Sun™ Storage J4500 Array Product Notes

Sun Microsystems, Inc.
www.sun.com

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Contents

CHAPTER 1

Sun Storage J4500 Array Product Notes

This document contains late-breaking information and issues for the Sun™ Storage J4500 array. It contains the following sections:

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Supported Server Platforms

The Sun Storage J4500 Array is supported for use with the following Sun servers and workstations:

TABLE 1-1 Supported Sun x64 and SPARC Servers

x64 Servers	SPARC Servers
X2100 M2, X2200 M2, X2250, X4100 M2, X4200 M2, X4140, X4150, X4240, X4250, X4440, X4450, X4540, X4600, X4600 M2, X6220, X6240, X6250, X6440, X6450	M3000, M4000, M5000, M8000, M9000, T1000, T2000, T5120, T5140, T5220, T5240, T5440, T6300, T6320, T6340, U45, V215, V245, V445

A list of all supported server platforms for the Sun Storage J4500 array is available on the Sun web site (http://www.sun.com/storagetek/disk_systems/expansion/4500/specs.xml).

Supported Host Bus Adapters

The following Host Bus Adapters (HBAs) are supported for use with the Sun Storage J4500 array:

- **Sun StorageTek PCI Express SAS 8-Channel HBA** (SG-XPCIE8SAS-E-Z, LSI™-based disk controller):
  - Installed in a free PCIe slot in supported Sun Fire and SPARC servers to provide an external connection to the Sun Storage J4500 array.
  - The minimum required HBA firmware revision for Sun Storage J4500 array support: firmware 1.26.00.00-IT, BIOS 6.24.00.00, Fcode 1.00.49, hardware revision B3. Updates may be obtained at: (http://www.lsi.com/support/sun)

Note – The previous minimum required firmware revision (1.23.04.219) was updated to fix a potential data loss issue described in Sun Alert 248487.

  - The HBA hardware must have a Sun manufacturing part number of 375-3487-02 or higher (for example, 375-3487-03 is supported while 375-3487-01 is not supported).

- The minimum driver version for operating system support for this HBA when connected to the Sun Storage J4500 array is described in the following table:

OS Supported	Minimum SG-XPCIE8SAS-E-Z HBA Driver Version Supported
Solaris 10 5/08, x86	MPT 1.77. An earlier version of the MPT driver may be updated with OS patch 137137-09 (SPARC) or 137138-09 (x86)
Solaris 10 5/08, SPARC	MPT 1.77. An earlier version of the MPT driver may be updated with OS patch 137137-09 (SPARC) or 137138-09 (x86)
Solaris 10 10/08, x86	MPT 1.77
Solaris 10 10/08, SPARC	MPT 1.77
Windows Server 2003, 32/64-bit	1.28.03, additional J4500 driver is required. See "Updated Driver Files Required for Windows (6679125)" on page 15.
Windows Server 2008, 32/64-bit	1.28.03, additional J4500 driver is required. See "Updated Driver Files Required for Windows (6679125)" on page 15. Note that the Sun Common Array Manager 6.1.2 is not supported for use with data host servers running Windows Server 2008.
Red Hat Enterprise Linux (RHEL) 4.6 32/64-bit	MPT 3.16.00.00
RHEL 5.1 32/64-bit	MPT 4.16.00.00
RHEL 5.2 32/64-bit	MPT 4.16.00.00
SUSE Linux Enterprise Server (SLES) 9 SP4 32/64-bit	MPT 3.16.00.00
SLES 10 SP1 32/64-bit	MPT 4.16.00.00
SLES 10 SP2 32/64-bit	MPT 4.16.00.00

- **Sun StorageTek SAS RAID Eight-Port, External HBA** (SG-XPCIESAS-R-EXT-Z, Adaptec™-based RAID controller):
  - Installed in a free PCIe slot in supported Sun Fire and SPARC servers to provide an external connection to the Sun Storage J4500 array.
  - The initial firmware/BIOS version shipped with this HBA will support its use with the Sun StorageJ4500 array. For detailed information, refer to the *Sun StorageTek RAID Manager Software Release Notes* (820-2755).
  - The initial drivers and software shipped with this HBA will support its use with the Sun Storage J4500 array. For a complete listing of operating system driver support, refer to the *Sun StorageTek RAID Manager Software Release Notes* (820-2755). For Windows installations, an additional J4500 driver is required. See "Updated Driver Files Required for Windows (6679125)" on page 15.

