Sun StorageTek™ 6540 Array Release Notes

Release 6.2

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Sun StorageTek 6540 Array Release Notes, Release 6.2

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*. The CAM release is currently version 6.2.0 and the latest firmware version is 07.15.11.11.

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" on page 2
- "System Requirements" on page 5
- "Upgrading Firmware" on page 20
- "Best Practices for Adding Expansion Modules" on page 4
- "Known Issues" on page 23
- "Operational Information" on page 28
- "Release Documentation" on page 30
- "Service Contact Information" on page 31
- "Third-Party Web Sites" on page 31
- "Disk Drive Insertion" on page 33

Features in This Release

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

- "Sun StorageTek 6540 Array Features" on page 2
- "Best Practices for Adding Expansion Modules" on page 4

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 1.

TABLE 1 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

TABLE 1 Comparison of 4-Gbyte-cache, 8-Gbyte-cache, and 16-Gbyte-cache Array Configurations

	4 Gbyte Cache	8 Gbyte Cache	16 Gbyte Cache
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

- Auto Service Request

Auto Service Request (ASR) is a 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 6.2.0* 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 4

TABLE 2 lists the supported expansion modules.

TABLE 2 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 6.2.0* 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 using the `export` function in the CAM command line or GUI (as of CAM 6.2). It is always a best practice to maintain recoverable backups of your data.

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 6

You must have Sun StorageTek Common Array Manager, v5.00 or later software. Current CAM Release 6.2.0, is recommended.

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
FC400G10K	400-Gbyte 10,000-RPM FC drives (4Gbits/sec); 6400 Gbytes per tray

TABLE 3 Supported Disk Drives *(Continued)*

Drive	Description
SATA 2, 500G7.2K	500-Gbyte 7,200-RPM SATA drives (3 Gbits/sec); 8000 Gbytes per tray
SATA 2, 750G7.2K	750-GB 7,200-RPM SATA drives (3 Gbits/sec); 12000 GB per tray
SATA2, 1T7.2K	1-Tbyte7, 200-RPM SATA drives (3Gbits/sec); 16000 Gbytes per tray

Data Host Requirements

This section describes supported data host software, HBAs, and switches.

- "Multipathing Software" on page 6
- "Supported Host Bus Adaptors (HBAs)" on page 8
- "Supported Enterprise Software" on page 19
- "Supported FC and Multilayer Switches" on page 20

Multipathing Software

You must install multipathing software on each data host that communicates with the Sun Storage 6540 Array.

For Solaris OS 8 and 9 data hosts, the multipathing software is part of the Sun StorageTek SAN Foundation Kit (SFK) 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.

TABLE 4 lists supported multipathing software by operating system.

TABLE 4 6540 Multipathing Software

OS	Multipathing Software	Minimum Version	Latest Version	Host Type Setting	Notes
Solaris 8/9 S	STMS/MPxIO	SFK 4.4.10	SFK 4.4.13 4.4.14 (Solaris 9)	Solaris with MPxIO	
Solaris 10	STMS/MPxIO	Update 6 Update 5 with patch 137137-09 (Sparc), 137138-09 (x64)	Kernel Jumbo Patch (KJP)	Solaris with MPxIO	
Solaris 8, 9	RDAC	09.10.02.01	9.10.02.01	Solaris with MPxIO	
Solaris 8,9,10 with DMP	Symantec Veritas Dynamic Multi-Pathing (DMP)	5.0	5.0MP3	Solaris with DMP	
Windows 2000/2003 Non-Clustered	RDAC/MPIO	09.01.32.30 (RDAC)	01.03.0302.0013 (MPIO)	Windows 2000/2003 Non Clustered	
Windows MSCS Cluster	RDAC/MPIO	09.01.32.30 (RDAC)	01.03.0302.0013 (MPIO)	Windows 2000/20003 Clustered	Support for RDAC on Windows stops at 6.60 firmware. You must use MPIO for 7.10 and above
Windows 2000/2003 Non-Clustered with DMP	DMP	5.0	5.1	Windows 2000/Server 2003 non-clustered (with Veritas DMP)	
Windows 2003 Clustered with DMP	DMP	5.0	5.1	Windows Server 2003 clustered (with Veritas DMP)	
Windows 2008	MPIO	01.03.0302.0013	01.03.0302.0013	Windows 2000/Server 2003	Array must be at firmware level 06.60 and above
AIX 5.2, 5.3	SUNdac Plugin	5.2.0.16	5.2.0.16	AIX	
AIX 5.x with DMP	DMP	5.0	5.0MP3	AIX with DMP	

