note – The SAN patches listed for Solaris 8 and 9 in the SAN 4.4 Patches column of Table 4 are included in the SAN 4.4 package at the top of each list. SAN 4.4.x is also know as the SAN Foundation Kit.

TABLE 4 Sun HBAs and Multipathing Supported by Solaris OSs

Operating System	2-Gbit HBA Driver	4-Gbit HBA Driver	SAN Foundation Kit Patches
Solaris 8	SG-XPCI1FC-QF2 (6767A) SG-XPCI2FC-QF2 (6768A) SG-XPCI2FC-QF2-Z (6768A)	SG-XPCI2FC-QF4 SSG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4	SAN 4.4.10: 111095-27 111096-15 111097-23 111412-20 119913-09
Solaris 9	SG-XPCI1FC-QF2 (6767A) SG-XPCI2FC-QF2 (6768A) SG-XPCI2FC-QF2-Z (6768A)	SG-XPCI2FC-QF4 SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4	SAN 4.4.10: 113039-15 113040-19 113041-12 113042-15 119914-09
Solaris 10	SG-XPCI1FC-QF2 (6767A) SG-XPCI2FC-QF2 (6768A) SG-XPCI2FC-QF2-Z (x6768A)	SG-XPCI2FC-QF4 SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4	Included in OS

TABLE 4 Sun HBAs and Multipathing Supported by Solaris OSs *(Continued)*

Operating System	2-Gbit HBA Driver	4-Gbit HBA Driver	SAN Foundation Kit Patches
Solaris 10 x86	SG-XPCI1FC-QF2 (6767A) SG-XPCI2FC-QF2 (6768A) SG-XPCI2FC-QF2-Z (x6768A)	SG-XPCI2FC-QF4 SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4	included in OS

TABLE 5, TABLE 6, and TABLE 7 lists supported HBAs for Windows, Linux, and other data host platforms. For multipathing support on data hosts running the Windows or Linux operating systems, you can use the Sun Redundant Dual Array Controller (RDAC) driver software or other multipathing software as listed.

You can download HBA drivers and other host software from the Sun Download Center, `http://www.sun.com/software/download/`. Download operating system updates from the web site of the operating system company.

For data hosts using multipathing software, you must install the multipathing software before you install any OS patches.

TABLE 5 Supported Microsoft Windows Data Host Platforms

Host OS	Patches or Service Pack	Servers	HBAs	Multipathing Software	Cluster Configurations
Windows 2000 Server and Windows 2000 Advanced Server	Service Pack 4 (SP4)	x86 (IA32)	QLogic QLA 246x QLogic QLA 2200/2202 QLogic QLA 2310/2340/2342 Emulex LP11000/LP11002 Emulex LP9802/9802DC/982 Emulex LP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 Emulex LP8000 LSI 449290/409190 2-Gb Sun HBAs: SG-XPCI1FC-EM2 SG-XPCI2FC-EM2 SG-XPCI1FC-QL2 SG-XPCI1FC-QF2 SG-XPCI2FC-QF2-Z 4-Gb Sun HBAs: SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4 SG-XPCI1FC-QF4 SG-XPCI2FC-QF4 SG-XPCI1FC-EM4-Z SG-XPCI2FC-EM4-Z	Redundant Dual Array Controller (RDAC) SMrdac-WS32-09013230	Microsoft Cluster Server

TABLE 5 Supported Microsoft Windows Data Host Platforms *(Continued)*

Host OS	Patches or Service Pack	Servers	HBAs	Multipathing Software	Cluster Configurations
Windows 2003 32-bit	SP1 R2	x86 (IA32)	QLogic QLA 246x QLogic QLE 246x QLogic QLA 200 Qlogic QLA 2200/2202 Qlogic QLA 2310/2340/2342 Emulex LP11000/LP11002 Emulex LPe11000/LPe11002 Emulex LP9802/9802DC/982 Emulex LP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 LSI 7102XP/7202XP SysConnect SYS9843 SG-XPCI1FC-EM2 SG-XPCI2FC-EM2 SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4	RDAC SMrdac-WS32-09013230	Microsoft Cluster Server
Windows 2003 64-bit	SP1 R2	x64 (AMD) EM64T IA64	QLogic QLA 246x QLogic QLE 246x QLogic QLA 200 Qlogic QLA 2200/2202 Qlogic QLA 2310/2340/2342 Emulex LP11000/LP11002 Emulex LPe11000/LPe11002 Emulex LP9802/9802DC/982 Emulex LP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 LSI 7102XP/7202XP SG-XPCI1FC-EM2 SG-XPCI2FC-EM2 SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4	RDAC SMrdac-WS64-09013230, SMrdac WSX64-09013230	Microsoft Cluster Server