- **Sun StorageTek ExpressModule SAS 8-Channel HBA** (SG-PCIE8SAS-EB-Z, LSI™-based disk controller):
  - Installed in a free PCIe ExpressModule slot in a Sun blade chassis to provide an external connection to the Sun Storage J4500 array for supported Sun blade x64 and SPARC server modules.
  - The minimum required HBA firmware revision for Sun Storage J4500 array support: firmware 1.26.00.00-IT, BIOS 6.24.00.00, Fcode 1.00.49. Updates may be obtained at: `(http://www.lsi.com/support/sun)`
  - The minimum driver version for operating system support for this HBA when connected to the Sun Storage J4500 array is described in the following table:

OS Supported	Minimum SG-PCIE8SAS-EB-Z HBA Driver Version Supported
Solaris 10 5/08, x86	MPT 1.77. An earlier version of the MPT driver may be updated with OS patch 137137-09 (SPARC) or 137138-09 (x86)
Solaris 10 5/08, SPARC	MPT 1.77. An earlier version of the MPT driver may be updated with OS patch 137137-09 (SPARC) or 137138-09 (x86)
Solaris 10 10/08, x86	MPT 1.77
Solaris 10 10/08, SPARC	MPT 1.77
Windows Server 2003, 32/64-bit	1.28.03, additional J4500 driver is required. See "Updated Driver Files Required for Windows (6679125)" on page 15.
Windows Server 2008, 32/64-bit	1.28.03, additional J4500 driver is required. See "Updated Driver Files Required for Windows (6679125)" on page 15. Note that the Sun Common Array Manager 6.1.2 is not supported for use with data host servers running Windows Server 2008.
Red Hat Enterprise Linux (RHEL) 4.6 32/64-bit	MPT 3.16.00.00
RHEL 5.1 32/64-bit	MPT 4.16.00.00
RHEL 5.2 32/64-bit	MPT 4.16.00.00
SUSE Linux Enterprise Server (SLES) 9 SP4 32/64-bit	MPT 3.16.00.00
SLES 10 SP1 32/64-bit	MPT 4.16.00.00
SLES 10 SP2 32/64-bit	MPT 4.16.00.00

Supported Configurations

The supported configurations for your array are listed in the following table.

TABLE 1-2 Supported HBAs and Configurations

HBA	Configuration	HBA Connection to Single J4500	J4500 Daisy- Chain Support	Daisy-Chained J4500 Connections
Sun StorageTek SAS RAID External HBA (Adaptec-based)	Single path (single host to array connection)	Refer to the *Sun Storage J4500 Array System Overview* (820-3163)	Yes, for a total of two J4500s per HBA	Refer to the *Sun Storage J4500 Array System Overview* (820-3163)
Sun StorageTek SAS External HBA (LSI-based) --or-- Sun StorageTek ExpressModule SAS External HBA (LSI-based)	Single or multipath	Refer to the *Sun Storage J4500 Array System Overview* (820-3163)	Yes, two J4500s cascaded single path from each HBA wideport (four arrays total), --or-- Two J4500s cascaded multipath from each HBA wideport (two total arrays)	Refer to the *Sun Storage J4500 Array System Overview* (820-3163)

Note – For multipath support, newer versions of HBA and array fimrware and drivers might be required. Refer to the Sun Storage J4500 Array System Overview (820-3163).

Latest Software Updates

The latest software updates for the Sun Storage J4500 array, including the Sun Common Array Manager (CAM), are available on the Sun download web site, at:

(http://www.sun.com/download/index.jsp)

Click on the **View by Category** tab. Choose **Systems Administration > Storage Management** and look for the appropriate Sun Storage J4500 array downloadable package.

Latest Firmware Updates

The latest firmware updates for the Sun Storage J4500 array are available through the Sun Common Array Manager (CAM) software. When performing array enclosure firmware updates, CAM checks the Sun software download site for the latest available updates.

Hardware Issues

The following hardware issues apply to the Sun Storage J4500 array.

Sun Fire X2200 M2 Server With Sun Storage J4500 Unable to Boot From the Network (6666703)

When the server is attached to an external Sun Storage array disk product (such as the Sun Storage J4500 Array), the server might fail to boot when the network boot option is selected (pressing F12 when booting). This is because the server only supports eight boot devices. One of those devices is reserved for the server's CD/DVD drive. The remaining seven boot device options are allocated to drives in the external Sun Storage array, which is attached to the server through a SAS host bus adapter (HBA) PCIe card. Therefore, network boot options are not present in the server BIOS's boot device priority list.

