

StorageTek Automated Cartridge System Library Software

Installation

Version 8.0.0



Part Number: Update
June 2010

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StorageTek Automated Cartridge System Library Software Installation Guide
Part Number: CRC Update

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Revision History

EC	Date	Revision	Description
001631	May 2010	AA	Supports StorageTek ACSLS 8.0. In this release software enforcement of the right-to-use license is no longer employed in ACSLS, and no longer checks for a valid license key.
Update	June 2010		Updated instructions and requirements.

Preface

StorageTek Automated Cartridge System Library Software (ACSL) 8.0 is Oracle's StorageTek's UNIX server software that controls a StorageTek Automated Cartridge System (ACS). The StorageTek ACS family of products consists of fully automated, tape cartridge-based data storage and retrieval systems. StorageTek ACSL supports network access to different client systems that can range from workstations to mainframes to supercomputers running on a variety of operating systems.

This guide is for the individual responsible for administering StorageTek ACSL. It is expected that you already have a working knowledge of the following:

- UNIX file and directory structure
- How to use UNIX commands and utilities for your platform
- UNIX system files
- How to do typical UNIX system administrator tasks, such as logging on as root and setting up user accesses to a UNIX application

Related Documentation

The following list contains the names and order numbers of publications that provide additional information about *the product*.

The online documentation is available at:

<http://docs.sun.com/app/docs/prod/filename>

Function	Title
Administrators	StorageTek ACSL 8.0 Administrator's Guide
Administrators	StorageTek ACSL 8.0 Messages Guide
Installation	StorageTek ACSL 8.0 Installation

Function	Title
Marketing	StorageTek ACSLS 8.0 Product Information
Administrators	StorageTek ACSLS 8.0 Quick Reference
Administrators	StorageTek ACSLS 8.0 Release Notes

Conventions for Reader Usability

Conventions are used to shorten and clarify explanations and examples within this book.

Typographic

The following typographical conventions are used in this book:

- **Bold** is used to introduce new or unfamiliar terminology, or it's used in steps to indicate either an action or a decision the user has to make.
- *Letter Gothic* is used to indicate command names, filenames, and literal output by the computer.
- **Letter Gothic Bold** is used to indicate literal input to the computer.
- *Letter Gothic Italic* is used to indicate that you must substitute the actual value for a command parameter. In the following example, you would substitute your name for the "username" parameter.
`Logon username`
- A bar (|) is used to separate alternative parameter values. In the example shown below either username or system name must be entered.
`Logon username | systemname`
- Brackets [] are used to indicate that a command parameter is optional.
- Ellipses (...) are used to indicate that a command may be repeated multiple times.
- This guide shows all ACSLS commands in lowercase. You can, however, enter these commands in all lowercase, all uppercase, or any combination of uppercase and lowercase. Single underlines show minimum command abbreviations. For example, aud and au are valid forms of the audit command.

Keys

Single keystrokes are represented by double brackets [[]] surrounding the key name. For example, press [[ESC]] indicates that you should press only the escape key.

Combined keystrokes use double brackets and the plus sign (+). The double brackets surround the key name and the plus sign is used to add the second keystroke. For example, press [[ALT]]+C indicates that you should press the alternate key and the C key simultaneously.

Enter Command

The instruction to “press the <Enter> key” is omitted from most examples, definitions, and explanations in this book.

For example, if the instructions asked you to “enter” `Logon pat`, you would type in `Logon pat` *and* press <Enter>.

However, if the instructions asked you to “type” `Logon pat`, you would type in `Logon pat` and you would *not* press <Enter>.

Symbols

The following symbols are used to highlight text in this book.

Caution – Information necessary to keep you from corrupting your data.

Note – Information that may be of special interest to you. Notes are also used to point out exceptions to rules or procedures.

Documentation Website

Function	URL
Documentation	
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Employee:	http://docs.sfbay.sun.com/

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ACSL 8.0 Installation, part number

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Overview

Automated Cartridge System Library Software (ACSL) is Oracle's StorageTek server software that controls StorageTek tape libraries. An Automated Cartridge System (ACS) is a group of tape libraries connected through pass-thru-ports (PTPs). ACSL accesses and manages information stored in one or more ACSs through command processing across a network. The software includes a system administration component and interfaces to client system applications, and library management facilities.

