

Sun StorEdge A5x00

Installation Check List and Planning Guide

Best Practices

Sun Networked Storage
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- ▼ **Check List - *with detailed installation steps***

- ▼ **Documentation Worksheets**



Installation Planning

1. Site support

Before the Hardware Arrives

- ▼ Identify all support personnel needed
 - 1. Pre-installation
 - a. Sales Rep and SE
 - b. Customer IT manager, technical lead and administrators
 - c. SunService Sales Rep, Customer Service Manager and SSE
 - d. Installation team
 - 2. Installation
 - a. Field Engineer
 - b. SSEs, local storageaces and ASSE
 - c. Customer technical contact for installation
 - 3. Post-installation
 - a. Assigned FE and SSE
 - b. Customer administrators

2. Pre-Installation Planning

Before the Hardware Arrives

- ▼ Customer planning meeting - With Sales SE and customer to understand requirements and set expectations.
 - 1. Floor plan - Have accurate floor space needs and computer room plans for system and array placement.
 - 2. Hardware naming scheme - System and array names should be known upfront. These will be needed for site documentation and cable labeling.



3. **Array configurations - HBA placements on host. Full or split loop arrays. Hub or daisy-chain usage etc.**
4. **Solaris installation - Decisions to consider include:**
 - a. **Booting to local disk or array - Make sure customer is aware of all the issues when booting to an array.**
 - b. **Solaris partition layout - One large /, or separate /usr, /var etc.**
 - c. **Mirrored system disk and location**
 - d. **Size and location of swap space**
5. **Identify all required unbundled software and patches**
6. **SEVM or SDS planning - Disk groups for arrays. Volume/metadevice type and layout. Hot spare use etc. AP vs DMP. Use software worksheets.**
7. **Schedule - Approximate timelines for each stage of the installation.**
 - e. **Hardware install**
 - f. **Solaris install**
 - g. **System validation**
 - h. **SEVM or SDS install**
 - i. **Applications install**
 - j. **Customer final signoff**

3. Documentation

Configuration worksheets

- ▼ **Storage configurations - Have all disks, loops and arrays easily identified and located using any message form.**
 1. **Hardware - map all disks, arrays and loops back to system board HBAs**
 - a. **socal0 - to loop/arrays with names**
 - b. **Controller number - on socal#**
 - c. **disk targets - have array map with boxid and slot to target conversion**



- ▼ **STORtools** - Have printouts of the STORtools snapshot file and desired Display Configuration views.
- ▼ **Volume/Metadevice configurations** - Have all disk groups, volumes or metadevices mapped for easy identification and maintenance.
 1. **Software** - map all SEVM and/or SDS objects
 - a. **Current vxprint -ht and/or metastat -p outputs to help with any needed volume recovery procedures**
 - b. **Disk groups** - disks in which arrays/loops, primary host ownership
 - c. **Volume/metadevice** - disks and mirrors mapped. Chunk sizes and average data size can be documented if known. Directory mounted to and/or application usage.

Maintenance procedures

- ▼ **Preventative maintenance**
 1. **Check logs and error indicators**
 - a. **Setup STORtools monitoring**
 - b. **SyMon**
- ▼ **Configuration maintenance**
 1. **Site change control logs** - all activity should be tracked
 - a. **Disk addons, storage reallocation to disk groups and hosts**
 - b. **Volume creation, deletion, resizing or other configuration change**
 - c. **Keep STORtools snapshots**
- ▼ **Troubleshooting procedures**
 1. **SunService contact numbers**
 2. **A5x00 Troubleshooting Guide**



- ▼ **Corrective maintenance**
 1. **Disk replacement procedures**
 2. **Array FRU replacement procedures**
 3. **Volume recovery from above**

4. Installation

Hardware

- ▼ **Before power is applied**
 1. **Racks**
 - a. **Uncrate and position all racks**
 - b. **Rack mount any addon devices or arrays according to plan**
 2. **Systems**
 - a. **Install addon modules, cpus, simms, HBAs etc. according to plan**
 3. **Label then install all fiber cables for arrays**
 - a. **Be aware of cable bend radius and secure seating of cables and GBICs**

- ▼ **Power on all equipment and check for errors - Use Check List**
 1. **Check arrays with front panel module (FPM)**
 - a. **Resolve any obvious FRU errors**
 - b. **Check for correct loop node counts. If loop is hung use process of elimination (POE) to resolve.**
 - c. **Check/Set array names, boxids and loop configs using the FPMs**
 2. **Check system with console, use probe-fcal-all or other OBP commands**



Software

- ▼ **Install Solaris according to plan**
 1. **Install unbundled packages including STORtools**
 2. **Install all patches**
 3. **Check and upgrade any downrev firmware**

5. System Validation

SunService

- ▼ **Hardware extended testing**
 1. **SunVTS**
 2. **STORtools Installation Verification**
 3. **Run explorer**
 4. **Setup STORtools monitoring**

Customer

- ▼ **Defined**
 1. **Database load**
 2. **Application test run**
 3. **Suggestion form or feedback to Sun on installation process**



Installation Check List

1. Define system configuration

2. Unpack and position hardware

3. Install host side components

- 3.1 Install Host Adapters (HAs)
- 3.2 Install GBICs in I/O board
- 3.3 When installing in U2, make sure you have the appropriate rev level of HA.