Workaround: When booting from the network, use the HBA's BIOS configuration utility to disable boot support for the HBA.

- For the StorageTek SAS RAID Eight-Port HBA (SG-XPCIESAS-R-EXT-Z, Adaptec-based RAID controller), this can be done using the HBA BIOS utility. Press Ctrl-A when prompted during the boot process to launch the HBA BIOS utility. At the -Select menu, disable the HBA's runtime BIOS setting (preventing

the HBA from being used as a boot device). Refer to the "Using the BIOS RAID Configuration Utility" chapter of the *Sun StorageTek SAS RAID HBA Installation Guide* (820-1260), which is available on the Sun web site at:

(http://docs.sun.com/app/docs/prod/sas.raidhba.ext#hic)

- For the StorageTek PCI Express SAS 8-Channel HBA (SG-XPCIE8SAS-E-Z, LSI-based controller), this can be done using the HBA BIOS utility. Press Ctrl-C when prompted during the boot process to launch the HBA BIOS utility. At the main menu, select the HBA to be disabled (preventing the HBA from being used as a boot device). Then, using the arrow keys to highlight the Boot Order field, press the Delete key. Refer to the "Booting Through the SAS HBA" section of the *Sun StorageTek PCI Express SAS 8-Channel HBA Installation Guide* (820-0070), which is available on the Sun web site at:
(http://docs.sun.com/app/docs/prod/pcie.sas.adapt#hic)

When you no longer require network boot and want to use external Sun Storage array drives as boot devices, go back into the HBA BIOS configuration utility and re-enable boot support for the HBA.

Removing a J4500 Power Supply Without First Unplugging AC Power Will Power Off the Array (6721256)

The Sun Storage J4500 array has redundant, hot-pluggable power supplies and can continue to operate with one failed power supply. If the array has a failed power supply, and you attempt to remove it without first unplugging the failed power supply's AC power cord, the entire array will power off. Removing a power supply with the AC power cord still connected is not supported.

Workaround: When removing a power supply, first unplug the AC power cord from the power supply and then remove the power supply from the array. Instructions for power supply removal can be found in the *Sun Storage J4500 Array Service Manual* (820-3160).

Loss of Cable or Connector Phys Can Cause Performance Degradation Without Generating an Alert (6731647)

The Sun Storage J4500 array has four SAS ports (two per SAS fabric). Each port contains four phys (physical links). If an active SAS port or cable is damaged and loses one or more of its phys, you will not receive any kind or alert or warning about

it, either through the enclosure management software or the array indicator LEDs. However, the problem can manifest itself in a noticeable drop in storage I/O performance. Each phy acts like a separate I/O bus, the fewer bus lines the less bandwidth is available for I/O.

Workaround: When troubleshooting problems with J4500 performance, be sure to check the SAS cable and SAS connectors for damage. Replace the cable if it is damaged. Move the cable to a different SAS port if the connector port (on the HBA or the array) is damaged.

Array Management General Issues

The following enclosure management issues apply to the Sun Storage J4500 array.

Sun Common Array Manager Support for the Sun Storage J4500 Array

The minimum version of the Sun Common Array Manager required to support the Sun Storage J4500 array is version 6.1.2. This software is free and downloadable from the System Administration/Storage Management category on the Sun Software Download site at:

(http://www.sun.com/download/index.jsp)

Note – CAM version 6.1.2 does not support Sun Storage J4500 array enclosure management when the array is connected to a data host server running Windows Server 2008. Check the CAM *Software Release Notes* for the latest support information.

Sun Common Array Manager Does Not Report Over-Temperature Condition (6741036)

If the temperature in the Sun Storage J4500 array rises too quickly to the point of a thermal-trip shutdown, the Common Array Manager (CAM) might not issue an alarm for the event. CAM polls the array every five minutes. If the over-temperature condition happens within that window, CAM will not capture it. CAM will, however, capture that the array has shut down by detecting the loss of the SAS link.

Note that even though CAM did not capture the event, the array hardware will still work as expected and shut the array down to prevent damage from temperatures that exceed its operating limit.

