



Sun StorageTek™ Common Array Manager Software Release Notes

Release 6.4.1

Sun Microsystems, Inc.
www.sun.com

Part No. 820-7920-13
August 2009

Submit comments about this document by clicking the Feedback[+] link at: <http://docs.sun.com>

Copyright 2009 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, California 95054, U.S.A. All rights reserved.

Sun Microsystems, Inc. has intellectual property rights relating to technology that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed at <http://www.sun.com/patents> and one or more additional patents or pending patent applications in the U.S. and in other countries.

This document and the product to which it pertains are distributed under licenses restricting their use, copying, distribution, and decompilation. No part of the product or of this document may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any.

Third-party software, including font technology, is copyrighted and licensed from Sun suppliers.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and in other countries, exclusively licensed through X/Open Company, Ltd.

Sun, Sun Microsystems, the Sun logo, AnswerBook2, docs.sun.com, Sun StorEdge, Solaris, Java, Sun StorageTek, and Solstice DiskSuite are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S., or its subsidiaries, and in other countries.

All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and in other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

Legato Networker is a registered trademark of Legato Systems Inc.

Netscape Navigator and Mozilla are trademarks or registered trademarks of Netscape Communications Corporation in the United States and other countries.

The OPEN LOOK and Sun™ Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

U.S. Government Rights—Commercial use. Government users are subject to the Sun Microsystems, Inc. standard license agreement and applicable provisions of the FAR and its supplements.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Copyright 2009 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, Californie 95054, Etats-Unis. Tous droits réservés.

Sun Microsystems, Inc. a les droits de propriété intellectuels relatants à la technologie qui est décrit dans ce document. En particulier, et sans la limitation, ces droits de propriété intellectuels peuvent inclure un ou plus des brevets américains énumérés à <http://www.sun.com/patents> et un ou les brevets plus supplémentaires ou les applications de brevet en attente dans les Etats-Unis et dans les autres pays.

Ce produit ou document est protégé par un copyright et distribué avec des licences qui en restreignent l'utilisation, la copie, la distribution, et la décompilation. Aucune partie de ce produit ou document ne peut être reproduite sous aucune forme, par quelque moyen que ce soit, sans l'autorisation préalable et écrite de Sun et de ses bailleurs de licence, s'il y en a.

Le logiciel détenu par des tiers, et qui comprend la technologie relative aux polices de caractères, est protégé par un copyright et licencié par des fournisseurs de Sun.

Des parties de ce produit pourront être dérivées des systèmes Berkeley BSD licenciés par l'Université de Californie. UNIX est une marque déposée aux Etats-Unis et dans d'autres pays et licenciée exclusivement par X/Open Company, Ltd.

Sun, Sun Microsystems, le logo Sun, AnswerBook2, docs.sun.com, Sun StorEdge, Solaris, Java, Sun StorageTek, et Solstice DiskSuite sont des marques de fabrique ou des marques déposées de Sun Microsystems, Inc., ou ses filiales, aux Etats-Unis et dans d'autres pays.

Netscape Navigator et Mozilla est une marques de Netscape Communications Corporation aux Etats-Unis et dans d'autres pays.

Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc.

L'interface d'utilisation graphique OPEN LOOK et Sun™ a été développée par Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique Xerox, cette licence couvrant également les licenciées de Sun qui mettent en place l'interface d'utilisation graphique OPEN LOOK et qui en outre se conforment aux licences écrites de Sun.

LA DOCUMENTATION EST FOURNIE "EN L'ÉTAT" ET TOUTES AUTRES CONDITIONS, DECLARATIONS ET GARANTIES EXPRESSES OU TACITES SONT FORMELLEMENT EXCLUES, DANS LA MESURE AUTORISEE PAR LA LOI APPLICABLE, Y COMPRIS NOTAMMENT TOUTE GARANTIE IMPLICITE RELATIVE A LA QUALITE MARCHANDE, A L'APTITUDE A UNE UTILISATION PARTICULIERE OU A L'ABSENCE DE CONTREFAÇON.



Contents

Sun StorageTek Common Array Manager Software Release Notes	1
About CAM	2
Patches and Packages	2
CAM Patches - Sun Storage F5100 Flash Array	3
Patch-ID# 141485-01	3
Patch-ID# 141484-01	3
Patch-ID# 141486-01	4
What's New in this Release	4
New Access Configuration Features	4
New Custom Installation Options	4
What You Get with CAM 6.4.1	5
Licensing Optional Premium Features	5
Using Access Configuration Features	7
About Configuring Access/Zoning	9
System Requirements for Access Configuration	9
Access Configuration Guidelines	10
About SAS Multipathing	10
About SATA Affiliation	11
Cascading J4x00 Arrays Using the CAM Browser Interface	12

Configuring Multiple Host Access for a J4x00 Array	20
Using Custom Installation Options	23
Pre-install Device Plug-in Check	23
Core Software Packages	24
Plug-in Software Packages	24
Documentation	26
System Requirements	27
Supported Arrays	27
Supported Platforms and Required Packages	28
Required Patches	30
File Space Requirements	32
About Windows Service Packs	33
Open Ports Required on Management Host	33
Supported Platforms for the Remote CLI Client	34
Supported Web Browsers	34
Best Practices for Browser Performance	35
Supported Languages	35
Installing and Upgrading CAM	36
Installation Requirements	37
RAID Manager Software Drivers, Firmware, and Utilities	38
Prerequisites	38
Installation Logs	39
About the Software Installation DVD	40
Installing From a Downloaded File	40
Supported Upgrades	40
CLI (Minimal) Installation	41
Performing a CLI CAM Installation	42
Uninstalling a CLI CAM Installation	42

Uninstalling a Previous CAM Version	43
Array Firmware Delivered with CAM	44
Firmware Patches	44
Location of Firmware Files	45
Installing the Firmware Baseline	46
Baseline Firmware for RAID Arrays	47
Baseline Firmware for Sun StorageTek 2500 Series Arrays	47
Baseline Firmware for Sun StorageTek 6000 Series and FlexLine Arrays	49
Expansion I/O Modules	52
Supported Expansion Modules	52
Installing Firmware for Additional Expansion Modules	53
Baseline Firmware for JBOD Arrays	53
Baseline Firmware for Sun Storage F5100 Flash Array, Sun Storage J4000 Series Arrays, and the Sun Blade 6000 Disk Module	53
Known Issues and Operational Information	55
Troubleshooting Access Configuration	56
Configuration Access and SATA Affiliation Issues	57
RAID Array Operational Information and Issues	64
DACstore Issues	66
Configuration Issues	70
Documentation Issues	83
Firmware Issues	87
In-Band Array Management - Operational Information and Issues	89
About the RAID Array Proxy Agent	89
Known RAID Array Proxy Agent Limitations	89
Solaris: Checking the UTM LUNs and Start/Stop of the Proxy Agent	90
Localization Issues	90
Linux: Checking The UTM LUNs and Start/Stop of the Proxy Agent	91

Windows: Checking The UTM LUNs and Start/Stop of the Proxy Agent
92

Solaris Issues 96

Notable Updates/Fixes in this Release 97

Sun Microsystems Support 98

Sun Welcomes Your Comments 98

Third-Party Web Sites 98

Sun StorageTek Common Array Manager Software Release Notes

This document contains important information about Release 6.4.1 of the Sun StorageTek™ Common Array Manager (CAM) software, including requirements and issues that can affect installation and operation.

These Release Notes include the following sections:

- [“About CAM” on page 2](#)
- [“What’s New in this Release” on page 4](#)
- [“CAM Patches - Sun Storage F5100 Flash Array” on page 3](#)
- [“What You Get with CAM 6.4.1” on page 5](#)
- [“Using Access Configuration Features” on page 7](#)
- [“Using Custom Installation Options” on page 22](#)
- [“Documentation” on page 25](#)
- [“System Requirements” on page 26](#)
- [“Installing and Upgrading CAM” on page 35](#)
- [“Array Firmware Delivered with CAM” on page 43](#)
- [“Baseline Firmware for RAID Arrays” on page 46](#)
- [“Known Issues and Operational Information” on page 54](#)
- [“Troubleshooting Access Configuration” on page 55](#)
- [“Notable Updates/Fixes in this Release” on page 96](#)
- [“Sun Microsystems Support” on page 97](#)
- [“Sun Welcomes Your Comments” on page 97](#)
- [“Third-Party Web Sites” on page 97](#)

About CAM

The Sun StorageTek Common Array Manager software provides an easy-to-use interface from which you can configure, manage, and monitor Sun StorageTek and Sun Storage arrays.

CAM software includes the following:

- Browser interface
- Local command line interface
- Remote command line interface

The command line interfaces (CLIs) perform the same control and monitoring functions as the browser interface. For most new users, managing the array with the browser interface is recommended because it is easier to use if you're not familiar with the CLI.

To obtain a general overview and detailed technical information, go to:

http://www.sun.com/storage/management_software/resource_management/cam

Click the "Get It" tab to obtain the latest information and version available.

Patches and Packages

For the latest firmware patches available for your arrays, see Software Updates in the Resources section at:

http://www.sun.com/storage/management_software/resource_management/cam/support.xml

For information about LSI HBA packages, go here:

<http://www.lsillogic.com/support/sun>

CAM Patches - Sun Storage F5100 Flash Array

CAM 6.4.1 requires the following firmware patches for the Sun Storage F5100. Instructions for installing patches are located in the README files located in each patch bundle.

Patch-ID# 141485-01

Synopsis: Windows CAM 6.4.1 Firmware Release for F5100

Bugs fixed with this patch:

- 6760758 P2 FMod - unable to run I/O zombie 600f condition occurs
- 6811401 DEX compare errors
- 6834056 - Unexpected Register - device to host FIS during initialization
- 6866655 F5100 power-down results in FMods that are inaccessible or corrupt.

File included with this patch: SUNWj4000.msi

Patch-ID# 141484-01

Synopsis: Solaris CAM 6.4.1 Firmware Release for F5100

Solaris Release: 8, 9, 10

Sun OS Release: 5.8 5.9 5.10

Bugs fixed with this patch:

- 6760758 P2 FMod - unable to run I/O zombie 600f condition occurs
- 6811401 DEX compare errors 6834056 - Unexpected Register - device to host FIS during initialization
- 6866655 F5100 power-down results in FMods that are inaccessible or corrupt.

Files included with this patch:

/opt/SUNWstkcam/share/fw/README_J4000.txt

/opt/SUNWstkcam/share/fw/baseline/f5100.properties

/opt/SUNWstkcam/share/fw/images/sun/MP1F.bin

Patch-ID# 141486-01

Synopsis: Linux RHEL SuSE CAM 6.4.0 Firmware Release for F5100

Relevant Architectures: i386

Bugs fixed with this patch:

- 6760758 P2 FMod - unable to run I/O zombie 600f condition occurs
- 6811401 DEX compare errors 6834056 - Unexpected Register - device to host FIS during initialization
- 6866655 F5100 power-down results in FMods that are inaccessible or corrupt.

File included with this patch: sun-cam-fw-j4000-6.4.1-6.i386.rpm

What's New in this Release

New Access Configuration Features

CAM 6.4.1 introduces access configuration (zoning) support for the Sun StorageTek J4000 Series Arrays (J4200, J4400, and J4500 Storage Expansion Arrays) and the new Sun Storage F5100 Flash Array. You can assign each host its own storage resources, optimizing efficiency through segregation and topology control. Access configuration is accomplished between attached initiators and available disk drives.

See [“Using Access Configuration Features”](#) on page 7.

New Custom Installation Options

You can select specific device plug-ins for CAM installation and save significant space by installing software relevant to your specific configuration.

You still have the option to perform a Typical (full) installation.

See [“Using Custom Installation Options”](#) on page 22.

Note – For the Sun Storage F5100 Flash Array, firmware patches are required in addition to the CAM 6.4.1 software. See [“CAM Patches - Sun Storage F5100 Flash Array”](#) on page 3.

What You Get with CAM 6.4.1

TABLE 1 lists the version information for the software included in this release.

TABLE 1 Sun StorageTek CAM DVD Contents

Type	Version
Common Array Manager	6.4.1
Java WebConsole software	3.0.5
Java 2 Software Development Kit	1.5
Firmware files	See “ Array Firmware Delivered with CAM ” on page 43
Remote scripting CLI client	2.1.4

Licensing Optional Premium Features

CAM offers a wide variety of premium features for which you can purchase licenses. When you order licenses, they are sent to you with instructions on how to activate the features. For more information, search the CAM Help pages for these topics:

- About Licensed Features
- Adding a License
- Displaying License Information
- Managing Licenses

Note – Premium features are not supported for the Sun Storage J4000 Array Family or Sun Storage F5100 Flash Array.

The following licenses for premium features are available from Sun:

TABLE 2 Premium Feature Licenses: 06.xx.xx and 07.xx.xx Controller Firmware

Premium Feature	6540 Array	6140 Array	6130 Array	2500 Arrays	FLX240 Array	FLX280 Array	FLX380 Array
Data Snapshot	X	X	X	X	X	X	X
Data Volume Copy	X	X	X	X	X	X	X
Data Replicator	X	X	X		X	X	X

TABLE 2 Premium Feature Licenses: 06.xx.xx and 07.xx.xx Controller Firmware

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

TABLE 3 Premium Feature Licenses for 07.xx.xx Controller Firmware Only

Premium Feature	6140 Array	6540 Array	6570 Array	6580 Array
Enhanced Data Snapshot	X	X	X	X
Enhanced Data Snapshot Upgrade	X	X	X	X
Enhanced Data Replicator	X	X	X	X
Enhanced Data Replicator Upgrade	X	X	X	X
2 Domains	X	X	X	X
Upgrade 2 to 4 Domains	X	X	X	X
Upgrade 16 to 32 Domains	X	X	X	X
32 Domains	X	X	X	X
Upgrade 32 to 64 Domains	X	X	X	X
Upgrade 64 to 96 Domains	X	X	X	X
96 Domains	X	X	X	X
Upgrade 96 to 128 Domains	X	X	X	X

TABLE 3 Premium Feature Licenses for 07.xx.xx Controller Firmware Only

Premium Feature	6140 Array	6540 Array	6570 Array	6580 Array
128 Domains	X	X	X	X
Upgrade 128 to 256 Domains		X	X	X
256 Domains		X	X	X
Upgrade 256 to 512 Domains		X	X	X
512 Domains		X	X	X

Note – Arrays should be named before licenses are added. Otherwise, when users select to reset storage configuration for an array, the name might not list on the License Summary page.

Using Access Configuration Features

Starting with CAM 6.4.1, support for Access Configuration (SAS zoning) of the Sun Storage F5100 Flash Array and Sun StorageTek J4000 Array Series (J4200, J4400, and J4500) has been added. Through Access Configuration, you can assign each host its own storage resources. Accomplished on a per host initiator port, per hard-disk level, access configuration offers the following benefits: storage resource segregation, controlled resource sharing, protection, and topology control.



Caution – The Sun Blade™ 6000 Disk Module will present a folder in the navigation tree titled “SAS Domains,” even though access configuration is not supported by this storage module for this release. Do not attempt to modify any SAS domain settings for this module.

This section describes the following:

[“About Configuring Access/Zoning” on page 8](#)

[“System Requirements for Access Configuration” on page 8](#)

[“Access Configuration Guidelines” on page 9](#)

[“Core Software Packages” on page 23](#)

About Configuring Access/Zoning

You can design each connected host or host port to have exclusive ownership over a specific set of disks in a single array or across cascaded arrays.

The dual SAS fabric design of the J4x00 arrays is initially seen as two separately configured (zoned) SAS domains. In a clustered or multipath situation, where you want two hosts to have access to the same disks for failover, each domain must be configured identically in CAM for each side of the multipath connection or cluster. CAM provides zoning templates for common configurations, as well as the ability to import and export user-defined templates.

The Sun Storage F5100 Flash Array consists of four independent fabrics. Multipathing to each fabric is not supported. See the array's documentation for more information.

Note – For F5100 arrays, CAM will aggregate the four independent domains into a single unified view when a CAM management station or a CAM management station with additional proxy agents have visibility to each domain.

System Requirements for Access Configuration

Access Configuration features requires a supported LSI-based HBA, such as:

- SG-XPCIE8SAS-E-Z: 8-port PCIe HBA
- SG-XPCIE8SAS-EB-Z: 8-port PCIe ExpressModule for Storage Blades

For more information, refer to the documentation included with the HBA used.

Access Configuration Guidelines

Use the following guidelines when configuring access for array storage resources, as appropriate for your installation. Examples are given for initial configuration (with or without multipath failover) and adding array storage to an existing configured array.

Note – After the desired access configuration is completed, export the current SAS domain settings using the import/export functionality within the Access Configuration page. This will allow you to revert back to functional settings in the event of mis-configuration, or when an array component containing Access Configuration (zoning) information is replaced (i.e. SIM card or controller module).

This section describes the following:

- [“About SAS Multipathing” on page 9](#)
- [“About SATA Affiliation” on page 10](#)
- [“Cascading J4x00 Arrays Using the CAM Browser Interface” on page 11](#)
- [“Configuring Multiple Host Access for a J4x00 Array” on page 19](#)

Note – If pre-configured disks with data exist, backup your data before you use Access Configuration features. Verify that no host-to-disk I/O will take place during Access Configuration (zoning) operations.



