Sun StorageTek™ 6140 Array Release Notes

Release 5.1

Sun Microsystems, Inc.
www.sun.com

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Contents

Sun StorageTek 6140 Array Release Notes, Release 5.1

This document contains important release information about the Sun StorageTek™ 6140 Array 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 Sun StorageTek 6140 Array.

These release notes cover the array and related hardware issues. The array is managed by the Sun StorageTek Common Array Manager software. That software distributes the array firmware. For information about managing the array and the array firmware, refer to the version of *Sun StorageTek Common Array Manager Release Notes* corresponding to your installation.

The Release Notes consist of the following sections:

Features in This Release

This section describes the main features of the Sun StorageTek 6140 Array, including the following:

New Features

The following new features are available for the Sun StorageTek 6140 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 - 6140 Array

Array Controller	Original Supported Expansion Modules	Supported Expansion Modules with Controller Firmware 06.19.25.10 or higher
Sun StorageTek 6140 Array	CSM200	CSM100, CSM200, FLA200, FLC200, FLA300

- DC Power

The Sun StorageTek 6140 Array can be ordered with a DC power connection and connector cables. See "Using DC Power" on page 35

- Two-Post Telco Rack

The Sun StorageTek 6140 Array can be installed in a two-post telco rack. See "Preparing the Two-Post Telco Rack" on page 45

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 6140 Array Features

The Sun StorageTek 6140 Array is a 4-Gb/2-Gb Fibre Channel (FC) array that offers both direct attached and SAN attached storage. The Sun StorageTek 6140 Array features:

- Eight or four SFP host ports (four or two per controller)
- 1-Gb, 2-Gb, and 4-Gb host interface speed
- Dual redundant controllers
- FC and/or Serial Advanced Technology Attachment (SATA)-2 disk drives
- Support of up to 6 expansion trays with one controller tray for the 4-Gb model or up to three expansion trays with one controller tray for the 2-Gb model
- Switched drive tray (contains an FC switch)
- 112 maximum drives (7 trays with up to 16 drives each) for the 4-Gb array

The Sun StorageTek 6140 Array is available in a 2 GByte cache and a 4 GByte cache configuration. TABLE 2 compares the 2 GB cache and 4GB cache array configurations.

TABLE 2 Comparison of 2GB Cache and 4GB Cache Array Configurations

	Sun StorageTek 6140 Array with 2GB Cache	Sun StorageTek 6140 Array with 4GB Cache
Total cache size per array	2GB	4GB
Number of host ports (4Gb/s) per array	4	8
Maximum number of drives supported	64	112
Maximum array configuration	1x4	1x7
Maximum RAW capacity	32TBytes	56TBytes
Optional storage domains supported	4/8/16	4/8/16/64

6140 Array Ship Kit Contents

The Sun StorageTek 6140 Array controller and expansion trays are shipped separately. The following is a list of the contents in the tray ship kits.

- Ship kit for the controller tray:
  - Two 5-meter Fibre Channel (FC) cables for connecting the redundant array of independent disks (RAID) controllers to your storage area network (SAN) or host
  - Two 6-meter RJ45 -RJ45 Ethernet cables
  - Two RJ45-miniDIN cables
  - One RJ45-DB9 adapter
  - One RJ45-DB9 adapter with null modem
  - Sun StorageTek Common Array Manager Software CD
  - *Sun StorageTek Common Array Manager Software Installation Guide*
  - *Sun StorageTek 6140 Array Hardware Installation Guide*
  - *Sun StorageTek 6140 Array Poster*
  - *Accessing Documentation* card
- Ship kit for each expansion tray:
  - Two 2-meter optical FC cables and SFPs
  - *Accessing Documentation* guide

AC power cords (or the optional DC power option) are shipped separately with each tray.

Management Software

The Sun StorageTek Common Array Manager software provides you with an easy-to-use interface to configure, manage, and monitor Sun StorageTek storage systems, including the Sun StorageTek 6140 Array. You can also use the Common Array Manager software to diagnose problems, view events, and monitor the health of your array. The Common Array Manager software replaces the former host management software, the Sun Configuration Service and Sun Storage Automated Diagnostic Environment.

The Common Array Manager is described separately in the Sun StorageTek Common Array Manager documentation.

Firmware Content

Firmware updates are distributed with the Sun StorageTek Common Array Manager software. For information about the array and disk firmware, refer to the version of Sun StorageTek Common Array Manager Software Release Notes corresponding to your installation.

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 3 Available Licenses for Premium Features,

Premium Feature	6140 Array
Data Snapshot	X
Data Volume Copy	X
Data Replicator	X
4 Domains	X
Upgrade 4 to 8 Domains	X
8 Domains	X
Upgrade 8 to 16 Domains	X
16 Domains	X
Upgrade 16 to 64 Domains	X
64 Domains	X
Combo Data Snapshot and 8 Domains	X
Combo Data Snapshot, Data Volume Copy, Data Replicator, and 64 Domains	X
Combo Data Snapshot, Data Volume Copy	X
Combo Data Snapshot, Data Volume Copy, and Data Replicator	X

System Requirements

The software and hardware products that have been tested and qualified to work with the Sun StorageTek 6140 Array are described in the following sections:

Disk Drives and Tray Capacity

TABLE 4 lists the size, speed, and tray capacity for the supported FC and Serial Advanced Technology Attachment (SATA) disk drives in the Sun StorageTek 6140 Array.

TABLE 4 Supported Disk Drives

Drive	Description
FC 73G15K	73-GB 15,000-RPM FC drives (4 Gbits/sec); 1168 GB per tray
FC 146G10K	146-GB 10,000-RPM FC drives (2 Gbits/sec); 2044 GB per tray
FC 146G15K	146-GB 15,000-RPM FC drives (4 Gbits/sec); 2336 GB per tray
FC 300G10K	300-GB 10,000-RPM FC drives (2 Gbits/sec); 4800 GB per tray
FC 300G15K	300-GB 15,000-RPM FC drives (4 Gbits/sec): 4800 GB per tray
SATA 2, 500G7.2K	500-GB 7,200-RPM SATA drives (3 Gbits/sec); 8000 GB per tray
SATA 2, 750G7.2K	750-GB 7,200-RPM SATA drives (3 Gbits/sec); 12000 GB per tray

Data Host Requirements

This section provides a snapshot of the data host requirements of the 6140 Array at the time this document was produced. These requirements can change frequently; for complete up-to-date compatibility requirements, contact your Sun sales or support representative.

TABLE 5 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 their 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 or later; x86: 118855-18 or later).
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 6140 Array software releases and must be ordered separately.

You must install data host software (including multipathing) on each data host that communicates with the Sun StorageTek 6140 Array. For Solaris OS 8 and 9 data hosts, the multipathing software is part of the Sun StorEdge SAN Foundation software. In Solaris OS 10, multipathing is included in the OS. For data hosts running the Solaris OS, follow the instructions in the *Sun StorageTek 6140 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 Foundation Software and Patches column of TABLE 5 are included in the SAN 4.4 package at the top of each list. SAN 4.4.x is also known as the SAN Foundation Software (SFS) and SAN Foundation Kit (SFK).