Array Name Listed by Common Array Manager Does Not Match Array WWN Label (6745468)

The Sun Storage J4500 array has a unique SAS World Wide Name (WWN) label attached at the back of the array enclosure for identification. By default, the J4500 stores a variation of the base array WWN in a special programmable register called the Nickname. The nickname is available to enclosure management software to allow you to give the array a descriptive name. The Sun Common Array Manager (CAM) supports this feature. When the array is registered in CAM, the nickname for the active SAS fabric is displayed (shown in the "name" field).

The default nickname is slightly different depending upon which SAS fabric (A or B) is being used. Here's an example of how it varies from the base array WWN:

- Default SAS fabric A nickname - 50800200004917C0
- Default SAS fabric B nickname - 5080020000491740
- Base array WWN - 5080020000491700 <--- This example value matches the physical label on the back of the array enclosure.

The last two digits in SAS fabric A are seen as "C0', in SAS B the last two digits are "40".

You can change the nickname from the CAM Administration page (see the "Naming an Array" section in Chapter 3 of the *Sun StorageTek Common Array Manager User Guide for the J4000 Family* on the Sun documentation web site at: `(http://docs.sun.com/app/docs/coll/j4500)`. The new name will be saved to the array and will replace the existing nickname. Note that if you change the SAS fabric being used, for example from A to B, you will need to reset the name in CAM.

See also "Old Array Name Displayed After Moving SAS Cable From J4500 SAS A to SAS B (6738923)" on page 10.

Old Array Name Displayed After Moving SAS Cable From J4500 SAS A to SAS B (6738923)

In the Sun Common Array Manager (CAM), users can set a descriptive name for the Sun Storage J4500 array. This descriptive name is applied to the active SAS fabric only. The secondary SAS fabric retains the default name set at the factory. During a firmware update of the J4500, the procedure requires you upgrade the firmware of both SAS fabrics. After you move the SAS cable and perform the firmware update to the secondary fabric, if you leave the active SAS link on the secondary fabric, CAM displays the original factory-set name (typically the SAS fabric WWN) in the CAM GUI, CLI and email notifications, instead of the descriptive name you assigned in CAM.

This is expected behavior, since the primary and secondary SAS fabrics on the J4500 are separate and not linked to each other.

Workaround: If you choose to leave the active SAS link on the secondary fabric, you need to reset the registered name in CAM.

See also "Array Name Listed by Common Array Manager Does Not Match Array WWN Label (6745468)" on page 9.

No Array Fault LEDs Light When a Disk is Removed, But An Alarm is Logged (6731624)

When you pull a drive out of a Sun Storage J4500 array you will not see a fault (amber) LED on any of the enclosure status indicators. However, the Common Array Manager (CAM) logs an alarm telling you a disk has been removed and that the array is not in an optimal state. This discrepancy does not indicate a problem. Although the standard configuration for the J4500 always includes the full complement of 48 disks, occasional maintenance procedures might temporarily leave the array with fewer disks. The array will still operate normally.

Note – The J4500 array enclosure will operate normally with fewer than 48 disks, however, this only applies if all enclosure maintenance covers (fan and disk) are closed to allow for proper air flow. Running the enclosure with its maintenance covers open for longer than 60 seconds can cause the enclosure to overheat.

Baseline Firmware Update Fails With FWR_DEVICE_ERROR, 4 (6744983)

In rare cases, a baseline firmware update using the Sun Common Array Manager might fail with the following error:

```
Flash firmware image failed -FWR_DEVICE_ERROR, 4
```

The CAM alarm log only indicates a firmware revision delta alarm (which is typical if CAM determines that there is a later version of firmware than what is currently on your array).

Workaround: Retry the update. If repeated updates do not resolve the issue, call Sun for service.

Solaris 10 5/08 Patch Required to Use Common Array Manager (CAM)

Patches required to run CAM on Solaris 10 with the Sun Storage J4500 and Sun Blade 6000 arrays are (i386) 138881-01 and (SPARC) 138880-01 (SES driver). The SCSI Enclosure Services Driver (SES) must be patched in order for CAM to do discovery and manage these types of arrays.

Diagnostics Issues

The following issues apply to SunVTS diagnostics software, version 6.05 and above, when used with the Sun Storage J4500 array.

Locating Diagnostics Documentation

The *Where to Find Sun Storage J4500 Array Documentation* (820-3159) lists a diagnostics manual that is not part of the Sun Storage J4500 array collection on the Sun documentation web site. The SunVTS diagnostics information is specific to the server acting as the host for the J4500.