ACSL 8.0 uses the relational database PostgreSQL which is included in your Solaris 10 distribution.

Please check the website for any maintenance releases.

Software Requirements

- ACSL 8.0 has been fully tested and verified on Oracle's Sun SPARC and X86 platforms running Solaris-10 (U6 10/2008 or U7 05/2009). Other operating systems, including AIX and virtual environments, are not tested or supported.
- Because of special device driver requirements to enable virtual libraries, ACSL 8.0 cannot run in a Solaris Zoned environment. However, ACSL 8.0 can run in a logical domain on a SPARC system with Chip Multithreading (CMT) technology. ACSL 8.0 HA systems must be installed on their own dedicated platform pair.
- The graphical user interface and SMCE service in ACSL 8.0 requires Java 1.6 U14 and is included on the ACSL 8.0 CD for easy installation. You cannot install ACSL unless this requirement is met. Please note that:
 - Should you choose to install Java in a different directory, a soft link must be provided that points to the java binaries located in: /usr/java/bin/java
 - To verify the version, enter the command: java -version.
The system should reply with "java version 1.6.0_14"

System Requirements

- Memory: 2GB minimum
- Swap: Configure swap to be no less than the configured amount of physical memory.

Browser Requirements:

- File systems:
Installation fails if the following file systems do not exist as separate file systems.
 - /export/home - 5GB or greater
 - /export/backup - 5GB or greater

- Optional Fibre card.

A Fibre card is optional. However, a contemporary QLogic Fibre HBA (4GB or higher) is required if:

- A dedicated Fibre port is required to operate in target mode for client communication to logical libraries.
- Another port is required to act as an initiator for communication with SCSI-attached libraries, such as the SL500 or SL700.

Note: If neither of these is required, you do not need a Fibre card. However, during normal GUI operations a critical error icon shows up in the Web Console. Ignore this error.

Browser Requirements:

ACSL8 8.0 has been tested and fully verified on the following browsers:

- Internet Explorer 8.x
- FireFox 2.x, 3.0.x
- Chrome 4.x

There are known issues with the following browsers:

- Internet Explorer 7.x mis-interprets line breaks in drop-down menus as legitimate selections.
- Firefox 3.5.x and 3.6.x are unable to auto refresh the ACSLS Tree menu (left frame). The frame can be manually refreshed as follows: Right-click in the left frame, select This-Frame -> Reload Frame.

This issue can be resolved by installing the FireBug Add-on to FireFox.

Co-Hosting

Co-hosting other applications with ACSLS 8.0 is supported on machines that support logical domains (LDMs). Because ACSLS drivers are attached to hardware devices, ACSLS must be installed in the primary domain. Co-hosting is otherwise not supported with ACSLS.

Installing ACSLS on Solaris

This chapter describes procedures for installing ACSLS.

To apply any maintenance, refer to the installation instructions in the associated PUT or PTF document included with the CD, or the document associated with the maintenance tar file on the website.

This chapter discusses:

- [“Exporting the Database” on page 4](#)
- [“Installing ACSLS 8.0” on page 3](#)
 - [“Installing Solaris” on page 4](#)
 - [“Preparing for ACSLS Installation” on page 5](#)
 - [“Using pkgadd” on page 8](#)
- [“Using pkgadd” on page 8](#)
 - [“Installing ACSLS Software Using install.sh” on page 9](#)
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 - [“Installing and Configuring your Library Hardware” on page 11](#)
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 - [“Auditing the Library” on page 12](#)
- [“Uninstalling ACSLS 8.0” on page 13](#)
- [“Uninstalling any SCSI Media Changer Drivers” on page 13](#)

Installing ACSLS 8.0

The following table provides a summary of the steps you perform for installing ACSLS:

