

StorageTek Automated Cartridge System Library Software

Product Information

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Revision

Date	Revision	Description
March 2011	E21610-01	<p>This release supports:</p> <ul style="list-style-type: none">• Redundant Electronics• Logical Libraries• Graphical User Interface• T10000C• IPv6 network connections to the SL3000 library. <p>Beginning with ACSLS 7.3.1, enforcement of the right-to-use license is no longer employed in ACSLS, and no longer checks for a valid license key.</p>
July 2011	E21610-02	<p>This release supports:</p> <ul style="list-style-type: none">• IPv6 network connections to SL8500 libraries.

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Preface

StorageTek Automated Cartridge System Library Software (ACSL) 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 of publications that provide additional information about *the product*.

- StorageTek ACSL 8.0.2 Administrator's Guide
- StorageTek ACSL 8.0.2 Messages Guide
- StorageTek ACSL 8.0.2 Installation
- StorageTek ACSL 8.0.2 Product Information
- StorageTek ACSL 8.0.2 Release Notes
- StorageTek ACSL 8.0.2 Quick Reference

Conventions for Reader Usability

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

Typographic

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.

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Overview

ACSLs offers an easy extensible and maintainable library server that supports StorageTek automated tape libraries.

Note – ACSLS 8.0.1 must be installed before you apply ACSLS 8.0.2 maintenance.

Software Requirements

- ACSLS has been fully tested and verified on Oracle's Sun SPARC and X86 platforms running Solaris-10 (U7 5/2009, U8 10/2009, or U9 9/10). Other operating systems, including AIX and virtual environments, are not tested or supported.
- Because of special device driver requirements to enable virtual libraries, ACSLS cannot run in a Solaris Zoned environment. However, ACSLS can run in a logical domain on a SPARC system with Chip Multithreading (CMT) technology. ACSLS HA systems must be installed on their own dedicated platform pair.
- The graphical user interface and SMCE service in ACSLS requires Java 1.6 U14 and is included on the ACSLS CD for easy installation. You cannot install ACSLS 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: Systems with up to 8GB of memory should have a minimum of 2GB of physical swap. For systems with more than 8GB, consult the *Solaris System Administrator's Guide*.
- File systems:

Installation fails if the following filesystems do not exist as separate filesystems.

- /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

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

What's New

ACSLs 8.0.2 maintenance supports the following new features and enhancements

T10000C

ACSLs 8.0.2 supports T10000C tape drives and media.

IPv6 for the SL3000 and SL8500

ACSLs 8.0.2 supports IPv6 network connections to the SL3000 and SL8500 libraries.

Redundant Electronics (RE)

Redundant Electronics is now supported on the SL3000 as well as SL8500. ACSLS now connects to multiple SL8500 libraries with RE in a string and accurately tracks and reports the status of each connection. When RE is installed and licensed in a library, ACSLS identifies which Library Controller card (LC) is active and only sends requests to the active LC on each library.

You *must* upgrade to ACSLS 8.0.2 before installing the RE library firmware (SL8500 6.00 firmware).

ACSLs Tracks both the Desired State and the Current State of LSMs and Tape Drives

Current state is now tracked more accurately than before, reflecting whether a library component is ready and communicating, limited by the desired state of the component.

The desired state manages library and tape drive availability. Desired state is the availability that you want for an ACS, port connection, LSM, and tape drive. You set the desired state via the `vary` command. The desired state for any of the library components can be viewed using the `query lmu` and `display` commands.

ACSLs now accurately tracks the current state of LSMs and drives. For example, if the desired state of an LSM is online but it is not ready, its current state is offline.

The desired state for ACSs and ports is already supported, and ACSLS has tracked the current state of ACSs and ports for years.

The availability of logical libraries and tape drives in logical libraries is also governed by the desired state that you set for both the underlying physical library and the logical library. If the desired states for both the physical library and logical library are online, the current states of logical libraries and logical tape drives reflect the current state of the underlying physical libraries and drives.