For information on the SunVTS version supported for your server, including an overview of diagnostics performed and methods to launch SunVTS, go to the documentation collection for the host server. Server documentation is located on the Sun documentation web site at:

(http://docs.sun.com/app/docs/prod/servers#hic)

For more in-depth information on using SunVTS, supported servers, available tests, and how to interpret results, go to the documentation collection of the version of SunVTS that you are running at:

(http://docs.sun.com/app/docs/prod/vts64#hic)

Note – The Sun Common Array Manager (CAM) is the recommended tool for managing and monitoring the Sun Storage J4500 array. CAM is designed to help you monitor all components in the array enclosure during normal server operation, alert you if there are problems, and provide service advisories for correcting fault conditions.

Solaris Issues

The following issues apply to systems running the Solaris 10 operating system when using the Sun Storage J4500 array.

- "ZFS Forces a Flush of the NVRAM on the StorageTek SAS RAID External HBA When Completing Synchronous Writes, Which Impacts Performance" on page 13
- "Unable to Install SPARC Solaris on Sun Storage J4500 External Drives with StorageTek SAS RAID HBA (6698440)" on page 13

ZFS Forces a Flush of the NVRAM on the StorageTek SAS RAID External HBA When Completing Synchronous Writes, Which Impacts Performance

As of Solaris 10 8/07, you can prevent ZFS from issuing SYNCHRONIZE CACHE commands to the NVRAM on the Sun StorageTek SAS RAID External HBA (SG-XPCIESAS-R-EXT-Z, Adaptec-based RAID controller) by defining a ZFS global setting in the Solaris `/etc/system` file. This setting improves ZFS performance and is appropriate for Solaris 10 8/07. However, this setting will likely not be required in subsequent releases of the Solaris OS. The setting must only be used if all devices managed by ZFS are managed with non-volatile caches.

Workaround: To define the ZFS global setting for Solaris 10 8/07, do the following:

1. On the system in which the HBA is installed, add the following line to the Solaris `/etc/system` file:

   ```
   set zfs:zfs_nocacheflush=1
   ```

Note – This global setting affects all ZFS file systems on the system in which the HBA is installed. Keep in mind that you must not define this setting if ZFS is managing any disks with volatile caching, as the setting can put data at risk on those disks.

---

2. Reboot the host system.

For more information about how to reboot the system, see your system documentation.

Unable to Install SPARC Solaris on Sun Storage J4500 External Drives with StorageTek SAS RAID HBA (6698440)

If you have a SPARC system running Solaris 10 5/08 OS or earlier with a StorageTek SAS RAID HBA (Adaptec-based) connected to a Sun Storage J4500 array, you will not be able to install the Solaris OS on one of the J4500 drives. You can still use the J4500 array as a storage device, but will not be able to boot the Solaris OS from it.

Support for installing and booting the Solaris OS (for SPARC platforms) on the J4500 will be available with Solaris 10 10/08 OS using the aac driver.

Linux Issues

The following issues apply to systems running the Red Hat or SUSE Linux operating systems when using the Sun Storage J4500 array.

Array Hot-Plug Actions Not Supported on Linux (6741578, 6688831)

If you perform a hot-plug action (such as a SAS cable disconnect/reconnect, array power cycle, disk removal/replacement, or array firmware update) on a Sun Storage J4500 array connected to a host server running Linux, you might experience one of the following problems:

- The host might not be able to see the array.
- The host might receive read/write errors with the array.
- The host server might hang, causing it to be unresponsive.
- The Common Array Manager (CAM) might not be able to find replaced devices or be unable to register the array and display the following error: `No items found`.

This has been seen on Linux versions based on the 2.6 kernel (for example, SLES 9, SLES 10, RHEL 4 and RHEL 5). This version of the kernel does not support array hot-plug actions. To find out which kernel version your Linux system is running, enter the following command from root.

```
# uname -r
```

You will see, for example:

```
2.6.9-67.ELsmp
```

Workaround: If you encounter this issue, you need to reboot the host server. If you need to temporarily disconnect the SAS cable from the array or host, be sure to reboot the host after reconnecting the cable.

Windows Issues

The following issues apply to the Sun Storage J4500 array running Microsoft Windows.