Caution – For Linux hosts: newly added (or removed) targets (i.e. disks) due to changes in Access Configuration or the addition of new storage can potentially cause the host to hang or panic due to known Linux kernel issues. Rebooting the host should solve this problem.

About SAS Multipathing

Note – The Sun Storage F5100 Flash Array does not support multipathing or clustering.

You can use the Sun Storage J4x00 array in a serial-attached SCSI (SAS) multipathing configuration to provide fault tolerant connectivity to storage. Although J4x00 arrays use single port SATA drives, the IO circuitry provides a redundant data path to each disk port if the connections to the drives use independent controller paths (i.e., SIM0 and SIM1 for J4200/J4400 arrays and SAS A and B for the J4500 arrays).

Using the multipathing feature of the SAS protocol, the J4x00 can be configured to provide a redundant data path from host to disk. When used in conjunction with RAID and clustered server configurations, multipathing can help increase the availability of your J4x00 storage.

Note – The J4500 array is not supported in a clustering configuration.

The J4x00 multipathing supports active-active and active-passive operation, as follows:

- During an active-active operation, a host can communicate with a hard disk by two different paths.
- During an active-passive operation, a host can communicate with a hard disk using only one path. Should that path become unavailable, a failover occurs where the host begins using the path in the other SAS domain (or fabric) to communicate with the hard disk.
- Operating system-specific driver software controls the multipathing capability (active-active or active-passive). You enable, disable, and configure multipathing through the server's operating system software.

About SATA Affiliation

The potential for SATA affiliation conflicts exists in J4500 and F5100 arrays, or in J4200 or J4400 arrays when any SATA drives are installed. Conflict can occur when more than one initiator tries to access the drive via the same SIM or Controller path (i.e., more than one host attached to SIM0/1 on a J4200/J4400 array; more than one host attached to a F5100 array domain; or more than one host attached to SAS-A/B on a J4500 array).

Possible symptoms of SATA Affiliation conflicts are: operating system hangs, zoning operations take longer than 10 minutes to complete, and/or disk utilities like "format" will not return device lists in a timely fashion.

When more than one instance of CAM probes a SATA drive from a single SAS domain, SATA affiliation issues occur. This can lead to the symptoms stated above. For this reason, only a single CAM host should be connected to a SAS domain unless drives have already been zoned to prevent SATA affiliation issues. After the access configuration (zoning) is completed from a Primary CAM Server (or a Primary CAM Server with only one active proxy agent), CAM can be installed or enabled on additional proxy hosts as desired.

SATA Affiliation Guidelines

For the purpose of configuring the Access Configuration between initiators and drives when SATA drives are in use, multiple hosts can be attached concurrently as long as the following rules are applied:

- Until the Access configuration (zoning) is complete, un-register all CAM proxy agents on any hosts other than the one being used to configure the Access Configuration. This can also be accomplished by un-installing the CAM proxy agent or by not installing the CAM proxy agent until Access Configuration is complete.

Note – A single CAM proxy can be used if the primary CAM host is not directly attached to the storage via a SAS connection.

- Do not run commands on hosts other than the one used to configure the Access Configuration (i.e., format, cfgadm, etc.) which might attempt to access the attached storage.

Cascading J4x00 Arrays Using the CAM Browser Interface

Note – Sun Storage F5100 Flash Arrays do not support cascading between individual domains or between F5100 arrays.

There are three sets of steps required to cascade (or add) a J4x00 array to an existing J4x00 series array from the CAM browser interface.

If multiple arrays are to be cascaded, add them one at a time, using the following procedures:

- [“Preparing Existing Arrays Prior to Cascading Additional Storage”](#) on page 12
- [“Preparing New Arrays for Cascading \(Adding Storage Capacity\)”](#) on page 12
- [“Cascading the New Array to the Existing Storage”](#) on page 14

Preparing Existing Arrays Prior to Cascading Additional Storage

This procedure takes you through the steps required to disable the Access Configuration state for existing arrays, in preparation for cascading additional arrays.

1. Verify a backup of any existing data is made.

This is a precautionary step and therefore a best practice.

2. From the Access Configuration page, check the SAS addresses, write down the initiator WWN's and associated drives for each domain, and then perform an Export operation for each.

Prior to re-cabling, you must record the initiator WWN and the desired associated disks. The configuration will need to be re-created because the initiator might be attached to a different array in the cascade or different ports on an array.

3. From the Access Configuration Summary page, change the access configuration status for each domain in the array to Disabled.

4. Unregister related arrays in CAM:

a. From the navigation pane, select Storage Systems.

The Storage System Summary page displays.

b. Select the checkbox to the left of the array and click Remove.

c. Click OK.

Proxy hosts for un-registered arrays will automatically be removed as well.

Preparing New Arrays for Cascading (Adding Storage Capacity)

Before cascading can occur, all arrays that will be added as new or additional storage must be prepared using the steps in this procedure.

1. Specify ports for each array: Connect both sides of the new array (SIM0/SIM1 for J4200/J4400 arrays or SAS A/SAS B for J4500 arrays) directly to a server running a full CAM installation.

The array must not be cascaded to another J4x00 array at this time.

2. Log into the CAM management host by opening your browser and entering this address: <https://host-name:6789>

(where host-name is the DNS name of the server connected to the array)

3. From the Storage System Summary Page, click Register and then register the attached array (following the instructions in the wizard), using the host name or host IP address of the data host in the Registration window.

4. Expand the Array tree for the server until the Access Configuration screen for the first SAS Domain displays.



Caution – Be sure you have selected the appropriate array before going to Step 5. The Reset to Default procedure clears existing zoning configurations.

Typically, new arrays will not have a password set. If you assigned a password for the array's Access Configuration, you will need it to perform Step 5. If the previous password is not known, you can clear it using the methods specified in your J4200, J4400, or J4500 User Guide.

5. Click **Reset to Default**.

This action clears any previous access configurations on the SAS domain of the array.

6. Read the pop-up warning message and then click **OK**.
7. From the Initiator to Disk Access Configuration Summary page for the domain which has been reset to Default, click **Configure**.
8. Select the entry in the Initiator Centric Access List and click **Remove**.
9. Click **Save**.

10. Repeat Steps 4-9 for the second SAS domain of the array.

The storage in this array will all be placed in a single domain for each attached initiator.

11. Unregister all arrays to be cascaded from CAM:

- a. From the navigation pane, select **Storage Systems**.

The Storage System Summary page displays.

- b. Select the checkbox to the left of the array and click **Remove**.

- c. Click **OK**.

12. Disconnect the array from the server, and then disconnect AC power to the array.

Cascading the New Array to the Existing Storage

Prerequisite: If any initiators from any attached hosts are not seen, verify that multipathing is disabled on those hosts. In addition, a reboot might be necessary to force an attached host to register its initiators with the storage arrays.

1. Disconnect all other attached hosts so your configuration resembles:

- [FIGURE 1](#) for J4500 arrays (attach to SAS-A and SAS-B)
- [FIGURE 2](#) for J4200/J4400 arrays (attach to SIM0 and SIM1)

2. Connect the new array in cascade fashion to the existing J4x00 array(s).

In [FIGURE 1](#) and [FIGURE 2](#), Array 1 is either an existing or a new storage array. Array 2 is a new array which is attached to the Primary CAM Server.

Note – This configuration differs from the configuration that will be used during normal operation. This configuration is temporary but required in order to synchronize the settings between the old array(s) and the new array being cascaded.

FIGURE 1 Temporary Cabling of J4500 for initialization of the Cascade

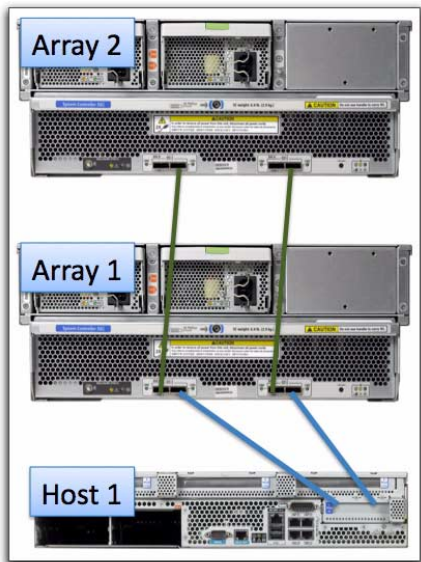
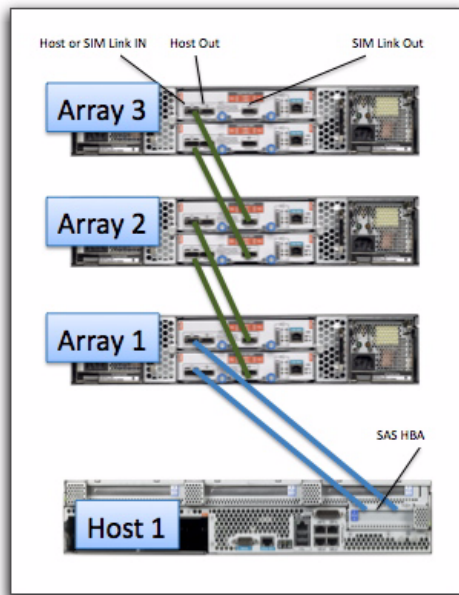


FIGURE 2 Temporary Cabling of J4200/J4400 Arrays for Initialization of the Cascade



3. Power on all arrays by reconnecting AC power.

The new array might take a few minutes to be recognized by the server's HBA.

4. From the Storage System Summary page, register the newly cascaded array configuration.

All attached arrays should be found. If they are not, perform a host reboot (i.e. Full reboot reconfigure on Solaris) and attempt the registration again.

5. Enable Access Configuration for the selected SAS Domain found underneath the entry for your Primary CAM Server.

To go to the Access Configuration page: Expand the Array tree until the Administration page for the SAS Domain displays, and then click Access Configuration.

a. Expand the Array tree for the server until the Administration page for the first SAS Domain is displayed.

b. Click the Access Configuration page to assign disks to each server.

6. Synchronize the password for the selected SAS Domain with the current and newly attached arrays.

a. From the Administration page for the selected SAS domain, select "Change Password in the Array Registration Database."

b. Enter your desired (or existing) password

c. Click Save.

Note – If the existing (primary) JBOD had a zoning password set before cascading: After re-discovering the JBOD cascade and before performing Synchronize Cascade, you must update the zoning password in the array database for the aggregated SAS domain with the zoning password of the primary array(s). To do this, select the third option for Zoning Password Management from the SAS Domain Administration page. This step is necessary because a new SAS domain database file is created for the aggregated SAS domain and the new SAS domain database file does not contain the zoning password.

7. Attach additional hosts and change cabling from the Primary CAM Server (host) as shown in cabling diagrams for your particular array.

When you have completed Step 7, all the arrays in the cascade should be discovered and the access configuration for all domains will be in the "disabled" state.

Note – See [FIGURE 3](#) and [FIGURE 4](#) for the initial cascading setup for J4500 arrays.



Caution – If the storage array contains SATA drives, do not discover the CAM proxy on the additional host at this time. If the CAM proxy is discovered, the software might attempt to probe from the additional host which can cause SATA affiliation conflicts. Therefore, all configuration must be done from the Primary CAM Server. For help, see “[Troubleshooting Access Configuration](#)” on page 55.

Important Notes

- Access configuration information will be retained for any host connections that do not need to be moved in order to properly cable the cascaded configuration. Any host connections that must be moved to new array ports (or ports on the new array) must have access configuration manually recreated for that initiator.
- For additional cabling instructions see the appropriate documentation: *Sun Storage J4500 Array System Overview*, *Sun Storage J4200/J4400 Array Hardware Installation Guide*, or other user documentation for your particular arrays.
- Disk drives should not be used by more than one host path unless multipathing is planned. Drives in an array (especially SATA drives) should not be shared by more than one host unless clustering software is being used.
- For information about clustering J4200/J4400 arrays, search for Sun Cluster 3.2 Release Notes and related information at <http://wikis.sun.com> and <http://www.sun.com/documentation>. Sun Storage J4500 and F5100 Flash arrays are not supported in a clustering configuration.

FIGURE 3 shows an example of how two hosts attach to two J4500 arrays. Refer to your user documentation for cabling instructions for your particular array.

FIGURE 4 shows an example of how two hosts attach to two J4200/J4400 arrays. Refer to your user documentation for more information.

FIGURE 3 Recommended Cascading Configuration for J4500 Array

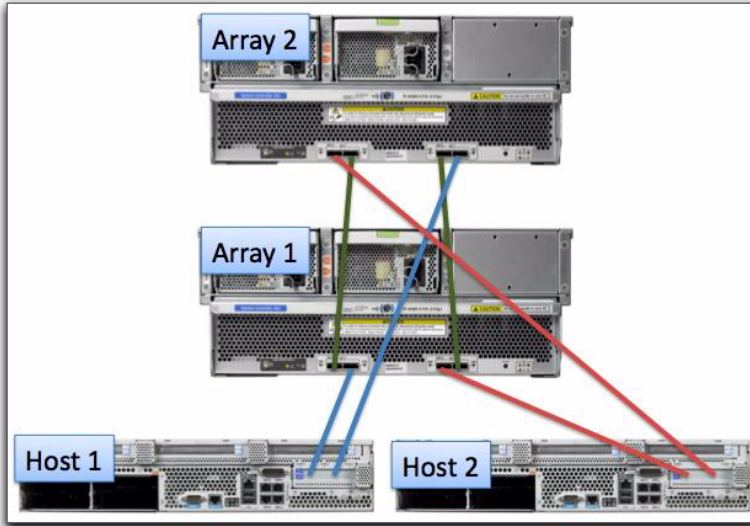
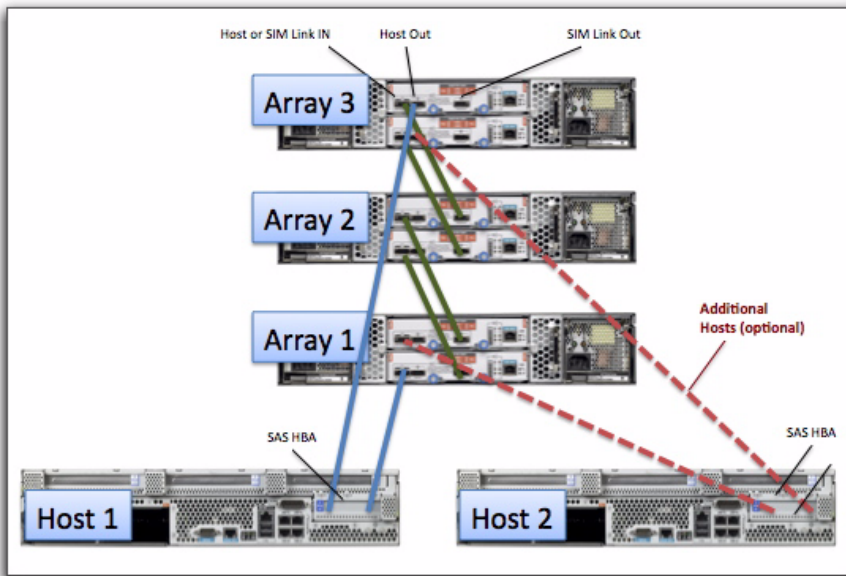


FIGURE 4 Recommended Cascading Configuration for J4200/J4400 Array Types



8. From the selected SAS Domain's Access Configuration page, click Configure.

At this time, all arrays, domains, and initiators from all attached hosts should be seen within the corresponding Access Configuration Pages.

If initiators from any attached hosts are not seen, verify that multipathing is disabled on those hosts. In addition, a reboot might be necessary to force an attached host to register their initiators with the storage arrays.

9. **For connections between the host and array that do not attach to a different port on this array (or another array due to configuration guidelines), implement Access Configuration for those initiators.**
 - a. **From the selected SAS Domain's Access Configuration page, configure the initiator and storage for the SAS domain.**
 - b. **If multiple initiators are seen, they should also be configured at this time (i.e., initiator #1 might have disks 1-6 and initiator #2 might have disks 7-12).**
10. **Repeat Steps 8-9 to assign disks to the server (host) for all SAS domains found under the entry for the Primary CAM Server.**
11. **Configure the multipathing software for each attached host so that the multipathing drivers control any drives shared by multiple paths.**
12. **Export Access Configuration information for each SAS port.**

Configuring Multiple Host Access for a J4x00 Array

Prerequisite: If you have configured multipathing, disable multipath software until after the access configuration is complete so the arrays will see all initiators.

Configuring Hosts for Access Configuration

The first server you will configure is referred to as the "CAM Primary Server" and each additional server you set up for Access Configuration is referred to as "(additional) host." The server used to configure access configuration can also be the combination of a Management station and single proxy server.

1. **Install the full version of CAM that supports zoning for the J4x00 array on the Primary CAM Server (unless it is already installed).**
2. **Attach all SAS cables from all desired hosts, as indicated in your array user documentation.**

For example, you might attach the first server for the J4x00 array to either the input port on one controller or an input on each side (SAS A/B or SIM 0/1) if multipathing is desired.

Note – When SAS connections are moved to a new port, Access Configuration (zoning) information is lost for that connection and will need to be re-created. Prior to re-cabling, record the initiator SAS Address and associated disks to accurately re-create Access Configuration on the new port.