4. A5x00 power on checks

4.1 Table-Top(TT), Single Photon per host connection.

- 4.1.1 Power on Photon(s). Wait until Photon(s) complete POST.
- 4.1.2 Check and/or set enclosure names. To avoid confusion, make sure all enclosures have different names. A temporary name can be assigned now, i.e., A, B, C...etc, and then changed to a final name after the system boots (it is easier to assign an enclosure name using luxadm than on the FPM).
- 4.1.3 Check Box IDs. If enclosures are single connected, that is, there is only one enclosure on a loop, the Box ID should be set to 0.
- 4.1.4 Verify that all drives are up and running.
- 4.1.5 Check status of all power supplies and fans.
- 4.1.6 Check loop topology, i.e., is loop whole or split?
- 4.1.7 Check for correct node count per loop. To see node count, press the "A0 B0 B1 A1" line at the top of the Loop view on FPM. If incorrect start POE troubleshooting.
- 4.1.8 Check IB firmware level. Note any Photons with downgraded firmware for upgrading later.

4.2 Rack configuration using Hub:

- 4.2.1 Power on Photon(s). Wait until Photon(s) complete POST.
- 4.2.2 Check and/or set enclosure names. To avoid confusion, make sure all enclosures have different names. A temporary name can be assigned now, i.e., A, B, C...etc, and then see changed to a final name after the system boots (it is easier to assign an enclosure name using luxadm than on the FPM).
- 4.2.3 Check Box IDs. From top to bottom, the box IDs should be set as follows within a rack:

 - Box ID = 0 Top Photon
 - Box ID = 1
 - Box ID = 2
 - Box ID = 3 Bottom Photon
- 4.2.4 Verify that all drives are up and running.
- 4.2.5 Check status of all power supplies and fans.
- 4.2.6 Check loop topology, i.e., is loop whole or split? For Rack configurations all loops should be whole.
- 4.2.7 Check for correct node count per loop. To see node count, press the "A0 B0 B1 A1" label at the top of the Loop view on FPM. If node count is incorrect start POE troubleshooting.
- 4.2.8 Check IB firmware level. Note any Photons with downgraded firmware for upgrading later.



4.3 Daisy-chained configuration:

- 4.3.1 Power on Photon closest to host. Wait until Photon completes POST.
- 4.3.2 Check and/or set enclosure names. To avoid confusion, make sure all enclosures have different names. A temporary name can be assigned now, i.e., A, B, C...etc, and then changed to a final name after the system boots (it is easier to assign an enclosure name using luxadm than on the FPM).
- 4.3.3 Check Box IDs. From closest to host to furthest from host, the box IDs should be set as follows:>
 - Box ID = 0 Photon closest to host
 - Box ID = 1
 - Box ID = 2
 - Box ID = 3 Photon furthest from host
- 4.3.4 Verify that all drives are up and running.
- 4.3.5 Check status of all power supplies and fans.
- 4.3.6 Check loop topology, i.e., is loop whole or split? For daisy-chained configurations all loops should be whole.
- 4.3.7 Check node count per loop. To see node count, press the "A0 B0 B1 A1" label at the top of the Loop view on FPM. If incorrect start POE.
- 4.3.8 Check IB firmware level. Note any Photons with downgraded firmware for upgrading later.
- 4.3.9 One at a time, power on next Photon in chain and repeat steps 4.3.2 though 4.3.8 for each Photons. Verify that node count increases appropriately as each Photon is added to the chain.

□ 5. Configure host

5.1 Not booting from Photon

- 5.1.1 Install Solaris, if needed. Install the STORtools package
- 5.1.2 Halt system, and connect all Photon cables. Boot system with "boot -r"
- 5.1.3 After system boots, use luxadm disp and STORtools displays to see if all Photons are present.
- 5.1.4 Set enclosure names to facilitate configuration.
- 5.1.5 Check system and storage for current revisions, use the STORtools Check Revisions function and reference the support matrix.
- 5.1.6 Install all appropriate patches and download any needed hardware code, including IB firmware, HA fcode, and disk drive firmware upgrades. See patch READMEs for details.
- 5.1.7 Re-boot system.