TABLE 5 Sun HBAs and Multipathing Supported by Solaris OSs

Operating System	2-Gb HBA	4-Gb HBA	SAN Foundation Software and included Patches
Solaris 8	SG-XPCI1FC-QF2 (6767A)		SAN 4.4.10:
	SG-XPCI2FC-QF2 (6768A)		111095-27
	SG-XPCI2FC-QF2-Z (6768A)		111096-15
	SG-XPCI1FC-QL2		111097-23
	SG-XPCI1FC-EM2		111412-20
	SG-XPCI2FC-EM2		119913-09

TABLE 5 Sun HBAs and Multipathing Supported by Solaris OSs *(Continued)*

Operating System	2-Gb HBA	4-Gb HBA	SAN Foundation Software and included Patches
Solaris 9	SG-XPCI1FC-QF2 (6767A) SG-XPCI2FC-QF2 (6768A) SG-XPCI2FC-QF2-Z (6768A) SG-XPCI1FC-QL2 SG-XPCI1FC-EM2 SG-XPCI2FC-EM2		SAN 4.4.10 (or later): 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-XPCI1FC-QL2 SG-XPCI1FC-EM2 SG-XPCI2FC-EM2	SG-XPCI2FC-QF4 SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4 SG-XPCI1FC-QF4 SG-XPCI1FC-EM4-Z SG-XPCI2FC-EM4-Z	included in OS
Solaris 10 x86	SG-XPCI1FC-QF2 (6767A) SG-XPCI2FC-QF2 (6768A) SG-XPCI2FC-QF2-Z (x6768A) SG-XPCI1FC-QL2 SG-XPCI1FC-EM2 SG-XPCI2FC-EM2	SG-XPCI2FC-QF4 SG-XPCIE1FC-QF4 SG-XPCIE2FC-QF4 SG-XPCIE1FC-EM4 SG-XPCIE2FC-EM4 SG-XPCI1FC-QF4 SG-XPCI1FC-EM4-Z SG-XPCI2FC-EM4-Z	included in OS

* Solaris 10 requires Sun Update 2 (SPARC: 118833-20; x64: 118855-18)

TABLE 6, TABLE 7, and TABLE 8 lists supported HBAs for Windows, Linux, and other data host platforms, respectively. For multipathing support on data hosts running these operating systems, you can use the Sun StorageTek 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.

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

TABLE 6 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)	Microsoft Cluster Server

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

Host OS	Patches or Service Pack	Servers	HBAs	Multipathing Software	Cluster Configurations
Windows 2003	SP1 R2	x64 (AMD) EM64T x86 (IA32) 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 SysConnect SYS9843 (IA32 only) 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	Microsoft Cluster Server

TABLE 7 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-processing (DMP) 4.0	Oracle Real Application Clusters (RAC) SteelEye LifeKeeper Server Clustering

TABLE 7 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	Oracle RAC SteelEye LifeKeeper Server Clustering

TABLE 7 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 8 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 6140 Array on AIX. Download the Array Support Library (ASL) from http://support.veritas.com/.

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 StorEdge QFS software	4.0 minimum
Sun StorEdge SAM-FS software	4.0 minimum
Sun StorEdge Availability Suite	3.2 minimum
Sun StorEdge 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 6140 Array:

- Sun StorEdge Network 2Gb 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
- QLogic
  - SANBox 3050/3602/5200/5600/5602
  - SANBox2-8
  - SANBox2-16
  - SANBox2-64
- Computer Network Technology

- Edge 3000

Installing Firmware

The array installation procedures are described in the *Sun StorageTek 6140 Array Hardware Installation Guide* that came with your array. Host management software installation and upgrades are described in the *Sun StorageTek Common Array Manager 5.1.x Release Notes*. This section describes release-specific steps for firmware upgrades that you must perform:

- "Upgrading Array Firmware" on page 17
- "Updating the SSD Driver for the Solaris OS" on page 18

Upgrading Array Firmware

New firmware files are included in each release of the Sun StorageTek Common Array Management software, currently Release 5.1.x. When you install new management software from CD or web download. and perform the Upgrade Firmware function, the upgrade script will detect older firmware versions and upgrade to the new firmware versions required for this release. If the script detects that there is no earlier version installed, it will perform a complete new installation. The upgrade scripts are included on the Sun StorageTek 6140 Array CD, or 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 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. **On the Java Web Console page, click Sun StorageTek Common Array Manager.**
2. **Go to the Storage System Summary page and select the arrays to be upgraded.**
3. **Click the Upgrade Firmware button.**
4. **Follow the prompts.**

Note – The array will remain in a degraded state until all alarms are cleared.

Updating the SSD Driver for the Solaris OS

After installing software for the data hosts from the Sun StorageTek 6140 Host Installation Software CD, 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.**

   Refer to the README file for more information on downloading patches.

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.**

   Refer to the README file for more information on downloading patches.

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 6140 Array.

Ship Kit and Setup Poster Changes

The array ships with two RJ-45 to miniDIN cables. The ship kit also includes a RJ45-DB9 adapter. Additionally, a RJ45-DB9 adapter with a null modem has been added to the ship kit. The two adapters allow users to connect to the array from most Sun workstations, portable PCs, and terminal servers. If your ship kit does not include the RJ45-DB9 adapter with a null modem and you cannot connect with the RJ45-DB9 adapter, either supply your own adapter or contact Sun Service.

To connect from a portable PC without a serial port, you will need to purchase a USB to serial adapter, available from most computer stores.

The Sun StorageTek 6140 Array Setup Poster poster is being updated to reflect the new cables in the ship kit. The original poster is outdated and shows a miniDIN to DB-9 (M) cable and a DB-9 (F) to DB-9 (F) cable.

Auto-Negotiation of Ethernet Switches Must be Set to On

The Ethernet ports of the array auto-negotiate for standard 10 and 100 Mbits/second full duplex connectivity. The ethernet switch that the array's management path connects with must have auto-negotiation turned on. If it is not set, the array will eventually lose visibility from the management host.

ASL Requires Reboot After Installation

Bug 6377228 – After the 6140 ASL license is installed, several commands (vxdctl enable, vxdmpadm listenclosure all and vxdmpadm listctlr all) do not report the correct name for the 6140 Array. Only after rebooting the system will these commands report the correct name.

Workaround – This problem is fixed in the very latest ASL driver. Go to the Veritas web site to download the latest ASL driver.

Controller Tray ID Numbering Is Unrestricted

Bug 6418696 - Controller tray IDs can be set to any number between 0 and 99. However, they should be limited to the values of 80 through 99, with expansion trays using 0 through 79. 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).

Workaround - Ensure that any assigned tray ID value is not a duplicate.

Bootability Issues With 1-Gigabit HBAs and Direct Attached Configurations

Bug 5084873 - When you use a Sun StorEdge 6130 array as a boot device, the host system boots its operating system from the array. There are known issues with using the array as a boot device using 1-gigabit host bus adapters (HBAs) in direct attach configurations. Therefore, 1-gigabit HBAs can be used with the Sun StorEdge 6130 array for nonboot applications only. If you want to use the Sun StorEdge 6130 array as a direct attached boot device, use it only with 2-gigabit HBAs supported by Sun.