TABLE 4 6540 Multipathing Software

OS	Multipathing Software	Minimum Version	Latest Version	Host Type Setting	Notes
Red Hat 3 SUSE 8	RDAC/MPP	09.00.A2.19	09.03.0B02.0013	Linux	
Red Hat 4 SUSE 9/SUSE 10	RDAC/MPP	09.03.0B02.0013	09.03.0B02.0013	Linux	
Red Hat 5 SUSE 10 SP1	RDAC/MPP	09.03.0C02.0013	09.03.0C02.0013	Linux	
Red Hat SUSE with DMP	DMP	5.0MP3	5.0MP3	Linux with DMP	Requires 7.10 firmware and NVSRAM.
HPUX	Veritas DMP	5.0MP1	5.0MP1	HP-UX	

Supported Host Bus Adaptors (HBAs)

TABLE 5, TABLE 6, TABLE 7, and TABLE 8 lists supported HBAs and other data host platform elements by operating system.

HBAs must be ordered separately from Sun or its respective manufacturers. Sun HBAs can be ordered from:

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

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.

You must install the multipathing software before you install any OS patches.

TABLE 5 Supported Solaris Data Host Platforms

Operating System	Minimum OS Patches	2-Gbit HBA Driver	4-Gbit HBA Driver	8-Gb Sun HBAs
Solaris 8	108974-49 or higher	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	N/A
Solaris 9	113277-44 or higher	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	N/A
Solaris 10	Update 6	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	SG-XPCIE1FC-QF8-Z SG-XPCIE2FC-QF8-Z SG-XPCIE1FC-EM8-Z SG-XPCIE2FC-EM8-Z
Solaris 10 x86	Update 6	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	SG-XPCIE1FC-QF8-Z SG-XPCIE2FC-QF8-Z SG-XPCIE1FC-EM8-Z SG-XPCIE2FC-EM8-Z

TABLE 6 Supported Microsoft Windows Data Host Platforms

Host OS	Patches or Service Pack	Servers	HBAs	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	Microsoft Cluster Server

TABLE 6 Supported Microsoft Windows Data Host Platforms *(Continued)*

Host OS	Patches or Service Pack	Servers	HBAs	Cluster Configurations
Windows 2003 32-bit	SP1 R2	x86 (IA32)	Qlogic QLE 256x Qlogic QLE 246x QLogic QLA 246x QLogic QLA 234x QLogic QLA 2310F Emulex LPe12000/12002 Emulex LPe11000/LPe11002/LPe1150 Emulex LP9802/9802DC/982 EmulexLP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 LSI 7102XP/7202XP SysConnect SYS9843 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 8-Gb Sun HBAs: SG-XPCIE1FC-QF8-Z SG-XPCIE2FC-QF8-Z SG-XPCIE1FC-EM8-Z SG-XPCIE2FC-EM8-Z	Microsoft Cluster Server

TABLE 6 Supported Microsoft Windows Data Host Platforms *(Continued)*

Host OS	Patches or Service Pack	Servers	HBAs	Cluster Configurations
Windows 2003 64-bit	SP1 R2	x64 (AMD) EM64T IA64	Qlogic QLE 256x Qlogic QLE 246x QLogic QLA 246x QLogic QLA 234x QLogic QLA 2310F Emulex LPe12000/12002 Emulex LPe11000/LPe11002/LPe1150 Emulex LP9802/9802DC/982 Emulex LP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 LSI 7102XP/7202XP SysConnect SYS9843 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 8-Gb Sun HBAs: SG-XPCIE1FC-QF8-Z SG-XPCIE2FC-QF8-Z SG-XPCIE1FC-EM8-Z SG-XPCIE2FC-EM8-Z	Microsoft Cluster Server