TABLE 6 Supported Linux Data Host Platforms

Host OS	Sun Servers	HBAs	Multipathing Software	Cluster Configurations
Linux SuSE 8.0, 2.4 kernel	x64 EM64T x86 (IA32) IA64	LSI 44929 LSI 40919 QLogic QLA 246x QLogic QLE 246x QLogic QLA 2342 QLogic QLA 2340 QLogic QLA 2310F Emulex LP982/LP9802/9802DC Emulex LP9002/LP9002DC/LP952 Emulex LP10000/10000DC/LP1050 SG-XPCI1FC-EM2 SG-XPCI2FC-EM2 SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4	RDAC (MPP) Dynamic Multi-Pathing (DMP) 4.0 Linux_MPP_09.00.A2.19	Oracle Real Application Clusters (RAC) SteelEye LifeKeeper Server Clustering

TABLE 6 Supported Linux Data Host Platforms *(Continued)*

Host OS	Sun Servers	HBAs	Multipathing Software	Cluster Configurations
Linux SuSE 9.0 - IA 32, 2.6 kernel	x64 EM64T x86 (IA32) IA64	QLogic QLA 246x QLogic QLA 2342 QLogic QLA 2340 QLogic QLA 2310F Emulex LP982/LP9802/9802DC Emulex LP9002/LP9002DC/LP952 Emulex LP10000/10000DC/LP1050 2-Gb Sun HBAs: SG-XPCI1FC-EM2 SG-XPCI2FC-EM2 SG-XPCI1FC-QL2 SG-XPCI1FC-QF2 SG-XPCI2FC-QF2-Z 4-Gb Sun HBAs: SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4 SG-XPCI1FC-QF4 SG-XPCI2FC-QF4 SG-XPCI1FC-EM4-Z SG-XPCI2FC-EM4-Z	RDAC (MPP) DMP 4.0 Linux_MPP_09.01.B2.32	Oracle RAC SteelEye LifeKeeper Server Clustering

TABLE 6 Supported Linux Data Host Platforms *(Continued)*

Host OS	Sun Servers	HBAs	Multipathing Software	Cluster Configurations
Red Hat Linux 4.0, 2.6 kernel	x64 EM64T x86 (IA32) IA64	QLogic QLA 246x QLogic QLA 2342 QLogic QLA 2340 QLogic QLA 2310F Emulex LP982/LP9802/9802DC Emulex LP9002/LP9002DC/LP952 Emulex LP10000/10000DC/LP1050 2-Gb Sun HBAs: SG-XPCI1FC-EM2 SG-XPCI2FC-EM2 SG-XPCI1FC-QL2 SG-XPCI1FC-QF2 SG-XPCI2FC-QF2-Z 4-Gb Sun HBAs: SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4 SG-XPCI1FC-QF4 SG-XPCI2FC-QF4 SG-XPCI1FC-EM4-Z SG-XPCI2FC-EM4-Z	RDAC (MPP) DMP 4.0	SteelEye LifeKeeper Server Clustering
Red Hat Linux 3.0, 2.4 kernel	x64 EM64T x86 (IA32) IA64	QLogic QLA 246x QLogic QLA 2342 QLogic QLA 2340 QLogic QLA 2310F Emulex LP982/LP9802/9802DC Emulex LP9002/LP9002DC/LP952 Emulex LP10000/10000DC/LP1050 LSI 44929 LSI 40919 2-Gb Sun HBAs: SG-XPCI1FC-EM2 SG-XPCI2FC-EM2 4-Gb Sun HBAs: SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4	RDAC (MPP) DMP 4.0	Oracle RAC SteelEye LifeKeeper Server Clustering