5.2 Booting from Photon

- 5.2.1 If possible, verify that IBs, HAs, and disk drives are at latest firmware level BEFORE installing Solaris. If it is necessary to upgrade any of these, it is much easier to do so on another system that is already running before installing Solaris on a Photon.
- 5.2.2. Connect only boot Photon to system.
- 5.2.3 Install Solaris, if needed. Select "No Reboot" option in Suninstall. After Solaris completes installation, use "luxadm set_boot_dev" command to set boot device to Photon disk. Install the STORtools package.
- 5.2.4 Halt system, and connect all other Photon cables, if appropriate. Boot system with "boot -r"
- 5.2.5 After system boots, use luxadm disp and STORtools displays to see if all Photons are present.
- 5.2.6 Set enclosure names to facilitate configuration.
- 5.2.7 Check system and storage for current revisions, use the STORtools Check Revisions function and reference the support matrix.
- 5.2.8 Install all appropriate patches and download any needed hardware code, including IB firmware, HA fcode, and disk drive firmware upgrades. See patch READMEs for details.
- 5.2.9 If you have to upgrade IB firmware, HA fcode, or disk drive firmware to boot device path components you will need to shutdown the system. You don't want to download any firmware while there is any i/o going on and the only way to guarantee that is to have the array completely idle. You may follow the following procedure to perform upgrades:



- a. Copy the appropriate file(s) to some other location not on the boot path. This means copy the needed files to a whole different Photon or other disk. If another disk is not available you can copy to the cdrom or alternate boot device /tmp directory after booting.
- b. Halt the system and boot from CDROM, net or alternate boot device.
- c. After the system boots, mount the filesystem where the firmware and fcode files are located. Upgrade the necessary components (HA fcode, IB firmware, disk drive firmware) as appropriate.

Example:

```
ok boot cdrom -s
~
# mount -o ro /dev/dsk/clt0d0s0 /a
# cp /a/usr/lib/locale/C/LC_MESSAGES/ibfirmware /tmp
# cp /a/usr/lib/firmware/fc_s/fcal_s_fcode /tmp
# cp -r /patchdir/106129-02 /tmp
# umount /a
# luxadm download -s -f /tmp/ibfirmware ARRAYNAME
# luxadm fcal_s_download -f /tmp/fcal_s_fcode
# cd /tmp/106129-02
# ./download
```

5.2.10 Re-boot the system.

6. Check Configuration

- 6.1 Re-verify that all Photons are present using luxadm probe, luxadm disp and STORtools displays.
- 6.2 Verify that all ses devices, in the /dev/es directory are present and linked correctly taking into account possible multiple paths.
- 6.3 Verify that all disk drive device links, in /dev/dsk and /dev/rdisk, are present, taking into account possible multiple paths.
- 6.4 Create STORtools snapshot file

7. Test the installation

- 7.1 Run STORtools Installation Verification tests.

8. Setup storage monitoring

- 8.1 Enable STORtools Storage Monitor for automated storage status and message file checking with emailed notification of errors.

9. Complete configuration worksheets



Worksheets

▼ Volume worksheet

The first two worksheets represents A5x00 racks or loops containing 4 arrays with 14 disks, and 3 arrays with 22 disks. These can be used to assist with volume planning and documentation. For information and examples on planning and configuring SEVM volumes on the A5x00 reference the A5x00 and SEVM Configuration Guide and the Available Storage Configuration Guidelines whitepapers. Both of these papers can be obtained from Sun Storage technical marketing.

▼ Hardware worksheet

The third worksheet is used to maintain a map of A5x00 array adapters, loops and disk identifiers. This can be a great aid when troubleshooting various messages which use differing loop syntax. An alternate to using this worksheet is to printout copies of the STORtools snapshot file and desired Display Configuration views.

A5x00 rack name _____ Disk groups _____

Hosts : Loop A - _____ Loop B - _____

BoxID _____
Name _____
Volumes:

BoxID _____
Name _____
Volumes:

BoxID _____
Name _____
Volumes:

BoxID _____
Name _____
Volumes:





Resources

White papers

[StorEdge A5000 and SEVM Configuration Guide](#)
[A5x00 Troubleshooting Guide](#)
[STORtools User Guide](#)
[Sun StorEdge A5x00 Architecture](#)

Web Sites

<http://www.sun.com/storage/a5000/> - general information
<http://docs.sun.com/> - product note with patch information

Sun Internal Web Sites

<http://thedance.eng/phonon/docplan.shtml> - documentation
<http://storageweb.eng/tm/phonon/main/> - technical marketing site
<http://storageweb.eng/tm/STORtools/>

Product Documentation

Hardware

Configuration Guide	805-0264
Product Note	805-1018
Installation and Service Manual	802-7573
Installation Tasks and Documentation Guide	805-1903
GBIC Installation card	802-7571
SBus FC-100 Host Adapter Installation and Service Manual	802-7572
PCI FC-100 Host Adapter Installation and Service Manual	805-3682
FC-100 Hub Installation and Service Manual	805-0315
Caster Base Installation Guide	802-5034
X-Option Installation Card	805-0071

Rackmount documentation

Rackmount Placement Matrix	802-6945
FC-100 Hub Rackmounting Installation Card	805-1990
Rackmounting Card	805-0070

Software

Solaris 2.6 Platform Notes: Using luxadm Software	805-2040
Sun Enterprise Volume Manager 2.6 System Administrators Guide	805-5707
Sun Enterprise Volume Manager 2.6 Installation Guide	805-5707
Sun Enterprise Volume Manager 2.6 Software Release Notes	805-5708
Solstice DiskSuite 4.2 Installation and Product Note	805-5960
Solstice DiskSuite 4.2 User Guide	805-5961



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