TABLE 6 Supported Microsoft Windows Data Host Platforms *(Continued)*

Host OS	Patches or Service Pack	Servers	HBAs	Cluster Configurations
Windows 2008	Service Pack 1	x86 (IA32) x64 (AMD) EM64T IA64	QLogic QLE 256x QLogic QLA 246x QLogic QLE 246x QLogic QLA 2310/2340/2342 Emulex LP11000/LP11002 Emulex LPe11000/LPe11002 Emulex LP9802/9802DC/982 Emulex LP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 Emulex LPe12000/LPe12002 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 8-Gb Sun HBAs: SG-XPCIE1FC-QF8-Z SG-XPCIE2FC-QF8-Z SG-XPCIE1FC-EM8-Z SG-XPCIE2FC-EM8-Z	Microsoft Cluster Server

TABLE 7 Supported Linux Data Host Platforms

Host OS	Patches or Service Pack	HBAs	Cluster Configurations
Linux SuSE 8.0, 2.4 kernel	SP4	QLogic QLE 256x QLogic QLA 246x QLogic QLE 246x QLogic QLA 2310/2340/2342 Emulex LP11000/LP11002 Emulex LPe11000/LPe11002 Emulex LP9802/9802DC/982 Emulex LP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 Emulex LPe12000/LPe12002 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	Oracle Real Application Clusters (RAC) SteelEye LifeKeeper Server Clustering

TABLE 7 Supported Linux Data Host Platforms *(Continued)*

Host OS	Patches or Service Pack	HBAs	Cluster Configurations
Linux SuSE 9.0 - IA 32, 2.6 kernel	SP4	QLogic QLE 256x QLogic QLA 246x QLogic QLE 246x QLogic QLA 2310/2340/2342 Emulex LP11000/LP11002 Emulex LPe11000/LPe11002 Emulex LP9802/9802DC/982 Emulex LP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 Emulex LPe12000/LPe12002 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 8-Gb Sun HBAs: SG-XPCIE1FC-QF8-Z SG-XPCIE2FC-QF8-Z SG-XPCIE1FC-EM8-Z SG-XPCIE2FC-EM8-Z	Oracle RAC SteelEye LifeKeeper Server Clustering

TABLE 7 Supported Linux Data Host Platforms *(Continued)*

Host OS	Patches or Service Pack	HBAs	Cluster Configurations
Red Hat Linux 4.0, 2.6 kernel	-	QLogic QLE 256x QLogic QLA 246x QLogic QLE 246x QLogic QLA 2310/2340/2342 Emulex LP11000/LP11002 Emulex LPe11000/LPe11002 Emulex LP9802/9802DC/982 Emulex LP952/LP9002/LP9002DC Emulex 10000/10000DC/LP1050 Emulex LPe12000/LPe12002 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 8-Gb Sun HBAs: SG-XPCIE1FC-QF8-Z SG-XPCIE2FC-QF8-Z SG-XPCIE1FC-EM8-Z SG-XPCIE2FC-EM8-Z	SteelEye LifeKeeper Server Clustering

TABLE 7 Supported Linux Data Host Platforms *(Continued)*

Host OS	Patches or Service Pack	HBAs	Cluster Configurations
Red Hat Linux 3.0, 2.4 kernel	-	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	Oracle RAC SteelEye LifeKeeper Server Clustering

TABLE 8 Other Supported Data Host Platforms

Host OS	Host Servers	HBAs	Cluster Configurations
Novell NetWare 6.0 (SP5)	x86 (IA32)	QLogic QLA 2342 QLogic QLA 2340 QLogic QLA 2310F	Novell Cluster Services
Novell NetWare 6.5 (SP7)	x86 (IA32)	QLogic QLA 2342 QLogic QLA 2340 QLogic QLA 2310F QLogic QLA 246x	Novell Cluster Services
IRIX 6.5.26, 6.5.27, 6.5.28, 6.5.29	MIPS	QLogic QLA 2310	N/A

TABLE 8 Other Supported Data Host Platforms *(Continued)*

HP-UX B11.31	HP RISC	HP A6795A HP A6826A HP A6684A HP A6685A HP A5158A HP AB378A HP AB379A HP AD300A HP AD355A	
HP-UX B11.11	HP RISC	HP A6795A HP A6826A HP A6684A HP A6685A HP A5158A	
HP-UX B.11.23	HP RISC IA64	HP A6795A HP A6826A HP A9784A HP AB378A HP AB379A HP AD300A HP AD355A	
IBM AIX 5.2, 5.3	Power	IBM 5716 IBM 5758 IBM 5759 IBM 6228 IBM 6239	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/`.