Note – If SATA drives are being used by any attached arrays, any CAM proxy hosts which connect to any arrays with SATA drives must have their proxy agents removed prior to the following steps in order to prevent SATA affiliation issues. In addition, no commands (i.e., formatting, etc.) should be run from any host other than the chosen Primary CAM Server. For more information see [“Troubleshooting Access Configuration” on page 55](#).

3. Log into CAM from the Primary CAM Server you configured in Step 3 by opening the browser and entering the following address:

https://host-name:6789

Where host-name is the DNS name of the server connected to the array.

4. From the Storage System Summary page, click Register and follow the instructions in the wizard to register the arrays to the IP address of the first server.

5. If all attached initiators are not shown in the Access Configuration page: Configure and reboot the Primary CAM Server and configure your multipathing software if multiple paths are attached at this point.

If the Primary CAM Server does not immediately recognize the array, use the appropriate host commands to scan for storage.

6. Configure the Access Configuration for each initiator attached to the storage.

In the Access Configuration page, the initiator(s) from the additional host(s) should be visible; however, they may only be represented as unique SAS addresses (no host names) since the proxy has not been discovered yet. Configuration for the additional host initiators should be done at this time by selecting the desired drives for one of the second host's initiators, then repeating for each initiator on the second host.

a. Expand the Array tree for the server until the Access Configuration page for the first SAS Domain is displayed.

b. Click the Access Configuration page to assign disks to each server.

c. For each initiator, choose the desired targets (i.e., disks) to which the initiator should have access.

For multipath initiator pairs, make sure the targets are the same.

- d. Click Add/Modify.
 - e. Verify the Access Configuration setting is set to “Enable” and click Save.
The selected settings will be applied to the SAS Expander devices in the storage.
 - f. Click OK.
7. Repeat Step 7 to assign the desired disks for the attached servers on the second SAS domain or the same disks used when configuring the initial SAS domain (to be used as the second path to the disks assigned to the server).
 8. Power cycle the attached hosts using the appropriate options (i.e., reconfigure-reboot on Solaris) which will perform a full re-scan of the attached storage.
 9. After all hosts are powered up, do the following:
 - a. If SATA drives are being used, install and register the CAM proxy agents on any additional hosts other than the primary instance of CAM. For installation information, see the Sun StorageTek Common Array Manager User Guide for Open Systems and [“Using Custom Installation Options” on page 22](#).
 - b. Verify the appropriate Access Configuration is now active (i.e., the OS utility should now only show storage devices selected in the previous Access Configuration).
 - c. Verify multipathing is configured, based on the OS and MP software to be used.

Using Custom Installation Options

New in CAM is the ability to select specific device plug-ins for installation. Doing so significantly reduces the amount of space required for CAM installation, in that only relevant software for your configuration is installed. You will still have the option to perform a Typical (full) installation, if desired.

The information in this section applies to both the GUI and CLI installation procedures.

The Custom installation option enables you to select one of the following new installation types:

- **Management Host Software Without GUI** - Installs the Java WebConsole and all CAM core packages. All device plug-ins can be chosen for installation.

Note – This option will not install the CAM GUI. To use the CAM GUI interface, you must choose the Typical installation option.

- **Data Host Proxy Agent** - Installs the CAM core packages and allows management of devices via the CLI. Only JBOD device plug-ins can be chosen for installation, and a host can act as a proxy for the management host (this allows aggregation of information from multiple hosts as well as delegation to other hosts for firmware upgrades, access configuration changes, etc.).
- **Administrator Host CLI Client** - Installs the remote CLI package only. The remote CLI is used to communicate with a host that has CAM core software installed.

Pre-install Device Plug-in Check

When either the Management Host Software or Data Host Proxy Agent option is selected in a Custom installation, your system is scanned for existing device plug-in software during installation. Upon completion, discovered plug-in software is indicated with a selected check box. Undiscovered software is indicated with an unselected check box.

Version information is also displayed after each device type, which includes the currently installed version and the new version to be installed. If no current software exists for a device type, only the new version information will be displayed.

After the scan, you can select or de-select which software to install.

Note – If the Data Host Proxy Agent installation option is chosen, only JBOD device types can be selected, and array firmware will not be installed.

Core Software Packages

The following core software packages are installed with the new Custom installation options.

TABLE 4 Core Software Packages

Solaris Sparc/X86	Linux	Windows
SUNWstkcaml-scsi	sun-cam-scsi-	sun-cam-scsi.msi
SUNWsefms	sun-cam-fms-	SUNWsefms.msi
SUNWstkcamlcd	sun-cam-dev- sun-cam-dev-var-	SUNWstkcamlcd.msi

Plug-in Software Packages

The plug-in software packages listed in the following table are installed with the new Custom installation options.

TABLE 0-1 Plugin Software Packages

	Solaris Sparc/X86	Linux	Windows
RAID Arrays	SUNWsefms-dpi-array-sym	sun-cam-dpi-array-sym-	SUNWsefms-dpi-array-sym.msi
Sun Storage J4200 and J4400 Arrays	SUNWstkcaml-dpi-host, SUNWstkcaml-dpi-jbod-j4200	sun-cam-dpi-host- sun-cam-dpi-jbod-j4200	SUNWstkcaml-dpi-host.msi, SUNWstkcaml-dpi-jbod-j4200.msi
Sun Storage J4500 Array	SUNWstkcaml-dpi-host, SUNWstkcaml-dpi-jbod-j4500	sun-cam-dpi-host- sun-cam-dpi-jbod-j4500	SUNWstkcaml-dpi-host.msi, SUNWstkcaml-dpi-jbod-j4500.msi
Sun Storage F5100 Flash Array	SUNWstkcaml-dpi-jbod-f5100	sun-cam-dpi-jbod-f5100	SUNWstkcaml-dpi-jbod-5100

The Custom installation option enables you to select one of the following new installation types:

- **Management Host Software Without GUI** - Installs the Java WebConsole and all CAM core packages. All device plug-ins can be chosen for installation.
- **Data Host Proxy Agent** - Installs the CAM core packages and allows management of devices via the CLI. The remote proxy is to be used for aggregation of arrays attached to remote hosts. It will not discover Sun StorageTek 6000 series arrays, Flexline, or Sun StorageTek 2500 series arrays (for these arrays, the RAID array proxy must be used and is located in the Add-Ons directory).
- **Administrator Host CLI Client** - Installs the remote CLI package only. The remote CLI is used to communicate with a host that has CAM core software installed.

Note – You will need to choose “Typical” installation to be able to manage devices via the browser user interface (BUI). You cannot manage devices via the BUI if you choose “Management Host Software Without GUI” in the Custom install menu during installation.

Documentation

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

You can search for Sun documentation at:

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

Online Help and manpages are incorporated into the software. The following table lists other documentation related to CAM.

TABLE 5 Common Array Manager - Related Documentation

Documents Related To CAM

Sun StorageTek Common Array Manager Software Installation Guide

Sun StorageTek Common Array Manager CLI Guide

Sun StorageTek Common Array Manager User Guide for Open Systems

Sun Storage F5100 Flash Array Documentation

Sun Storage J4200 Array Documentation

Sun Storage J4400 Array Documentation

Sun Storage J4500 Array Documentation

Sun Blade 6000 Disk Module Documentation

Sun StorageTek 2500 Series Array Getting Started Guide

Sun StorageTek 2500 Series Array Release Notes

Sun StorageTek 2500 Series Array Firmware Upgrade Guide

Sun Storage 6x80 Array Release Notes for CAM 6.4

Sun Storage 6580/6780 Hardware Installation Guide

Getting Started Guide for Sun Storage 6580/6780 Rack Mounted Arrays

Sun StorageTek MPIO Device Specific Module Installation Guide for Microsoft Windows OS Platform

Sun StorageTek RDAC Failover Driver Installation Guide for Linux OS

For more information, see your array documentation.

System Requirements

System requirements for the Sun StorageTek Common Array Manager software are described in the following sections:

- [“Supported Arrays” on page 26](#)
- [“Supported Platforms and Required Packages” on page 27](#)
- [“File Space Requirements” on page 31](#)
- [“About Windows Service Packs” on page 32](#)
- [“Open Ports Required on Management Host” on page 32](#)
- [“Supported Platforms for the Remote CLI Client” on page 33](#)
- [“Supported Web Browsers” on page 33](#)
- [“Supported Languages” on page 34](#)

Supported Arrays

CAM software supports the following Sun storage systems:

- Sun StorageTek Flexline 240 Array
- Sun StorageTek Flexline 280 Array
- Sun StorageTek Flexline 380 Array
- Sun StorageTek 2510 (iSCSI)
- Sun StorageTek 2530 Array (SAS)
- Sun StorageTek 2540 Array (FC)
- Sun StorEdge 6130 Array
- Sun StorageTek 6140 Array
- Sun StorageTek 6540 Array
- Sun StorageTek 6580 Array
- Sun StorageTek 6780 Array
- Sun Storage F5100 Flash Array
- Sun Storage J4200 Array
- Sun Storage J4400 Array
- Sun Storage J4500 Array
- Sun Blade™ 6000 Disk Module

Supported Platforms and Required Packages

TABLE 6 Management Host Platforms

Platform	Operating System	CPU	Minimum System Memory
SPARC server or workstation	Solaris 9 OS 8/03 Solaris 10 OS	UltraSPARC 3 or better (750 MHz)	1 GB
Windows Servers	Windows 2003 with Service Pack 2 Windows XP Professional with Service Pack 3* Windows 2008	1.5 GHz PC	500 MB
x64 computer	Red Hat Linux 4u6 Red Hat Linux 5u2 SuSE Linux Enterprise Server 10 SP2 Suse Linux Enterprise Server 9 SP4	x64	500 MB
x64 or x86 computer	Solaris 10 OS	x64 or x86	1 GB

* Windows XP Home Edition is not supported.

[TABLE 7](#) lists Solaris packages that must be installed on your Solaris host. Installing the minimum Solaris operating system as listed in [TABLE 6](#) will install all but the last four packages. Those packages are required by Java, but are not used by the management software.

TABLE 7 Required Solaris Packages

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

TABLE 7 Required Solaris Packages

File	Description
SUNWmfrun	Motif RunTime Kit
SUNWxwice	X Window System Inter-Client Exchange (ICE) Components
SUNWxwplt	X Window System platform software
SUNWxwrtl	X Window System & Graphics Runtime Library Links in /usr/lib

TABLE 8 lists Linux packages and libraries that must be installed on your Linux host. The 32-bit versions of the packages and files are required.

TABLE 8 Required Linux Packages

File	Version
fileutils	4.0-8
gawk	3.0.4-1
glibc	2.1.2-11
ld-linux.so.2	-
libc.so.6	-
libc.so.6	(GLIBC_2.0)
libc.so.6	(GLIBC_2.1)
libc.so.6	(GLIBC_2.1.2)
libc.so.6	(GLIBC_2.1.3)
libcrypt.so.1	-
libcrypt.so.1	(GLIBC_2.0)
libdl.so.2	-
libpam.so.0	-
sh-utils	2.0-1
textutils	2.0-2
libstdc++.so.5	-
libstdc++.so.5	(CXXABI_1.2)
libstdc++.so.5	(GLIBCPP_3.2)
libstdc++.so.5	(GLIBCPP_3.2.2)
ksh	ksh-93r-12.5.x86_64.rpm

Required Patches

For the latest patches available for your system, check SunSolve at:

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

The latest patches on SunSolve can be quickly found by referencing the Support section of the Common Array Manager product page here:

http://www.sun.com/storage/management_software/resource_management/cam/support.xml

For the latest patches available for your system, check SunSolve at:

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

To obtain patches, install s10u6 or later.

The SCSI Enclosure Services Driver (SES) must be patched in order for CAM to do discovery and manage these types of arrays.

Solaris 10 data host SMP support for CAM 6.4.1 requires patches 137137-02 for SPARC and 137138-02 for x86.

Note – The SES and MPT drivers are only for J4000 Series Arrays, Sun Storage F5100 Flash Array, and Sun Storage 6000 Module. For more information, refer to the documentation for your particular array.

The IDR addresses for MPT drivers for Solaris are:

- SPARC platform: 142400-01, with 141736-04 as prerequisite
- X64 platform: 142401-01, with 141737-04 as prerequisite

TABLE 1 Requirements for SMP Support on Solaris

Solaris 10 i386	Solaris 10 SPARC
138881-01	138880-01
118344-14	118731-01
120901-03	119578-30
121334-04	118822-30
119255-50	118918-24
121127-02	120900-04
113000-07	121133-02

TABLE 1 Requirements for SMP Support on Solaris

Solaris 10 i386	Solaris 10 SPARC
117435-02	119254-50
118844-30	119042-11
119043-11	118833-36
121264-01	119374-13
122035-05	119574-02
123840-04	121901-02
118855-36	122539-05
118919-21	120272-22
119575-02	123839-07
121902-02	126897-02
122532-04	125369-13
120273-24	119689-07
122641-06	125503-02
125370-06	125547-02
125504-02	126419-01
125548-02	120011-14
126420-01	125891-01
126424-03	126540-02
120012-14	127755-01
127756-01	127127-11
127128-11	125555-02
125556-02	138866-02
138867-02	137137-09
138884-01	137137-02
137138-09	
137138-02	

File Space Requirements

TABLE 9 CAM File Space Requirements

Operating System	Disk Space	Directory Space
Solaris 9 OS 8/03	450 MB	root – 5 MB
Solaris 10 OS		/tmp – 210 MB
		/usr – 40 MB
		/var – 155 MB
		/opt – 715 MB
Windows XP Professional Edition with SP2 Note: Windows XP Home Edition is not supported.	1225 MB on system drive	Not Applicable
Windows 2003 with SP1 or higher		Not Applicable
Windows 2008		Not Applicable
Red Hat Enterprise Linux AS Releases 4 and 5 SuSE Linux 10 and 9	450 MB	root – 5 MB
		/tmp – 120 MB
		/usr – 155 MB
		/var – 180 MB
		/opt – 595 MB

Note – For Solaris and Linux, the base packages are installed in /opt, root and /usr, and runtime files are stored in /var and /tmp. Disk usage estimates for the runtime files are based on a large configuration with 50 storage arrays.

Note – For the Sun Storage J4200, J4400, J4500, and F5100 Flash Arrays, and the Sun 6000 Storage Module: In order to centralize the management of multiple arrays which may be connected to multiple direct attached hosts, download the entire CAM installation kit and during the installation choose the “Data Host Proxy Agent” option for any hosts not designated as the centralized CAM management station. The centralized CAM management station will require the “Typical” distribution to be installed.

About Windows Service Packs

Caution – Before installing CAM on Windows: Be sure a file or directory named “%SystemDrive%\Program” does not exist. This file can prevent some applications from functioning properly. If it does exist, rename the file to “%SystemDrive%\Program1.”

If needed, download the files from the Microsoft Download site. You must be logged in to the Windows system as an administrative user.

Note – Open Storage management requires a hot-fix patch for Win2K3, # 943545 and a Win2K8 patch, # KB958387-v2-x64 (64-bit Win2008).

The array installation files and installers are provided in a compressed file on the DVD. The process unpacks the contents of the file on the host and then proceeds with the installation.

After the installation on a Windows platform, you will need to configure the Windows firewall on each host to allow an exception for port 6789.

For more information, refer to the appropriate product documentation.

Open Ports Required on Management Host

Open the following incoming and outgoing ports for secure-by-default Solaris, Linux, and Windows platforms:

- Incoming Ports
 - TCP 6788 - console HTTP port that redirects to 6789
 - TCP 6789 - console HTTPS port
- Outgoing Ports
 - TCP 25 - SMTP used for email event notification from FMS
 - UDP 161 - SNMP used for event notification traps from FMS
 - TCP 2463 - used for RPC (remote procedure calls) with the arrays
- Proxy Agent Ports
 - Use open port 8653 only if a proxy agent is used.
- For instructions on how to open a port through the firewall using Windows, refer to the documentation/online Help for that operating system.

Supported Platforms for the Remote CLI Client

The remote scripting CLI client sends commands to a management host, which in turn sends the commands to the array.

[TABLE 10](#) lists remote platforms from which you can run the CLI client:

TABLE 10 Remote CLI Client Platforms

OS	Version
Solaris 9 SPARC	8/03 or higher
Solaris 10 SPARC	any
Solaris 10 x86	any
Windows Server 2003	Standard/Web/ Enterprise Edition; SP2
Windows 2008	any
Windows XP Professional Ed.	SP2
Red Hat Linux	4u6, 5u2
SuSE Linux	9, 10
IBM AIX	3.5
HP-UX	B.11.23

Supported Web Browsers

TABLE 11 Supported Web Browsers

Browser	Minimum Version
Firefox	2.0
Microsoft Internet Explorer	5.5 Note: Version 7 and 8 are not supported.

Best Practices for Browser Performance

For best web browser performance while using CAM, consider the following items:

- Enable pop-up windows.
- Specify No Proxy for the Common Array Manager host, to avoid situations where your browser might hang, time out, or generate error messages. From Preferences > Advanced > Proxies (or a similar path, depending on your browser), add the Common Array Manager management host name to the “No Proxy for” section.
- Recent Firefox versions might require you to accept and add a security certificate prior bringing up the authentication page.

Supported Languages

The locales are installed as part CAM's installation and there is no need to download any additional software other than the CAM Software and most recent patch updates.