Queue and Retry Mounts and Dismounts when the Library is Temporarily Unavailable

ACSLs now queries mount and dismount requests when temporary library outages are detected. Mount and dismount requests from all sources are automatically queued and retried, as long as the desired state of all required library components is *online*. This means mount and dismount requests from the following sources are all automatically queued and retried:

- ACSAPI clients
- `cmd_proc`
- Fibre-attached clients for tape drives in logical libraries

Temporary outages occur when the desired state of the library hardware is *online*, but the current state is *offline*. Examples of temporary outages are: when an LSM door is open; when ACSLS loses communications with a library; or during an LC *switch operation*. During a temporary library or tape drive outage, mounts and dismounts are queued, and are retried when the library is available.

If the desired state of the library hardware is *offline*, then ACSLS fails mount or dismount requests with the appropriate error status.

New dynamic variables control queuing and retrying mounts and dismounts:

- `MOUNT_RETRY_DELAY` controls how often queued mounts and dismounts are retried or availability of libraries and drives are re-checked.
- `MOUNT_RETRY_TIME_LIMIT` is the time limit to queue and retry mounts and dismounts. After this, requests fail.

New `acs_renumber.sh` utility

This is a simple tool that enables you to change the identifier of a given ACS in your library complex without having to reconfigure the attached libraries. Since every LSM, every CAP, every drive, and every volume in the library is identified in relation to an ACS, this utility updates all of the various database tables so that each library resource aligns with the new ACS i.d. that you assign.

Overview of ACSLS

Library Management

ACSLS is automated library management software. It facilitates automated tape operations for multiple clients, providing services and support to enhance library ease-of-use, performance, and availability. One ACSLS server can control libraries connected into a library complex, individual libraries, or a mix of both.

ACSLS includes all library management capabilities available in the legacy ACSLS product at the ACSLS 7.3, PUT0801 level. Support is provided for ACSAPI clients, `cmd_proc` and ACSLS utilities (startup and shutdown have changed).

Graphical User Interface

The GUI is a browser-based web application which runs within the Java Web Console. This interface provides an alternative to the traditional `cmd_proc` interface from ACSLS.

- Runs as an application with the Java Web Console.
- Provides an alternative to the `cmd_proc` for library administration and operation. It provides the ability to perform most legacy `cmd_proc` operations, along with new operations related to logical library management.
- Provides real-time monitoring of tape library components.
- Provides a tree browser to navigate physical and logical configuration.
- Real time alerts are visible from each screen.
- Allows the customizing of filtering capabilities and the ability to download query results to a flat file.

Features

- Create, edit and delete logical library resources
- View physical and logical resources
- Audit physical and logical libraries
- Perform enters and ejects
- Perform mounts and dismounts
- Set clean and set owner for one or more volumes
- User-customized displays and custom filtering for volume and drive listings.
- Set the CAP mode and priority
- Vary operations for physical and logical components
- System Operations, including ability to cancel selected operations
- Log viewer for event logs

Logical Libraries

The ACSLS GUI enables you to create logical libraries which include a sub-set of the volumes and drives in a specific physical library. This allows you to define logical subsets of your physical libraries, which can be managed and utilized by client applications as if they were separate logical libraries. You can dedicate a portion (or all) of the volumes and drives in a given physical library to a logical library for use by a specific client application.

- A logical library can not span more than one physical ACS (or physical partition).
- Logical libraries are accessible to clients using the ACSLS 8.0.1 SCSI Interface. They *are not* available to clients that use the legacy ACSAPI.
- Physical drives and cartridges that are allocated to logical libraries become inaccessible to ACSAPI clients. The physical libraries, along with any drives and volumes that are not allocated to logical libraries, remain accessible to ACSAPI clients.
- Drives and volumes that are allocated to logical libraries are allocated exclusively - there is no support for sharing of either drives or volumes across logical libraries.

Open Format (Volser)

Before ACSLS 8.0, support for longer volume labels in physical libraries relied on library firmware and configuration.