TABLE 2-1 Installation Tasks

Task	Page
1. Have all your license key information ready.	See the License Key chapter in the ACSLS 8.0 Administrator’s Guide.
2. Export the database if you are upgrading from a previous version of ACSLS This lets you migrate the database and control files to the new version of ACSLS.	4

TABLE 2-1 Installation Tasks

Task	Page
3. Install the Solaris operating system. The latest Solaris patch cluster is recommended.	4
4. Prepare for ACSLS Installation	5
5. Remove any previous version of ACSLS	8
6. Install the ACSLS package through pkgadd	8
7. Initiate the installation shell script	9
8. Set the user passwords	10
9. Install and configure your library hardware	11
10. Import the database if it was exported.	11
11. Enter your license key information.	See the License Key chapter in the ACSLS 8.0 Administrator's Guide.
12. Verify your installation	12
13. Audit your libraries	12

Exporting the Database

If you are upgrading from a prior release, you need to export the database and control files.

For more information and procedures, refer to Exporting the Database in the "Database Administration" chapter of the *ACSLs 8.0 Administrator's Guide*.

Installing Solaris

For installation procedures, please refer to the Solaris Installation instructions.

ACSLs requires the following requirement be met; otherwise the installation fails or ACSLS does not operate properly:

- Two separate file systems must exist and be mounted: /export/home and /export/backup.
- /export/home and /export/backup must be mounted to allow SETUID
- Client services must be enabled.
- SUNWcmco must be installed.
- umask must be 022.

Preparing for ACSLS Installation

Before you install ACSLS, complete the following steps:

1. Verify that the server system hardware is properly configured, connected, powered on, and ready.
2. Connect the LMU to a valid serial or TCP/IP port.
Most contemporary libraries are TCP/IP or SCSI-attached. Legacy StorageTek libraries, such as Cimmaron, Powerhorn, and the L5500 can be Serial-Attached.
If more than one serial port is available on your server, configure two ports to the LMU. An alternate LMU connection provides higher throughput and greater robustness.
3. Multiple serial port connects are necessary if you are configuring the server to a Dual Serial-Attached LMU installation. You can provide redundant connections to each LMU using a multi-port adapter.
4. If your installation includes a SL8500 library or a 9310 library and TCP/IP LMU(s), connect the TCP/IP LMU(s) to the network used for LMU communication.
5. For SCSI-connected libraries, you should use a differential connection where possible. If a single-ended SCSI controller is used, you should limit the cable distance to three meters between the server and the library. With low-voltage differential (LVD), the cable should be no more than 10 meters. High-voltage differential (HVD) SCSI cables can extend up to 20 meters.
6. Make sure that each attached LMU and LSM is fully configured, powered on, and ready.

Note – The configuration utility, `acsss_config`, will fail unless all LMUs and LSMs are fully configured, powered on, and ready.

7. If you will be using logical libraries to support SCSI clients over Fibre Channel, set up the FC connections between any client HBA ports and suitable HBA ports on the ACSLS server.
8. If you have any communication problems refer to “Troubleshooting” chapter in the *ACSLs Administrator’s Guide*.
9. If you intend to use removable media for database backup, have a blank cartridge available for your backup tape device to complete the configuration process.
10. ACSLS requires specific user IDs. If these user IDs are not defined before ACSLS installation, ACSLS creates them. When ACSLS installation creates the user IDs, the system assigns the user ID numbers and group ID numbers. To assign specific user ID and group ID numbers, you must define the following groups and users before installing ACSLS:

User	Group
acsss	staff
acssa	staff
acsdb	acsdb

When these user IDs are defined before ACSLS installation, they can either be defined locally (on the ACSLS server) or via remote authentication methods (e.g., NIS or Kerberos). These user IDs must be defined with the following properties:

- The default shell for `acsss` and `acssa` is “ksh”. The default shell for `acsdb` is “sh”.
- The home directories for the `acsss`, `acssa`, and `acsdb` user IDs must reside under the ACSLS installation directory. The default installation directory for `acsss` is `/export/home/ACSSS` (referred to as `$ACS_Home`). The home directories for the ACSLS user IDs are:

```
acsss    /export/home/ACSSS
acssa    /export/home/ACSSA
acsdb    /export/home/acsdb
```

If the home directories for the ACSLS user IDs do not match their required locations, please either modify the home directories for these users or delete the user IDs so they are added correctly during the ACSLS installation process.