TABLE 7 Other Supported Data Host Platforms

Host OS	Host Servers	HBAs	Multipathing Software	Cluster Configurations
Novell NetWare 6.0 (SP5)	x86 (IA32)	QLogic QLA 2342 QLogic QLA 2340 QLogic QLA 2310F	NetWare Multi-Processing Executive (MPE)	Novell Cluster Services
Novell NetWare 6.5 (SP3)	x86 (IA32)	QLogic QLA 2342 QLogic QLA 2340 QLogic QLA 2310F QLogic QLA 246x	NetWare MPE	Novell Cluster Services
IRIX 6.5.26, 6.5.27, 6.5.28, 6.5.29	MIPS	QLogic QLA 2310	N/A	N/A
HP-UX B11.11	HP RISC	HP A6795A HP A6826A HP A6684A HP A6685A HP A5158A	Logical Volume Management (LVM) DMP 4.1	
HP-UX B.11.23	HP RISC IA64	HP A6795A HP A6826A HP A9784A	LVM DMP 4.1	
IBM AIX 5.2, 5.3	Power	IBM 5716 IBM 6228 IBM 6239	DMP 3.2 MP2	Veritas Cluster Service

Note – The multipathing driver for the IBM AIX platform is VERITAS DMP, bundled in VERITAS Volume Manager 3.x for the Sun StorageTek 6540 Array. Download the Array Support Library (ASL) from `http://support.veritas.com/ as` documented in the *Sun StorageTek Common Array Manager Software Release Notes*.

The enterprise software applications listed in TABLE 8 are compatible with the Solaris OS on the data host.

TABLE 8 Supported Enterprise Software

Software	Version
Legato NetWorker	7.3
Sun Cluster	3.0, 3.1
Sun StorageTek QFS software	4.0 minimum
Sun StorageTek SAM-FS software	4.0 minimum
Sun StorageTek Availability Suite	3.2 minimum
Sun StorageTek Enterprise Backup Software	7.3
Solstice DiskSuite	4.2.1 (in conjunction with the Solaris 8 OS)
Solaris Volume Manager	Embedded in the Solaris 9 and 10 OSs
VERITAS Volume Manager (VxVM)	3.2, 3.5, 4.0, 4.1
VERITAS File System (VxFS)	3.2, 3.5, 4.0, 4.1
VERITAS Cluster Server (VCS)	3.2, 3.5, 4.0, 4.1
VERITAS NetBackup	5.0 or higher

The following FC fabric and multilayer switches are compatible for connecting data hosts and the Sun StorageTek 6540 Array:

- Sun StorEdge Network 2 Gb FC Switch - 8, 16, and 64
- SANRAD V-Switch 3000
- Brocade SilkWorm 200E/2400/2800/3200/3250/3800/3850/3900/4100/4900/7420/12000/24000/48000
- Cisco 9020/9120/9140/9216/9216i/9506/9509
- McDATA 3216/3232/4300/4400/4500/4700/6064/6140/i10K/QPM 4Gb blade for 6140

- QLogic
  - SANBox 3050/3602/5200/5602
  - SANBox2-8
  - SANBox2-16
  - SANBox2-64
- Computer Network Technology Edge 3000

Upgrading Firmware

Host management software upgrades are described in the *Sun StorageTek Common Array Manager 5.0 Release Notes*. This section describes release-specific steps for firmware and driver upgrades that you must perform:

- "Upgrading Array Firmware" on page 15
- "Updating the SSD Driver for the Solaris OS" on page 16

Upgrading Array Firmware

If you have a previous release of the Sun StorageTek 6540 Array firmware installed, the upgrade software will detect it and upgrade to the new firmware versions required for this release. If the upgrade detects that there is no earlier version installed, it will perform a complete new installation. The upgrade software is available in the package you obtain from the Sun Download Center, `http://www.sun.com/software/download/`.

▼ To Upgrade the Firmware on the Array

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

Upgrade the firmware on the array using the Common Array Manager interface:

1. **Log in to the management host.**
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.**

Updating the SSD Driver for the Solaris OS

After installing software for the data hosts, go to SunSolve (`http://www.sun.com/sunsolve`) and download the `SSD` driver for data hosts running the Solaris 8 or 9 OS.

▼ To Update the SSD Driver for the Solaris 8 OS

Note – Patch `108974-49` or higher requires patch `108528-29` or higher. If needed, apply patch `108528-29` or higher first.