Supported Enterprise Software

The enterprise software applications listed in TABLE 9 are compatible with the Solaris OS on the data host.

TABLE 9 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

Supported FC and Multilayer Switches

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/2400/2800/300/3200/3250/3800/3850/3900/4100/4900/5000/5100/5300/7420/7500/12000/24000/48000/DCX
- Cisco 9020/9120/9140/9124/9134/9216/9216i/9222i/9506/9509/9513
- McDATA 3216/3232/4300/4400/4500/4700/6064/6140/i10K/QPM 4Gb blade for 6140
- QLogic
  - SANBox 3050/3602/5200/5602/9000
  - 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 6.2.0 Release Notes*. This section describes release-specific steps for firmware and driver upgrades that you must perform:

- "Upgrading Array Firmware" on page 20
- "Updating the SSD Driver for the Solaris OS" on page 22

Upgrading Array Firmware

New firmware files are included in each release of the Sun StorageTek Common Array Manager software, currently Release 6.2.0. When you install new management software from CD or web download and perform the Upgrade Firmware function, the software will detect older firmware versions and prompt you to upgrade to the new firmware versions required for this release. It is not necessary to uninstall the existing firmware.

If the software detects that there is no earlier version installed, it will perform a complete new installation. The software is available on the Sun StorageTek Common Array Manager CD, or in the package you obtain from http://www.sun.com/storagetek/management_software/resource_management/cam/get_it.html.

TABLE 1 shows the firmware files relevant to CAM Release 6.2.0.

TABLE 1 6540 and FLX380 Firmware Upgrades

Firmware	Upgrade Performed By
06.60.11.10	Customer
07.10.25.10	Sun Microsystems Support Services
07.15.11.11 and higher	Customer

The 06.xx versions of firmware are online upgrades and customer installable.

The transition from 06.xx to 07.xx firmware is an offline upgrade requiring a service call to implement. Contact Sun Microsystems Support Services at: http://www.sun.com/contact/support.jsp.

While firmware 07.15.11.11 is bundled with CAM Release 6.2.0, it is still required to first update the 6540 and FLX380 arrays to 07.10.25.10 via a service call. Once the array firmware is at a version of 07.xx, you can perform an online upgrade of the firmware to the 07.15.11.11 version.

▼ To Upgrade the Firmware on the Array

The following procedure applies only to 06 level firmware and firmware upgrades after the 07.10.25.10 upgrade has been installed by Sun Service. Using the Common Array Manager interface, this procedure downloads the firmware binary on the management host to the array and upgrades the firmware running in the array.

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 -- -rdTo 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:

- "Installation and Initial Configuration Issues" on page 23
- "Hardware and Firmware Issues" on page 24
- "Documentation Issues" on page 27
- "Operational Information" on page 28

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.

Auto Code Sync Feature Can Fail During Controller Replacement

Bug 6757957 – Replacement controllers have recently shipped with 7.x version firmware on them. If the primary controller is replaced while the array is powered on and a good secondary controller with 06.xx firmware exists, the replacement should auto code synchronize to the secondary controller. During a controller replacement the replacement controller occasionally does not auto code synchronize to the secondary controller as it should. Instead, the array automatically upgrades to 7.x code.

In such a case. the firmware on the controllers will not match the baseline firmware on the Common Array Manager Software 6.2.0 CD or download. An alarm will be generated.

Workaround – Download the following patch and follow the patch instructions to install it on the array.

Patch 140060-01 6xxx Array Firmware -- (Solaris)

Patch 140061-01 6xxx Array Firmware -- (Windows)

Patch 140062-01 6xxx Array Firmware -- (Linux)

Future replacement controllers will be updated to correct the problem.

2 and 4 Gbps Drive Trays Cannot Be Mixed on the Same Tray Group

CSM200 expansion trays can hold either 2 or 4 Gbps drives, but not within the same tray. Mixing 2 and 4 Gbps drive trays in the same tray group (drive channel) will run all drives at the lower speed.