The following command creates the `acsss` user on Solaris. (You must be logged in as `root`.)

```
useradd -d /export/home/ACSSS -g staff -s /bin/ksh -c "ACSLs Control Login" acsss
```

The account information is:

```
acsss-d /export/home/ACSSS-g staff-c "ACSLs Control Login"-s /bin/ksh
acssa-d /export/home/ACSSA-g staff-c "ACSLs SA Login"-s /bin/ksh
acsdb-d /export/home/acsdb-g acsdb-c "ACSLs Database Owner" -s /sbin/sh
```

The following commands modify the `acsss`, `acssa`, and `acsdb` users' home directories. (You must be logged in as `root`.)

```
usermod -d /export/home/ACSSS acsss
usermod -d /export/home/ACSSA acssa
usermod -d /export/home/acsdb acsdb
```

Note – If the `/etc/cron.d/cron.allow` file exists, verify that the ACSLS `acsss` and `acsdb` user IDs exist within the file. If they don't, add them to the `/etc/cron.d/cron.allow` file; otherwise the cron jobs fail.

Removing any previous version

1. Is this a new installation?

YES	Go to “Using pkgadd” on page 8.
-----	---

NO	Make sure you exported the database by using the <code>db_export.sh</code> utility command.
----	---

2. Shut down ACSLS:

You need to be logged in as `acsss` to do this.

```
acsss disable
```

3. Login as `root` and remove ACSLS, backup and other files:

ACSLs Version	Procedure
ACSLs 6.0 or 6.0.1 If the server_to_server directory exists	<pre>cd /export/home rm -rf ACSsS informix cd /export/backup rm -rf informix misc rm -rf informix misc server_to_server cd / rm -rf INFORMIXTMP nsr</pre>
ACSLs 6.1 to 7.1	<pre>cd /export/home pkgrm STKacsls cd /export/backup rm -rf informix misc server_to_server cd / rm -rf INFORMIXTMP rm -rf /nsr cd /var/tmp rm -rf acsls</pre>
ACSLs 7.2 or higher	<pre>cd /export/home pkgrm STKacsls rm -rf ACSsS ACSsA acsdb cd /export/backup rm -rf * (this removes all contents of the backup directory)</pre>

- Remove files under second disk (if installed).

```
cd /second_disk
```

If you installed the second disk in another directory other than /second_disk, cd to that directory.

```
rm -rf data
cd /second_disk/backup
```

If you installed the second disk in another directory other than /second_disk/backup, cd to that directory.

For ACSLS 6.0 and later enter:

```
rm -rf informix misc
```

- Verify that no database processes are running before you begin the install. If in doubt, reboot.

Note – If you are removing ACSLS (and not installing a new version), remove the ACSLS user IDs from /etc/cron.d/cron.allow.

Using pkgadd

1. Log in as `root`.
2. Insert the ACSLS 8.0 CD.
3. In a terminal window or at the command prompt, enter
`cd /cdrom/cdrom0`
4. Install using `pkgadd`:
`pkgadd -d .`

Note – Make sure you enter a space and a period after `-d`

`pkgadd` asks what package you want installed. There are two packages and they must be installed in the following order:

- a. `STKacsls`
- b. `STKsnmp` (optional)

Note – ACSLS 8.0 checks for the required Java version.