---

1. **Download the 108974-49 or higher patch from SunSolve.**

2. **Unpack the patch:**

```
unzip 108974-49.zip
```

3. **Read the README file:**

```
108974-49/README.108974-49
```

4. **Apply the patch with the `patchadd` command:**

```
patchadd 108974-49
```

5. **Reboot your system.**

```
reboot -- -r
```

▼ To Update the SSD Driver for the Solaris 9 OS

Note – Patch 113277-44 or higher requires patches 112233-02 and 112834-02, which are already included in most versions of the Solaris 9 OS. If they are needed, apply patches 112233-02 and 112834-02 first.

---

1. **Download the 113277-44 or higher patch from SunSolve.**

2. **Unpack the patch:**

```
unzip 113277-44.zip
```

3. **Read the README file:**

```
113277-44/README.113277-44
```

4. **Apply the patch with the** `patchadd` **command.**

```
patchadd 113277-44
```

5. **Reboot your system.**

```
reboot -- -r
```

Known Issues

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

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

Installation and Initial Configuration Issues

This section describes known issues and bugs related to installing and initially configuring the Sun StorageTek 6540 Array.

X-option Controller Firmware Upgrade Fails

Bug 6455157 – In the x-option case, the array controller reads in Sun StorageTek 6140 NVSRAM from the I/O Modules and is then listed and detected as a Sun StorageTek 6140 controller. As a result, the Sun StorageTek Common Array Manager software fails to update the firmware properly. This problem occurs only with controllers for the Sun StorageTek 6540 Array that are connected in the field with Sun StorageTek CSM2 expansion trays. It does not apply to factory-installed Sun StorageTek 6540 Arrays.

Workaround – Use the CLI to upgrade the array firmware, as follows:

On a Solaris management host, use the CLI to enter the following commands:

```
cd /opt/SUNWstksm/bin

./csmservice -i -p 117856-35:121540-02:121540-02
```

On a Windows management host, use a terminal window to enter the following commands:

```
C:> cd \Program Files\Sun_Microsystems\StorageTek_Mgmt\Component\
SunStorageTekSoftwareManager

C:> .\csmservice -i -p 117856-35:121540-02:121540-02
```

The script prompts you with a list of the registered arrays. Select only the IP for the Sun StorageTek 6540 controller that you are trying to upgrade. When the firmware upgrade is complete, unregister (remove) the array in the software and then register the array again.

Controller Tray ID Numbering Is Unrestricted

Bug 6418696 – Controller tray IDs can be set to any number between 0 and 99. Because expansion trays use the values 0 to 79, controller trays should use the values 80 to 99 (except 85) to avoid duplicate tray IDs. If tray IDs are duplicated, the array will not be able to detect the drives on one of the two trays that have the same ID (which one is arbitrary). Do not use ID 85 for the controller tray, as this number is the default setting that indicates everything is operating as expected.

Workaround – Use the values 0 to 79 for expansion trays and 80 to 99 (except 85) for controller trays and ensure that any assigned tray ID value is not a duplicate.

LED Not Lighting Upon Battery Removal

Bug 6449021 - Removing a battery does not light (as amber) the corresponding LED in the upper corners of the interconnect module.

cfgadm Command Does Not Work With SSD Driver Patch 113277-45 for Solaris 9

Bug 6451036 - With the patch installed, changes with the `cfgadm` command are lost upon rebooting.

Workaround - Force the configuration update (of the `/etc/cfg/fp/fabric_WWN_map`) with the following commands:

```
cfgadm -c configure -o force_update cx
```

Hardware and Firmware Issues

This section describes general issues related to the Sun StorageTek 6540 Array hardware and firmware.

System Cabinet Doors Must Be Closed

Caution – The front and back doors of the system cabinet must be closed for compliance to domestic and international EMI regulations as well as proper equipment cooling.

Do not block or cover the openings of the system cabinet.

Cabinet airflow is from front to back. Allow at least 30 inches (76.2 cm) in front of the cabinet, and at least 24 (60.96 cm) inches behind the cabinet, for service clearance, proper ventilation, and heat dissipation.

Volumes Associated With Bypassed Drives Are Displayed As Missing

Bug 6371462 - The switch setting 2 Gb/s or 4 Gb/s applies to the speed of the internal FC data path to disk drives. When a 2-Gb/s drive is set to 4 Gb/s, the drive enters a status of Bypassed.