Trays Groups that must run at the same drive speed:

- Trays Groups 00 and 20 (tray IDs begin with 0x or 2x)
- Trays Groups 10 and 30 (tray IDs begin with 1x or 3x)

Figure 2.4 from the *Sun StorageTek 6540 Array Hardware Installation Guide* shows 4 tray groups. If you have 2 Gbps drive trays to mix with 4 Gbps drive trays, you could add all the 2Gbps drives to trays with IDs of X0 and X2. The 4 Gbps drive trays could go in trays with IDs of X1 and X3.

This does not apply to new trays consisting of all 4 Gbps drives.

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.

Unplanned Controller A Reboot

Bug 6760780 – When controller firmware version 6.60.11.21 or higher is used in combination with snapshot processing, controller A may panic and reboot unexpectedly.

Drive Status Differs After Drive Migration

Bug 6753699 – When using controller firmware version 6.60.11.21 or higher, it is possible to see differing drive status between controllers A and B during a drive migration to a vertical volume group arrangement. This can occur for both assigned and unassigned drives.

Workaround – To synchronize drive status between controllers A and B, it is necessary to reboot both controllers.

Controllers Enter Reboot Loop After Data Replication Pairs are Restored

Bug 6755990 – When using controller firmware version 7.10.25.10 or higher, if an event occurs which normally would cause a single data replication pair to become unsynchronized, all data replication pairs become unsynchronized at the same time. A restart of data synchronization then causes both controllers on the primary data replication array to reboot continuously.

Controller Reboot if LSI Server Running StoreAge SVM is Attached and a Volume is Moved

Bug 6724873 – If an LSI server running LSI StoreAge Storage Virtualization Manager (SVM) is attached to a Sun StorageTek 6540 array running controller firmware version 7.10.25.10, one controller reboots with anomalous data approximately four minutes after ownership of a volume is changed on the array. The other controller will often need to be manually rebooted in order for the array management software to work again with that controller.

This issue has also been known to occur when a volume on the Sun StorageTek 6540 array is mapped to an LSI server.

Workaround – To prevent this issue from occurring, configure the LSI server StoreAge SVM and Data Path Module (DPM) as host in the SAN.

Large Data Replication Block Size Causes Controller Reboot

Bug 6680647 – When running data replication with an I/O block size of 4096 blocks, it is possible for the array controller to reboot with anomalous data.

Workaround – If running controller firmware version 06.xx.xx.xx, do not exceed a maximum data replication block size of 512 blocks. If running controller firmware version 07.xx.xx.xx, do not exceed a maximum data replication block size of 1024 blocks.

Controller Cache Memory Size Displays `0`

Bug 6747153 – When running controller firmware version 07.xx.xx.xx, both the GUI and command line interface (CLI) versions of the array management software report `0` for cache memory size.

Workaround – The following serial command can be used to gather the cache size:

```
rpaGetMemorySizeMB
```

Excessive DDE Errors From FLA200 Trays

Bug 6749000 – When a single tray stack contains a mix of FLA200 and FLC200 trays, and the FLA200 trays contain Fibre Channel (FC) drives, it is possible to receive excessive FLA200 Dynamic Data Exchange (DDE) errors within the Major Event Log (MEL) of the array management software.

Workaround – Excessive DDE errors may be ignored.

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).

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 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.

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.

Operational Information

This section provides useful operational information not documented elsewhere.

Batteries Alert: Transitioning to an Unknown State

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

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.

Controller Tray ID Numbering Is Unrestricted

Controller tray IDs can be set to any number between 0 and 99. 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.

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.