Updated Driver Files Required for Windows (6679125)

If your Sun Storage J4500 array is connected to a server running Microsoft Windows Server 2003 or 2008, you need to download and install an updated driver package for Windows Device Manager to properly recognize the array. Go to the Sun software download site at:

(http://www.sun.com/download/index.jsp)

Click the **View by Category** tab. Choose **Systems Administration > Storage Management** and look for the appropriate Sun Storage J4500 array downloadable package.

Sun StorageTek SAS RAID External Host Bus Adapter Issues

The following issues relate to the Sun Storage J4500 array attached to the Sun StorageTek SAS RAID Eight-Port External HBA (SG-XPCIESAS-R-EXT-Z, Adaptec-based RAID controller).

Newly Installed Drives Show as Failed With Red "X" (6669248)

If you add a new array to the HBA or a new disk to the array, the new drives will be marked as failed (marked with a red "x") in the StorageTek RAID Manager GUI, even after a rescan. This will also generate messages such as "`Selection timeout: device removed or not responding`" in the event log indicating that a drive might have failed. It is even possible to see a great number of these types of messages.

It is important to understand that this is normal behavior, and that treating a disk as "failed" when it is first discovered and in an unknown state to the RAID controller is the safest way to handle newly discovered disks. After a period of time, after the HBA scans the disk(s), the failed marker will be removed and the disk(s) will be accessible for management.

Workaround: When attaching new arrays or installing new disk drives, wait for the HBA to fully discover the drives. This process can take several minutes depending on how many drives are being added. Ignore any messages specific to the new devices until the HBA has finished its discovery and the failed markers are removed.

Creating Volumes Using the HBA BIOS Utility Might Affect an Internal System Boot Device (6694218)

Using the StorageTek HBA BIOS RAID configuration utility to create volumes on your Sun Storage J4500 array might cause another internal boot device in the system not to boot. This is a rare occurrence.

Workaround: Creating volumes on the Sun Storage J4500 array using the HBA BIOS utility is recommended for advanced users only. When using the HBA BIOS RAID Configuration utility to create volumes, refer to the *Sun StorageTek SAS RAID HBA Installation Guide* (820-1260).

Creating Volumes Using the HBA BIOS Utility Might Affect StorageTek RAID Manager Performance (6686753)

If you are in the process of configuring RAID volumes using the HBA's BIOS utility, and at the same time attempt to run the StorageTek RAID Manager, there will be noticeable degradation in StorageTek RAID Manager performance until the BIOS utility completes the volume configuration process.

Workaround: If you use the HBA BIOS to create RAID volumes, do not also attempt to use the StorageTek RAID Manager. Wait until RAID volume creation is completed before attempting to run the StorageTek RAID Manager. Creating volumes on the Sun Storage J4500 array using the HBA BIOS utility is recommended for advanced users only. When using the HBA BIOS RAID Configuration utility to create volumes, refer to the *Sun StorageTek SAS HBA Installation Guide* (820-1260).

The Space Bar and Delete Keys Do Not Work When Changing a Logical Disk Label (6618707)

If you are using the StorageTek RAID Manager and performing an express or custom controller configuration, you might find that the space bar and Delete keys do not work when attempting to change the logical device name with the cursor at the end of the Logical Device name field.

Workaround: When changing a Logical Device name, use the mouse to highlight the existing name and then type in the new name.

This issue has been fxed in HBA firmware version 15872, available from the Intel support site:
(http://support.intel.com/support/motherboards/server/sunraid/index.htm)

Deleting a Logical Drive Without Deleting a Partition

When attempting to delete a logical volume, you might discover that the GUI tool advises you to remove any partitions on the logical drive before it will allow deletion. This is a safety feature designed to prevent accidental deletion of drives with valid data.

Workaround: If you find it necessary to remove a logical volume without deleting partitions from the OS first, note that the `arcconf` command line tool allows the deletion of logical volumes without first requiring removal of the partitions. The syntax for this is:

```
arcconf DELETE # LOGICALDRIVE z
```

Where # is the controller number and *z* is the number of the logical drive to be deleted. You will receive the following warning message:

```
WARNING: logical device z may contain a partition.

All data in logical device z will be lost.

Delete the logical device?
```

Press **`y`** and then Enter to continue, or press Enter to abort.

Returning a Non-Failed Drive to a Ready State

If, for testing purposes, you use the StorageTek RAID Manager GUI to fail a physical drive, the drive does not normally return to a ready state without physically replacing the drive. In a test scenario, you might not need to physically replace the drive, and might use the `arcconf` command line tool to return the drive to a ready state. The syntax for this is:

```
arcconf SETSTATE # DEVICE x y RDY
```

Where # is the controller number and *x y* are the drive channel and ID number respectively.

