

**StorageTek Automated Cartridge System Library
Software**

Product Information

Release 8.4

E62371-05

March 2018

E62371-05

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Preface

StorageTek Automated Cartridge System Library Software (ACSL) is Oracle's StorageTek UNIX server software that control StorageTek automated tape libraries. This 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.

Audience

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 perform typical UNIX system administrator tasks, such as logging on as root and setting up user accesses to a UNIX application.

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ACSL 8.4 introduces greater flexibility for customers with varied platform and file-system preferences. The ACSL package installs in any file system on any contemporary Solaris 11.2 or 11.3 platform, or Oracle Linux 6.5 or 6.8 platform.

For other ACSL documentation, refer to the Oracle Technical Network (OTN) at:

<http://docs.oracle.com/>

Requirements

This section describes the software, system, browser, and co-hosting requirements.

Software Requirements

ACSL 8.4 has been developed and tested for the following operating system environments:

- Oracle's Sun SPARC and X86 platforms running Solaris 11, Update 2 or 3.
- Oracle Enterprise Linux 6.5 (ACSL 8.4 base through patch 8.4.0-04)
- Oracle Enterprise Linux 6.8 (requires ACSL 8.4 patch 8.4.0-04)

Oracle Linux testing was performed in environments using Oracle's Unbreakable Enterprise Kernel. Other operating systems, including virtual environments, are not tested or supported.

Note:

- Special device drivers are provided in ACSL for use with logical libraries and with fibre-attached libraries, such as the SL500 and SL150. This is an issue for Solaris zoned environments. Because such device drivers are attached to the system kernel, they must reside in the global zone. In cases where such drivers are used, ACSL cannot be installed in the local zoned environment. Logical libraries are not supported on the Linux operating system.
 - ACSL 8.4 High Availability (HA) systems must be installed on their own dedicated platform pair.
-
-

Patch Updates

The following patch updates are available for ACSL 8.4.

Patch 8.4.0-4

ACSL S patch 8.4.0-4 adds Oracle Enterprise Linux 6.8 as a supported operating system level for ACSLS 8.4 (ACSL S 8.4 was initially certified on Linux 6.5 only).

In a Linux environment, specific tuning and configuration settings are required to improve ACSLS performance and stability. Refer to the *ACSL S Installation Guide* for details about Linux system configuration and tuning.

This patch includes all updates available in the previous patches. There is no need to apply earlier patches. This patch includes a complete ACSLS bundle. It can be installed as an update to an existing ACSLS 8.4 base installation, or as a new installation.

Patch 8.4.0-3

ACSL S 8.4.0-3 supports the LTO 8 drives and media on Solaris 11.2, Solaris 11.3, and Linux 6.5.

- Solaris 11.2 SPARC and X86

Patch 3 can be applied to the ACSLS Solaris 11.2 base or patch 1.

- Solaris 11.3

Patch 3 can be applied to the ACSLS Solaris 11.3 base, patch 1, or patch 2.

Only Solaris 11.3 supports the COMSTAR updates.

- Linux 6.5 X64 only

Patch 3 can be applied to the ACSLS Linux 6.5 base or patch.

For users wanting updated logical library support on Solaris 11.3, you must install the ACSLS 8.4.0-3 patch. ACSLS High Availability (HA) is **not** supported on the 11.3 patch.

Patch Installation

Refer to the `Readme.txt` file for specific patch installation instructions.

On Solaris 11.3, please note that the `install.sh` script should NOT be executed until after the patch has been applied. This is true for patches 8.4.0-3 and 8.4.0-4, both of which modify the installation requirements and behavior in that script.

System Requirements

- Memory: 4GB minimum

To show system memory:

- Solaris

```
prtconf | grep Mem
```

- Linux

```
grep MemTotal /proc/meminfo
```

- Swap Space: Solaris and Linux systems should be equipped with a minimum of 4GB of memory and a minimum of 2GB of swap space. When system memory exceeds 6GB, provide swap space that is no less than 30% of physical memory. To check swap space, enter one of the following operating system commands:

- Solaris

```
vmstat -S
```


The result is expressed in kilobytes.

- Linux

```
vmstat -s | grep total
```

The result is expressed in kilobytes.

- File systems and required databases:

ACSL 8.4 enables you to install in any file system. You must define the following directories before installing ACSL:

- A base directory where the ACSL components will be installed.
- A default directory for ACSL backups. It is recommended (but not required) to place the ACSL backup directory in a separate file system from the ACSL base directory.