In Fibre Channel switched configurations in which a Fibre Channel switch is connected between the host and a Sun StorEdge 6130 array being used as a boot device, both 1-gigabit and 2-gigabit Sun HBAs can be used.

Hardware and Firmware Issues

This section describes general issues related to the Sun StorageTek 6140 Array hardware and firmware.

Sharp Edges on Chassis

Caution – On both the controller and expansion trays, the rear of the chassis has very sharp edges.

Controller FRU Handle Can Be Hazardous

Caution – Be careful using the FRU handle on the controller tray. It can snap shut when pushed hard during reinsertion, pinning fingers between the tray and handle edges.

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.

The Expansion Tray Must Be Set to the Same Speed As the Controller

The Controller and expansion trays must be set to the same speed. If the 2/4GB switch is set to 2GB on one and it is set to 4GB on the other, the expansion tray will appear inoperative with no indication of the cause.

The controller is set to 2GB at the factory. An expansion tray is set at the factory to whatever its disk drives are. You can tell what the speed of the disks on the tray are by removing one of the disks and examining the label. Next to the disk name on the label there is a number indicating the RPM and speed of the disk. For example, the number 15k.4 indicates the disk is 15,000 RPMs and 4GB.

Addition and Removal of Initiators From Zones in Fabric Are Not Dynamically Detected

Bug 6329784 - When an initiator is added or removed from a zone in a fabric, the configuration software does not dynamically detect the change. The WWNs of initiators newly added to the SAN are not displayed.

Workaround – If the WWN of a new initiator is not in the drop-down list on the New initiator page, try creating the initiator by manually entering the new WWN. This will force the page to refresh. When you create another new initiator, the WWN will be in the list.

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 assignments. They are displayed on a separate Ghost Volumes list, with minimal info available.

Deleting Initiators That No Longer Appear on the SAN

Bug 6224251 - When creating initiators on an array previously connected to a host, be aware that should this host be removed and another host attached, the pull-down menu for creating an initiator will show the WWNs for the original host, as well as the WWNs of the new host.

Workaround - Reboot the array.

Secondary Volumes Are Not Recognized in a Replication Set

Bug 6266943 - After becoming a secondary volume of a replication set, a volume that was previously recognized by a host (through the `format` command) is displayed as `drive type unknown`. This secondary volume should be designated as a read-only device.

Workaround - Ensure that the intended secondary volume is a new (unlabeled) volume. Do not use an existing volume.

Cannot Boot From System With a 6768A Direct Attached HBA

Bugs 6339202 & 6358173 - The 6768A (QLogic 2342) 2-Gb dual-port adapter cannot be used in direct attach mode, and you cannot boot from it.

Workaround - To use 6768A in direct attach mode, move the jumpers from pins 2-3 to pins 1-2. To boot using this HBA, move the 6768A jumpers from pins 2-3 to pins 1-2 or put a switch between the host and array.

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 Plugs (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 Sun Storage Diagnostic Environment 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

Bug 6203836 - If a volume failure on a Sun StorageTek 6140 Array results from failed disk drives, you must be careful when introducing replacement drives that were part of a volume in use by another Sun StorageTek 6140 Array.

Workaround - To avoid having the array incorrectly initiate a volume migration process with the newly introduced replacement drives, perform one of the following tasks:

- Verify that the volume on the Sun StorageTek 6140 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 6140 Array are not part of an active volume. If the disk drives are part of an active virtual disk, delete all volumes residing on that virtual disk before removing the disk drives.

SAN Driver Issues

The following issues are related to the SAN driver.

The `cfgadm -c unconfigure` *Command Only Unconfigures UTM LUNs*

Bug 6362850 - For Solaris 10, the `cfgadm -c unconfigure` command only unconfigures Universal Transport Mechanism (UTM) LUNs (also called management LUNS) and not the LUNs on the data hosts. When this happens, you will not be able to unconfigure the data host LUNs.

Workaround - Install Solaris 10 patch 118833-20 or later (SPARC) or patch 118855-18 or later (x64). Apply the same workaround as bug 6185781: add the following line to the `/etc/driver_aliases` file after applying the patches, then reboot:

```
ses "scsiclass,00.vSUN.pUniversal_Xport"
```

Users See UTM LUNs Under `Format`

Bug 6340983 and **6185781**- Users can see the UTM LUNs using `format` and other utilities, causing confusion as the management LUNs should be hidden.
Workaround – As of Release 5.1.3, the Sun StorageTek Common Array Manager software allows you to unmap the UTM LUN.

Documentation Issues

This section describes known issues and bugs related to the Sun StorageTek 6140 Array documentation.

With Release 5.0, the *Sun StorageTek 6140 Array Getting Started Guide* (Release 2.0) has been replaced by the *Sun StorageTek Common Array Manager Software Installation Guide* and the *Sun StorageTek 6140 Array Hardware Installation Guide*. Refer to the *Sun StorageTek Common Array Manager Software Installation Guide* for information about Sun StorageTek Common Array Manager software installation, firmware files, and logging into the browser interface and sscs CLI man pages.

Cable Changes in Installation Guide

The Sun StorageTek 6140 Array Hardware Installation Guide has not yet been updated for:

- The addition of one RJ45-DB9 adapter with null modem to the contents of the controller tray box.
- A change from copper cables to 2-meter optical FC cables and SFPs in the expansion module box.

The outdated copper cables are referenced in each configuration cabling section.Use the optical FC cables instead.

Revised Specifications

The following are revised specifications for the array and its documentation.

Controller Module (fully populated)

- Acoustics: 6.8 bels
- Heat Output:

  380 Watts (1297 BTU/Hr) using AC Power Source

445 Watts (1519 BTU/Hr) using DC Power Source (NEBS)

- Altitude (storage) 100 ft (30.5 M) below sea level to 9,840 feet (3,000 meters)
- AC Power

  3.73 A Max Operating @ 115 VAC (90 to136 VAC Range), 50/60 Hz

  1.96 A Max Operating @ 230 VAC (180 to 264 VAC Range), 50/60 Hz
- DC Power

  15.8 A Max Operating @ 36 VDC (-36 to -72 VDC Range)
- Safety and Emissions

  EN 300 386 (NEBS)

CSM200 Expansion Module (fully populated)

- Acoustics: 6.8 bels
- Heat Output:

  410 Watts (1400 BTU/Hr) using AC Power Source

  445 Watts (1519 BTU/Hr) using DC Power Source (NEBS)
- Altitude (storage) 100 ft (30.5 M) below sea level to 9,840 feet (3,000 meters)
- AC Power

  4.21 A Max Operating @ 115 VAC (90 to136 VAC Range), 50/60 Hz

  2.16 A Max Operating @ 230 VAC (180 to 264 VAC Range), 50/60 Hz
- DC Power

  15.8 A Max Operating @ 36 VDC (-36 to -72 VDC Range)
- Safety and Emissions

  EN 300 386 (NEBS)

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.