Switching SAS Cables or Making New Connections (6740104, 6729675)

If you replace a SAS cable, switch a SAS cable from one port of the HBA to the other port on the HBA, or from one port of the J4500 to another port, you should wait long enough after the initial cable disconnect for all the physical hard disks shown in the GUI or through the CLI to indicate that they have been removed (in the GUI, you will see a red "X" on each disk). This prevents problems with the controller attempting to remove drives at the same time it is reading the same drives on another port.

If no display is available, wait at least three minutes between disconnecting and then reconnecting SAS cables.

Workaround: If, after reconnecting the cable, you see no progress in drive re-discovery after several minutes you might need to initiate an HBA rescan. Try disconnecting and reconnecting the SAS cable to initiate a rescan. If the drives remain in the failed state after this action, reboot the host server.

Manual Rescan Fails After a J4500 Firmware Update (6740110)

In rare instances, after using the Sun Common Array Manager (CAM) to upgrade the Sun Storage J4500 array firmware, the StorageTek RAID Manager might fail when a manual rescan is initiated with an event error similar to the following:

```
Could not perform the bus rescan: controller 1. Result codes:
[DETAILS: The driver cannot execute the requested IOCTL. RC:-5
API:0x3a IOCTL:0x0].
```

Workaround: If you see this issue, try disconnecting and reconnecting the SAS cable to initiate a rescan. If the rescan continues to fail after this action, reboot the host server.

Host Loses Communications With Both the HBA and Array Some Time After a Server Reboot (6743084)

In rare instances, on a Sun Fire T2550 SPARC host running Solaris 10 5/08 OS, the host might lose communications with both the HBA and the Sun Storage J4500 array for no apparent reason. The Common Array Manager logs a "communications link lost" event. On physical inspection, the SAS link LEDs on the J4500 display green. However, the StorageTek RAID Manager or its CLI cannot find the HBA or the J4500.

Workaround: If you run into this issue, reboot the host server.

StorageTek RAID Manager Agent (ADPTstor_agent) Processes Affect I/O Performance on Solaris (6742727)

On servers running Solaris, the operation of the StorageTek RAID Manager agent (`ADPTstor_agent`) will slightly affect I/O performance during its poll of array disk SMART data. SMART is a predictive failure feature built into hard disk firmware. The agent uses this information to alert the administrator of problems with a disk through the StorageTek RAID Manager. The agent polls for SMART data every 10 minutes and the process takes between 5 and 10 seconds.

Workaround: If you experience unacceptable I/O performance degradation, try disabling the agent to see if it improves, though it is not recommended. To disable the agent, enter the appropriate command at the OS command prompt:

- To turn the agent off: `svcadm disable ADPTstor_agent`
- To turn the agent on: `svcadm enable ADPTstor_agent`

This issue has been fxed in HBA firmware version 15872, available from the Intel support site:
(http://support.intel.com/support/motherboards/server/sunraid/index.htm)

StorageTek RAID Manager Device Properties Shows Old J4500 Firmware Version After Update (6739921)

After updating Sun Storage J4500 array firmware using the Sun Common Array Manager (CAM), the StorageTek RAID Manager device properties for the array still shows the old firmware version.

Workaround: If you run into this issue, note that the correct firmware version level will be seen in the StorageTek RAID Manager after the next reboot of the host server. To confirm your array firmware version, use CAM.

Sun StorageTek SAS External Host Bus Adapter Issues

The following issues relate to the Sun Storage J4500 array attached to the Sun StorageTek SAS 8-Channel External HBA (SG-XPCIE8SAS-E-Z, LSI-based disk controller) and Sun StorageTek ExpressModule SAS 8-Channel HBA (SG-PCIE8SAS-EB-Z, LSI-based disk controller).

After Configuration Change, One or More Disks Might Be Seen as Removed to Host and Management Software (6720242)

In very rare instances on a Sun Fire T2000 SPARC host running Solaris 10 5/08 OS, one or more disks in the Sun Storage J4500 array might show as "removed" to the host system and enclosure management software. No array status LEDs indicate problems with the disks.

This issue has only been seen soon after a significant change to a storage configuration (HBA replacement, disk replacement, cables switched, firmware update).