Volumes on Bypassed drives are marked as Missing and lose their pool assignment. They are displayed on a separate Ghost Volumes list, with minimal info available.

Workaround – Power off the arrays and set the link rate switch back to 2 Gb/s.

Batteries Alert: Transitioning to an Unknown State

Bug 6430195 - If you power off, remove, or experience a failure of either of the power cooling units, the system generates battery alerts for both batteries as "transitioning to an unknown state."

Even though the batteries are listed as being in an unknown state, they are still providing protection in the event of a cache failure. No workaround is required.

Removal of Power Fan Unit Causes Batteries to Switch to Unknown State

Bug 6430195 – If you power off, remove, or experience a failure of either of the power cooling units (which also house the controller's battery packs), the system generates battery alerts for both batteries as "transitioning to an unknown state."

Workaround – You should not lose data unless the batteries fail, or unless you do not have adequate charges remaining in the batteries for cached data to finish being written to disk.

Unit Identified As IOM Is Labeled ESM

Bug 6438824 – There is a module on the array, physically labeled ESM, that is identified by Sun StorageTek Common Array Manager software as an input/output module (IOM).

Switch Ports Used in a Replication Link Cannot be Used for Regular Data Access

Bug 6411928 - Switch ports used for the dedicated link in a remote replication are not automatically usable as regular ports when the replication link is removed.

Workaround - Disable and re-enable the switch port to make it usable for regular data access.

Errors From IOM 2A and 2B Ports

Bug 6417872 - When Small Form-factor Pluggables (SFPs) are installed into the I/O Module (IOM) 2A and 2B ports, the front amber fault LED lights and the IOM displays an "H8" error.

Workaround - Do not install SFPs into these slots; they are reserved for future use.

Faulty Expansion Cable Causes an Event but the Front Panel Status LED Remains Green

Bug 6180131 - Using a faulty expansion cable causes the management software to report the array health as Degraded and causes the management software to report the error `Drive tray path redundancy lost`. However, the status LED on the front of the chassis does not signal an error and remains green instead of turning amber, as expected.

Replacing Failed Disk Drives From Another Array Can Cause Volume Problems

If a volume failure on a Sun StorageTek 6540 Array results from failed disk drives and you introduce replacement drives that were part of a volume in use by another Sun StorageTek 6540 Array, the array might incorrectly initiate a volume migration process with the replacement drives.

Workaround - Perform one of the following tasks:

- Verify that the volume on the Sun StorageTek 6540 Array with the failed disk drives has not been deleted. You should leave the volume in a Failed state and not delete the volume.
- Verify that the disk drives being taken from the inactive Sun StorageTek 6540 Array are not part of an active virtual disk. If the disk drives are part of an active virtual disk, delete all volumes residing on that virtual disk before removing the disk drives.

Power Cooling Unit Replacement Procedure Applies to Controller Tray

Bug 6444767 - The procedure to remove and replace a power cooling unit in the Service Adviser section of the Sun StorageTek Common Array Manager software applies to the controller tray, not the expansion trays.

Workaround – Use the following procedure to replace a power cooling unit in the expansion tray.