Although you can install ACSL in any directory, the default directories used for ACSL are:

- /export/home is the default ACSL base directory.
- /export/backup is the default ACSL backup directory.

The ACSL base directory file system requires a minimum of 5GB free. Reserve an additional 5GB free for ACSL backups. To view file system sizes, enter the following command:

```
df -h
```

- Fibre card (optional) is optional. A suitable HBA is required for Fibre Channel operations.
 - For target mode operation, supporting the Logical Library feature, this HBA must be a contemporary QLogic fibre card (4Gb or higher).
 - For initiator mode operation, supporting a fibre-connected library such as the SL500 or SL150, ACSL 8.4 is fully tested and certified with QLogic and Emulex HBAs.

Browser Requirements

The ACSL 8.4 GUI can operate with most common browsers, though formal testing has been limited to recent releases of FireFox, Chrome, and Internet Explorer. The Chrome browser and earlier versions of FireFox have tested well using the default settings for ACSL in the WebLogic server. Internet Explorer V8 (and above) and FireFox V39 (and above) require configuration settings to provide a 2048-bit self-signed digital certificate for https. Please refer to the section, "Configuring a Self-Assigned Digital Certificate for HTTPS" in the *ACSL 8.4 Installation Guide*.

Co-hosting

To ensure uninterrupted library service and to avoid unanticipated problems due to resource contention, it is generally recommended that ACSL run in a standalone environment on a dedicated server. However, some systems are designed to allow multiple applications to run in co-hosted fashion as though they are completely isolated from one another. Solaris Containers and Oracle Solaris VM Server for SPARC enable conditional co-hosting possibilities for use with ACSL.

The following list details the conditions and limitations associated with the various co-hosting options for an ACSL application.

- Solaris Zones (containers)

Solaris zones enable a system administrator to partition a standard, low cost server into four independent Solaris systems, each with its own isolated file system, and its own instance of Solaris. You can assign network resources to each zone and you can reboot any local (non-global) zone without affecting applications in other zones on the same platform. However, the ability to share kernel resources, such as device drivers, across multiple zones is tenuous at best. Ideally, an application that requires kernel drivers would reside in the global zone. However, it is generally bad practice to install an application in the global zone since any irrecoverable error condition with the application could impact all other applications running in the other zones.

ACSL 8.4 can reside in a Solaris zone only if it does not require drivers beyond the network interface. Any use of Logical Libraries requires a target-mode fibre-channel driver, and any connection to an SL500 or SL150 library requires an initiator-mode fibre-channel driver. Either of these configurations dictates that ACSLS must be installed in the global zone.

There is no version of ACSLS HA supported for use in Solaris zones.

- Oracle VM Server for SPARC

Oracle VM Server for SPARC (formerly Logical Domains or LDOMs) technology offers significant advantages over Solaris Containers to the extent that each domain is in control of its own Solaris kernel.

A Solaris administrator can partition hardware resources across the system, assigning a specific resource to a specific domain. Network resources on this virtual machine can easily be shared across any of up to 128 *guest domains* on the server. But applications that require access to I/O devices through the PCIe bus must be installed in special I/O domains. The number of I/O domains that you can create on the VM Server depends on the number of discrete PCIe buses on the SPARC platform. On a system with a single PCIe bus, you can have two I/O domains, and one of these must be the control domain.

Any ACSLS application that relies solely on network connectivity to the library and for client applications can be installed in a guest domain on this server. The virtual network set-up procedure is described in the document, *Oracle VM Server for SPARC 2.1 Administration Guide* in the section, entitled "Using Virtual Networks".

If your ACSLS 8.4 application is intended for use with logical libraries, or if you intend to connect to a fibre-channel library such as the SL500 or L700, then ACSLS must be installed in an I/O domain. Refer to the section "Setting up I/O Domains" in the *Oracle VM Server for SPARC 2.1 Administration Guide*.

Solaris Cluster Software is supported on the Oracle VM Server for SPARC and this platform can be employed in an ACSLS HA application. Refer to the *Oracle Solaris Cluster Data Service for Oracle VM Server for SPARC Guide*.

Overview of ACSLS

ACSL 8.4 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 7.3.1 product. Support is provided for ACSAPI clients, `cmd_proc` and ACSLS utilities (startup and shutdown have changed).

Graphical User Interface

The Web-based ACSLS Graphical User Interface (GUI) provides a graphical console for manipulating and monitoring library operations and for the administration and operation of logical libraries. Refer to the online help for procedures and detailed information for using the GUI.