Workaround: If you run into this issue, first reboot the J4500 array. If, after the array reboot, the disks are still seen by the server as missing, you will need to reboot the host server.

Disks Intermittently Suffer Degraded I/O Performance and Errors (6724252)

In rare instances on a Sun Fire T2000 SPARC host running Solaris 10 5/08 OS, with two daisy-chained Sun Storage J4500 arrays, one or more disks in the Sun Storage J4500 array might exhibit degraded I/O performance and errors while running VDBench. This problem can last several minutes and then the disk will recover. The `/var/adm/messages` log may list the following errors:

```
Error for Command: read(10)
```

and

```
SCSI transport failed: reason 'reset': giving up
```

Workaround: If the error message persists (reported repeatedly), verify that all SATA disk drives in the J4500 are fully functional (look for errors in the error log of your enclosure management software, look for fault indicator LEDs on the array enclosure and use the Common Array Manager to make sure the disks have the latest firmware from Sun). You might further diagnose whether the link error is due to a disk or disk slot by testing whether the error messages follow a given disk (by moving the disk that exhibits the error to a different slot in the array), or is with a specific disk slot (by moving known good drives into a slot that has exhibited the error).

If you have a disk problem, replace the disk. If you have a problem with a disk slot, remove the System Controller and check its two high-speed dock connectors (two yellow connectors that plug the System Controller into the disk backplane) for damaged pins. If you find damaged connector pins, replace the System Controller. If you are unable to determine where the problem is, call Sun for service to determine the next course of action.

Replacement instructions for all customer replaceable components are listed in the *Sun Storage J4500 Array Service Manual* (820-3160) located on the Sun documentation web site at: `(http://docs.sun.com/app/docs/coll/j4500)`.

192 Disks on a Single HBA (6792256)

For both the Sun StorageTek SAS 8-Channel External HBA and Sun StorageTek ExpressModule SAS 8-Channel LSI-based HBAs, the maximum allowable number of daisy-chained Sun Storage J4500 arrays per HBA is two with HBA firmware versions below 1.26.03.00-IT. This allows for a total of 96 disks per HBA.

This issue has been fixed in firmware release 1.26.03.00-IT. For 192 disks per HBA support, download and upgrade your HBA firmware, if required. For LSI HBA firmware and driver updates, go to:

(http://www.lsi.com/support/sun).

Host is Unable to See Zoned Disks After Moving SAS Cable (6824323)

CAM access configuration (zoning) is designed to behave in this manner for SATA drives. Access configuration features are PHY-based rather than initiator-based. When zoning is activated while a host is connected to port 0 of J4500 array, the HBA's SAS address is recorded for those 4 phys of port 0 and some other value recorded for the 4 phys of port 1. When the cable is moved from port 0 to port 1, the HBA's SAS address does not match the port 1 address. The address change causes the Zoning Security policy to come into effect and the HBA will be put into zone 0.

Documentation Issues

The following issues relate to the Sun Storage J4500 array documentation.

- "CMA Information in the X4500-J Slide Rail Installation Guide is Incorrect" on page 23
- "Management Options When Using the StorageTek ExpressModule SAS External HBA (LSI-Based)" on page 24

CMA Information in the X4500-J Slide Rail Installation Guide is Incorrect

You might receive an early revision of the Sun X4500-J Slide Rail Installation Guide (820-1858-11). This document, along with the slide rail kit, is packaged with the Sun Storage J4500 array. The early revision of this document states that a Cable

Management Arm (CMA) is shipped with your product and must be used. However, due to the possibility of damage to the array SAS cabling, the CMA was removed from the array slide rail kit.

If your array includes the early revision of this document, please go to the Sun documentation web site for the latest version (820-1858-12 or later) and follow the installation instructions in that document.
(http://docs.sun.com/app/docs/coll/j4500)

Management Options When Using the StorageTek ExpressModule SAS External HBA (LSI-Based)

When using the Sun StorageTek ExpressModule SAS External HBA (SG-XPCIE8SAS-EB-Z, LSI™-based controller) with your Sun Storage J4500 array, your management options are the same as those listed for the Sun StorageTek SAS External HBA (SG-XPCIE8SAS-E-Z, LSI™-based controller). For a complete list, refer to Chapter 2 of the *Sun Storage J4500 Array System Overview* (820-3163), available on the Sun documentation web site
(http://docs.sun.com/app/docs/coll/j4500)