For Solaris, Linux and Windows, the Browser User Interface for the Sun StorageTek Common Array Manager is available in:

- English
- French
- Japanese
- Simplified Chinese

The CLI is available in:

- English

The online Help is available in:

- English
- Japanese
- Simplified Chinese

The man pages are available in:

- English
- Japanese

Installing and Upgrading CAM

CAM installation procedures are described in the *Sun StorageTek Common Array Manager Software Installation Guide* and the *Sun StorageTek Common Array Manager User Guide for Open Systems*.

Note – For information about new custom installation options, see [“Using Custom Installation Options”](#) on page 22.

This section describes the following:

- [“Installation Requirements”](#) on page 36
- [“RAID Manager Software Drivers, Firmware, and Utilities”](#) on page 37
- [“Prerequisites”](#) on page 37
- [“Installation Logs”](#) on page 38
- [“About the Software Installation DVD”](#) on page 39
- [“Installing From a Downloaded File”](#) on page 39
- [“Supported Upgrades”](#) on page 39
- [“CLI \(Minimal\) Installation”](#) on page 40
- [“Performing a CLI CAM Installation”](#) on page 41
- [“Uninstalling a CLI CAM Installation”](#) on page 41
- [“Uninstalling a Previous CAM Version”](#) on page 42

Caution – Before installing CAM on Windows, the file or directory `“%SystemDrive%\Program”` should not exist. If it does exist, rename the file to `“%SystemDrive%\Program1.”` The existence of this file could cause certain applications to not function correctly.

Note – You will need to choose [“Typical”](#) installation to manage devices via the browser user interface (BUI). You cannot manage devices via the BUI if you choose [“Management Host Software”](#) during installation.

Installation Requirements

You can install CAM on a local management host or on a central management server.

Before installing the management software, do the following:

- Read the entire installation instructions.
- Complete the array hardware installation.
- Check the installation space requirements.

To obtain a general overview and detailed technical information, go to:

http://www.sun.com/storagetek/management_software/resource_management/cam

Click the “Get It” tab to obtain the latest information and version available.

After initial installation and configuration, you can upgrade the management software and firmware with each release.

For more information, see “[Array Firmware Delivered with CAM](#)” on page 43.

Registration Page Displays Upon Initial Installation

When you install the CAM software for the first time, upon logging into the Browser User Interface, a registration page will display. Fill out the information before continuing.

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

For more information about ASR, go to: <http://www.sun.com/service/asr>

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

RAID Manager Software Drivers, Firmware, and Utilities

RAID Manager is used only with Sun StorageTek SAS RAID host bus adapters (HBAs) for arrays in the J4000 array family.

To download drivers, firmware, and utilities for Sun StorageTek RAID Manager software:

1. Go to Sun's SAS RAID Web page here:

http://www.sun.com/storagetek/storage_networking/hba/raid/

2. From the Related Support section on right side of the page, select Drivers, Firmware, and Utilities.

Prerequisites

Before you perform an installation procedure, do the following:

1. **Locate the management software.**

The management software is distributed on the Sun StorageTek Common Array Manager Software DVD and is also available from the Sun website.

To obtain a general overview and detailed technical information, go to:

http://www.sun.com/storage/management_software/resource_management/cam/

Click the "Get It" tab to obtain the latest information and version available.

2. **Locate the most current patches here:**

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

Information regarding any available patches for CAM will be located here:

http://www.sun.com/storage/management_software/resource_management/cam/support.xml

3. **If supported by your array types, verify that you have license certificates for all premium features, including storage domains.**

See "Licensing Optional Premium Features" on page 5.

4. **Read the installation instructions.**

See "Documentation" on page 25.

5. **Log in as root (Solaris and Linux) or as a user with full administration privileges—not just local administrator privileges—(Windows) on the management host.**

6. Note that before starting the installation script, the DVD verifies host requirements, such as the following:

- Unsupported versions of related software such as CAM releases prior to 5.x, Storage.
- Unsupported versions of operating systems or software
- Insufficient disk space (see “File Space Requirements” on page 31)

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

Prerequisites for Solaris Zones

- Before you install CAM in a sparse-root zone, install Lockhart 3.0.5 with its L10N (Localization) packages in the global zone.
- For Solaris 10, do not attempt to run the Lockhart setup script when logged into the local zone. The CAM installation prevents this. Either install Lockhart into a whole root zone or install/upgrade Lockhart in the global zone before installing CAM into the local zone.

For more information, contact Sun Microsystems Support Services at:

<http://www.sun.com/contact/support.jsp>

Installation Logs

If installation failure occurs, check the available disk space.

For more information, consult the installation logs.

TABLE 2 Installation Logs

Platform	Installation Log Location
Solaris	<code>/var/sadm/install/se6000/se6000_Host_SW.log</code>
Linux	<code>/var/opt/cam</code>
Windows 32-bit	<code>%SystemDrive%\Program Files\Common Files\Sun Microsystems\se6000</code>
Windows 64-bit	<code>%SystemDrive%\Program Files (x86)\Common Files\Sun Microsystems\se6000</code>

About the Software Installation DVD

The Sun StorageTek Common Array Manager Installation Software DVD provides three installation-related wizards:

- GUI software installer – Enables you to use a graphical user interface wizard to install a selection of applications to support a local or remote management host.
- CLI software installers – Enables you to use a CLI script to install a selection of applications to support a local or remote management host.
- Uninstaller – Enables you to uninstall the management and remote host software from a host.

Installing From a Downloaded File

To obtain a general overview and detailed technical information, go to:

http://www.sun.com/storagetek/management_software/resource_management/cam

Click the “Get It” tab to obtain the latest information and version available.

After initial installation and configuration, you can upgrade the management software and firmware with each release.

Supported Upgrades

Solaris: Upgrades from CAM 5.1.1.2, 5.1.2.2, 5.1.3.2, and 6.x to this release are supported. You are not required to uninstall the existing CAM version before installing this release.

Linux: Upgrades are supported.

Windows: Upgrades are supported.

CLI (Minimal) Installation

You can perform a minimal installation that enables one of two options: CLI or CLI with firmware. In both cases, this installation is approximately 10%-20% of the size of the full CAM installation since the Graphical User Interface (GUI) is not installed.

To install the CLI (Minimal) Installation, choose the “Management Host Software Without GUI” option under Custom Settings during the installation process.

After the CLI-only Installation mode is chosen, the option will be given to make the installation on this host a proxy to another host running the full installation of CAM for the purpose of aggregating multiple proxy hosts.

Note – Minimal installation can stand alone, whereas Remote Client (proxy) installation requires a fully installed image on a separate host to serve as the primary management server.

This light-weight management solution is installed on a data host attached to the array. The data host can also serve as a management host using the CLI only installation option and provides:

- Array management and monitoring capabilities
- Local CLI
- Array configurations supported in full installation
- Optional array firmware

For complete instructions on CLI Minimal Installation, refer to the appropriate documentation at:

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

Type the document title, part of the title, or the document’s part number in the “Search” field, and press Return.

Performing a CLI CAM Installation

For complete instructions on CLI (Minimal) Installation, refer to the appropriate documentation. See [“Documentation” on page 25](#).

1. From the Common Array Manager Installation page, select one of these options in the Select a feature bundle list:

- CLI with Firmware (management host software; CLI for local users, remote users, and remote management host; array firmware)
- CLI Only (management host software; CLI for local users, remote users, and remote management host)

2. Click Next and follow the prompts by pressing 1 for Next, 3 to Cancel, or 5 to Redisplay.

The software will notify you as it checks your system and does any or all of the following:

- Uninstalls any old features
- Installs Java 2 Standard Edition (private copy)
- Installs Sun StorageTek Configuration Service BUI
- Installs Sun StorageTek Fault Management Services
- Installs Sun StorageTek Array Firmware
- Installs Sun StorageTek Common Array Manager
- Creates uninstaller
- Finalizes the Vital Product Data Registry.

3. Press 3 to Finish or 5 to Redisplay.

Uninstalling a CLI CAM Installation

1. From the host software installer, select Uninstall.

2. Click Next and follow the prompts by pressing 1 for Next, 3 to Cancel, or 5 to Redisplay.

The software will notify you as it checks your system and does the following:

- prepares for uninstallation
- uninstalls Java 2 Standard Edition
- uninstalls Sun StorageTek Fault Management Services
- finalizes the Vital Product Data Registry

- post-uninstallation action

The system will notify you that the un-installation has been successful.

3. Press 3 to Finish or 5 to Redisplay.

Uninstalling a Previous CAM Version

Note – Users must stop all applications that are running a java.exe or javaw.exe before running the uninstaller.

- 1. Log in to the CLI on the management host or using the remote CLI client as documented in the *Sun StorageTek Common Array Manager Software Installation Guide* and the *Sun StorageTek Common Array Manager User Guide for Open Systems*.**

Navigate to the appropriate directory for your operating system:

For Windows, navigate to:

```
%systemdrive%\Sun\CommonArrayManager\Host_Software_6.4.0.13\  
bin\uninstall.bat
```

For Solaris and Linux, navigate to:

```
/var/opt/CommonArrayManager/Host_Software_6.4.0.13/bin/uninstall
```

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

- libgcj-3.3.3-43.24.x86_64.rpm
- gettext-0.1.14.1-30.1.x86_64.rpm

- 2. Use the following commands to remove the current installation, removing stored data:**

- `uninstall -f`

Perform a full uninstall, with a prompt asking if you want to remove stored data.

- `uninstall -f -s`

Perform a full uninstall in “silent” mode that removes all stored data and asks no questions.

Array Firmware Delivered with CAM

Firmware delivered with CAM can be installed using CAM's Install Firmware Baseline feature. However, moving from one major firmware release to another might require special procedures.

- For the 6140, 6540 and FLX380 array types, upgrading from a 06.xx.xx.xx version to 07.xx.xx.xx requires a special utility. Consult the *Sun StorageTek 6000 Series Array Firmware Upgrade Guide*.
- For the 25xx array types, upgrading from a 06.xx.xx.xx version to 07.xx.xx.xx requires a special utility. Consult the *Sun StorageTek 2500 Array Series Firmware Upgrade Utility Guide*.

Note – If you attempt an upgrade a couple of times and it fails, you should contact a support representative. See “[Sun Microsystems Support](#)” on page 97.

This section describes the following topics:

- “[Firmware Patches](#)” on page 43
- “[Location of Firmware Files](#)” on page 44
- “[Installing the Firmware Baseline](#)” on page 45
- “[Baseline Firmware for Sun StorageTek 2500 Series Arrays](#)” on page 46
- “[Baseline Firmware for Sun StorageTek 6000 Series and FlexLine Arrays](#)” on page 48
- “[Expansion I/O Modules](#)” on page 51
- “[Baseline Firmware for JBOD Arrays](#)” on page 52

Firmware Patches

For the latest firmware patches available for your arrays, see Software Updates in the Resources section at:

http://www.sun.com/storage/management_software/resource_management/cam/support.xml

Note – For the Sun Storage F5100 Flash Array, a patch is required to update the FMOD firmware. “[CAM Patches - Sun Storage F5100 Flash Array](#)” on page 3.

Location of Firmware Files

CAM installs the firmware files in the following locations:

- Solaris: /opt/SUNWstkcam/share/fw
- Windows:
 - 64 bit - <system drive>\Program Files (x86)\Sun\Common Array Manager\Component\jSunStorageTekArrayFirmware\
 - 32 bit - <system drive>\Program Files\Sun\Common Array Manager\Component\jSunStorageTekArrayFirmware\
- Linux - /opt/sun/cam/share/fw/

In this base directory, there are README files for each array type defining the firmware baseline. Each component is listed with the baseline version number and the filename of the firmware.

- README_2500.txt - Defines the firmware baseline for the Sun StorageTek 2500 Series Arrays.
- README_6000.txt defines the firmware baseline for the Sun StorageTek 6130, 6140, 6540, FLX240, FLX280, and FLX380 arrays.
- README_J4000.txt defines the firmware baseline for the J4000 Series and Sun Blade 6000 Disk Module.

Firmware files are located in the images subdirectory:

- Controller, NVSRAM, IOM firmware - images/ngc
- SIM firmware - images/qnt/
- Expander board firmware - images/sun
- Disk drive firmware - images/disk

Installing the Firmware Baseline

For optimal performance, Sun Microsystems recommends that the firmware on all arrays be at the level of the current firmware baseline. CAM generates a Revision Delta Alarm when any array components are not at baseline. New features are not supported with non-baseline firmware.

1. Log in to the management software.

2. From the Java Web Console page, click Sun StorageTek Common Array Manager.

3. Be sure the array is not in a degraded state.

If it is degraded, the firmware upgrade attempt might fail and damage the array. Resolve the critical alarms before continuing the upgrade. If the array is degraded only because it is not at the baseline, the upgrade can be performed.

4. Resolve any alarms.

Alarms can be checked in the Java Web Console masthead or in the Alarms Summary link in the Navigation Tree on the left. Use Service Advisor to fix any alarms.

Note – For 6xxx, FlexLine, and 25xx arrays, both controllers must be attached to the network and be accessible by the host.

5. From the Storage System Summary page, select the array for which the firmware needs to be installed/upgraded.

6. Click Install Firmware Baseline, and follow the instructions given in the Firmware Upgrade Wizard.

The upgrade process analyzes the array to determine the current firmware versions installed. If the firmware is not at the baseline, and you choose to upgrade, the baseline firmware is installed on the array.

Baseline Firmware for RAID Arrays

Baseline Firmware for Sun StorageTek 2500 Series Arrays

Upgrading from an 06.xx.xx.xx controller version to 07.xx.xx.xx requires the use of an upgrade utility. Consult the *2500 Array Series Firmware Upgrade Utility Guide*.

The following table lists components with their baseline version numbers and filenames.

TABLE 12 Baseline Firmware Information: Sun StorageTek 2500 Series Arrays

Controller	Version	Firmware File
2510	06.70.54.11	nge/RC_06705411_desperado_apollo_1532.dlp
2510_exmoor	07.35.44.10	nge/RC_07354410_exmoor_apollo_1532.dlp
2530	06.70.54.11	nge/RC_06705411_desperado_apollo_133x.dlp
2530_exmoor	07.35.44.10	nge/RC_07354410_exmoor_apollo_133x.dlp
2540	06.70.54.11	nge/RC_06705411_desperado_apollo_1932.dlp
2540_exmoor	07.35.44.10	nge/RC_07354410_exmoor_apollo_1932.dlp
NVSRAM	Version	Firmware File
2510	N1532-670843-001	nge/N1532-670843-001.dlp
2510_exmoor	N1532-735843-002	nge/N1532-735843-002.dlp
2510-Simplex	N1532-670843-901	nge/N1532-670843-901.dlp
2510_exmoor-Simplex	N1532-735843-902	nge/N1532-735843-902.dlp
2530	N133X-670843-001	nge/N133X-670843-001.dlp
2530_exmoor	N133X-735843-002	nge/N133x-0735843-002.dlp
2530-Simplex	N133X-670843-901	nge/N133x-670843-901.dlp
2530_exmoor-Simplex	N133X-735843-902	nge/N133X-735843-902.dlp
2540	N1932-670843-001	nge/N1932-670843-001.dlp
2540_exmoor	N1932-735843-002	nge/N1932-735843-002.dlp

Baseline Firmware Information: Sun StorageTek 2500 Series Arrays

2540-Simplex	N1932-670843-901	nge/N1932-670843-901.dlp
2540_exmoor-Simplex	N1932-735843-902	nge/N1932-735843-902.dlp
IOM	Version	Firmware File
2500 SAS	0195	nge/esm0195.esm
Disk Drive	Version	Firmware File
HDS7250SASUN500G	AV0A	disk/D_HDS7250SASUN500G_AV0A_LCA.dlp
HUA7210SASUN1.0T	AC5A	disk/D_HUA7210SASUN1.0T_AC5A_LCA.dlp
HUA7250SBSUN500G	AC5A	disk/D_HUA7250SBSUN500G_AC5A_LCA.dlp
HUA7275SASUN750G	AC5A	disk/D_HUA7275SASUN750G_AC5A_LCA.dlp
HUS1514SBSUN146G	SA04	disk/D_HUS1514SBSUN146G_SA04_LCA.dlp
HUS1530SBSUN300G	SA04	disk/D_HUS1530SBSUN300G_SA04_LCA.dlp
HUS1573SBSUN72G	SA04	disk/D_HUS1573SBSUN72G_SA04_LCA.dlp
ST31000NSSUN1.0T	SU0D	disk/D_ST31000NSSUN1.0T_SU0D_LCA.dlp
ST314655SSUN146G	0B92	disk/D_ST314655SSUN146G_0B92.dlp
ST314656SSUN146G	0A1C	disk/D_ST314656SSUN146G_0A1C.dlp
ST32502NSSUN250G	SU0D	disk/D_ST32502NSSUN250G_SU0D_LCA.dlp
ST330055SSUN300G	0B92	disk/D_ST330055SSUN300G_0B92.dlp
ST330056SSUN300G	0A1C	disk/D_ST330056SSUN300G_0A1C.dlp
ST340008SSUN0.4T	0543	disk/D_ST340008SSUN0.4T_0543.dlp
ST345056SSUN450G	0A1C	disk/D_ST345056SSUN450G_0A1C.dlp
ST35000NSSUN500G	3AZY	disk/D_ST35000NSSUN500G_3AZY_LCA.dlp
ST35002NSSUN500G	SU0D	disk/D_ST35002NSSUN500G_SU0D_LCA.dlp
ST373455SSUN72G	0B92	disk/D_ST373455SSUN72G_0B92.dlp
ST37500NSSUN750G	3AZY	disk/D_ST37500NSSUN750G_3AZY_LCA.dlp
ST37502NSSUN750G	SU0D	disk/D_ST37502NSSUN750G_SU0D_LCA.dlp

Baseline Firmware for Sun StorageTek 6000 Series and FlexLine Arrays

For the 6140, 6540 and FLX380 array types, upgrading from a 06.xx.xx.xx version to 07.xx.xx.xx requires a special utility. Consult the *Sun StorageTek 6000 Series Array Firmware Upgrade Guide*.