Now, the ACSLS SCSI Media Changer Interface allows ACSLS to support longer volume labels. You have visibility to the longer volume labels through the GUI, the CLI (`cmd_proc`), and utilities.

Longer volume labels are viewed by clients using the SCSI Medium Changer interface to access logical libraries. They are not accessible to ACSAPI clients.

SCSI Media Changer over Fibre Client Interface

ACSLS 8.0.1 provides a SCSI Media Changer over Fibre Channel Interface for allowing access to logical libraries. ACSLS can service multiple SCSI clients simultaneously. Each client has exclusive access to its assigned logical library.

This allows client software, such as NetBackup, to utilize the logical libraries as if they were separate physical libraries. Each logical library can be assigned to only one client, but a given client can access multiple logical libraries if desired. ACSLS 8.0.1 does not allow direct SCSI client access to the backing physical libraries - only the volumes and drives assigned to the logical libraries are accessible.

SCSI client access can be established when creating or modifying logical libraries.

ACSAPI Client Interface

ACSLS 8.0.1 provides an ACSAPI client interface which is compatible with existing client applications. The ACSAPI interface is identical to that provided in the legacy ACSLS 7.3 product.

Access and Visibility

ACSAPI clients have neither visibility nor access to logical libraries.

Physical Drives and Cartridges

Physical drives and cartridges that are allocated to logical libraries become inaccessible to ACSAPI clients. The physical libraries, along with any drives and volumes that are NOT allocated to logical libraries, remain accessible to ACSAPI clients.

Command Line Interface

ACSLS 8.0.1 provides a command-line interface in the form of the legacy `cmd_proc` from ACSLS. This interface provides the same functionality as ACSLS 7.3 for managing physical library resources.

The `cmd_proc` interface does not provide access to logical libraries. But the physical resources which have been allocated to logical libraries do remain fully accessible through the `cmd_proc` administrative CLI (although they are not accessible to ACSAPI clients).

Utilities

ACSLS provides a set of utilities which can be executed from a shell running on the ACSLS server. This includes most of the traditional utilities provided in the legacy ACSLS 7.3 PUT0801 product.

These utilities include the following:

- backup and restore operations for database tables
- import and export operations for database tables
- startup and shutdown operations

- dynamic configuration for physical libraries
- `volrpt`, `moving.sh`, and `ejecting.sh`

Differences and exceptions

- A new utility (`getHba.sh`) manages Fibre Channel (FC) ports. Ports can be configured to operate in target mode (supporting FC clients) or in initiator mode (managing FC-attached physical libraries).
- ACSLS provides a new command (`acsss`) for starting and stopping the library management application. This command is available from the shell prompt only, and is not accessible from the GUI.

The `acsss` command replaces the `db_command`, `rc.acsss`, `kill.acsss`, and `fix_rc.sh` commands used in ACSLS. The `acsss` command also provides the ability to monitor application status. For example, you use:

- `acsss enable` to start ACSLS
- `acsss disable` to stop ACSLS
- `acsss` to see the list of options

No Longer Requires Software Licenses

Beginning with StorageTek ACSLS versions 7.3.1 and 8.0.1, the right-to-use license is no longer enforced in StorageTek ACSLS, and ACSLS no longer checks for a valid license key. Messages regarding a soon-to-be-expired license key or library capacity license no longer appear on the system console or in the `acsss_event.log`.

The following utilities no longer function in their capacity to set and check for a valid license key:

- `licensekey.sh`
- `get_license_info.sh`

To view your library slot usage use the `free_cells.sh` utility.

testports Utility

Beginning with StorageTek ACSLS versions 7.3.1 and 8.0.1, a new `testports` utility tests the connection to TCP/IP libraries and whether the ACS and port connection is online or offline.

Library, Tape Drive and Media Support

This chapter provides you with a list of:

- [“Libraries and Library Features Supported” on page 19](#)
- [“Tape Drives Supported” on page 20](#)
- [“Tape Media Supported” on page 24](#)
- [“Tape Drive and Media Compatibility Supported” on page 26](#)

Libraries and Library Features Supported

The following table provides the list of libraries supported by ACSLS. The second column in this table shows support for a library and its features added after ACSLS 7.0.