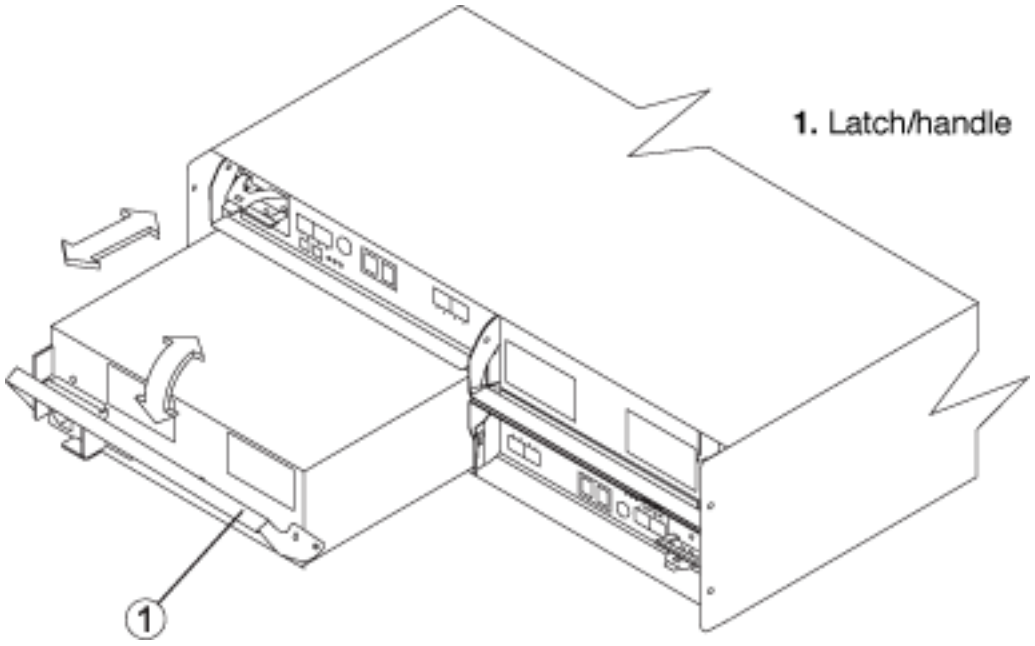
From the rear, power cooling unit A is located in the upper right corner of the tray and power cooling unit B is located in the lower left corner of the tray.

1. Locate the failed power cooling unit by checking the fault lights. If a fault is detected, the Service Action Required LED (amber) will be on and the Service Action Allowed LED (blue) should be on.

   Important: Never remove a power cooling unit unless the blue Service Action Allowed LED is On. Otherwise, you could lose data access by removing the power cooling unit.

2. Push the power switch on the failed power cooling unit to the Off position.
3. Unplug the power cord from the failed power cooling unit.
4. If power cooling unit A is being replaced, lift the latch handle up to unlock the unit and pull it out of the tray. If power cooling unit B is being replaced, pull the latch handle down to unlock the unit and pull it out of the tray. FIGURE 1 shows the removal of power cooling unit B.

FIGURE 1 Sample Removal of Power Cooling Unit B



5. Unpack the new power cooling unit, and save the packing materials for the failed unit. Use care when handling both the new and the failed power cooling units.
6. Ensure that the power switch on the new power cooling unit is in the Off position.
7. Insert the new power cooling unit until it connects with the midplane connector, and push the latch handle into the locked position.
8. Plug the power cord into the new power cooling unit.
9. Push the power switch to the On position.
10. The green power-fan LEDs should now be on. If this is not the case, contact your Customer Service representative.

Power Up the System Before Connecting the Modem Power Cord

The patch panel modem power cord is not connected to the cabinet power strip from the factory. To use the modem, power up the system *before* connecting the modem power cord to the cabinet power strip.

Solaris 8 (108974-49) or Solaris 9 OS Driver Patch (113277-45)

Bug 6451036 - These patches attempt to update the `/etc/driver_aliases` file using the `add_drv` command to cause UTM LUNs to bind to the SCSI Enclosure Services (SES) driver. If the SES driver is already loaded on the system when the `add_drv` command occurs, the `/etc/driver_aliases` file is not updated.

In addition, a patch is included for the SCSI Disk (SD/SSD) drivers that causes them to reject UTM LUNs. If the above driver_aliases file addition fails, the UTM LUNs do not bind to the SES driver.

SAN Driver Issues

The following issues are related to the SAN driver.

The `cfgadm -c unconfigure` *Command Unconfigures UTM LUNs Only and Not Other Data LUNs (Solaris 10)*

Bug 6362850 - The `cfgadm -c unconfigure` command unconfigures Universal Transport Mechanism (UTM) LUNs only and not other data LUNs. When this happens, you will not be able to unconfigure LUNs.

Workaround - Obtain Solaris 10 patch 118833-20 (Sparc) or patch 118855-16 (x86) to fix this issue.

UTM LUNs Appear Under Format Command

Bug 6443017 – The UTM LUNs for the Sun StorageTek 6540 Array appear in the format command output. To avoid confusion, these LUNs should not appear in the output.

Workaround – In Solaris 8 and 9 OSs, the UTM LUN shows up under the SD driver. In Solaris 10 OS, for the Sun StorageTek 6540 Array, mask the LUN by adding the following entry into the `/etc/driver_aliases` file:

ses “scsiclass,00.vSTK.pUniversal_Xport”

Operational Information

This section provides useful operational information not documented elsewhere.