If you attempt an upgrade that fails, you should contact a support representative. See [“Sun Microsystems Support” on page 97](#).

TABLE 13 Baseline Firmware Information: Sun StorageTek 6130, 6140, 6540, 6580, 6780, FLX240, FLX280, and FLX380 Arrays

Controller	Version	Firmware File
6130	06.60.22.10	nge/RC_06602210_chromium2_apollo_288x.dlp
6140	06.60.22.10	nge/RC_06602210_chromium2_apollo_399x.dlp
6140_aurora	07.50.13.10	nge/RC_07501310_09q1_apollo_fc_399x.dlp
6540	06.60.22.10	nge/RC_06602210_chromium2_apollo_6091.dlp
6540_aurora	07.50.13.10	nge/RC_07501310_09q1_apollo_fc_6091.dlp
6580	07.50.13.10	nge/RC_07501310_09q1_apollo_fc_7091.dlp
6780	07.50.13.10	nge/RC_07501310_09q1_apollo_fc_7091.dlp
FLX240	06.60.22.20	nge/RC_06602220_chromium2_silverado_288x.dlp
FLX280	06.60.22.20	nge/RC_06602220_chromium2_silverado_588x_06600400.dlp
FLX380	06.60.22.20	nge/RC_06602220_chromium2_silverado_6091.dlp
FLX380_aurora	07.50.13.10	nge/RC_07501310_09q1_apollo_fc_6091.dlp
NVSRAM	Version	Firmware File
6130	N288X-660843-003	nge/N288X-660843-003.dlp
6140	N399X-660843-003	nge/N399X-660843-003.dlp
6140_aurora	N399X-750843-002	nge/N399X-750843-002.dlp
6540	N6091-660843-003	nge/N6091-660843-003.dlp
6540_aurora	N6091-750843-003	nge/N6091-750843-003.dlp
6580	N7091-750843-003	nge/N7091-750843-003.dl
6780	N7091-750843-003	nge/N7091-750843-003.dlp

TABLE 13 Baseline Firmware Information: Sun StorageTek 6130, 6140, 6540, 6580, 6780, FLX240, FLX280, and FLX380 Arrays

NVSRAM	Version	Firmware File
FLX240	N288X-660855-003	nge/N288X-660855-003.dlp
FLX280	N588X-660855-003	nge/N588X-660855-003.dlp
FLX380	N6091-660855-003	nge/N6091-660855-003.dlp
FLX380_aurora	N6091-750855-002	nge/N6091-750855-002.dlp
IOM	Version	Firmware File
CSM100 FC	9682	nge/esm9682.s3r
CSM100 iSATA	9728	nge/esm9728.dl
CSM200	98C4	nge/esm98C4.esm
FLA300	9682	nge/esm9682.s3r
FLA200	9330	nge/esm9330.s3r
FLC200 iSATA	9728	nge/esm9728.dl
FLC200 dSATA	9566	nge/esm9566.dl
Disk Drive	Version	Firmware File
HDS7225SCSUN250G	0705 (LP1160-A7BA)	disk/D_HDS7225SCSUN250G_0705.dlp
HDS7240SBSUN400G	AC7A	disk/D_HDS7240SBSUN400G_AC7A.dlp
HDS7250SASUN500G	0705 (LP1160-AV0A)	disk/D_HDS7250SASUN500G_0705.dlp
HUA7210SASUN1.0T	0710 (LP1160-AC5A)	disk/D_HUA7210SASUN1.0T_0710.dlp
HUA7250SBSUN500G	0710 (LP1160-AC5A)	disk/D_HUA7275SASUN750G_0710.dlp
HUA7275SASUN750G	0710 (LP1160-AC5A)	disk/D_HUA7275SASUN750G_0710.dlp
HUS1014FASUN146G	2A08	disk/D_HUS1014FASUN146G_2A08.dlp
HUS1030FASUN300G	2A08	disk/D_HUS1030FASUN300G_2A08.dlp
HUS1073FASUN72G	2A08	disk/D_HUS1073FASUN72G_2A08.dlp
MAT3073FSUN72G	1403	disk/D_MAT3073FSUN72G_1403.dlp
MAT3147FSUN146G	1403	disk/D_MAT3147FSUN146G_1403.dlp
MAT3300FSUN300G	1403	disk/D_MAT3300FSUN300G_1403.dlp
MAW3073FCSUN72G	1303	disk/D_MAW3073FCSUN72G_1303.dlp

TABLE 13 Baseline Firmware Information: Sun StorageTek 6130, 6140, 6540, 6580, 6780, FLX240, FLX280, and FLX380 Arrays

MAW3147FCSUN146G	1303	disk/D_MAW3147FCSUN146G_1303.dlp
MAW3300FCSUN300G	1303	disk/D_MAW3300FCSUN300G_1303.dlp
MAX3073FDSUN72G	0403	disk/D_MAX3073FDSUN72G_0403.dlp
MAX3147FDSUN146G	0403	disk/D_MAX3147FDSUN146G_0403.dlp
ST31000NSSUN1.0T	0705	disk/D_ST31000NSSUN1.0T_0705.dlp
ST314655FSUN146G	3092	disk/D_ST314655FSUN146G_3092.dlp
ST314656FSUN146G	091C	disk/D_ST314656FSUN146G_091C.dlp
ST314670FSUN146G	055A	disk/D_ST314670FSUN146G_055A.dlp
ST314680FSUN146G	0407	disk/D_ST314680FSUN146G_0407.dlp
ST314685FSUN146G	042D	disk/D_ST314685FSUN146G_042D.dlp
ST314695FSUN146G	0409	disk/D_ST314695FSUN146G_0409.dlp
ST32500NSSUN250G	0706 (LP1160-3AZY)	disk/D_ST32500NSSUN250G_0706.dlp
ST330000FSUN300G	055A	disk/D_ST330000FSUN300G_055A.dlp
ST330055FSUN300G	3092	disk/D_ST330055FSUN300G_3092.dlp
ST330056FSUN300G	091C	disk/D_ST330056FSUN300G_091C.dlp
ST340008FSUN0.4T	0343	disk/D_ST340008FSUN0.4T_0343.dlp
ST345056FSUN450G	091C	disk/D_ST345056FSUN450G_091C.dlp
ST35000NSSUN500G	0706 (LP1160-3AZY)	disk/D_ST35000NSSUN500G_0706.dlp
ST373207FSUN72G	055A	disk/D_ST373207FSUN72G_055A.dlp
ST373307FSUN72G	0407	disk/D_ST373307FSUN72G_0407.dlp
ST373453FSUN72G	0449	disk/D_ST373453FSUN72G_0449.dlp
ST373454FSUN72G	042D	disk/D_ST373454FSUN72G_042D.dlp
ST373455FSUN72G	3092	disk/D_ST373455FSUN72G_3092.dlp
ST373554FSUN72G	0409	disk/D_ST373554FSUN72G_0409.dlp
ST37500NSSUN750G	0706 (LP1160-3AZY)	disk/D_ST37500NSSUN750G_0706.dlp

Expansion I/O Modules

To add expansion modules to an array configuration, follow the procedures documented in the Service Advisor.

Supported Expansion Modules

The following tables list the supported expansion modules that can be attached to an array configuration:

TABLE 14 Supported Expansion Modules: 6000 Series Arrays

Array Controller	Supported Expansion Modules
Sun StorageTek 6540 Array	CSM100, CSM200, FLA200, FLC200, FLA300
Sun StorageTek 6140 Array	CSM100, CSM200, FLA200, FLC200, FLA300
Sun StorageTek 6130 Array	CSM100, CSM200, FLA200, FLC200, FLA300
Sun StorageTek 6580 Array	CSM100, CSM200, FLA200, FLC200, FLA300
Sun StorageTek 6780 Array	CSM100, CSM200, FLA200, FLC200, FLA300

TABLE 15 Supported Expansion Module: 2500 Series Array

Array Controller	Supported Expansion Modules
Sun StorageTek 2500 Series Arrays	2501

TABLE 16 Supported Expansion Module: FLX240, FLX280, and FLX380 Arrays

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

Installing Firmware for Additional Expansion Modules

1. **Install the Common Array Manager release, following the standard installation procedure.**

For more information, see the *Sun StorageTek Common Array Manager Software Installation Guide*.

2. **Register the array, if needed.**
3. **From the Storage Summary page or Array Administration page, click the Install Firmware Baseline button.**
4. **Follow the instructions given in the Firmware Upgrade Wizard.**
See the Service Advisor for detailed information.

Baseline Firmware for JBOD Arrays

Baseline Firmware for Sun Storage F5100 Flash Array, Sun Storage J4000 Series Arrays, and the Sun Blade 6000 Disk Module

CAM supports one prior version of the firmware for legacy features on previously supported arrays.

Note – Before contacting Sun Microsystems Support Services for assistance with firmware, be sure you know the correct firmware revision.

CAM always shows the current version of firmware installed. However, certain System Administration functions specific to the operating system might display the disk drive firmware incorrectly. In this case, the drive requires re-labeling in order to update the exposed string which typically shows a firmware revision.

The following table lists the components with their firmware baseline version numbers and filenames.

TABLE 17 Baseline Firmware: F5100 Flash Array, J4000 Series Arrays and Sun Blade 6000 Module

SIM Board	Version	Firmware File
Sun Storage J4200	3A32	qnt/J4200.3A32.fw
Sun Storage J4400	3R21	qnt/J4400.3R21.fw
Expander Board	Version	Firmware File
Sun Storage J4500	5.3.73.0 (0349)	sun/sasxfwlo.5.03.73.fw
Sun Storage F5100 Flash Array	5.3.73.0 (0349)	sun/sasxfwmo.5.03.73.fw
B6000 Blade Storage	5.2.14.0 (502E)	sun/sasxfwnv.5.02.14.fw
B6000 NEM Plus	5.2.14.0 (502E)	sun/sasxfwnv.5.02.14.fw
B6000 NEM GOA	5.2.14.0 (502E)	sun/sasxfwnv.5.02.14.fw
B6000 NEM Hydra	5.2.14.0 (502E)	sun/sasxfwnv.5.02.14.fw
FMOD	Version	Firmware File
SD88SA024SA0	MP1A	sun/MP1A.bin
Disk Drive	Version	Firmware File
ST340008SSUN0.4T	0543	disk/ST340008S.0543.fw
ST32500NSSUN250G	3AZY	disk/ST32500NS.3AZY.fw
ST35000NSSUN500G	3AZY	disk/ST35000NS.3AZY.fw
ST37500NSSUN750G	3AZY	disk/ST37500NS.3AZY.fw
HUA7250SBSUN500G	AC5A	disk/HUA7250SB.AC5A.fw
HUA7275SASUN750G	AC5A	disk/HUA7275SA.AC5A.fw
HUA7210SASUN1.0T	AC5A	disk/HUA7210SA.AC5A.fw
HUS1573SBSUN72G	SA04	disk/HUS1573SB.SA04.fw
HUS1514SBSUN146G	SA04	disk/HUS1514SB.SA04.fw
HUS1530SBSUN300G	SA04	disk/HUS1530SB.SA04.fw
ST314656SSUN146G	0A1C	disk/ST314656S.0A1C.fw
ST330056SSUN300G	0A1C	disk/ST330056S.0A1C.fw
ST345056SSUN450G	0A1C	disk/ST345056S.0A1C.fw

ST31000NSSUN1.0T	SU0D	disk/ST31000NS.SU0D.fw
ST37502NSSUN750G	SU0D	disk/ST37502NS.SU0D.fw
ST35002NSSUN500G	SU0D	disk/ST35002NS.SU0D.fw
ST32502NSSUN250G	SU0D	disk/ST32502NS.SU0D.fw

Known Issues and Operational Information

The following sections provide information about known issues and recommended workarounds, as well as operational information not found elsewhere in the documentation:

- [“Troubleshooting Access Configuration” on page 55](#)
- [“RAID Array Operational Information and Issues” on page 63](#)
- [“Configuration Issues” on page 69](#)
- [“Documentation Issues” on page 82](#)
- [“Firmware Issues” on page 86](#)
- [“In-Band Array Management - Operational Information and Issues” on page 88](#)
- [“Localization Issues” on page 89](#)
- [“Solaris Issues” on page 95](#)
- [“Notable Updates/Fixes in this Release” on page 96](#)

Troubleshooting Access Configuration

Note – This section applies only to the Sun Storage J4000 Series Arrays and F5100 Flash Array.

Using new Access Configuration features, you can assign each host its own storage resources, optimizing efficiency through segregation and topology control. Access configuration is accomplished on a per host initiator port, per hard-disk level.

Review this section, along with [“Using Access Configuration Features” on page 7](#), to understand the appropriate steps to use the new features and information about troubleshooting.

Also review [“Documentation Issues” on page 82](#) for information about Access Configuration features which will be documented in future releases.

Important Notes

- It is best practice to configure servers one at a time.
- Access Configuration features require a supported LSI-based HBA (i.e., SG-XPICIE8SAS-E-Z or SG-PCIE8SAS-EB-Z) with the minimum required firmware installed in the CAM management or data host, directly connected to the J4x00 array. See [“System Requirements for Access Configuration” on page 8](#) for more information.
- Multipath connections to a J4x00 array using separate SAS fabrics will not cause SATA affiliation issues because each host uses a separate path to the disks.



Caution – In a failover (multipath or clustered) configuration, granting multiple hosts access to the same disks through different controllers can lead to data loss. Be careful to properly assign the Access Configuration relationships between the hosts and storage while considering multipathing software to be used.

- Custom access configurations should be manually saved immediately after they are created.
- Custom access configurations cannot be saved after a controller fails.
- So that CAM can detect all disks (including those for which access is not configured), you must clear SATA affiliations after each access configuration operation. The best way to clear SATA affiliation conflicts is to first discover the storage from the hosts being used to perform the Access Configuration for all storage and all attached hosts, and not to install CAM proxies or run commands on additional hosts until Access Configuration steps are complete.

Configuration Access and SATA Affiliation Issues

The following topics should help you troubleshoot issues you encounter when using the new Access Configuration (SAS Zoning) features.

SATA Affiliation Guidelines

For the purpose of configuring the Access Configuration between these initiators and drives, multiple hosts can be attached concurrently as long as the following rules are applied:

- Un-register all CAM proxy agents on any hosts other than the one being used to configure the Access Configuration. This can also be accomplished by un-installing the CAM proxy agent or by not installing the CAM proxy agent until Access Configuration is complete.

Do not run commands on hosts other than the one used to configure the Access Configuration (i.e., format, cfgadm, etc.) which might attempt to access the attached storage.

Access Configuration Operations Require Clearing of SATA Affiliations

When a J4x00 array contains SATA drives, an affiliation (dedication) to the initiator (HBA port) is automatically created within the STP/SATA bridge in order to comply with the SATA protocol which is point-to-point in nature. If multiple initiators are attached using a single SAS fabric (either SAS A or B), the affiliation to an initiator will be arbitrarily chosen, creating potential issues.

During Access Configuration, SATA drives can be shared between multiple hosts, as described in [“SATA Affiliation Guidelines” on page 11](#) and [“Configuring Multiple Host Access for a J4x00 Array” on page 19](#).

Adding New Expanders to a SAS Domain Causes Domain Name to Change

Bug 6822709 —When an expander is added to a SAS Domain, the SAS Domain name changes. The name is keyed off of the expander(s). When you add a new JBOD, the key will change. Domain name is based on concatenated SAS addresses.

This behavior is expected and working as designed.

Clustering is Not Supported if Your Array has SATA Drives

Mixed drives within a single tray are not supported in J4200 and J4400 arrays if Access Configuration (zoning) is going to be performed. If your array has SATA drives, multipath targets should only be assigned to the initiators of one host. Multiple hosts sharing the same SATA drives (i.e., clustering) is not supported.

Change Password Does Not Work Until Password is Updated

Bug 6832996 --Change Password in Array Registration Database doesn't work 2nd time until password is updated.

This works as designed.

As a preventive measure, CAM checks the old password given by the user against the password in the registration database - not the password in the expander.

CLI - "modify sas-domain" to Associate or Dissociate Defines Access Configuration Lists



Caution – Using the “modify sas-domain” command to associate or dissociate initiators and disks defines access configuration lists. You should not use this command for incremental changes, as each change affects all elements of the SAS domain. For example, dissociating one disk in a SAS domain containing 48 drives implicitly associates the other 47 drives.