TABLE 2-1 Library and Library Features Supported

Library and Library Feature	Support and Maintenance Level after 7.0
StorageTek 4410	
StorageTek 9310	
StorageTek 9360	
StorageTek 9740 SCSI-Attached	
StorageTek 9740 HLI-Attached	
StorageTek 9710	
StorageTek 9714	
StorageTek 9730	
StorageTek 9738	
StorageTek L20, L40, L80	
StorageTek L180	
StorageTek L700	
StorageTek L700e PTP	
StorageTek L5500	

TABLE 2-1 Library and Library Features Supported

Library and Library Feature	Support and Maintenance Level after 7.0
StorageTek SL8500	ACSL 7.1
StorageTek SL8500, Dual TCP/IP Connections	ACSL 7.1 with PUT0602
StorageTek SL8500, Connections to Multiple Libraries	ACSL 7.1 with PUT0701
StorageTek SL8500 Partitioning	ACSL 7.1 with PUT0701
StorageTek SL500	ACSL 7.1 with PUT0402
StorageTek SL500 Cartridge Expansion Module (CEM)	ACSL 7.1 with PUT0502
StorageTek SL3000	ACSL 7.3
StorageTek SL3000 AEM	ACSL 7.3 with PUT0801 (ejecting only 42 cartridges at a time) ACSL 8.0 (eject full AEM using the GUI)
StorageTek Virtual Tape Library (VTL)	ACSL 7.3 with PUT0801
Drive & Media Statistics from Library	ACSL 7.3. An improved display is provided with PUT0801.
Redundant Electronics in the SL3000 and SL8500	ACSL 7.3.1 and 8.0.2
IPv6 communication with the SL3000	ACSL 7.3.1 and 8.0.2

Tape Drives Supported

The following table is used to translate drive types between applications. The Drive Type Name represents the drive type in `cmd_proc` and event log messages. The ACSAPI Drive Type Number is used in ACSLS software operations and ACSAPI client communications.

The last column in the Tape Drives table identifies support for a tape drive and associated media added after ACSLS 7.0.

Notes:

1. The library drive type for DLT and SDLT drives is in a different drive domain than Oracle StorageTek drives, and it overlays with the drive types of StorageTek drives. To avoid conflicts, it is incremented by 40 hexadecimal or 64 decimal when these drives are reported by Host/Library Interface libraries. The incremented or “offset” drive type is reported in parentheses.
2. The SL8500 supports LTO-5 drives starting with the 6.0.2 firmware. ACSLS must be at the 7.3.1 or 8.0.2+ update level to support the SL8500 6.0.2+ firmware.

TABLE 2-2 Tape Drives Supported

ACSAPI Drive Type Number	Drive Domain - hex and character, if applicable	Drive Type Reported by Library (decimal)	Drive Type Name	Tape Drive Description	ACSL S Support after 7.0
0	00h	64	4480	StorageTek 18-track	
1	00h	08	4490	StorageTek Silverton 36-track	
2	00h	32	9490	StorageTek TimberLine 36-track high performance	
3	00h	16	SD3	StorageTek Redwood Helical	
4	00h	04	4890	StorageTek Twin Peaks 36-track	
5	01h	01 (65)*	DLT2000	Quantum DLT2000	
6	01h	02 (66)*	DLT2000XT	Quantum DLT2000XT	
7	01h	03 (67)*	DLT4000	Quantum DLT4000	
8	01h	04 (68)*	DLT7000	Quantum DLT7000	
9	00h	02	9840	StorageTek T9840A	
10	00h	33	9491	StorageTek TimberLine EE 36-track	
11	01h	07 (71)*	DLT8000	Quantum DLT8000	
12	00h	03	9840-3590	T9840A with IBM 3590 emulation	
13	00h	05	T9940A	T9940A with SCSI/Fibre or VSM3490	
14	00h	06	9940--3590	T9940A with 3590 emulation	
15	01h	20 (84)*	SDLT	Super DLT 220	
16	00h	01	T9840B	High Performance 9840 with SCSI/Fibre or VSM3490	
17	00h	07	T9840B35	T9840B with 3590 emulation	
18	4Ch ("L")	48	HP-LTO	HP LTO Generation 1	
19	4Ch ("L")	49	IBM-LTO	IBM LTO Generation 1	
20	4Ch ("L")	50	CER-LTO	Certance LTO Generation 1	