- An alternative library console with greatly expanded flexibility and ease of use. It provides most of the operations that are available in the legacy `cmd_proc`.
- Logical library support.
- 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.
- Real-time monitoring of tape library components.
- A tree browser to navigate physical and logical configuration.
- Real time alerts that are visible from each screen.

An alert informs you of conditions that might result in damage to hardware, corruption of data, or corruption of application software. It always precedes the information to which it pertains.

- The ability to filter volume and drive displays with user-specified criteria.
- User-customized views of system events and system logs.
- Online help.

Logical Libraries

The ACSLS GUI or `lib_cmd` enables you to create logical libraries which include a sub-set of the volumes and drives in a specific physical library. This enables you to define logical subsets of your physical libraries, which can be managed and used 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 cannot span more than one physical ACS (or physical partition).
- Logical libraries are accessible to clients using the ACSLS 8.x 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.
- Logical libraries are only supported on the Solaris operating system. They are not supported in the Linux environment.

Open Format (Volser)

Before ACSLS 8.x, 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

ACSL 8.x 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 use 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.x 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

ACSL 8.4 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

Two ACSLS command-line interfaces, `cmd_proc` and `lib_cmd` are accessible to users `acsss` and `acssa`.

The primary command-line interface for library control is `cmd_proc`. The `cmd_proc` gives you access to all library operational functions related to physical tape volumes and drives. These functions include `mount`, `dismount`, `enter`, `eject`, `audit`, `query`, `display`, and `vary`.

A second command-line interface, `lib_cmd`, is primarily used for configuring logical libraries, but has a limited set of commands related to physical libraries, including `display`, `vary` and `eject`.

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 7.3.1 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.
- Cartridge vaulting operations.
- Library management utilities.
- Library inventory reporting.

acsss Start-up and Shut-down Macro

ACSLs software consists of multiple services that are operated with a simple command, `acsss`. The `acsss` macro enables you to start, stop, and check status of the multiple services as a single entity. Common operations with the `acsss` macro include:

- `acsss enable` to start ACSLS.
- `acsss disable` to stop ACSLS.
- `acsss status` to check the status of the various services.

Once enabled, the various services are controlled and monitored by the Solaris Service Management Facility (SMF), or the Linux `init` service utility. These respective system utilities handle automatic restart operations after a system boot.

Library, Tape Drive and Media Support

This chapter provides you with a list of:

- ["Current Libraries Supported"](#) on page 2-1
- ["Legacy Libraries Supported"](#) on page 2-1
- ["Tape Drives Supported"](#) on page 2-2
- ["Tape Media Supported"](#) on page 2-5
- ["Tape Drive and Media Compatibility Supported"](#) on page 2-8

Current Libraries 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 *Current Libraries Supported*

Library and Library Feature	Support and Maintenance Level after 7.0
StorageTek SL8500	ACSLS 7.1
StorageTek SL500	ACSLS 7.1 with PUT0402
StorageTek SL3000	ACSLS 7.3
StorageTek SL3000 AEM	ACSLS 7.3 with PUT0801 (ejecting only 42 cartridges at a time) ACSLS 8.0 (eject full AEM using the GUI)
StorageTek Virtual Tape Library (VTL)	ACSLS 7.3.1 and 8.0.2
Drive & Media Statistics from Library	ACSLS 7.3. An improved display is provided with PUT0801
SL3000 and SL8500 Redundant Electronics	ACSLS 7.3.1 and 8.0.2
SL150	ACSLS 8.2
SL8500 Partitioning across library complex	ACSLS 8.0.2 - 8 partitions ACSLS 8.3 - 16 partitions
SL8500 Bulk CAP	ACSLS 8.4

Legacy Libraries Supported

The following legacy libraries are supported by ACSLS:

- StorageTek 9310

- StorageTek 9360
- StorageTek L180
- StorageTek L700
- StorageTek L700e PTP
- StorageTek L5500

ACSL S is still coded to support several earlier StorageTek libraries, such as the 4410s, 97xx, L20, L40, and L80 libraries. However, support for these libraries has not been tested for several years.

Tape Drives Supported

The following table translates 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.

