StorageTek Automated Cartridge System Library Software

Release Notes

Release 8.3

E41330-04

July 2014

ACSLS 8.3 introduces greater flexibility for customers with varied platform and file-system preferences. The ACSLS package will install in any file system on any contemporary Solaris 10, Solaris 11, or Oracle Linux 6 platform. Oracle also provides ACSLS 8.3 application support for customers running Red Hat Enterprise Linux 6.3 or 6.4.

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

http://docs.oracle.com/

Requirements

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

Platform Requirements

ACSLS 8.3 will run successfully on any contemporary SPARC or X86 server platform.

Memory
A minimum of 2 GB memory is required for ACSLS 8.3. Additional memory (up to 16 GB) may be desirable in high-volume library environments where multiple requests for mount and dismount operations are to be processed simultaneously or where the GUI is heavily used.

Disk Capacity
A minimum of 40 GB should be available to the file system in which ACSLS 8.3 will be installed. This will accommodate ACSLS and WebLogic binaries, and will allow ample storage for on-going logging and database backup activity.

Network I/O
At least one 10/100/1000-base-T network port is required for client and library communication.   Dedicated redundant network adapters are recommended when connecting to SL8500 and SL3000 libraries. Redundant networks are necessary when connecting to an SL8500 or SL3000 library with the Dual TCP/IP feature.

Fibre-channel
Fibre-channel initiator port is required to support fibre-attached libraries such as the StorageTek SL500 or SL150.

Fibre-channel target port is required if ACSLS is to present logical libraries to fibre-channel client applications. A 4 Gb/s (or higher) QLogic HBA will be necessary for target-mode operation.

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Operating System Requirements

- Solaris 10 Update 10 and Update 11 for SPARC and X86

- Solaris 11 Update 1 for SPARC and X86

- Oracle Linux 6.3 and 6.4

  Oracle Linux testing was done in environments using Oracle's Unbreakable Enterprise Kernel and the Red Hat Compatible Kernel. Oracle provides full system support on these systems.

- Red Hat Enterprise Linux 6.3 or 6.4

  Oracle provides ACSLS 8.3 application support for customers running Red Hat Enterprise Linux 6.3 or 6.4.

Software Requirements

- ACSLS uses PostgreSQL to manage database services for library control.

  - PostgreSQL 8.3 is a standard inclusion with Solaris 10.

  - For Solaris 11, the PostgreSQL 8.3 packages are provided along with the ACSLS 8.3 package from the Oracle edelivery site. Installation instructions are provided in the *ACSLS 8.3 Installation Guide*.

  - For Linux, PostgreSQL 8.4 is provided for easy installation from the Oracle yum repository. Instructions are included in the *ACSLS 8.3 Installation Guide*.

- WebLogic 10.3.5 is bundled with ACSLS 8.3.

- The ACSLS GUI, logical library services, and `lib_cmd` require Java 1.6 or Java 1.7. The necessary Java run-time environment is a standard package included with Solaris 10, Solaris 11, and Linux 6.

- ACSLS 8.3 includes (optional) device drivers:

  - The *mchanger* driver controls fibre-attached libraries such as the SL500 and SL150.

  - The *qlt* and *stmf* drivers used presents logical libraries to fibre-channel client applications.

  - If any of these drivers are used, then ACSLS 8.3 must have immediate access to kernel-level functions. In such cases, ACSLS cannot be installed in a Solaris Zoned environment.

Browser Requirements

The ACSLS 8.3 graphical user interface has been tested using the following browsers:

- Firefox 22.0

- Chrome 28.0

For Internet Explorer versions 8, 9, and 10, it will be necessary to create an SSL certificate with public/private key pair that is unique to the specific ACSLS server installation. Refer to the *ACSLS 8.3 Installation Guide* for details on creating such an SSL certificate.

Co-Hosting

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

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

Solaris Containers

Solaris Containers (or 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 container 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 not good practice to install an application in the global zone since any fatal condition with the application could impact all other applications running in the other zones.