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, v6.2.0*	819-5747-*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, v. 6.2.0 or higher*	819-5749-*nn*
Information about the Common Array Manager CLI	*Sun StorageTek Common Array Manager CLI Guide*	819-5748-*nn*

Service Contact Information

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

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

Third-Party Web Sites

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APPENDIX **A**

Disk Drive Insertion

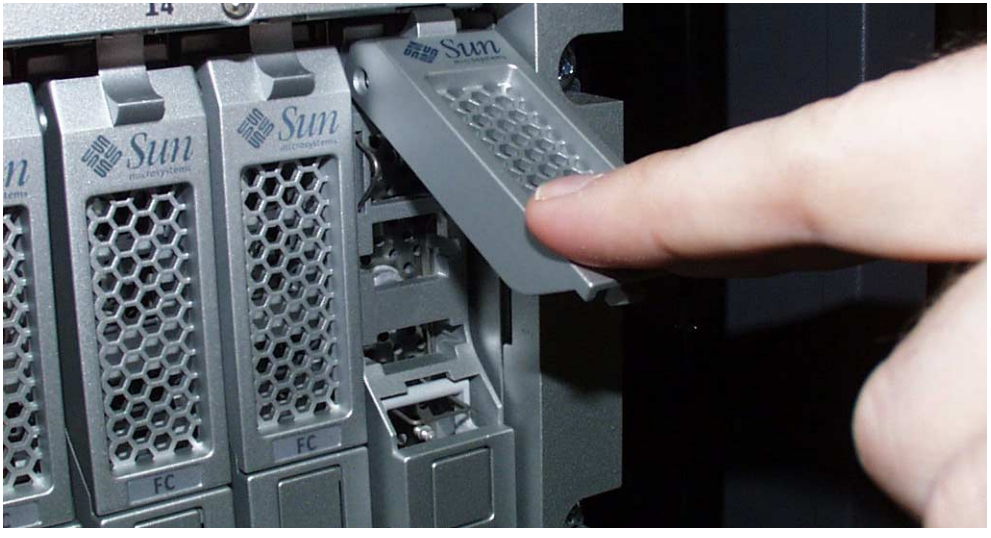
This appendix describes how to properly insert a disk drive into a controller or expansion tray.

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.

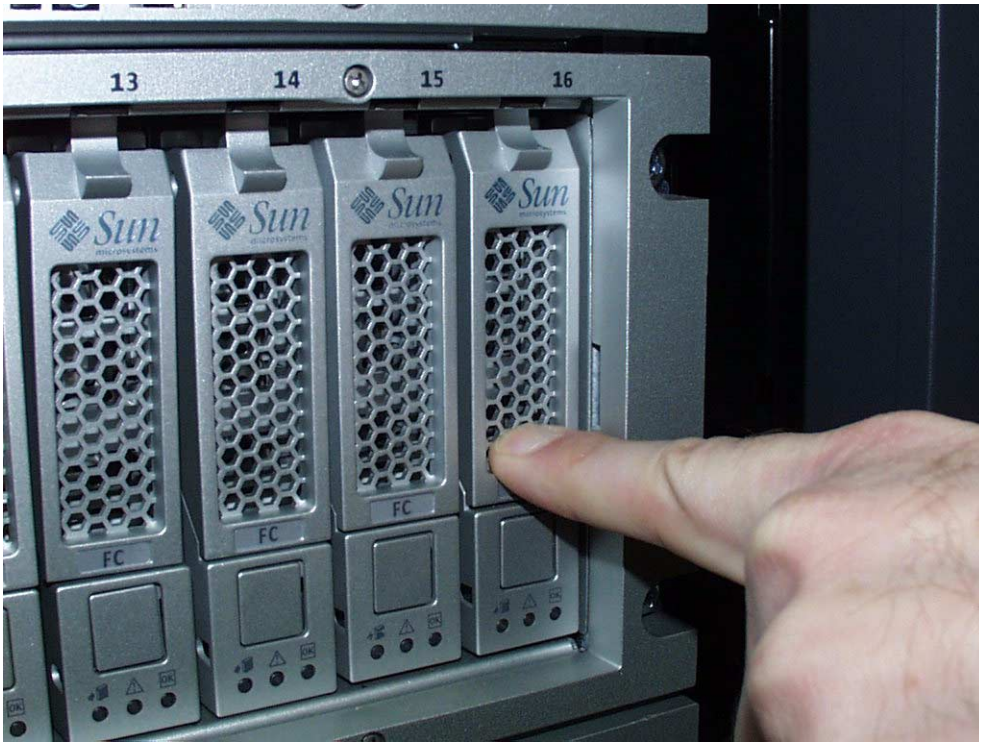
FIGURE A-1 shows a drive being inserted into the chassis the correct way.

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