Note:

- 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.
 - The format of the data written by Fibre-attached and Ethernet-attached drives is the same.
-
-

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	

Table 2–2 (Cont.) 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	ACSL5 Support after 7.0
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	
21	00h	09	T9940B	T9940B with SCSI/Fibre or VSM3490	
22	00h	10	T9940B35	T9940B with 3590 emulation	
23				reserved	
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	ACSL5 7.1
31	54h ("T")	13	T1A	T10000A with Fibre or VSM3490	ACSL5 7.1 with PUT0501
32	54h ("T")	14	T1A35	T10000A with IBM 3592 emulation	ACSL5 7.1 with PUT0501
33	4Ch ("L")	54	HP-LTO-3	HP LTO Generation 3	ACSL5 7.1 with PUT0501
34	4Ch ("L")	55	IBM-LTO-3	IBM LTO Generation 3	ACSL5 7.1 with PUT0501
35	4Ch ("L")	56	CER-LTO-3	Certance LTO Generation 3	ACSL5 7.1 with PUT0501
36				reserved	
37	54h ("T")	24	T1AE	T10000A, fibre or VSM3490, with encryption enabled	ACSL5 7.1 with PUT0602
38	54h ("T")	25	T1AE35	T10000A - IBM 3592 emulation with encryption enabled	ACSL5 7.1 with PUT0602
39				reserved	
40				reserved	

Table 2–2 (Cont.) 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	ACSLs Support after 7.0
41	00h	18	T9840D	T9840D, fibre or VSM3490	ACSLs 7.1 with PUT0602
42	00h	19	T9840D35	T9840D - IBM 3592 emulation (MVS attach)	ACSLs 7.1 with PUT0602
43	00h	20	T9840DE	T9840D, fibre or VSM3490, with encryption enabled	ACSLs 7.1 with PUT0602
44	00h	21	T9840DE5	T9840D- IBM 3592 emulation (MVS attach) with encryption enabled	ACSLs 7.1 with PUT0602
45	01h	24 (88)*	DLT-S4	Quantum DLT-S4	ACSLs 7.1 with PUT0602
46	4Ch ("L")	57	HP-LTO4	HP LTO Generation 4	ACSLs 7.1 with PUT0701
47	4Ch ("L")	58	IBM-LTO4	IBM LTO Generation 4	ACSLs 7.1 with PUT0701
48				reserved	
49	54h ("T")	26	T1B	T10000B with Fibre or VSM3490	ACSLs 7.1 with PUT0701 and PTF or ACSLS 7.2 with PUT0702
50	54h ("T")	27	T1B35	T10000B with IBM 3592 emulation	ACSLs 7.1 with PUT0701 and PTF or 7.2 with PUT0702
51	54h ("T")	28	T1BE	T10000B with Fibre or VSM3490 and encryption	ACSLs 7.1 with PUT0701 and PTF or ACSLS 7.2 with PUT0702
52	54h ("T")	29	T1BE35	T10000B with encryption and IBM 3592 emulation	ACSLs 7.1 with PUT0701 and PTF or ACSLS 7.2 with PUT0702
53	54h ("T")	34	T1C	T10000C with Fibre or VSM3480	ACSLs 7.3.1 or ACSLS 8.0.2
54	54h ("T")	35	T1C35	T10000C with IBM 3592 emulation	ACSLs 7.3.1 or ACSLS 8.0.2
55	54h ("T")	36	T1CE	T10000C with Fibre or VSM3480 and encryption	ACSLs 7.3.1 or ACSLS 8.0.2

Table 2–2 (Cont.) 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	ACSLs Support after 7.0
56	54h ("T")	37	T1CE35	T10000C IBM 3592 emulation with encryption enabled	ACSLs 7.3.1 or ACSLS 8.0.2
57	4Ch ("L")	59	HP-LTO5	HP-LTO Generation 5	ACSLs 7.3.1
58	4Ch ("L")	60	IBM-LTO5	IBM LTO Generation 5	ACSLs 7.3.1
59	4Ch ("L")	61	HP-LTO6	HP LTO Generation 6	ACSLs 8.2
60	4Ch ("L")	62	IBM-LTO6	IBM LTO Generation 6	ACSLs 8.2
61	54 ("T")	38	T1D	T10000D with Fibre or VSM3480	ACSLs 8.2
62	54 ("T")	39	T1D35	T10000D with IBM 3592 emulation	ACSLs 8.2
63	54 ("T")	40	T1DE	T10000D with Fibre or VSM3480 and encryption	ACSLs 8.2
64	54 ("T")	41	T1DE35	T10000D IBM 3592 emulation with encryption enabled	ACSLs 8.2
65	54 ("T")	42	T1D-Eth (name changed in ACSLS 8.4)	T10000D Ethernet-attached using FCoE	ACSLs 8.3
66	54 ("T")	43	T1DpEth (name changed in ACSLS 8.4)	T10000D Plus - Ethernet-attached	ACSLs 8.3
67				reserved	
68	4Ch ('L')	45	IBM LTO 7	IBM LTO Generation 7	ACSLs 8.4
69	4Ch ("L")	46	IBM LTO 8	IBM LTO Generation 8	ACSLs 8.4.0-3

Tape Media Supported

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

Note:

- * 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.
- ***** LTO-6 media types are reported as LTO-3.2T and LTO-3.2W in ACSLS 8.1. In ACSLS 8.2 and later releases, LTO-6 media types are reported as LTO-2.5T and LTO-2.5W. This was because the capacity of LTO-6 media changed before LTO-6 was announced.