Array Health Is Displayed Incorrectly During RAID-5 and RAID-1 Reconstruction

Bug 6202126 - During RAID-1 or RAID-5 reconstruction, the array health status is incorrectly reported as OK in the Sun StorEdge Configuration Service application while the Sun Storage Automated Diagnostic Environment correctly reports volumes in degraded mode.

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 approximately every 25 hours by a timer.

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-gigabyte cache for 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).

Status Codes

The following is a list of the meanings of the status codes that may display on the numerical LEDs on the controller and expansion modules.

FF – IOM Boot Diagnostic executing

88 – This IOM is being held in Reset by the other IOM

AA – IOM-A application is booting up

bb – IOM-B application is booting up

L0 – Mismatched IOM types

L2 – Persistent memory errors

L3 – Persistent hardware errors

L9 – Over Temperature

H1 – SFP Speed Mismatch (2 Gb/s SFP installed when operating at 4 Gb/s)

H2 – Invalid/Incomplete Configuration

H3 – Maximum Reboot Attempts Exceeded

H4 – Cannot Communicate with Other IOM

H5 – Midplane Harness Failure

H6 – Firmware Failure

H7 – Current Enclosure Fibre Channel Rate Different than Rate Switch

H8 – SFP(s) Present in Currently Unsupported Slot (2A or 2B)

Release Documentation

Following is a list of documents related to the Sun StorageTek 6140 Array. For any document number with *nn* as a version suffix, use the most current version available

For Sun StorageTek 6140 Array documentation, see
`http://docs.sun.com/app/docs/coll/st6140array5.0`

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

Application	Title	Part Number
Site planning information	*Sun StorageTek 6140 Array Site Preparation Guide*	819-5046-*nn*
Regulatory and safety information	*Sun StorageTek 6140 Array Regulatory and Safety Compliance Manual*	819-5047-*nn*
Installation and initial configuration instructions	*Sun StorageTek 6140 Hardware Installation Guide*	819-7497-*nn*

Application	Title	Part Number
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, including firmware information.	*Sun StorageTek Common Array Manager Release Notes, v. 6.0.0 or higher*	820-2935-*nn*
Installation instructions and basic configuration information for the Sun StorageTek Common Array Manager	*Sun StorageTek Common Array Manager Software Installation Guide, v. 6.0 or higher*	820-2934-*nn*
Quick-reference information for the Common Array Manager CLI	*Sun StorageTek Common Array Manager CLI Quick Reference Card*	820-2932-*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.

Drives are inserted with the power on, unless specifically instructed not to by Sun technical support.

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

1. Lift the drive handle up to open it.
2. Push the disk drive into the chassis by slowly pushing against the drive housing until the drive handle engages with the chassis.
3. 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

APPENDIX **B**

Using DC Power

This appendix describes using the DC Power Unit for the Sun StorageTek 6140 array in the following sections:

DC Power Overview

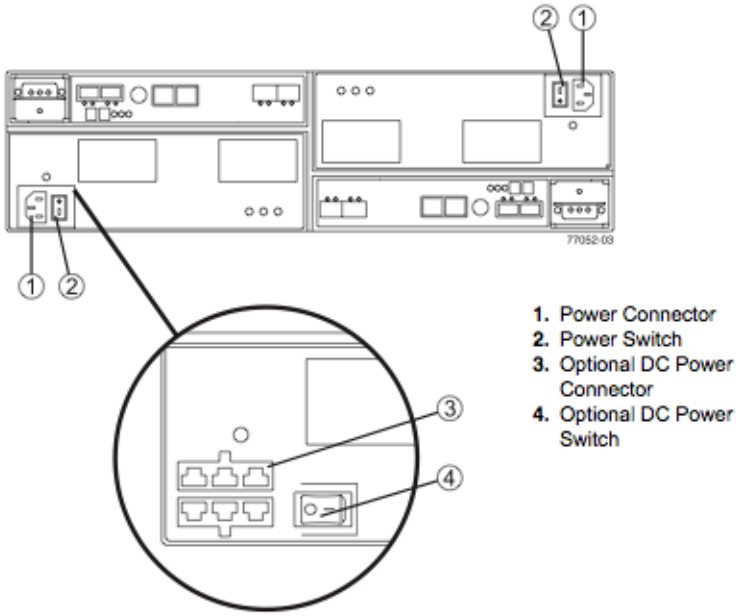
The Sun StorageTek 6140 array can be ordered with a DC power connection and connector cables.

Caution – A qualified service person is required to make the DC power connection per NEC and CEC guidelines. A two-pole 20-amp circuit breaker is required between the DC power source and the array module for over-current and short-circuit protection. Before turning off any power switches on a DC-powered module, you must disconnect the two-pole 20-amp circuit breaker.

Caution – Electrical grounding hazard – This equipment is designed to permit the connection of the D.C. supply circuit to the earthing conductor at the equipment.

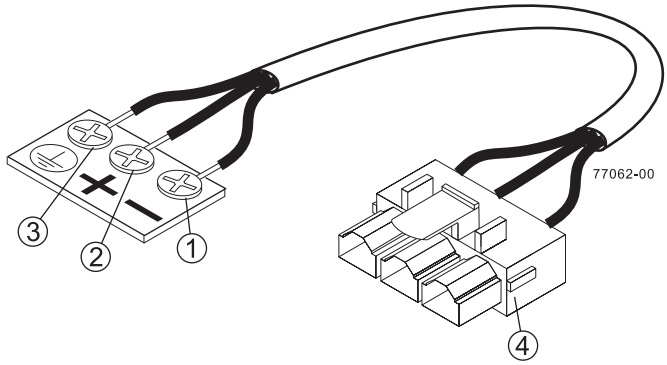
FIGURE B-1 shows the DC Power Connectors and DC Power Switch.

FIGURE B-1 DC Power Connectors and DC Power Switch.



Caution – Risk of electrical shock – This unit has more than one power source. To remove all power from the unit, all DC MAINS must be disconnected by removing all power connectors (item 4 in Appendix FIGURE B-2) from the power supplies.

FIGURE B-2 DC Power Connector Cable and Source Wires



1. Supply (Negative), Brown Wire, –48 VDC
2. Return (Positive), Blue Wire
3. Ground, Green/Yellow Wire
4. DC Power Connector

Site Preparation for DC Power

This section updates the Sun StorageTek 6140 Array Site Preparation Guide with information regarding site power and wiring, power requirements (–48 VDC), and power cord routing instructions for the Sun StorageTek 6140 array:

- "Site Wiring and Power" on page 37
- "DC Power Input" on page 38
- "DC Power Connector Cables and Source Wires" on page 39

Site Wiring and Power

The Sun StorageTek 6140 array uses wide-ranging, redundant power supplies that automatically accommodate voltages to the AC power source or the optional –48-VDC power source.

The power supplies meet standard voltage requirements for both North American (USA and Canada) operation and worldwide (except USA and Canada) operation. The power supplies use standard industrial wiring with line-to-neutral or line-to-line power connections.

Note – Power for the optional –48-VDC power configuration is supplied by a centralized DC power plant instead of the AC power source in the cabinet. Refer to the associated manufacturer's documentation for specific DC power source requirements.