ACSLS 8.x can reside in a Solaris container only if it does not require drivers beyond the network interface. If you intend to use the target-mode fibre-channel driver (qlt) which is required for logical libraries, then your application should not be installed in a Solaris container. Or, if you intend to use a fibre-attached library which requires the mchanger driver, the application should not be installed in a Solaris container.

> **Note:** There are no versions of ACSLS-HA that are supported for use in Solaris Containers.

Oracle VM Server for SPARC

Oracle VM Server for SPARC (formerly Logical Domains or LDOMs) is technology available on SPARC T-series servers with Chip Multithreading (CMT) technology. This 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 busses 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 described in the document, *Oracle VM Server for SPARC 2.1 Administration Guide* in the section, "Using Virtual Networks".

If your ACSLS 8.x application is intended for use with logical libraries, or if you intend to connect to a fibre-channel library such as the SL500 or SL150, 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*.

Enhancements

This release contains multiple enhancements.

New Operating System Support — Solaris 11

ACSLS 8.3 is supported on Solaris 11 Update 1, as well as Solaris 10 Update 10 and Update 11. The port to Solaris 11 includes all of the features that are available on Solaris 10.

New Operating System Support — Linux

ACSLS 8.3 is supported on Oracle Linux 6.3 and 6.4. The Linux port includes complete support of ACSAPI client operations. It includes all of the user interfaces, including `cmd_proc`, the ACSLS GUI and `lib_cmd`. The Linux port does not include support for logical libraries since the ability to present logical libraries to fibre-channel clients relies on the Solaris COMSTAR infrastructure. ACSLS HA is not supported on Linux.

Customer-Defined Install Directory

The ACSLS package is installable in any user-defined file system. The default base installation remains `/export/home`, but the installer can relocate the base installation to any file system that contains sufficient space. See the *ACSLS 8.3 Installation Guide* for details.

Product Configuration Flexibility

The `install.sh` routine has been redesigned with greater flexibility, allowing users to install, remove, or reinstall any portion of the product without impacting other components of the product. See the *ACSLS 8.3 Installation Guide* for details.

Java 7 Support

The Java functions in ACSLS are compatible with both Java 1.6 and Java 1.7.

Enhancements to the probeFibre.sh utility

The `probeFibre.sh` utility now provides more detailed information about FC-attached tape libraries. When using the `-v` option, the output reflects initiator ports, along with their associated libraries, for each FC HBA (available for both Solaris and Linux).

Enhancements to the auto-clean function

- When an attempt to automatically clean a tape drive fails, ACSLS will try to select another cleaner and re-try.

- Extend the usable life of cleaning cartridges. Relies on the tape drive to identify a spent cleaner rather than a pre-defined *max usage* value.

- Retry a failed dismount of a cleaning cartridge.

Mount retry behavior is more adjustable

The `MOUNT_RETRY_TIME_LIMIT` is adjustable upwards from five minutes. Users can manipulate this variable by running the `dv_config` utility. See the chapter, "Setting Variables that Control ACSLS Behavior" in the *ACSLS 8.3 Administration Guide*.

New status responses to *acsss status*

Status messages show granularity for weblogic and acsls start/stop status. *(online/offline/starting/stopping)*

Adjustable startup timeout (Solaris)

To accommodate unusual library configurations that may require more time for the acsls SMF service to startup and recover, ACSLS 8.3 provides for a customized startup policy. See the *ACSLS 8.3 Administration Guide* for details.

Support for partitioning across an SL8500 complex

Support for up to 16 partition in a library complex.

Support for FCoE Tape Drives

Support for T10000D FCoE (Fibre Channel over Ethernet) drive types: T10000D FCoE and T10000DE FCoE.

GUI diagnostic utility

The ACSLS GUI installation has multiple dependencies, including WebLogic status, acsls deployment, and possible firewall settings. A new utility, `checkGui.sh` tests these various dependencies and provides a summary report showing the status of each one. For more information, refer to the "Troubleshooting" appendix in the *ACSLS 8.3 Administrator's Guide*.

Fixes

This release contains fixes to the following bugs reported in ACSLS 8.2 and earlier.