CLI - Associate/Dissociate Command Not working on Windows

Bug 682487 –Associate/Dissociate on Windows via “sscs.bat” does not work with comma delimited disks.

Using quotes around the comma delimited disks works, as in this example:

```
C:\Program Files (x86)\Sun\Common Array Manager\Component\sscs>sscs.bat
modify -A -i 500605b000c19d50 -d "50800200004696ce,50800200004696d2" sas-
domain 50800200004696bf
```

CLI - Modify Name Not Working Consistently

Bug 6825429 –Modify Name of a JBOD is happening but the change of name is not consistent. Changing a JBOD name works, except in the case that the JBOD is un-registered and then registered again.

Workaround –Rename arrays when the name is not persisted.

CLI: Dissociate Command Not Working Properly

Bug 6829299 –Regression:Dissociate command using CLI is not working properly.

Under certain conditions, sscs access configuration modifications associate/disassociate (sscs modify -A/-D sas-domain) might move unintended targets from zone 1 to zone 127. This could have the unintended consequence of restricting visibility to targets not explicitly listed on the command.

This is working as designed; however, we will consider improving the user experience through the product and/or documentation (such as Online Help) in future releases.

Configuration Restrictions Lifted for Import/Export Operations

Bug 6822780 –Template Manager code has been revised to lift zoning configuration restrictions. There is no longer a restriction on configurations that can be imported to the same domain from which they were exported.

Disk Drive Locate LED Procedure

Bug 6829668 –Disk Drive Locate LED does not work on disks in unassigned zone. The Service Advisor, Disk Drive Locate LED procedure says it successfully turns on and off the amber drive LED but actually does not work for disks not assigned to a zone.

Workaround –Use either of the following options:

- From the host using the specific drive, use the CLI or the appropriate service procedures to issue the desired command to locate the drive.
- Reset-to-default or disable zoning.

Both options will enable all hosts to see all drives.

Email Notification Does Not Save “Apply Email Filters” Option

Bug 6813244 –Adding email notification does not save “Apply Email Filters” option on first attempt. Attempting to add a new email notification and apply email filters as part of the policy for the notification appears to be successful but silently fails to apply email filters.

Workaround –

1. From the Email Notification page select New... to add a new notification policy.
2. Enter an email address, and select the “Yes” radio button next to “Apply Email Filters.”
3. Save the page.
4. Click Refresh and verify “No” is selected in the radio button for “Apply Email Filters property.”

Host Details Page - MPT Driver Instance Number is Wrong in HBA Column

Bug 6828114 –MPT driver instance number is wrong in HBA column of table on Host Details Page.

Note the proper naming scheme of an HBA name in CAM in this example:

The mpt driver part of HBA name, “mpt:<id>”, should read as “mpt driver mapped to the controller <id>” NOT as “mpt driver instance <id>”. For example, “mpt:2” should read as “mpt driver mapped to the controller 2” NOT as mpt driver instance 2. The HBA name is presented as expected.

Host Unable to See Zoned Disks After Moving SAS Cable

Bug 6824323 –J4x00 host unable to see its zoned disks after moving SAS cable from port 0 to 1 of same domain. This applies to any change in initiator (same host or another host).

Workaround –Sun access configuration (zoning) policy was designed to behave in this manner. Access configuration features are PHY-based rather than initiator-based. When zoning is activated while host is connected to port 0 of J4500, 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.

Multipath:Host Detail Page Shows Disks Presented to Specific init only

Bug 6821919 –Multipath:Host Detail Page shows disks presented to specific init only (2portHBA - 1Exp)

Multipath Host Details Page shows disks presented to specific initiator only in case where 2 ports of the dual port HBA are connected to same Expander of any JBOD. This is likely a driver issue.

Workaround –Contact Sun Service if dual connections from a single HBA must be attached to a single SAS domain. Special HBA settings must be changed to allow this type of configuration.

Proxy Host Details Page F5100- Storage Name for FMods not Displayed

Bug 6824461 –After registering a F5100 via localhost, then via proxyhost, the Proxy Host Details page does not display the storage name for the FMods that are zoned-out to the localhost but the SAS address. This will be fixed in the next product release.

SAS Domain Refresh Adds More Domains - Windows 2008

Bug 6815001 –Windows08 - SAS Domains refresh changes the contents of what is displayed (adds more domains). This will be fixed in the next product release.

Workaround –Click in the Tree view on the left side of the screen to clear the Domain Summary Screen.

SAS Domains - Clicking Links Causes Tree to Unexpectedly Collapse

Bug 6819851 –While using the CAM GUI with a Windows operating system, we have observed that clicking the links or sub-links under the SAS Domains can cause the tree in the left pane of the window to collapse.

Workaround –Re-open the tree to the desired location when this problem occurs. This behavior will be fixed in the next product release.

Service Advisor Controller Replacement Does Not Describe Restoring Access Configuration / SIM Replacement Results in Loss of Path to Targets For Expander

Bug 6830576 and 6817270 –The current Service Advisor controller replacement procedures do not include instructions on how to restore access configuration after controller replacement.

Workaround –Controller replacement requires existing access configurations to be exported before the controller fails and restored after it is replaced. This will be documented in Service Advisor in a future release.

SAS Domain Discovered when Sun Blade 6000 is Registered

Bug 6791269 –CAM discovers SAS Domain on registration of Sun Blade 6000 Storage Module running 05.02.xx firmware.

Customers should not zone JBODs running FW that does not officially support zoning (from Sun’s perspective). See [“Array Firmware Delivered with CAM” on page 43](#).

Note – For this release, Access Configuration (Zoning) features are not supported for the Sun Blade 6000 Storage Module.

Template Name Error using Import Command - CLI

Bug 6828734 –An unexpected internal system error displays when the wrong template name is issued in the import CLI command.

The SAS Zoning Template Manager service does not always check for null parameters. The CLI SASTemplateProcessor does not check for an error when it attempts to search for the template key using the user-supplied template name.

Workaround –Supply a template name that matches one of the template names returned by “scs list template.”

WinXX PreExisting Disk Configurations Difficult to Map

Bug 6828851 –WinXX PreExisting Disk Configurations are difficult to map in CAM for Win hosts for access configuration.

It is difficult to map drives (pre-existing configurations) in Windows.

Workaround –To map a drive between CAM and your Windows host, follow these steps:

1. In the CAM Left-Hand Tree, navigate to Storage Systems> <Array Name> / FRUs/Disk.
2. To find the physical disk number, navigate to the disk details page: Summary > Component Summary > Details
3. The physical disk number found in Step 2 correlates to the <Host>:\\ PhysicalDiskNN device presented by your Windows host.

RAID Array Operational Information and Issues

Java Web Console Version 3.0.2 Goes into Maintenance Mode

Bug 6657309 –After several minutes of inactivity, the Sun Java Web Console Version 3.0.2 goes into maintenance mode and yields errors similar to the following:

```
m4000 gconfd (noaccess-2277): I can't write to '/var/tmp/orbit-noaccess', ORB init failed
```

```
m4000 svc.startd[7]: system/webconsole:console failed: transitioned to maintenance (see 'svcs -xv' for details)
```

```
svc:/system/webconsole:console (Java web console)
```

```
State: maintenance since Tue Apr 18 14:08:06 2009
```

```
Reason: Method failed.
```

```
See: http://sun.com/msg/SMF-8000-8Q
```

```
See: man -M /usr/share/man -s 1M smcwebserver
```

```
See: /var/svc/log/system-webconsole:console.log
```

Impact: This service is not running.

Workaround –For unix hosts, set the directory permission to 01777 (i.e., `chmod 01777 /var/tmp`) and restart the console.

Solaris Runtime and RAID Array Proxy Agent Packages Install on Wrong Architectures

Bug 6665774 –If you perform installation using the incorrect package, CAM will install but not run. For example, if the in-band proxy agent packages are being delivered as being architecture-dependent (SPARC and x86 for Solaris), then the SPARC package installation should not succeed on an x86 platform. The risk of this happening is low.

Workaround – Install the correct package. See [“Installing and Upgrading CAM” on page 35](#).

Array Out of Compliance Yields Errors

When an array is out of compliance due to an invalid or missing license, a number of operations might not occur, such as:

- Standard RAID volume creation
- Automatic configuration
- Creation of storage partitions mappings
- Hot spare assignments
- DSS
- DCE/DVE
- Snapshot volume creation

Cache Stop % Cannot Be Greater than Cache Start %

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

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

CLI - Adding 2+ Unnamed or Unlabeled Arrays Indeterminate

Bug 6681173 –List devices can show multiple unlabeled entries. List storage systems can show multiple unlabeled entries as well. The CLI user is unable to differentiate between unlabeled entries.

Workaround –Rename each unlabeled device to a unique Temporary Name. Use list controller to determine the IP address for the Temporary Name, and then change the array name to what you want.

Custom Install - Able to Register Array but Device Monitoring Fails

Bug 6841609 –6.4.1.5:Able to register Loki after custom install; mgmt host- Sun Storage F5100 Flash Array & data host - J4x00/B6000 s/w. Management hosts and data hosts must both have the same device plugin installed to manage a device. In other words, if you want to manage a B6000, you must install its plugin on both the management host and data host. While discovery works without having the plugin on the management host, device monitoring will fail.

Workaround–When a Custom Installation is used, the management and proxy hosts must have the applicable array types selected.

See “[Installation Requirements](#)” on page 36.

DACstore Issues

Maintained by the array firmware, DACstore stores information on each of the arrays' disk drives. Before you connect any replacement drive or additional expansion module to an existing functioning array, you should contact Sun Support at <http://www.sun.com/contact/support.jsp> to ensure the connection goes smoothly and avoid issues with the DACstore configuration and status database.

Arrays with Potential DACstore Issues

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

If you observe any of the following, contact Sun Microsystems Support Services at <http://www.sun.com/contact/support.jsp>

- Cannot apply feature licenses
- Cannot upgrade/install the baseline for array firmware
- Host operating system reports the wrong product identifier
- Array registration or discovery fails to complete
- Persistent or unrecoverable multipathing failover

Defragmentation Jobs Do Not Display - Jobs Summary Page

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

Workaround –This should have no impact but if the status needs to be seen, you can run defragmentation jobs using the CLI: `/opt/se6x20/cli/bin/sscs modify --array ArrayName --defragment vdisk 1`

Disk Drive Failure Affects Vdisk Redundancy

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

The drive is chosen to satisfy the following conditions:

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

Errors - General Password Mismatch

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

Workaround – Use the correct array password.

Free Capacity Does Not Add Up

Bug 6800666 – Storage Utilization on Storage System Free Capacity does not add up.

Works as designed –CAM adds up the free capacity’s real value which might seem slightly high.

Host Board Type with Controller B - Unknown Status

Bug 6821043 –6580 array displays “Unknown” status in Host Board Type and “controller.hostBoardStatus.3” in Host Board Status with controller B.

Workaround –The correct host board status can be seen on the FRU Details Page.

Import Attempt with Invalid Password Generates Uninformative Dialog

Bug 6822938 –When an access configuration is attempted to be imported w/ an invalid password, an uninformative dialog box is presented to the user.

Workaround –Will be fixed in a future release.

Installation Fails due to Missing TEMP - Windows

Bug 6791511 –When CAM is being installed on a Windows system, an “Invalid TEMP” directory pop-up window displays.

Workaround –Windows users should investigate TEMP, TMP, and USERPROFILE environment variable settings, rather than follow the directions in the pop-up window.

Installation Fails when User Account Control is On- Windows 2008

Bug 6753949 –CAM fails to install on Windows 2008 when User Account Control is turned on.

Workaround –Users with Administrative privileges that are used to install CAM on Windows 2008 must have User Account Control turned off. From the Control Panel, select User Accounts, and then turn the User Account Control off.

Jobs Checkbox Does Not Display; Job Will Not Cancel

Bug 6600387 –When a long job is running, such as large volume creation, the Cancel checkbox does not display on current job status. Some jobs cannot be cancelled once they have started on the array.

Workaround –If the queue includes multiple jobs for the array to perform, the job can be cancelled at the point where the GUI sends the next job to the array.

Mid-plane Tray Replacement Must Have Controller Tray Power Off

Bug 6816773 –For all arrays that can have external expansion trays separate from the RAID controller tray, you must power off the controller tray before replacing the mid-plane tray.

Workaround –Before replacing a mid-plane expansion tray, perform the following steps:

1. **Stop all I/O activity.**
2. **Wait two minutes to ensure the data in the controller cache is flushed to the drives.**
3. **Power off the controller tray.**
4. **Power off the expansion tray which has the mid-plane that needs to be replaced.**

Registration Page Displays Upon Initial Installation

When you install the CAM software for the first time, upon logging into the Browser User Interface, a registration page will display. Fill out the information before continuing.

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

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

Session Timeout Refreshes Main Page Rather than Window

Bug 6779252 – On Solaris 10u4 or later, CAM 6.4.x Session Timeout is refreshed in the main page or window pane instead of the entire window.

This is a bug in Sun Web Console 3.1 and will be fixed in an upcoming patch.

Workaround –Use Browser refresh to correct.

Webconsole Service Fails -- InstallShield Provides Wrong Switch

Bugs 6792599 and 6753860 –Webconsole service fails. InstallShield provides wrong switch (should be -c) in error message.

- Invalid switch option given on GUI based CAM install failure.
- Webconsole Service' Default 40bit SSL keys fail FIPS/Fed autids.
- When attempting to install CAM via text-based install, the installer is unable to run in graphical mode unless the correct switch is added.

Workaround –Run the installer with:

-c flag

```
root@sx-dimen-a04# ./RunMe.bin -c
```

Note – Appropriate ciphers can be setup in JVM or Tomcat used by Java Web Console via configuration files. Contact Sun Microsystems Support Services at <http://www.sun.com/contact/support.jsp> for instructions on how to modify the default ciphers for JVM or modify Tomcat configuration files.

Windows --Uninstallation of CAM Panics Host

Bug 6769156 –Users must stop all applications that are running a java.exe or javaw.exe before running the uninstaller.

Configuration Issues

Note – Using multiple configuration tools can cause issues. CAM has locking to prevent multiple CAM sessions from interfering with one another. There is, however, no way to prevent interference from other tools that perform equivalent functions such as configuring the storage array.

6xxx RAID Arrays Show Controller Host Ports as Down When Using RAID Array Proxy Agent

Bug 6756920 –Directly connected 6140 array registered with one controller shows opposite controller host ports as down. This issue only occurs when using the RAID array proxy agent and is cosmetic in nature.

CAM Login - Error in Left Pane of application of WinXP/MSIE

Bug 6747004–CAM link presents user with error in Left Pane of application of WinXP/MSIE. This will be fixed in the next product release.

CLI - “sscs ... modify userrole” Command is Unsuccessful

Bug 6757010 –The “sscs ... modify userrole” command does not change the user role either from “guest” to “storage” or from “storage” to “guest.”

Workaround –Perform this operation from the browser user interface.

CLI Error -- Connection Failed

Bug 6635453 –sscs displays “Connection failed!” error when user’s home directory or its files cannot be read.

Workaround –If you get a “Connection failed!” error when using the CAM CLI command sscs, do the following:

1. **Ensure the value of the HOME environment variable is set to your home directory.**
2. **Verify that \$HOME/.sscs_conf, if it exists, has owner read and write permission.**

CLI Usage Statement Syntax Error - “The resource was not found”

CLI usage statement yields syntax error “The resource was not found.”

Workaround –Add spaces between the disks.

Resolution for this issue is in progress. Generally, adding spaces can break scripts; however, in this case it is the only workaround.

CLI Uninstall Yields Errors

Bug 663281 –If gettext rpm is not present on Suse 9 platform, CLI uninstall gives error messages.

Solution –Before installing CAM on a Suse 9 platform, you must install the following RPM packages:

- libgcj-3.3.3-43.24.x86_64.rpm
- gettext-0.1.14.1-30.1.x86_64.rpm

See [“Uninstalling a Previous CAM Version” on page 42.](#)

CLI - Warning Message Displays in GUI After Issuing “sscs add -d registeredarray” Command

Bug 6796540 –After the “sscs add -d registeredarray” command is issued and associated arrays are registered on the host, this message displays on the GUI: “A script on this page may be busy, or it may have stopped responding. You can stop the script now, or you can continue to see if the script will complete.”

If you click Continue, wait a few minutes, and click the Storage System tab, this message still pops up. If you click Stop Script, the message goes away. However, if you click either Refresh or Storage System tab, the message re-displays.

Workaround –Click Continue to allow scripts. Avoid running the CLI and browser user interface in parallel.

Disabled Snapshot Re-enabled After Firmware Update

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

Workaround–Disable the snapshot again after the firmware update.

Email Notification with “null” PC/RA Results from Creating/Removing Pool on 6580

Bug 6826826 –After creating/removing a pool on a 6580 array, an email notification event received as Component Insert Event with Probable Cause “null” and Recommended Action “null.” This will be fixed in the next product release.

F5100 - 16 Proxy Agents under Host Domains Missing under SAS Domains in Navigation Tree

Bug 6855446 –While registering 16 data hosts connected to F5100 through CAM registration wizard in a single operation, some times one or two hosts may not get successfully registered. Navigation tree will not display SAS domains for those hosts, which will ultimately prevent SAS domain management, pertaining to those data hosts.

Workaround –Re-register the unregistered data hosts through the registration wizard.