TABLE 2-2 Tape Drives Supported

ACSAPI Drive Type Number	Drive Domain - hex and character, if applicable	Drive Type Reported by Library (decimal)	Drive Type Name	Tape Drive Description	ACSL S Support after 7.0
21	00h	09	T9940B	T9940B with SCSI/ Fibre or VSM3490	
22	00h	10	T9940B35	T9940B with 3590 emulation	
23				<i>reserved</i>	
24	01h	21 (85)*	SDLT-320	Super DLT 320	
25	00h	11	T9840C	T9840C with Fibre or VSM3490	
26	00h	12	T9840C35	T9840C with 3590 emulation	
27	4Ch ("L")	51	HP-LTO-2	HP LTO Generation 2	
28	4Ch ("L")	52	IBM-LTO-2	IBM LTO Generation 2	
29	4Ch ("L")	53	CER-LTO-2	Certance LTO Generation 2	
30	01h	23 (87)*	SDLT-600	Super DLT-600	ACSL S 7.1
31	54h ("T")	13	T1A	T10000A with Fibre or VSM3490	ACSL S 7.1 with PUT0501
32	54h ("T")	14	T1A35	T10000A with IBM 3592 emulation	ACSL S 7.1 with PUT0501
33	4Ch ("L")	54	HP-LTO-3	HP LTO Generation 3	ACSL S 7.1 with PUT0501
34	4Ch ("L")	55	IBM-LTO-3	IBM LTO Generation 3	ACSL S 7.1 with PUT0501
35	4Ch ("L")	56	CER-LTO-3	Certance LTO Generation 3	ACSL S 7.1 with PUT0501
36				<i>reserved</i>	
37	54h ("T")	24	T1AE	T10000A, fibre or VSM3490, with encryption enabled	ACSL S 7.1 with PUT0602
38	54h ("T")	25	T1AE35	T10000A - IBM 3592 emulation with encryption enabled	ACSL S 7.1 with PUT0602
39				<i>reserved</i>	
40				<i>reserved</i>	
41	00h	18	T9840D	T9840D, fibre or VSM3490	ACSL S 7.1 with PUT0602

TABLE 2-2 Tape Drives Supported

ACSAPI Drive Type Number	Drive Domain - hex and character, if applicable	Drive Type Reported by Library (decimal)	Drive Type Name	Tape Drive Description	ACSL S Support after 7.0
42	00h	19	T9840D35	T9840D - IBM 3592 emulation (MVS attach)	ACSL S 7.1 with PUT0602
43	00h	20	T9840DE	T9840D, fibre or VSM3490, with encryption enabled	ACSL S 7.1 with PUT0602
44	00h	21	T9840DE5	T9840D- IBM 3592 emulation (MVS attach) with encryption enabled	ACSL S 7.1 with PUT0602
45	01h	24 (88)*	DLT-S4	Quantum DLT-S4	ACSL S 7.1 with PUT0602
46	4Ch ("L")	57	HP-LTO4	HP LTO Generation 4	ACSL S 7.1 with PUT0701
47	4Ch ("L")	58	IBM-LTO4	IBM LTO Generation 4	ACSL S 7.1 with PUT0701
48				reserved	
49	54h ("T")	26	T1B	T10000B with Fibre or VSM3490	ACSL S 7.1 with PUT0701 and PTF or ACSL S 7.2 with PUT0702
50	54h ("T")	27	T1B35	T10000B with IBM 3592 emulation	ACSL S 7.1 with PUT0701 and PTF or 7.2 with PUT0702
51	54h ("T")	28	T1BE	T10000B with Fibre or VSM3490 and encryption	ACSL S 7.1 with PUT0701 and PTF or ACSL S 7.2 with PUT0702
52	54h ("T")	29	T1BE35	T10000B with encryption and IBM 3592 emulation	ACSL S 7.1 with PUT0701 and PTF or ACSL S 7.2 with PUT0702
53	54h ("T")	34	T1C	T10000C with Fibre or VSM3480	ACSL S 7.3.1 or ACSL S 8.0.2