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
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	DLTIIIXT	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

Table 2–3 (Cont.) Tape Media Supported

ACSAPI Media Type Number	Media Type Name	Media Description	Media Domain (on label)	Media Type (on label)	Cleaning Cartridge*** *
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
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
48	LTO-2.5T	LTO Generation 6 data cartridge	L*****	6	no

Table 2–3 (Cont.) Tape Media Supported

ACSAPI Media Type Number	Media Type Name	Media Description	Media Domain (on label)	Media Type (on label)	Cleaning Cartridge*** *
49	LTO-2.5W	LTO Generation 6 WORM data cartridge	L*****	W	no
50	LTO-6.4T	LTO Generation 7 data cartridge	L	7	no
51	LTO-6.4W	LTO Generation 7 WORM data cartridge	L	X	no
52	LTO-12T	LTO Generation 8 data cartridge	L	8	no
53	LTO-12W	LTO Generation 8 WORM data cartridge	L	Y	no

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.

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

Table 2–4 Drive and Media Compatibility

Drive Type (drive_type)	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

Table 2–4 (Cont.) Drive and Media Compatibility

Drive Type (drive_type)	Compatible Media for Data Cartridge	Compatible Media for Cleaning Cartridge
DLT2000XT	DLTIII, DLTIIIXT	DLTIII
DLT4000	DLTIII, DLTIIIXT, DLTIV	DLTIII
DLT7000	DLTIII, DLTIIIXT, DLTIV	DLTIII
DLT8000	DLTIII, DLTIIIXT, 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
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-LTO 4	LTO-800G, LTO-800W, LTO-400G, LTO-400W, LTO-200G (R/O)	LTO-CLNU
IBM-LTO 4	LTO-800G, LTO-800W, LTO-400G, LTO-400W (R/O), LTO-200G (R/O)	LTO-CLNU
HP-LTO 5	LTO-1.5T, LTO-1.5W, LTO-800G, LTO-800W, LTO-400G (R/O), LTO-400W (R/O)	LTO-CLNU
IBM-LTO 5	LTO-1.5T, LTO-1.5W, LTO-800G, LTO-800W, LTO-400G (R/O), LTO-400W (R/O)	LTO-CLNU
HP-LTO 6	LTO-2.5T, LTO-2.5W, LTO-1.5T, LTO-1.5W, LTO-800G (R/O), LTO-800W (R/O)	LTO-CLNU
IBM-LTO 6	LTO-2.5T, LTO-2.5W, LTO-1.5T, LTO-1.5W, LTO-800G (R/O), LTO-800W (R/O)	LTO-CLNU
IBM-LTO 7	LTO-6.4T, LTO-6.4W, LTO-2.5T, LTO-2.5W, LTO-1.5T (R/O), LTO-1.5W (R/O))	LTO-CLNU

Table 2–4 (Cont.) Drive and Media Compatibility

Drive Type (drive_type)	Compatible Media for Data Cartridge	Compatible Media for Cleaning Cartridge
IBM-LTO 8	LTO-12T, LTO-12W, LTO-6.4T (R/W), LTO-6.4W (R/W)	LTO-CLNU
T1A	T1000T1, T1000TS	T1000CT, T1000CL
T1A35	T1000T1, T1000TS	T1000CT, T1000CL
T1AE	T1000T1, T1000TS	T1000CT, T1000CL
T1AE35	T1000T1, T1000TS	T1000CT, T1000CL
T1B	T1000T1, T1000TS	T1000CT, T1000CL
T1B35	T1000T1, T1000TS	T1000CT, T1000CL
T1BE	T1000T1, T1000TS	T1000CT, T1000CL
T1BE35	T1000T1, T1000TS	T1000CT, T1000CL
T1C	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CC, T1000CL
T1C35	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CC, T1000CL
T1CE	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CC, T1000CL
T1CE35	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CC, T1000CL
T1D	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CL
T1D35	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CL
T1DE	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CL
T1DE35	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CL
T1D-Eth	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CL
T1DpEth	T1000T1 (R/O), T1000TS (R/O), T1000T2, T1000TT	T1000CL

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