5. If you do not have the required Java version, you need to:
 - a. Type:
`cd java`
`./setup.sh`
 - b. Enter `y` at the Java 6 prompt.
 - c. The java setup script installs Java 1.6.xx automatically on your server in the `/usr` directory.
 - d. Type `cd /cdrom/cdrom0`.
 - e. Re-install ACSLS using `pkgadd` as described in Step 4.
6. When prompted to select a package, select `STKacsls` and press `[[Return]]`.
ACSLS is installed in `/export/home/`.
7. Type `y` to at the prompt to install `setuid/setgid` files.
8. Select to continue at the super-user permission prompt.
9. Type `y` to at the prompt to install `STKacsls`.
User and group IDs are created (unless they already exist). Files being installed are displayed.
If the `acsss`, `acssa`, or `acbdb` user IDs are not defined with their home directories matching the ACSLS installation directory, the installation script displays a warning, for example:

```
***WARNING*** User acsss already exists, but its home directory
does not match the ACSLS installation directory. Please change the
acsss home directory to
/export/home/ACSSS after the installation.
```

If the `acsss`, `acssa`, or `acsdb` user IDs are created during installation, a default password is not created. You need to go into the `admintool` to create a password. These passwords must be maintained or set to never expire.

10. Type `cd /` when you have completed installation.

11. Eject the CD.

```
eject
```

Installing ACSLS Software Using `install.sh`

1. Change directories:

```
cd /export/home/ACSSS/install
```

2. To initiate the installation shell script, enter

```
./install.sh
```

3. Type `yes` at the “Do you accept this agreement?” prompt.

You are prompted to enter the directory for ACSLS database backups.

4. Select `/export/backup`.

The progress of the installation displays

5. Enter the HBA port you intend to use for Target-Mode operation for your logical libraries.

Note – Once you have an HBA installed, you receive the following prompt:

```
Please select a desired action:
```

- 1) Keep the HBA port configuration as it is.
- 2) Configure an additional target-mode port.
- 3) Restore a target port to initiator mode.

System status messages display.

6. Optional: If you have a SCSI or fibre-attached library.

Respond `y` to the prompt for installing a SCSI device driver for SCSI libraries.

```
Do you want to install the scsi device driver for SCSI libraries?
(y or n):
```

```
Y      Refer to the following example for the prompts you need
to answer.
```

Note – StorageTek libraries attached behind supported Fibre host-bus adapters (HBAs) can be auto-sensed by ACSLS using the capabilities included in supported HBA software. Supported HBAs currently include all contemporary Qlogic and Sun-branded HBAs. The ACSLS SCSI driver installation utility, *install_scsi_sol.sh* can configure multiple mchanger devices easily without the need for explicit user interaction. Libraries behind non-supported HBAs continue to function in the traditional manner where you declare the target and LUN address for each attached library. The installation utility then displays each library for which an mchanger instance has been created.

Example

```

Installing 64-bit mchanger
Probing for fibre-attached libraries...
One library found:
  STK L180 V-0310  Target 0 LUN 0
Are there additional libraries attached? (y or n): y
Enter the target:LUN pair corresponding to each library.
Separate target:LUN pairs with a space.
example: 4:0 5:0 5:1 5:2
==> 1:0 1:1
Use target 1 LUN 0
Use target 1 LUN 1
Is this correct? (y or n): y
Instances of 'mchanger' in /dev will be
built sequentially starting with mchanger 0.
Building an mchanger instance for each library...
Successfully built the following...
  /dev/mchanger0: STK L180 174-cells 4-drives
  /dev/mchanger1: STK L700 384-cells 8-drives
  /dev/mchanger2: STK SL500 65-cells 2-drives

```

Library driver installation is complete. You are now ready to set passwords for each user ID.

Setting the ACSLS User Passwords

ACSLs uses three passwords to allow access and protect the library management resources. To prevent a security exposure, these three passwords **must** be maintained or set to never expire.

- `acsss` - Provides system administration access to all commands and utilities.
- `acssa` - Provides operator access to the `cmd_proc` commands.
- `acsdb` - This is an internal ID that manages the ACSLS database.

You must set the passwords the first time you login to these IDs. To set the passwords:

1. Login to each of the user IDs.
2. Enter the password at the prompt.

If the `acsss`, `acssa`, or `ascdb` user IDs were not defined with their home directories matching the ACSLS installation directory, and the installation script displayed a warning, modify these user IDs so that their home directories are under the ACSLS base directory.