TABLE 2-2 Tape Drives Supported

ACSAPI Drive Type Number	Drive Domain - hex and character, if applicable	Drive Type Reported by Library (decimal)	Drive Type Name	Tape Drive Description	ACSL S Support after 7.0
54	54h ("T")	35	T1C35	T10000C with IBM 3592 emulation	ACSL S 7.3.1 or ACSLS 8.0.2.
55	54h ("T")	36	T1CE	T10000C with Fibre or VSM3480 and encryption	ACSL S 7.3.1 or ACSLS 8.0.2 .
56	54h ("T")	37	T1CE35	T10000C IBM 3592 emulation with encryption enabled	ACSL S 7.3.1 or ACSLS 8.0.2
57	4Ch ("L")	59	HP-LTO5	HP-LTO Generation 5	ACSL S 7.3.1
58	4Ch ("L")	60	IBM-LTO5	IBM LTO Generation 5	ACSL S 7.3.1

Tape Media Supported

The following table lists the compatible tape media supported for each transport type.

Notes:

- * Legacy StorageTek media do not have a media domain on the label. They are reported as media domain 0 (zero).
- ** 3480 cartridges do not have a media type label. They are reported as media type1.
- *** DLT cartridges do not have a media domain on the label. They are reported as media domain 1. SDLT cartridges with 7 character barcodes are also reported as media domain 1.
- **** When a media type is reported as cleaning cartridge "maybe", both data or cleaning cartridges can have this media type.

TABLE 2-3 Tape Media Supported

ACSAPI Media Type Number	Media Type Name	Media Description	Media Domain (on label)	Media Type (on label)	Cleaning Cartridge ****
0	3480	3480 18 or 6-track	0*	1**	maybe
1	3490E	3490E 36-track	0*	E	no
2	DD3A	StorageTek Redwood (Helical) 10GB	0*	A	no

TABLE 2-3 Tape Media Supported

ACSAPI Media Type Number	Media Type Name	Media Description	Media Domain (on label)	Media Type (on label)	Cleaning Cartridge ****
3	DD3B	StorageTek Redwood (Helical) 25GB	0*	B	no
4	DD3C	StorageTek Redwood (Helical) 40GB	0*	C	no
5	DD3D	StorageTek Redwood Cleaning Cartridge	0*	D	yes
6	DLTIII	Quantum DLT III -10GB	1***	C	maybe
7	DLTIV	Quantum DLT IV - 20GB or 35GB	1***	D	no
8	DLTIIIEXT	Quantum DLT IIIxt - 15GB	1***	E	no
9	STK1R	T9840A, T9840B, T9840C or T9840D data cartridge	0*	R	no
10	STK1U	T9840A, T9840B, 9840C cleaning cartridge	0*	U	yes
11	EECART	9490EE 36-track	0*	Z	no
12		reserved			
13	STK2P	9940 data cartridge	0*	P	no
14	STK2W	9940 cleaning cartridge	0*	W	yes
15		reserved			
16	LTO-100G	LTO Generation 1 data cartridge	L	1	no
17	LTO-50GB	LTO Generation 1 data cartridge	L	A	no
18	LTO-35GB	LTO Generation 1 data cartridge	L	B	no
19	LTO-10GB	LTO Generation 1 data cartridge	L	C	no
20	LTO-CLN2	IBM cleaning cartridge	C	2	yes
21	LTO-CLN3	Certance cleaning cartridge	C	3	yes
22	LTO-CLN1	HP cleaning cartridge	C	1	yes
23	SDLT	Super DLT Generation I cartridge	1***	S	maybe
24		reserved			
25	LTO-CLNU	LTO universal cleaning cartridge	C	U	yes
26	LTO-200G	LTO Generation 2 data cartridge	L	2	no
27	SDLT-2	Super DLT Generation II data cartridge	1***	2	no
28	T10000T1	T10000 data cartridge	T	1	no
29	T10000TS	T10000 "sport" data cartridge	T	S	no
30	T10000CT	T10000 cleaning cartridge	C	T	yes