F5100 - FMod status remains Unassigned even after Host to which it is Zoned is Registered

Bug 6823434 –After registering FMods via the host to which they had been zoned, we expected them to show-up as OK in the FRUs Device Summary page. However, a ValueChangeEvent was generated with its corresponding alarm. The FMods stayed as Unassigned in the Component Summary page.

This issue can occur when two HBA ports on the same host are zoned to different disks on the same JBOD. FRU Disk Details will show the correct unique identifier and firmware revision for all disks, but some drives will be incorrectly marked as having “Unassigned” status.

Workaround –Host Details Page does not Display Storage shared with Proxy Host - F5100

Bug 6838246 –When a Sun Storage F5100 Flash Array connected to two hosts is registered via localhost and then proxyhost, it is removed from the registered Storage Systems Local Host Details page.

Workaround –Enable the proxycfg on localhost and rediscover with hostname. This will be fixed in the next product release.

Hosts - Two Identical Names Display when Only One JBOD is Registered

Bug 6841392 –Two same hosts display in Host navigation pane, even though only one JBOD is registered. This will be fixed in the next product release.

Workaround–If an array is un-registered in CAM when the device is not physically attached, it is possible that the array (and host) may persist and become duplicate entries in the CAM navigation tree.

When this happens, do the following to clear registration entries in CAM:

1. Run the following as root on the host”

```
# /opt/SUNWsefms/bin/ras_admin device_delete_all
```

2. Re-register arrays (or proxy hosts containing arrays) in CAM.

Host Types - VMWARE and HPXTPGS Not Seen

Bug 6836160 –CAM 6.4.0.10 CAM only allows 16 host types, host types VMWARE and HPXTPGS in new 07.50.xx.xx firmware for 6xxx arrays are not seen/ selectable.

Workaround –Continue to use the pre-existing method of modifying the NVSRAM per the instructions documented in the referenced Bug.

Import Configuration Error - 2510 Arrays

Bug 6764318 –Importing array configuration from Administration page yields errors.

This issue occurs with 2510 arrays when these steps are followed:

1. **Register array with CAM and create a configuration (volumes, etc.).**

2. **Select Administration -> Export/Import page.**

3. Click Export.

4. Browse for the exported file and then click Import.

Several minutes might transpire at this point.

Result: This error message displays: "Error executing the import command"

Workaround –Prior to Importing, select Reset Configuration on the array's Administration page or run the following CLI command:

```
sscs reset -a ArrayName -l array array
```

Import Errors - 6580 and 6780 Arrays

Bug 6826976 –While performing an import using CAM 6.4.0.10 with registered 6580 array, this error message was received: "The target array does not support a required licensable feature." Performing an import with a registered 6780 array yields this error message: "Error executing the import command. It may be necessary to manually reset the array and try the import again."

Workaround –Prior to importing, select Reset Configuration on the array's Administration page or run the following CLI command:

```
sscs reset -a ArrayName -l array array.
```

The array name will be "unlabeled" after the import is complete.

Import Fails when Target Array has a Password

Bug 6800352 –Import failure displays the following error: "Error executing the import command. Errors occurred while importing the array settings. Try importing again, or configuring the array manually."

Workaround –Reset the array password before performing the import.

Installation Fails When Another Version's Installation Exists

Bug 6729062 –CAM fails to install on Windows with another version already installed.

Workaround –If either of the following two instances occur, use the procedure that follows:

- The following error occurs at any time during CAM installation: "Another version of this product is already installed. Installation of this version cannot continue. To configure or remove the existing version of this product, use Add/Remove Programs on the Control Panel."

- Uninstallation of CAM cannot clean up the Windows registry
1. **Download the Windows Installer CleanUp Utility from the following website:**
<http://support.microsoft.com/kb/290301>
 2. **Install the Windows Installer CleanUp Utility, by running msicuu2.exe.**

IP Address for Replaced Controller - Unable to Change (ipv4)

Bug 6807816 –CAM6.4.0.6 - Not able to change (ipv4) IP address for a replaced controller.

Workaround –Change the IP address on the controller from the serial port.

J4x00 Registered Name is Offset by Character

Bug 6745468 –Registered name is offset by a character from the physical sticker identifier.

Workaround –This is expected behavior. The physical sticker indicates the base WWN shared by all four expanders. This offset does not affect ASR registration, because the chassis WWN is used to register rather than the nickname.

Hot Plug Issues in Sun Storage J4000 and F5100 Flash Arrays - Linux

Two categories of J4x00/F5100 Hot Plug issues have been identified: Those that require a Linux host reboot and those in which the hot plug is not supported. These are separated into two sub-sections as follows:

1. **Linux host reboot is required if the array or any of its components are not recognized after changes such as cable re-configurations, firmware upgrades, etc.**
 - Sun StorageTek SAS RAID HBA hot plug is not supported.
 - Sun StorageTek SAS RAID HBA is inconsistent with CAM reports and missing FRU disk information. This is expected J4x00 registration behavior during SAS bus re-scan.
 - Firmware upgrade failed for Sun Blade 6000 Disk Module.
 - J4x00 - Name issues during registration and upgrade connected to B0/B1 side.
 - J4x00 - Linux J4x00 registration - `sg_map -i` must be clear of all errors or it will fail; leads to host reboot to clear `sg_map`.



Caution – Newly added (or removed) targets (i.e. disks) due to changes in Access Configuration or the addition of new storage can potentially cause the host to hang or panic due to known Linux kernel issues.

Bug 6688831 –Linux Operating Systems hang when Sun Storage J4200/J4400/J4500 arrays are disconnected from Sun StorageTek PCI-Express SAS Host Bus Adapter B3.

Bugs 6688831 and 6692819 –RHEL4 U6 64-bit Operating System hangs when Failed disk is recovered on J4000 array.

Bugs 670618 and 6731595–Alamo/Riverwalk: Sun StorageTek PCI-Express SAS Host Bus Adapter B3: SuSE 9 SP4: Multipath (device mapper): Alternate SIM failure causes host to hang.

Bug 6730211 –CAM: Linux RHEL5.2: PANIC when upgrading SIM firmware on J4000 array family with Sun StorageTek PCI-Express SAS Host Bus Adapter.

Bug 6730678 –Alamo/Riverwalk: Sun StorageTek PCI-Express SAS Host Bus Adapter B3: SuSE 9 SP4: Multipath (device-mapper): Alternate SIM failure causes host to hang.

Bug 6732411 –Allamo/Riverwalk: Sun StorageTek PCI-Express SAS Host Bus Adapter B3: SLES9SP4: Multipath: Lost Communication to Alamo/Riverwalk after CAM SIM firmware upgrade.

Bug 6732925 –RHEL5.2 J4000 array family: Panic when SIM is pulled while running IO on Sun StorageTek PCI-Express SAS Host Bus Adapter.

Bug 6737779 –J4000 array family: SUSE10: Loss of communication after upgrade of SIM and DISK Firmware.

Bug 6738394 –SUSE10:Riverwalk:SATA drives replacing cable in HBA causes multipath -l to lose info in sysfs & device-map.

Bug 6741578 –Cannot register J4x00 on Linux until host reboot3.

Bug 6741693 –RHEL5.2: Upgrade of SIM and disk firmware using CAM CLI causes panic.

Bug 6777089 MPT 3.16.00.00 pandora hba SAS cable insert, expander reset or power cycle hang x86 host until reset.

Bug 6817878 –OS does not see zoning filtering through to proxy server correctly. This issue is specific to Linux hosts.

Bug 6830042 –As a result of JBOD expander firmware upgrade, expander reset might hang Linux OS.

Bug 6833156 1.26.03.00: linux missing targets, fdisk -l and sg_map -i hangs after JBOD second power cycle.

2. Sun StorageTek SAS RAID HBA hot plug is not supported. Generally, the workaround is to reboot the array between any cable changes etc.

Bug 6723686 –J4x00 failed disk drive (Sun StorageTek SAS RAID HBA) not reported by CAM.

Bug 6732704 –J4x00 Windows agent (Sun StorageTek SAS RAID HBA) 0.0 MB reported; drive FRU missing unique identifier.

Bug 6739921 –Enclosure management device properties still shows old J4x00 firmware version after upgrade.

Patch for Linux Hosts

Bug 6701605 –WebConsole 3.1 patch is breaking the CAM UI on Linux host.

Workaround –Download patch 125954-16 or later from <http://www.sunsolve.sun.com> for Linux hosts and apply it to the CAM server to upgrade the WebConsole to 3.1. For Solaris and Windows, the upgrade is seamless. For Linux, the CAM interface might have problems, in which case you can refer to your Linux documentation.

Adding or Removing SATA Drives Requires Host Boot - Linux

Bug 6835314—Linux kernel:mptbase(Abort) occurring when SATA drives are added or removed. This issue has been discovered on both RedHat 5.2 and SuSE 10.

When adding or removing SATA drives to a Linux host (in this case this is done with access configuration in CAM or the Quanta SZQ tool), the Linux host frequently gives the following (mptbase -- Abort) message and then will not allow any more commands to be passed:

```
kernel: mptsas: ioc2: removing sata device: fw_channel 0, fw_id 4, phy 4, sas_addr 0x500163600010a390
```

```
kernel: mptbase: ioc1: LogInfo(0x31120101): Originator={PL}, Code={Abort}, SubCode(0x0101)
```

The following message is also common:

```
multipathd: sdd: checker msg is "tur checker reports path is down"
```

Normally the (kernel: mptsas) messages will be seen for zoning operations but when the (kernel:mptbase) message is also seen, only a reboot will recover the hosts' ability to properly see the drives.

Workaround –Working with Linux vendors to fix in a future release.

Port Summary is “unknown” - 6xxx Arrays

Bug 6801157 –For a 6xxx RAID array, Port Summary might show the Speed of the attached link as “unknown.”

Profile Names - Changing Case of Name Fails

Bug 6841202 –Renaming an array Profile changing only the case of the text results in a failure - “Already Exists.” This will be fixed in the next product release.

Workaround –Rename the profile with a name that is unique and then rename it again with the desired name.

Replication Status May be Listed Incorrectly when Primary Volume Fails - 6xxx Arrays

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

Replication Set Detail Page Shows Incorrect Dedicated Port - 6xxx Arrays

Bug 6684018 –Replication Set Details page shows an incorrect replication dedicated port for 6540 array.

Workaround –Will be fixed in a future release.

Service Advisor for 8GB HICs on 6580 and 6780 Arrays is Incorrect

Bug 6819748 –When the management software lists a disk as failed and the Service Advisor procedure for replacing drives is followed, the step to verify that the disk is ready to remove might not list the failed disk.

Workaround –Follow these instructions:

1. Check to see if the array is at 7.50 or later firmware.

If it is not, an upgrade is recommended. [“Installing and Upgrading CAM” on page 35](#)

2. Turn off the controller module by switching the AC/DC I/O switch to OFF.

3. Remove Controller A and perform a component update, then insert.
4. Remove controller B and perform component update, then insert.
5. Re-cable
6. Power on

Note – If you have RVM enabled, you need to move the cable to the highest numbered port, and this will require a rezone of your FC switches.

Snapshot Mapping Fails with Invalid LUN Error

Bug 6764785 –When attempting to map a snapshot from the Snapshot Details page, an error is observed that an invalid LUN number had been passed in. The user is not allowed to select a LUN number as the only option available from the pull down menu is “Next Available.”

Workaround –From the Snapshot Summary page, select the checkbox beside the snapshot and then click Map.

Snapshot Quantity Incorrect: Snapshot Details and License Summary Pages

Bug 6681459 –There is a discrepancy in the snapshot quantity shown on Snapshot details and License summary pages.

Workaround –Use the License page for accurate snapshot quantity details.

Snapshot Reserve Error When -Z Option is Used

Bug 6665092 –When used together, the -Z option overrides the -L option.

Therefore, the following command yields an error:

```
/sscs create -a 6540-1 -V master-vol-1 -f failsnapshot -m res-vol-1 -Z 5GB -w 50 -C 1  
-L average snapshot snap-1.
```

Workaround –Do not use the -Z option. Instead, use the -w option. The -Z option is only supported on the 6920 array.

Snapshot Reserve Space is Insufficient and Fails Resnap

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

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

Snapshot/Volume does not Display Objects in “Create New Mappings”

Bug 6743793 –Searching volume/snapshot in “Create New Mappings” does not display all objects when there are 2048 volumes defined. This impacts users who have many volumes but do not provide filtering criteria to reduce the set they want to manipulate from the wizard interface.

Workaround –Use the CLI to create the map.

Virtual Disk Name Change Fails When GHS is in Use

Bug 6757428 –Attempting to change the name of a optimal/enabled vdisk fails when GHS is in use.

Workaround –Will be fixed in a future release.

Volume Copy Instances While Volume Copy License is Removed

Bug 6826242 –Unable to activate replication set license if installed volume copy license is removed. The array has a variety of issues while the volume copy license is removed.

This works as designed. Arrays must be compliant with volume copy license. Otherwise, you cannot perform the following operations:

- Standard RAID Volume Creation
- Automatic Configuration
- Creation of Storage Partition Mappings
- Hot Spare Assignment
- Dynamic Segment Sizing (DSS) and Dynamic RAID Migration (DRM)
- Dynamic Capacity Expansion (DCE) and Dynamic Volume Expansion (DVE)
- Snapshot Volume Creation

- Remote Volume Mirror (RVM) Activation and Mirrored-Pair Establishment Volume Copy
- Establishment and “Start Copy” Operations

If the storage array supports multiple performance tiers, performance will suffer after the next storage array reboot unless the condition is resolved and the array is brought into compliance.

Solution –See “[Licensing Optional Premium Features](#)” on page 5 or search for this information in Online Help.

Volume Fail Error Occurs when VDisk does not Re-initialize

Bug 6760872 –Clicking vdisk button in Service Advisor does not re-initialize. Failed volume error is reported.

Workaround –Delete volumes (and subsequently the vdisk will be deleted). Recreate volumes/vdisk and restore data from backup.

Volume Incorrectly Mapped to Default Storage Domain

Bug 6796955 –Volume is incorrectly mapped to the default storage domain after volume creation. This has been observed on two separate CAM hosts (Win 2008 and Sol 10).The volume appears to be mapped to the default storage domain while all other volumes remain with the state showing Free.

All volumes should be created and no volume should be mapped.

Workaround –Will be fixed in a future release.

Volume Mapping - Historical Job “Create Mappings” Failed with non-specific failure data provided

Bug 6801450 –Historical job “Create mappings” failed with non-specific failure data provided.

Using the New wizard to select and map volumes starts the job; then, the job finishes and displays in Historical Job Summary. Mappings failed; however, the error is not specific as to which volumes failed. Status displays as follows:

The operation cannot be completed because the volume you are trying to map is already accessible by a host group or host in this storage domain.

Workaround –Will be fixed in a future release.

Volume Name Should be 25 or Fewer Characters

Bug 6809745 –Assigning a very large name to a volume and selecting Multiple Volume Creation from the Volume Wizard does not work. After you specify the size and complete the volume creation, a job is started but it does not complete. No error message displays.

Workaround –When naming a volume, use 25 or fewer characters.

Volumes Not Deleting from the Single Page Window

Bug 6807053 –Unable to delete volumes with the “show data in single page” option from the Volume Summary Page. After multiple volumes are deleted, the Volume Summary Page still shows the same number of volumes as before.

Workaround –Will be fixed in a future release.

Volume Segment Size Associated Requires a New Profile with a Variable Number of Disks when Changed

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

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

Volumes Supported on the Sun StorageTek 6130 Array Up to 1022

Bug 6540170 –CAM can be used to create up to 1022 volumes (volumes 0 through 1021) on the Sun StorageTek 6130 array. However, if the Access LUN is in use, up to 1023 volumes (volumes 0-1022) can be created. If you attempt to create more than the supported number of volumes, an error message is returned.

Windows “ param=value” --CLI throws exception in Modify Site

Bug 6800989 –Modify site in CLI throws exception in W2k3 and WinXP when incorrect format (“ param=value”) is used.

Workaround –Do not insert a space before the first quotation mark.

Documentation Issues

CLI - Anchor Points and Candidates Must be Specified When Importing Templates Using “import sas-domain” Command

The existing CLI documentation does not state the requirement to specify anchor points and candidates when importing access configuration templates using the “import sas-domain” command. Values for anchor points and candidates must be specified.

Workaround –Use the following syntax and option descriptions as a replacement for what is currently documented for the “import sas-domain” command.

Updated Synopsis:

```
import -t <template-name> -A <anchorPoint-name[,anchorPoint-name...]>  
-c <candidate-name[,candidate-name...]> sas-domain <sas-domain-name>
```

Updated Option Descriptions:

Note – The description for the -t (template) option remains as stated in the existing documentation.

- -A,--anchor-point <anchorPoint-name[,anchorPoint-name...]>
Specifies the name of the position in which a candidate storage system is placed within a specified template. Specified anchor points and candidates must agree with the output provided from the list template command.
- -c,--candidates <candidate-name[,candidate-name...]>
Specifies the names of storage systems which qualify under the specified anchor point names. Specified anchor points and candidates must agree with the output provided from the list template command.