The following commands modify the above users' home directories. (You must be logged in as `root`.)

```
usermod -d /export/home/ACSSS acsss
usermod -d /export/home/ACSSA acssa
usermod -d /export/home/ascdb ascdb
```

Note – If the `/etc/cron.d/cron.allow` file exists, verify that the ACSLS `acsss` and `ascdb` user IDs exist within the file. If they don't, add them to the `/etc/cron.d/cron.allow` file; otherwise the cron jobs fail.

Installing and Configuring your Library Hardware

Caution – If you imported data from a previous ACSLS release, you must start ACSLS and ensure all LSMs are online before configuring any new library hardware. This initializes the LSM types and protects your imported database information.

Note – You do not need to run `acsss_config` if you are importing your previous hardware configuration and are not changing your library hardware.

You must run `acsss_config` or `dynamic_config` to configure your libraries if:

- this is a new installation
- you are adding library hardware

Refer to the “Installing and Configuring Your Library Hardware” chapter in the *ACSL Administrator's Guide*.

Importing the Database

If you have exported the database and control files, you now need to import them.

If you are migrating to ACSLS 8.0 from a previous release and have customized your dynamic or static variables, you need to import them. For information on doing this, refer to Importing the Database in the “Database Administration” chapter of the *StorageTek ACSLS 8.0 Administrator's Guide*.

Entering Your License Key Information

You must enter a license key to activate ACSLS. To avoid unnecessary delays obtain your license key before you begin the ACSLS installation.

Refer to the License Key chapter in the ACSLS Administrator's Guide for procedures.

Verifying ACSLS Installation

Use the following procedure to verify ACSLS. You should be logged in as `acsss`. This procedure mounts or dismounts a cartridge.

1. Query the server from the `cmd_proc` by entering

```
query server
```

If messages are displayed indicating that the server is in mode, wait for a message indicating that the server is running.
2. Verify that the following are online. You must have at least one of each online. If not, bring them online with the `vary` command.

```
query port all
```

```
query acs all
```

```
query lsm all
```

```
query drive all
```
3. Do you have at least one cartridge in an LSM?

YES	Continue with the procedure.
NO	Enter a cartridge into an LSM.
4. Mount a volume by entering:

```
mount vol_id drive_id
```

Use the `query drive` command to get the ID of an available drive and the `query volume` command to get the ID of a library cartridge. Refer to the "Installing and Configuring Your Library Hardware" chapter in the *ACSLs Administrator's Guide*.
5. Did you see a message indicating a successful mount?

A successful mount message is:

```
Mount: vol_id mounted on drive_id
```

YES	Procedure is complete.
NO	If an error message appears, run this verification procedure again, ensuring that you specified a valid, available drive and a library cartridge. If the mount/dismount still fails, call StorageTek for assistance.
6. Dismount the cartridge by entering:

```
dismount vol_id drive_id force
```

where `vol_id` is the volume and `drive_id` is the drive you specified in Step 4.

Auditing the Library

The last step of your installation is auditing your libraries. You also need to audit your libraries:

- If this is a new installation.
- If you are adding new libraries to an existing configuration.

Uninstalling ACSLS 8.0

Note – Make sure you exported the database by using the `db_export.sh` utility command.

To uninstall ACSLS:

1. Log in as `acsss`.
2. Enter **acsss disable**.
3. Remove package:
 - Log in as `root`.
 - Enter `pkgrm STKacsls`
4. Perform a file cleanup for the disk:
 - `cd /export/home`
 - `rm -rf ACSSS ACSSA acsdb`
 - `cd /export/backup`
 - `rm -rf *` (this removes all contents of the backup directory)
5. Reboot.

Uninstalling any SCSI Media Changer Drivers

1. Login as `root`.
2. Remove the SCSI Media Changer (mchanger) drivers.


```
#rem_drv mchanger
```
3. Remove `mchanger.conf`.


```
#rm /usr/kernel/drv/mchanger.conf
```
4. Remove any mchanger device links.


```
#rm /dev/mchanger*
```
5. Remove package directories.


```
#rm -rf /opt/STKchanger
```


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