When Performing an Array Import, 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.

Using a Volume Before It Is Fully Initialized

When you create a volume and label it, you can start using the volume before it is fully initialized.

Controller Tray Battery Information

During bootup, the battery light might flash for an extended period. The battery charger performs a series of battery qualification tests before starting a battery charge cycle. This series of tests occurs at subsystem power-up. The tests are automatically reinitialized by a timer approximately every 25 hours.

Each controller tray contains a hot-pluggable lithium ion battery pack for cache backup in case of power loss. The on-board battery is capable of holding a 2-GB cache for up to three days (72 hours). The service life of the battery pack is three years, at the end of which the battery pack must be replaced (it is field-replaceable).

Erroneous Data Host Format Command Output

The Solaris `data host format` command might render one or more of the following listings:

`STK-FLEXLINE380-0616` and `STK-UniversalXport-0616`

These are not data volumes and should be ignored.

Documentation Issues

The *Sun StorageTek 6540 Array Site Preparation Guide* (819-6524-nn) incorrectly cites the following information in Chapter 2 under cabinet Power Requirements:

Current	32A (2 x 16A) maximum

This should state the following:

Current	Four 20 Amp circuits are required for the 6540 cabinet to insure full redundancy. (UL allows the planned use of only 16A from each of those 20A circuits.)

All components in the cabinet should operate on only two of the 20A circuits (16A loaded each), but in this case no AC redundancy would be in place (power only A0/A1 or B0/B1).

With all four 20A circuits powered (A0, A1, B0, B1), the cabinet will draw a maximum total of 32A from the four circuits. If the system were to draw more than that 32A, then full AC redundancy cannot be present.

The Sun Rack 1000-38 cabinet power distribution systems work at 180-264VAC only. Internal components will never be operated below 180V (200V nominal) when in this cabinet.

Release Documentation

The following is a list of documents related to the Sun StorageTek 6540 Array. For any document number with *nn* as a version suffix, use the most current version available.

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

Application	Title	Part Number
Site planning information	*Sun StorageTek 6540 Array Site Preparation Guide*	819-6524-*nn*
Regulatory and safety information	*Sun StorageTek 6540 Array Regulatory and Safety Compliance Manual*	819-6520-*nn*
Installation and initial configuration instructions	*Sun StorageTek 6540 Array Hardware Installation Guide*	819-6461-*nn*
Software installation instructions	*Sun StorageTek Common Array Manager Software Installation Guide, v5.0*	819-7035-*nn*
Instructions for installing the Sun StorEdge Expansion cabinet	*Sun StorEdge Expansion Cabinet Installation and Service Manual*	805-3067-*nn*
Instructions for installing the Sun Rack 900/1000 cabinets	*Sun Rack Installation Guide*	816-6386-*nn*
Instructions for installing the Sun Fire cabinet	*Sun Fire Cabinet Installation and Reference Manual*	806-2942-*nn*
Release-specific information for the Sun StorageTek Common Array Manager	*Sun StorageTek Common Array Manager Release Notes*	819-7036-*nn*
Quick-reference information for the Common Array Manager CLI	*Sun StorageTek Common Array Manager CLI Quick Reference Card*	819-7038-*nn*

Service Contact Information

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

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

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APPENDIX **A**

Disk Drive Insertion

This appendix describes how to properly insert a disk drive into a controller or expansion tray.

The correct way to insert a disk drive into the tray is as follows:

1. Push the disk drive into the chassis by slowly pushing against the drive housing until the drive handle engages with the chassis.
2. When the handle starts to move itself downwards, push the disk drive handle down. This will crank the disk drive the rest of the way into the chassis.

FIGURE A-1 shows a drive being inserted into the chassis the correct way.

FIGURE A-1 Inserting a Disk Drive

When the drive is completely installed, the drive and handle will be flush with the others, as shown in FIGURE A-2.

FIGURE A-2 Successfully Inserted Disk Drive

Caution – Do not insert a disk drive into a tray by pushing on its housing until it is all the way in. This can cause the handle to be stuck in the "up" position so it is unable to close.

FIGURE A-3 shows the wrong way to insert the drive.

FIGURE A-3 Incorrect Method of Inserting a Hard Drive