Consider the following information when preparing the array's installation site:

- Protective ground – Site wiring must include a protective ground connection to the AC power source or the optional –48-VDC power source.

Note – Protective ground is also known as safety ground or chassis ground.

- Circuit overloading

  Power circuits and associated circuit breakers must provide sufficient power and overload protection. To prevent possible damage to the array, isolate their power source from large switching loads (such as air- conditioning motors, elevator motors, and factory loads).
- Interruptions:
  - Input transient – 50 percent of the nominal voltage
  - Duration – One-half cycle
  - Frequency – Once every 10 seconds
- Power failures – If a total power failure occurs, the array automatically performs a power-on recovery sequence without operator intervention after power is restored.

DC Power Input

The DC power source must provide the correct voltage, current, and frequency specified on the array nameplate label and the serial number label.

The DC power limits within which the Sun StorageTek 6140 array can run without interruption include the following:

- Nominal voltage
  - Low range: –36 VDC
  - High range: –72 VDC
- Operating current: 15.8 A maximum

DC Power Connector Cables and Source Wires

The Sun StorageTek 6140 array is shipped with –48-VDC power connector cables if the DC power option is ordered. The power connector cable plugs into the DC power connector on the back of the array (Figure 6-3 on page 6-3). The three source wires on the other end of the power connector cable connect the array to centralized DC power plant equipment, typically through a bus bar above the cabinet. A qualified service person is required to make this DC power connection. FIGURE B-2 shows the DC connector cable and the source wires.

Two (or optionally, four) DC power connector cables are provided with each array. There are two DC power connectors on the back of each array's two DC power supplies if additional redundancy is required.

Note – It is not mandatory that the second DC power connection on the array's DC power supplies be connected. The second DC power connection is provided for additional redundancy only and may be connected to a second DC power bus.

Additional DC Specifications

The following are specifications for DC power for a fully populated controller or expansion module:

Heat Output: 445 Watts (1519 BTU/Hr) using DC Power Source (NEBS)

Safety and Emissions: EN 300 386 (NEBS)

Installation Notes for DC Power

The sections that follow update the Sun StorageTek 6140 Array Hardware Installation Guide for DC power.

Ship Kit Changes

If the DC power option is ordered, two DC power connector cables are provided with each controller tray for connection to centralized DC power plant equipment.

Two additional DC power connector cables should be ordered if additional redundancy is required.

Caution – A qualified service person is required to make the DC power connection per NEC and CEC guidelines. A two-pole 20-amp circuit breaker is required between the DC power source and the array module for over-current and short-circuit protection. Before turning off any power switches on a DC-powered module, you must disconnect the two-pole 20-amp circuit breaker.

DC Power LEDS

The following table lists the LEDs for DC power.

TABLE B-1 Lights on the Array Module

Light	Symbol	Location (CRUs)	Function
DC Power (Optional)	DC ⎓	Power-fan Note Light is directly above or below DC power switch and DC power connector	Indicates the power supply is receiving DC input power
Direct Current (DC) Enabled	DC ⎓	Power-fan	Indicates the power supply is outputting DC power

DC Power Caution When Link Rate Switching

Caution – Change the Link Rate switch only when there is no power applied to the controller tray. The link rate setting is read only at power-on. Before turning off any power switches on a DC-powered tray, you must disconnect the two-pole 20-amp circuit breaker.

Connecting Power Cables

To use the DC power option (–48-VDC) to power the array module, review the following points.

- Ensure that you use a separate power source for each optional DC power connector on the array module. Connecting to independent power sources maintains power redundancy.
- It is not mandatory that the second DC power connection on each of the array module's DC power-fan CRUs be connected. The second DC power connection is for additional redundancy only and may be connected to a second DC power bus.

Caution – A qualified service person is required to make the DC power connection per NEC and CEC guidelines. A two-pole 20-amp circuit breaker is required between the DC power source and the array module for over-current and short-circuit protection. Before turning off any power switches on a DC-powered module, you must disconnect the two-pole 20-amp circuit breaker.

Caution – Ensure that you do not turn on power to the array module or the connected drive modules until this guide instructs you to do so. For the proper procedure for turning on the power, see "“Connecting Power Cables” on page 41."

Caution – Electrical grounding hazard – This equipment is designed to permit the connection of the D.C. supply circuit to the earthing conductor at the equipment.

▼ Connecting the Cables

1. **Disconnect the two-pole 20-amp DC circuit breaker for the storage array.**
2. **Ensure that all DC power switches on the DC-powered array module and all DC power switches on any connected, DC-powered drive modules are turned off.**
3. **Connect the DC power connector cable to the DC power connector on the back of the array module.**

Caution – The three source wires on the DC power connector cable (–48 VDC) connect the array module to centralized DC power plant equipment, typically through a bus bar located above the cabinet.

Note – It is not mandatory that the second DC power connection on each of the array module's DC power-fan CRUs be connected. The second DC power connection is for additional redundancy only and may be connected to a second DC power bus.

4. **A qualified service person is required to make the DC power connection per NEC and CEC guidelines. A two-pole 20-amp circuit breaker is required between the DC power source and DC-powered modules for over-current and short-circuit protection. Connect the DC power source wires on the other end of the DC power connector cable to the centralized DC power plant equipment as follows (see** "DC Power Connector Cable and Source Wires" on page 37**).**

   a. **Connect the brown –48-VDC supply wire to the negative terminal.**

   b. **Connect the blue return wire to the positive terminal.**

   c. **Connect the green/yellow ground wire to the ground terminal.**

5. **If applicable, connect a DC power cable to each DC-powered drive module in the storage array.**

Turning Off the DC Power During an Emergency

Caution – Potential loss of data – An emergency shutdown of the storage array might not allow the server to complete its I/O to the storage array.

Note – Trays in storage arrays can be connected to either the standard AC power supply or the optional DC power supply (–48 VDC).

Note – Before turning off the power switches on a DC-powered tray you must disconnect the two-pole 20-amp circuit breaker.

Relocation Cautions

Use the following guidelines when relocating trays or drives from one storage array to another.

Caution – Potential data loss – Moving a array or array components that are configured as part of a volume group can result in data loss. To prevent data loss, always consult a Customer Support representative before relocating configured drives, controller trays or expansion trays.

Note – Trays in arrays can be connected to the DC power supply (–48 VDC). Before turning off any power switches on a DC-powered tray, you must disconnect the two-pole 20-amp circuit breaker.

Do not move controller trays or expansion trays that are part of a volume group configuration. If you must move array components, contact a Customer Support representative for procedures. A Customer Support representative might direct you to complete several tasks prior to undertaking the relocation. These tasks might include:

- Creating, saving, and printing an array profile of each storage array that is affected by the relocation of a drive or tray.
- Performing a complete backup of all data on the drives that you intend to move.
- Verifying that the volume group and each of its associated volumes on the affected array have an Optimal status.
- Determining the location and status of any global hot spares associated with the affected storage array.