TABLE 2-3 Tape Media Supported

ACSAPI Media Type Number	Media Type Name	Media Description	Media Domain (on label)	Media Type (on label)	Cleaning Cartridge ****
31	LTO-400G	LTO Generation 3 data cartridge	L	3	no
32	LTO-400W	LTO Generation 3 WORM data cartridge	L	T	no
33		reserved			
34	SDLT-S1	Super DLT Generation I data cartridge in SDLT-220 format	S	1	maybe
35	SDLT-S2	Super DLT Generation I data cartridge in SDLT-320 format	S	2	no
36	SDLT-S3	Super DLT Generation II data cartridge	S	3	no
37	SDLT-S4	Super DLT Generation 4 data cartridge	S	4	no
38	SDLT-4	Super DLT Generation 4 data cartridge	1***	4	no
39	STK1Y	T9840D cleaning cartridge	0*	Y	yes
40	LTO-800G	LTO Generation 4 data cartridge	L	4	no
41	LTO-800W	LTO Generation 4 WORM data cartridge	L	U	no
42	T10000T2	T10000 Version 2 data cartridge	T	2	no
43	T10000TT	T10000 Version 2 “sport” data cartridge	T	T	no
44	T10000CC	T10000 Version 2 cleaning cartridge	C	C	yes
45	LTO-1.5T	LTO Generation 5 data cartridge	L	5	no
46	LTO-1.5W	LTO Generation 5 WORM data cartridge	L	V	no
47	T10000CL	T10000 Backwards compatible cleaning cartridge	C	L	yes

Tape Drive and Media Compatibility Supported

The following table lists the compatible media for each drive type. Use these values as input to the `media media_type` and `drive drive_type` parameters on ACSLS commands.

Note – R/O identifies media types that are read-only by the specified drive type.

TABLE 2-4 Drive and Media Compatibility

Drive Type (<i>drive_type</i>)	Compatible Media for Data Cartridge	Compatible Media for Cleaning Cartridge
4480	3480,	3480
4490	3480, 3490E	3480
4890	3480, 3490E	3480
9490	3480, 3490E	3480
9490EE	3480 (read only), 3490E, EECART	3480
SD3	DD3A, DD3B, DD3C	DD3D
9840	STK1R	STK1U
9840-3590	STK1R	STK1U
T9840B	STK1R	STK1U
T9840B35	STK1R	STK1U
T9840C	STK1R	STK1U
T9840C35	STK1R	STK1U
T9840D	STK1R	STK1Y
T9840D35	STK1R	STK1Y
T9840DE	STK1R	STK1Y
T9840DE5	STK1R	STK1Y
T9940A	STK2P	STK2W
9940A-3590	STK2P	STK2W
T9940B	STK2P	STK2W
T9940B35	STK2P	STK2W
DLT2000	DLTIII	DLTIII
DLT2000XT	DLTIII, DLTIII XT	DLTIII
DLT4000	DLTIII, DLTIII XT, DLTIV	DLTIII
DLT7000	DLTIII, DLTIII XT, DLTIV	DLTIII
DLT8000	DLTIII, DLTIII XT, DLTIV	DLTIII
SDLT	SDLT, SDLT-S1, DLTIV	SDLT, SDLT-S1
SDLT-320	SDLT, SDLT-S1, SDLT-S2, DLTIV	SDLT, SDLT-S1
SDLT-600	SDLT (R/O), SDLT-2, SDLT-S1 (R/O), SDLT-S2 (R/O), SDLT-S3	SDLT, SDLT-S1
DLT-S4	SDLT-2, SDLT-4, SDLT-S2 (R/O), SDLT-S3, SDLT-S4	SDLT,