Logical Library Support

ACSLS 8.3 contains the following fixes to logical library support.

acsss_config: Added cleanup of logical volumes and scsi mappings for a deleted logical ACS.

When removing an ACS from the library configuration using `acsss_config` (without using drop_tables.sh), the administrator should first remove any logical libraries that are backed by that ACS. This can be accomplished by using the ACSLS GUI or the `lib_cmd` utility. This operation can be disruptive to client applications.

The recommended steps would be:

- Vary the logical ACS and any related logical drives offline.

- Remove the logical ACS from any client configurations (client dependent).

- Delete the logical ACS from the ACSLS configuration.

- Use `acsss_config` to remove the backing physical ACS.

This current change does not perform all of these steps; it simply removes related database records if an administrator did not follow the recommended procedures. A reboot may be necessary to propagate changes for the target mode Fibre drivers.

Fibre Channel client Move Medium destination slot is not updated correctly in ACSLS

In several cases, ACSLS would display an unexpected logical location for a volume after it had been moved by a FC client operation (the client used a Move Medium operation).

- When a FC client requested a dismount operation, specifying a destination slot other than the original source (at mount time), ACSLS retained the original source element and ignored the destination element supplied by the client.

- When a FC client requested a move operation with a destination specifying an import/export element, the logical volume record showed current location of 0 rather than the expected import/export element.

These problems are now corrected, and the logical location of affected volumes reflects the value specified by the client.

Absent volumes with a last logical address of a drive will make drive report full.

The updates to volumes in a logical library as they are marked absent have been improved. Earlier behavior reported absent volumes in drives and storage slots to FC clients, although the volumes were unusable. Absent volumes are now reported as being inaccessible, and will not be visible to clients until the physical volume is found. An updated `fixVol.sh` script is available to correct potential database inconsistencies, including absent volumes (useful if an imported database contains absent logical volumes).

Mounts and Dismounts

ACSLS 8.3 contains the following fixes for mounts and dismounts.

When a dismount failed and the cartridge was left in the drive, the vol_id in the drive database record was cleared

The `vol_id` in the drive record is now retained.

Mount requests could hang in limbo when auto cleaning failed

Under some conditions, when auto-cleaning failed under some conditions the mount error response was never returned to acslm. After weeks acslm could report hundreds of mount requests in its queue. It now ensures that auto-cleaning is retried if possible, and if recovery is not possible, it returns a mount error response to acslm.

Always report cleaning failures because of spent cleaning cartridges

Sometimes spent cleaning cartridges were not reported.

Cleaning cartridges left on drives after a single failed dismount attempt

Dismounts of cleaning carts were not retried like other dismounts.

Volume being mounted from a reserved cell could be marked absent

If an attempt is made to mount the same volume to two different drives at the same time, the volume could be marked absent by Cartridge Recovery. Both mounts could be processed concurrently up to the time they try to reserve the volume's home cell. The reservation of the cell for the second mount failed, and Cartridge Recovery was called for the volume. Cartridge Recovery found the cell empty (because of the first mount) and marked the volume as absent.

Change the logic to only call Cartridge Recovery to recover a volume when the volume's access_date is over a day old. (In that case, the cell's RESERVED status is probably stale.)

Other ACSLS Functions

ACSLS 8.3 contains the following fixes.

Reserved cell could not be updated to inaccessible by audit

During an audit, cells that were reserved were incorrectly reported as "no cell at this address" by the library are not properly updated to 'inaccessible'. When a cell is reported as "no cell at this address" by the library, ACSLS will now update it to inaccessible, even if the cell is reserved in the ACSLS database.

Send LSM Inoperative Event after LSM Not Ready

When an LSM Not Ready message is reported by the library, send an LSM Inoperative event to clients registered for Event Notification.

CSI_MULTI_HOMED_CL on x86 – Client IP address has octets in reverse order

When the `CSI_MULTI_HOMED_CL` (client) dynamic variable is set to TRUE, on ACSLS x86 servers, the client IP address that the CSI uses had the order of the octets reversed. This client IP address is reported by the CSI and used by the CSI in attempting to reply to client requests.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

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