APPENDIX C

Preparing the Two-Post Telco Rack

Use the procedures in this chapter to install trays in a standard Telco rack. (You can use the existing universal rack kit and procedures to install the Sun StorageTek 6140 array in a four-post Telco rack.) The number of trays you need to install depends on your overall storage requirements. You can install a maximum of eight, one controller tray and up to seven expansion trays, in a third-party Telco rack.

This chapter describes the process of installing Sun StorEdge 6140 trays. It contains the following sections:

The installation procedures in this chapter require the following items:

- #2 Phillips screwdriver
- #3 Phillips screwdriver
- Flathead screwdriver
- Antistatic protection

Caution – Electrostatic discharge can damage sensitive components. Touching the array or its components without using a proper ground might damage the equipment. To avoid damage, use proper antistatic protection before handling any components.

Preparing the Telco Rack

Install the rack as described in the installation instructions provided by the manufacturer.

Note – Sun Microsystems makes no warranties or guaranties as to fit, form, or function of the Sun StorEdge 6140 array installed in third-party racks or cabinets. It is the customer's responsibility to ensure that the rack or cabinet can house the Sun StorEdge 6140 array in all conditions that may exist. All racks and cabinets must comply with local building and construction codes.

Populating a rack with trays starting from the bottom and moving up distributes the weight correctly in the cabinet.

Attaching the Rails to a Telco 2-Post Rack

This procedure describes how to attach the rackmount rail kit to a Telco 2-post frame. You can use rack rails with a depth of 3-to-6 inches.

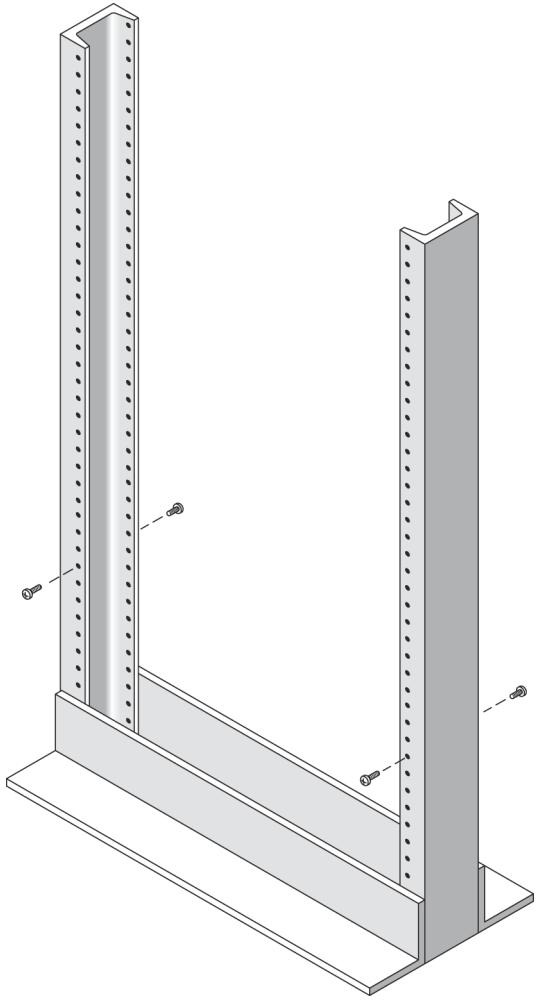
You will mount each tray with its horizontal center aligned with the frame of the Telco 2-post rack.

1. **Loosely adjust the rail length to accommodate the length of the array.**

1. **Insert four (12-24 or 10-32) screws (one in each post side) in the front and back mounting holes of the right and left posts (**FIGURE C-1**). Do not tighten at this time.**

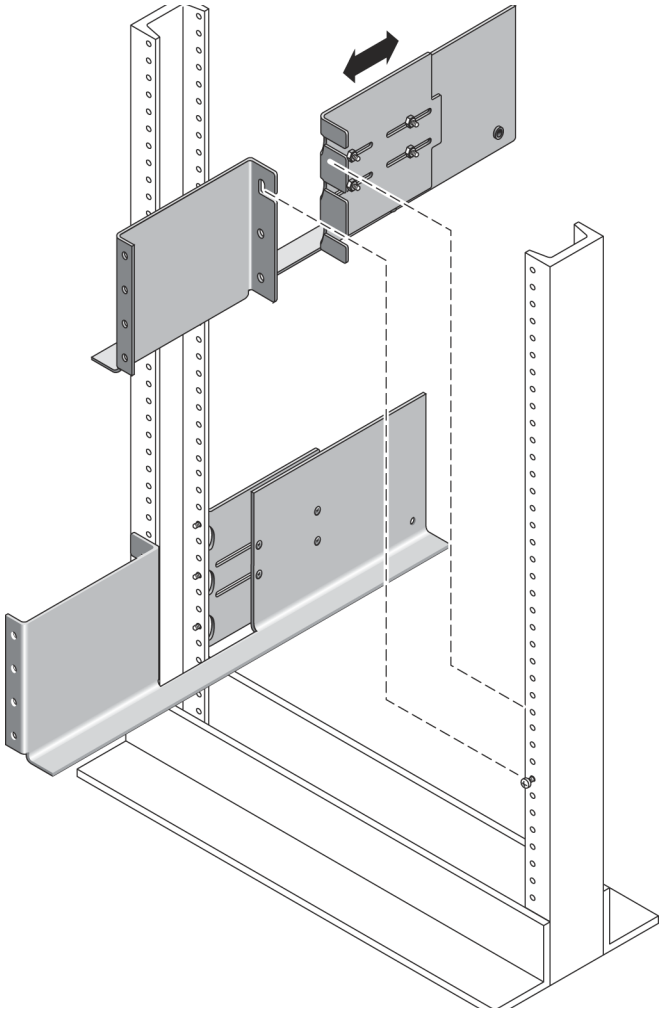
   Use the lowest available mounting hole at the bottom of each post that can be aligned with the top mount slot on the rail. The mount slot allows the rail to hang over the screw. Make sure that all four screws are aligned and mounted at the same height.