TABLE 2-4 Drive and Media Compatibility

Drive Type (<i>drive_type</i>)	Compatible Media for Data Cartridge	Compatible Media for Cleaning Cartridge
HP-LTO	LTO-100G, LTO-50GB, LTO-35GB, LTO-10GB	LTO-CLN1, LTO-CLNU
IBM-LTO	LTO-100G, LTO-50GB, LTO-35GB, LTO-10GB	LTO-CLN2, LTO-CLNU
CER-LTO	LTO-100G, LTO-50GB, LTO-35GB, LTO-10GB	LTO-CLN3, LTO-CLNU
HP-LTO-2	LTO-200G, LTO-100G, LTO-50GB, LTO-35GB, LTO-10GB	LTO-CLN1, LTO-CLNU
IBM-LTO-2	LTO-200G, LTO-100G, LTO-50GB, LTO-35GB, LTO-10GB	LTO-CLN2, LTO-CLNU
CER-LTO-2	LTO-200G, LTO-100G, LTO-50GB, LTO-35GB, LTO-10GB	LTO-CLN3, LTO-CLNU
HP-LTO-3	LTO-400G, LTO-400W, LTO-200G, LTO-100G (R/O), LTO-50GB (R/O), LTO-35GB (R/O), LTO-10GB (R/O)	LTO-CLN1, LTO-CLNU
IBM-LTO-3	LTO-400G, LTO-400W, LTO-200G, LTO-100G (R/O), LTO-50GB (R/O), LTO-35GB (R/O), LTO-10GB (R/O)	LTO-CLN2, LTO-CLNU
CER-LTO-3	LTO-400G, LTO-400W, LTO-200G, LTO-100G (R/O), LTO-50G (R/O), LTO-35GB (R/O), LTO-10G (R/O)	LTO-CLN3, LTO-CLNU
HP-LTO4	LTO-800G, LTO-800W, LTO-400G, LTO-400W, LTO-200G (R/O)	LTO-CLNU
IBM-LTO4	LTO-800G, LTO-800W, LTO-400G, LTO-400W (R/O), LTO-200G (R/O)	LTO-CLNU
HP-LTO5	LTO-1.5T, LTO-1.5W, LTO-800G, LTO-800W, LTO-400G (R/O), LTO-400W (R/O)	LTO-CLNU
IBM-LTO5	LTO-1.5T, LTO-1.5W, LTO-800G, LTO-800W, LTO-400G (R/O), LTO-400W (R/O)	LTO-CLNU
T1A	T10000T1, T10000TS	T10000CT, T10000CL
T1A35	T10000T1, T10000TS	T10000CT, T10000CL
T1AE	T10000T1, T10000TS	T10000CT, T10000CL
T1AE35	T10000T1, T10000TS	T10000CT, T10000CL
T1B	T10000T1, T10000TS	T10000CT, T10000CL

TABLE 2-4 Drive and Media Compatibility

Drive Type (<i>drive_type</i>)	Compatible Media for Data Cartridge	Compatible Media for Cleaning Cartridge
T1B35	T10000T1, T10000TS	T10000CT, T10000CL
T1BE	T10000T1, T10000TS	T10000CT, T10000CL
T1BE35	T10000T1, T10000TS	T10000CT, T10000CL
T1C	T10000T1 (R/O), T10000TS (R/O), T10000T2, T10000TT	T10000CC, T10000CL
T1C35	T10000T1 (R/O)), T10000TS (R/O), T10000T2, T10000TT	T10000CC, T10000CL
T1CE	T10000T1 (R/O), T10000TS (R/O), T10000T2, T10000TT	T10000CC, T10000CL
T1CE35	T10000T1 (R/O), T10000TS (R/O), T10000T2, T10000TT	T10000CC, T10000CL

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