CLI - Common Names Allowed for Disks When Creating Access Configurations Using “modify sas-domain” Command

The existing CLI documentation states that only SAS addresses can be used for the “-d” (disks) option when using the “modify sas-domain” command to create access configurations. However, values for the -d option can be disk common names or SAS addresses. Values for the -i (initiators) option must still be SAS addresses only.

Workaround –Use the following syntax and option descriptions (related to the -d and -i options only) as a replacement for what is currently documented for the modify sas-domain command.

Updated Synopsis:

```
modify -A -i <initiator-address[,initiator-address...]> -d <disk-name[,disk-name...]>  
sas-domain <sas-domain-name>
```

Associates specified initiators and disks in a SAS domain. Disk common names (e.g., JBOD_Test:disk:Disk.01) and SAS addresses (e.g., 5000c50001b9c83d) are used in place of <disk-name>. Initiator SAS addresses are used in place of <initiator-address>. CAUTION: Before executing this command, stop all I/O operations on any affected disks.

```
modify -D -i <initiator-address[,initiator-address...]> -d <disk-name[,disk-name...]>  
sas-domain <sas-domain-name>
```

Dissociates specified initiators and disks in a SAS domain. Disk common names (e.g., JBOD_Test:disk:Disk.01) and SAS addresses (e.g., 5000c50001b9c83d) are used in place of <disk-name>. Initiator SAS addresses are used in place of <initiator-address>. CAUTION: Before executing this command, stop all I/O operations on any affected disks.

Updated Option Descriptions:

- -d,--disk <disk-name[,disk-name...]>

Specifies the common names of the disks. Disk SAS addresses can also be used. If using this option, a value must be supplied or else an error message will be returned.

- -i,--initiator <initiator-address[,initiator-address...]>

Specifies the SAS addresses of the initiators. Initiator common names cannot be used. If using this option, a value must be supplied or else an error message will be returned.

CLI - Incorrect Synopsis and Option Descriptions for modify sas-domain in CLI Guide and Manpages

Bug 6830682 –The -C and -s option descriptions for the modify sas-domain command are swapped. This also affects the synopsis text for these options.

Workaround –Use the following synopsis text and -C and -s option descriptions as a replacement.

Updated Synopsis:

```
modify -C -P <old-password> -N <new-password> sas-domain <sas-domain-name>
```

Modifies the access configuration password in the Array Registration Database and the Array SAS Expander so both passwords match. The password can be a maximum of 32 alphanumeric characters. If setting a new password after it has been previously cleared, substitute "" (be sure to escape each quote mark) for <old-password>.

```
modify -s -N <new-password> sas-domain <sas-domain-name>
```

Modifies the access configuration password stored in the Array Registration Database only. The password can be a maximum of 32 alphanumeric characters.

Note – If the password in the Array SAS Expander does not match, modification operations on the SAS domain will be prevented.

Updated Option Descriptions:

- **-C,--change-password**
Specifies to change both the Array Registration Database and Array SAS Expander passwords.
- **-s,--synch-password**
Specifies to change the access configuration password in the Array Registration Database only.

CLI Doc: Trap Notification - Incorrect Usage Example

Bug 6826990 –The example noted in the CLI documentation for proper usage of the add notification command is incorrect, as it is missing the -o option.

Workaround –Use the following as a replacement example for this command:

```
sscs add -i 10.10.10.1 -o 162 notification trap
```

CLI Man Page & Help Provide Incorrect Option for Modify fcpport

Bug 6799310 –The loop ID range for the modify fcpport command is incorrectly reported as 1..127. The correct range is actually 1..125.

Workaround –When specifying a loop ID for this command, use a range of 1..125. The issue has been fixed in CAM version 6.4.2.

Virtual Disk Expansion has Errors in Online Help

Bug 6686067 –Documentation error in Expansion of Vdisk Help page. Wrong information is given to the user regarding maximum number of disks.

Solution –The Help is being updated with content similar to the following:

Rules for Virtual Disk Expansion

- RAID-0–Up to 30 disk drives with 06 level firmware and 224 disk drives with 07 level firmware. A minimum of one disk drive is required for virtual disk expansion.
- RAID-1–Up to 30 disk drives with 06 level firmware and 224 disk drives with 07 level firmware. A minimum of two disk drives is required for virtual disk expansion.
- RAID-3, RAID-5, and RAID-6–Up to 30 disks. A minimum of one disk drive is required for virtual disk expansion.
- All RAID levels– Maximum two disk drives can be used for virtual disk expansion at a time.

Note – When you expand a virtual disk, its disk drives must all be of the same size and type– either Serial Advanced Technology Attachment (SATA), Fibre Channel (FC), or Serial Attached SCSI (SAS).

Firmware Issues

For notable updates/fixed issues related to firmware, see “[Notable Updates/Fixes in this Release](#)” on page 96.

Avoiding Firmware Issues

To avoid issues regarding the new 07.xx.xx.xx firmware:

- Contact Sun Microsystems Support Services at:
<http://www.sun.com/contact/support.jsp>
to upgrade from 06.xx firmware baseline for the 6140, 6540, and FLX380 arrays.
- To install the new 07.35.xx.xx firmware for the 2500 Array Series, consult the *2500 Array Series Firmware Upgrade Utility Guide*.

Note – After the initial installation of 07.10.xx.xx, you can install future changes to the 07 firmware baseline using the normal upgrade procedures in CAM described in this document.

2510 Arrays - sscs modify iscs-ports Lacks IPV6 Support

Bug 6763354 – For 2510 arrays - sscs modify iscs-ports is lacking IPv6 support

Workaround – Use the GUI to use ipV6 for iscsi ports for the arrays.

2510 Arrays - Disabling IPv6 Support on Data Ports Does Not Work

Bug 6763343 – Disabling IPv6 support on the data ports does not work. Using CAM to manage the 2510 arrays disabling IPv6 Support on the data ports displays a successful status; however, IPv6 is not disabled. The check-box stays selected and there is no indication on the controller serial console of the disabling taking place.

Baseline properties file for 6140 Array - Typo for Drive ST330056FSUN300G

Bug 6837624 – 6140 properties file contains a typo indicating that the baseline firmware for drive ST330056FSUN300G is 91C and not 091C. This will be fixed in the next product release.

Workaround – Edit the properties file to change the firmware version 091C:

- In 6140.properties change ST330056FSUN300G.version=91C to ST330056FSUN300G.version=091C
- In 6140_crystal.properties change ST330056FSUN300G.version=91C to ST330056FSUN300G.version=091C

It may be necessary in some cases to unregister and register the array.

Use the CLI to upgrade these disks:

```
sscs modify -a <array_name> -c ST330056FSUN300G
```

```
-p /opt/SUNWstkcaml/share/fw/images/disk/D_ST330056FSUN300G_091C.dlp
```

Controller Slot Positions Contained in MEL Log are Unreliable

Bug 6747684 –The controller redundancy lost event is showing the wrong controller slot in the component field on a 2530 array.

Workaround –Will be fixed in a future release.

Install Wizard Displays False Warning

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

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

JBOD Firmware Upgrade Relies on DNS

Bug 6859158 –The JBOD firmware cannot upgrade because CAM is trying to resolve the host name via DNS. Since the DNS name and internal host name mismatched, it could not find the host and the upgrade failed.

Workaround –In order to run JBOD firmware upgrade through remote proxies, the hostnames of the management host and remote proxy hosts should be resolved from each host. For example in Solaris and Linux hostname/IP entries can added to the /etc/hosts of the management and remote proxy hosts.

Upgrade Utility Automatic Array Discovery Password Verify does not Reference the Array

Bug 6736963 – When multiple arrays are discovered (using the Automatic scan subnet option), the Password Verification pop-up windows do not make reference to the array.

Workaround – None at this time.

In-Band Array Management - Operational Information and Issues

In-band management is supported on the Sun StorageTek 6130, 6140, 6540, 2530 and 2540 arrays.

About the RAID Array Proxy Agent

Note – This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 6580, 6780, 2510, 2530 and 2540 arrays.

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

The proxy agent packages for each OS are located in the “Add-Ons” directory. Refer to the README file for installation instructions for your particular OS.

Known RAID Array Proxy Agent Limitations

Note – This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 6580, 6780, 2510, 2530 and 2540 arrays.

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

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

Solaris: Checking the UTM LUNs and Start/Stop of the Proxy Agent

Note – This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 6580, 6780, 2510, 2530 and 2540 arrays.

Download CAM in-band proxy agents for Solaris from here:

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

To verify the host sees the arrays management (UTM) LUN, do the following:

1. Start / Stop the Agent (Solaris)

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

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

2. Check the status of the agent

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

Localization Issues

Bug 6829803 –Tree structures on the left panel for Online Help is corrupted under the zh locale of browser, which is different.

Workaround –Set your language of browser to “en-us” for english help for the reference.

Bug 6829795 –import/export is failed with non-ascii configuration file name under localized system.

Workaround –Use non-ascii file name of the configuration file for importing/exporting feature.

Linux: Checking The UTM LUNs and Start/Stop of the Proxy Agent

Note – The SMagent requires Red Hat 5.1 (also known as “5 update 1”) or higher. It is not supported on Red Hat 5.0.

Note – This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 6580, 6780, 2510, 2530 and 2540 arrays.

Download CAM in-band proxy agents for Linux from here:

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

To verify the host sees the arrays management (UTM) LUN:

1. Start/Stop Agent

```
[root@nsvr-150 agent]# /opt/SMgr/agent/SMagent start
Stopping Agent process 12632.
SMagent started.
[root@nsvr-150 agent]# SANtricity Storage Array Host Agent,
Version 09.17.A0.03
Built Tue Dec 05 14:52:38 CST 2006
Copyright (C) 1999-2006 LSI Logic Corporation. All rights
reserved.
Checking device /dev/sda (/dev/sg0): Skipping
Checking device /dev/sdb (/dev/sg1): Skipping
Checking device /dev/sdc (/dev/sg2): Activating
Running...
```

2. Check for UTM LUN

```
[root@nsvr-150 agent]# java -classpath
/opt/SMgr/agent/SMagent.jar
devmgr.versioned.agent.DeviceIdentifier | grep "Volume
Access" /dev/sdc
(/dev/sg2) [Storage Array fms-lca1, Volume Access, LUN 31,
Volume ID <600a0b80002fc07400000000000000000>]
```

Windows: Checking The UTM LUNs and Start/Stop of the Proxy Agent

Note – This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 6580, 6780, 2510, 2530 and 2540 arrays.

To verify the host sees the arrays management (UTM) LUN, do the following:

1. Start/Stop Agent

```
E:\Program Files (x86)\StorageManager\agent>net start
"SANtricity Storage Manager Agent"
The Storage Manager Agent service is starting.
The Storage Manager Agent service was started successfully.
```

2. Check for UTM LUN

```
E:\Program Files (x86)\StorageManager\agent>C:\Java\
jdk1.5.0_11\bin\java -classpath SMagent.jar
devmgr.versioned.agent.DeviceIdentifier |
findstr Access
\\.\PHYSICALDRIVE0 [Storage Array fms-lcal, Volume Access,
LUN 31, Volume ID <600a0b80002458d20000000000000000>]
\\.\PHYSICALDRIVE1 [Storage Array fms-lcal, Volume Access,
LUN 31, Volume ID <600a0b80002fc074
```

Access LUN does not Correlate with Host to which it is Mapped

Note – This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 2510, 2530 and 2540 arrays.

Bug 6584815 –When an access LUN is mapped to a proxy agent host for in-band management use, you must correlate the mappings between the LUNs and the host by using the `format` command at the UNIX prompt. The system will list the access LUNs and the array ports from the UI or the CLI, and it will then compare the results. For example:

- Format

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

- List the array ports using the UI or CLI

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

- Correlate WWNs

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

Array Removal Might Not Complete Successfully

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

Controller Resetting Issues on In-band Managed Array

This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 6580, 6780, 2510, 2530 and 2540 arrays.

For best performance, ensure both controllers are connected during configuration.

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

Workaround –If physical connectivity is valid, un-register and then re-register the array.

Error: Could not Communicate with Controller to Complete Request

This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 6580, 6780, 2510, 2530 and 2540 arrays.

Bugs 6610504, 6609734, 6609155, 6607104, 6609732, 6612120 –An occasional problem exists where the in-band proxy agent may return the paths to the controllers in reverse order. This error can occur on any platform.

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

This error might occur when performing the following operations:

- Volume expansion
- Snapshot copy, re-snap and disable
- Virtual disk defragmentation

Workaround –Change the Current Volume Ownership when a “communication error” is encountered during volume expansion: From the Volumes page, select the “Specific Volume” and then change the value of the “Owning Controller.”

Changing the Current Volume Ownership will create an Alarm because the volume is not on the preferred controller. Select one of two actions:

- Change the Volume back to the original owner after performing the desired command.
- Change the Preferred Volume Ownership of the desired volumes via sscs(1m).

For best performance, ensure both controllers are connected during configuration.

Linux (Red Hat) 5.1 Version Required - 5.0 not Supported

Bug 6661742 – SMagent-LINUX-10.00.A2.02-1.i386.rpm will not load. SMagent is not supported on Red Hat 5.0. This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 2510, 2530 and 2540 arrays.

Workaround – The SMagent requires Red Hat 5.1 (also known as “5 update 1”) or higher.

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

This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 2510, 2530 and 2540 arrays.

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

Performance Monitoring Page Does Not Display In-band Statistics

This information applies only to FLX240, FLX280, FLX380, 6130, 6140, 6540, 6580, 6780, 2510, 2530 and 2540 arrays.

Bug 6681582 –Performance Monitoring page lists the Performance statistics as Unavailable.

Workaround –Check the physical connectivity from the management host to the array. If the connectivity is good, try un-registering and then re-registering this array.

Solaris Issues

SES vs. SD Paths for UTM LUNs

This information applies only to 2500 arrays.

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

Note – This bug is fixed in S10u5.

UTM LUNs Controlled by “Solaris Traffic Manager” - 2500 Arrays

Bug 6594360 –After you upgrade to S10U3 (or later), the in-band management UTM LUNs are controlled by Solaris Traffic Manager (MPxIO). In most cases, in-band management will not fail as a result of this; however, it is best practice to ensure that the UTM LUNs are not controlled by MPxIO. Performing the following workaround task will help prevent problems.

Workaround –Use the `format inquire` command to get the eight-character Vendor (VID) and Product IDs. Use the procedure that follows.

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

The following line should read:

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

2. Run the `stmsboot -u` command.

Respond to the prompts as follows:

```
WARNING: This operation will require a reboot.
```

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

```
The changes will come into effect after rebooting the system.
```

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

Notable Updates/Fixes in this Release

- 2164334** –500GB drives report check conditions and DDE's in MajorEventLog and makes MEL unusable
- 6538927** –6130/6140/6540: Documents has to state that auto-negotiation off on ethernet switch isn't supported
- 6572039** –SYMBOL returns 0 for FLX280 ethernet port speed
- 6588535** –750GB drives report check conditions and DDE's in MajorEventLog and makes MEL unusable
- 6593771** –Shell Command Component of DDC data is not present
- 6612020** –"B" controller continues to reboot
- 6633132** –2540 controller panics (06.17.52.10) during array registration in spmSymbolObjectBundle.cc
- 6663985** –Exception log corrupted when watchdog suspended and "I" issued
- 6703791** –SPM data base corruption causes bootloop; Mapset numbers do not match between the two controllers
- 6719611** –CSM200 drive tray has fault LED turned on when status is optimal
- 6736990** –Exmoor FW Upgrade Utility Crystal-M arrays status should be consistent with other 6000 arrays
- 6755642** –Snapshot status incorrect
- 6756414** –Exmoor: Controller Cache Memory size displays 0 from the GUI and CLI
- 6764311** –Abnormal high fan speed and noise in simplex Exmoor controller tray
- 6768200** –Controller reset during volume (vmware_vmfs_3) build
- 6778532** –Clear DACStore region on disks leads to Exmoor controller panic
- 6799705** –RVM deletion operation staying queued and causing loss-of-management
- 6821655** –(LBA) truncation issue on greater than 2TB volumes
- 6831858** –Upgrade Tool - Documentation Fix
- 6834034** –6780 Unable to balance lun warning messages
- 6834035** –6780 Unable to balance lun warning messages
- 6840229** –2500 Release Notes 820-6247-10 is missing information
- 6847935** –2500 series upgrade guide has wrong location for code download

Sun Microsystems Support

If you need help installing or using a product, contact Sun Microsystems Support Services at:

<http://www.sun.com/contact/support.jsp>

For the latest patches available for your system, check SunSolve at:

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

To download Common Array Manager software, go to:

http://www.sun.com/storagetek/management_software/resource_management/cam

Click the “Get It” tab to obtain the latest information and version available.

To search for a document from Sun’s website, go to:

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

Type the document title, part of the title, or the document’s part number in the “Search” field, and press Return.

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. Submit comments about this document by clicking the Feedback[+] link at <http://docs.sun.com>. Please include the title and part number of your document with your feedback:

Sun StorageTek Common Array Manager Release Notes, part number 820-7920-12.

Third-Party Web Sites

Sun is not responsible for the availability of third-party Web sites mentioned in this document. Sun does not endorse and is not responsible or liable for any content, advertising, products, or other materials available on or through such sites or resources. Sun will not be responsible or liable for any actual or alleged damage or loss caused by or in connection with the use of or reliance on any such content, goods, or services available on or through such sites or resources.