FIGURE C-1 Inserting Screws in the Front and Back Mounting Holes



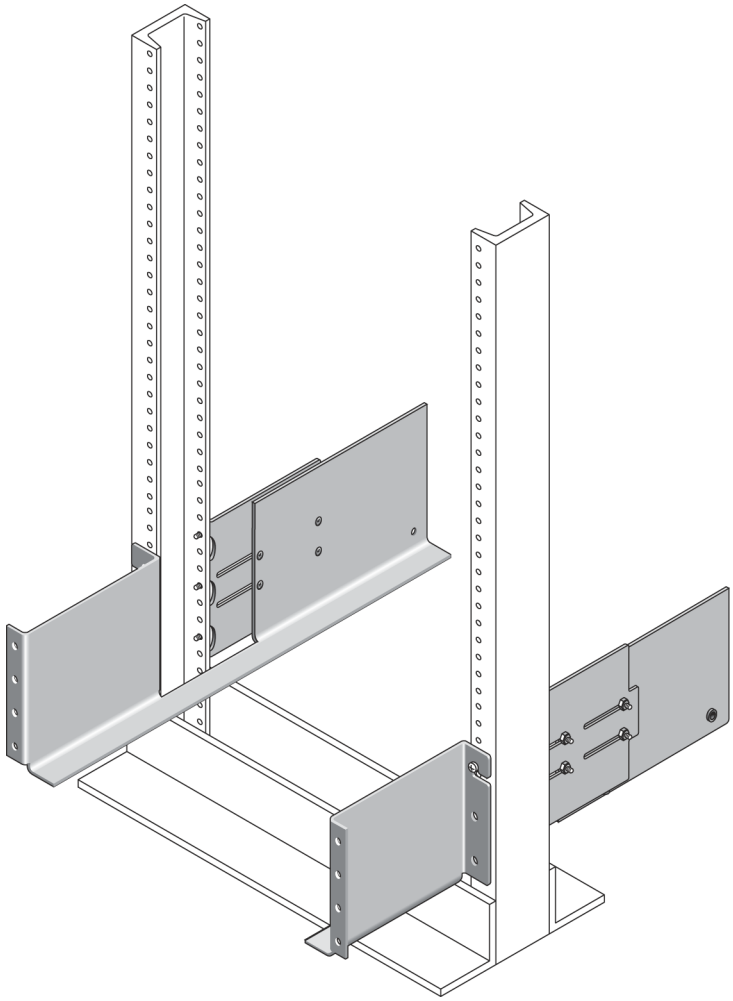
2. **Align the open slot of the left mounting rail over the front and back screws of the left post, and press the rail down until it is seated over the screws (**FIGURE C-2**). Repeat for the right rail.**

FIGURE C-2 Seating the Mounting Rails Over the Front and Back Screws



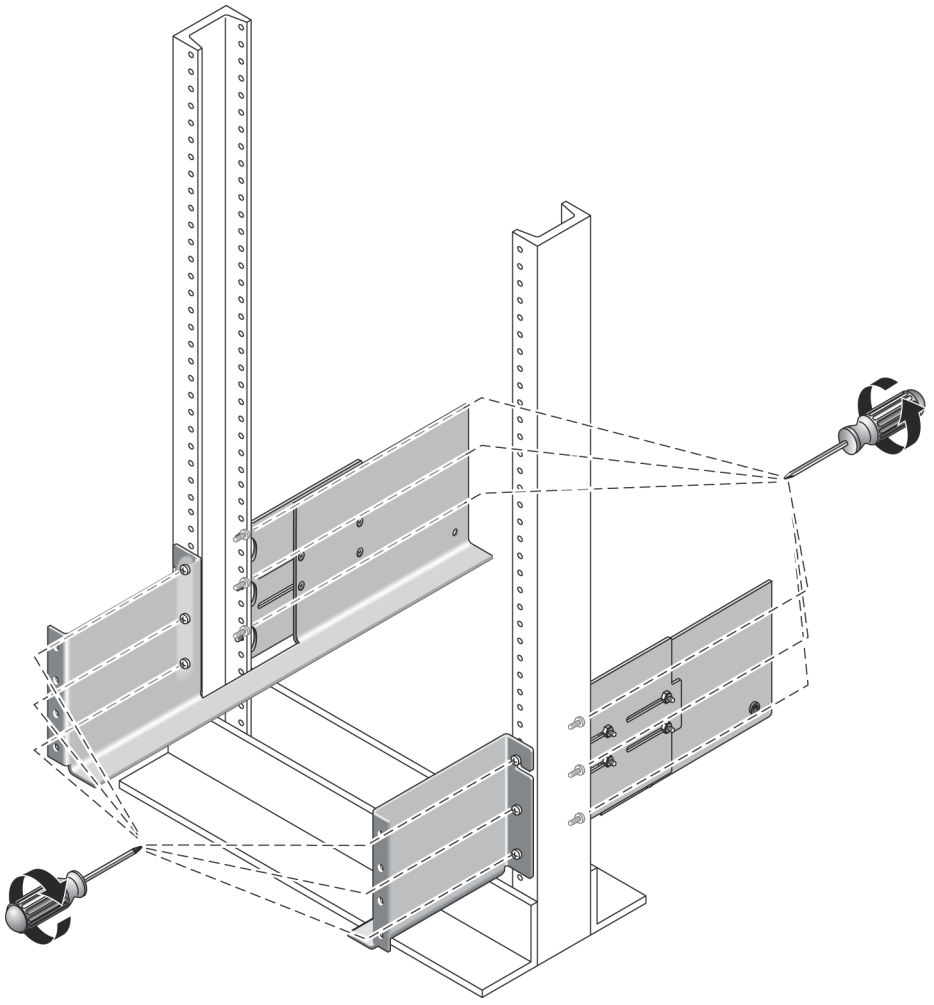
3. **Insert eight more (12-24 or 10-32) screws (two in each post side) in the lower mounting holes at the front and back of the left and right rails (**FIGURE C-3**).**

FIGURE C-3 Inserting Screws in the Lower Mounting Holes



4. **Using the #3 Phillips screwdriver, tighten all twelve screws (three on each side of a post) at the front and back of both mounting rails to secure each rail to its post (**FIGURE C-4**).**

FIGURE C-4 Inserting Screws in the Lower Mounting Holes



Installing a Tray in a Telco 2-Post Rack

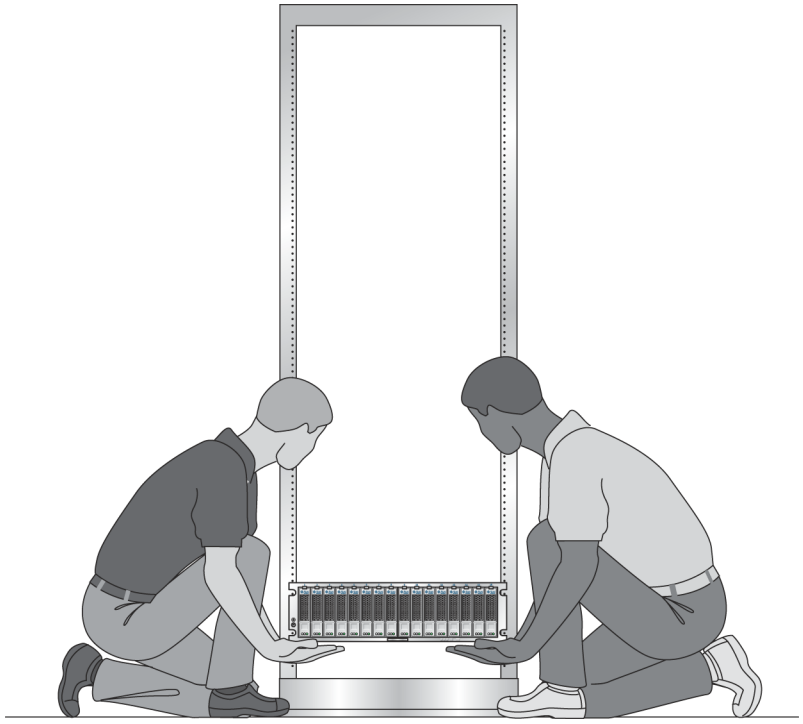
When installing a tray in a Telco 2-post rack, follow these instructions:

1. **Unsnap and remove the left and right end caps on the tray to permit access to the screw mounting holes.**

2. **Using two people, one at each side of the tray, carefully lift and rest the tray on the bottom ledge of the left and right rails (FIGURE C-5).**

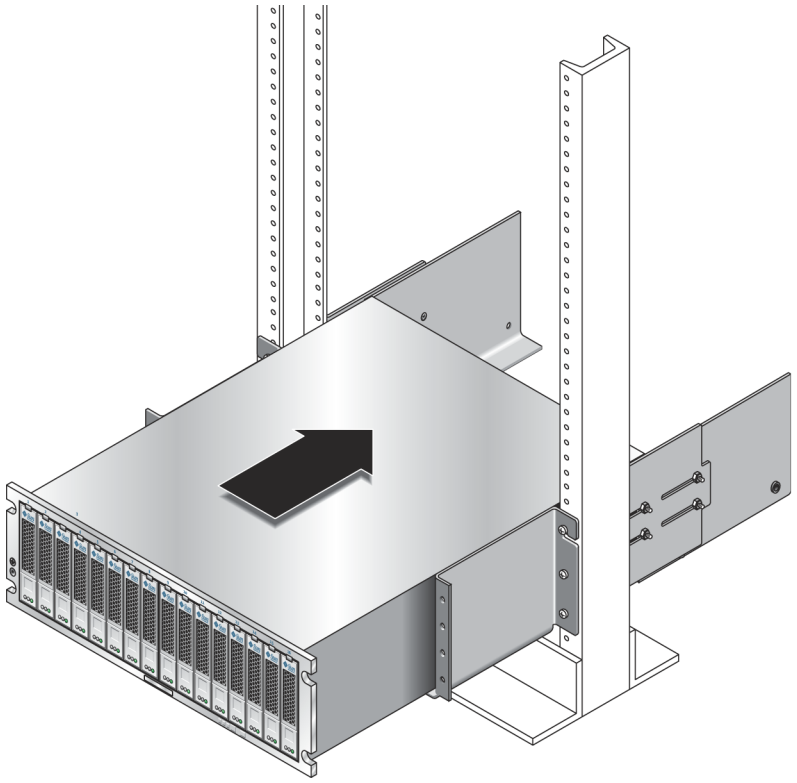
Caution – Use care to avoid injury. An tray can weigh up to 95 pounds (45 kg).

FIGURE C-5 Positioning the Tray in the Rack



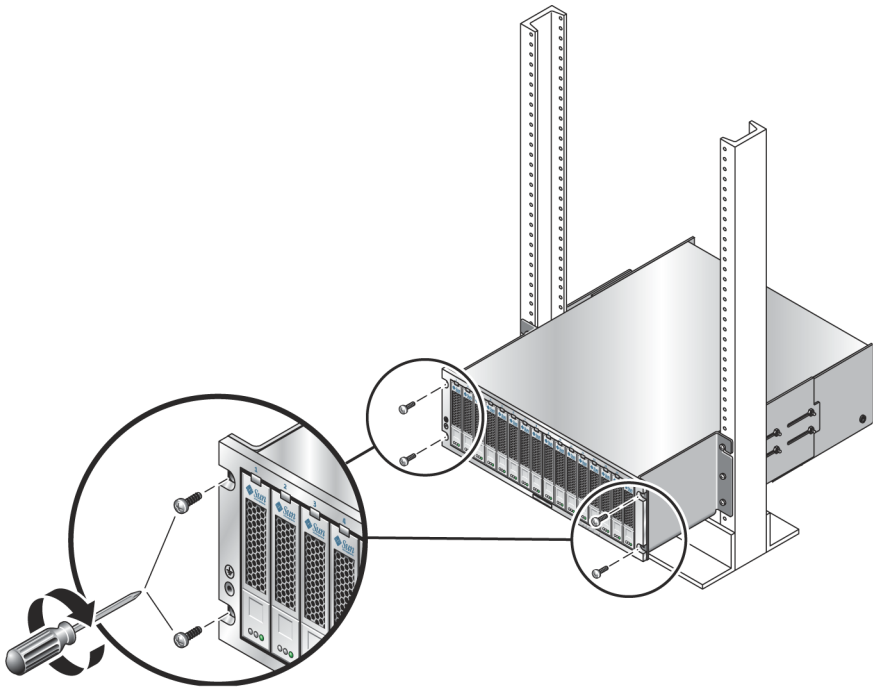
3. **Carefully slide the tray onto the mounting rails until the front bezel of the tray contacts the rail flange on each side (FIGURE C-6).**

FIGURE C-6 Sliding the Tray Into the Rack



4. **Use the #2 Phillips screwdriver to insert and tighten four 10-32 x 1/2“ screws, washers, and nuts (two each per side) to secure the tray to the front of the rack (**FIGURE C-7**).**

FIGURE C-7 Securing the Tray to the Front of the Rack



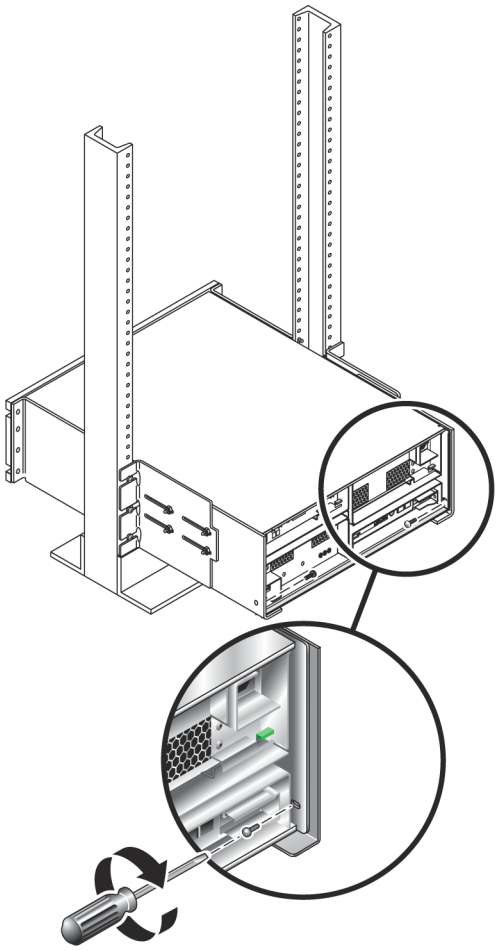
5. **Replace the left and right end caps to hide the front mounting screws.**

   The end caps snap onto the front bezel of the tray.

6. **At the back of the tray, make a final adjustment to the rail lengths to align the back mounting points (**FIGURE C-8**) on the rail and array.**

7. **At the back of the tray, use the flathead screwdriver to install and tighten two 6-32 flat-head screws (one per side) through the back mounting points (**FIGURE C-8**).**

FIGURE C-8 Securing the Tray to the Back of the Rack



8. **Tighten the four10-32 locknuts (two on each rail) on each rail extension to secure the rail length.**

FIGURE C-9 Tightening the Locknuts on the Rail Extension.