Configuring Sun StorageTek SL500 tape library for Amanda Enterprise backup software

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Introduction

The objective of this report to provide a how-to for configuring Sun StorageTek SL 500 with Amanda Enterprise 3.0

Amanda Enterprise 3.0 was certified with Sun StorageTek SL 500 tape library with Amanda server running on Solaris 10 platform. This combination is now supported on all Amanda server platforms. The list of platforms supported by Amanda server is available at https://www.zmanda.com/supported-platforms.html

Amanda Enterprise is radically simple, intelligent and robust network backup software that uses Open standards, Open data formats and is based on popular open source network backup software, Amanda. For more information on Amanda Enterprise, see https://www.zmanda.com/amanda-enterprise-edition.html

Amanda Enterprise™ is available for download from the Zmanda network (Subscription required) : https://network.zmanda.com/

Installation and Configuration

A Sun T5220 SPARC server running Solaris 10 was used as the Amanda server as well as the Amanda client. The Amanda server was connected to SL500 using Emulex FC HBA (the Leadville stack) via Brocade 300 FC switch.

Sun StorageTek SL 500™

Sun StorageTek SL 500 is an easy to use modular tape library system. The SL500 scales from 30 to 575 LTO slots with a maximum storage capacity of more than 460TB of uncompressed data. The library also allows users to use up to 18 tape drives with a native throughput of more than 7 TB/hour.

SL 500 Configuration

StorageTek SL500 had two IBM LTO4 drives (firmware revision 91VF) and 131 slots in total. Twenty slots were loaded with tapes in the configuration. The Solaris 10 changer device was /dev/scsi/changer/c3t500104f0007bf86ed0 and the two drives can be accessed as /dev/rmt/[0,1].

Amanda Enterprise access the devices as *amandabackup* user. This user should have permissions to read and write to the drive as well as the changer device.

```
$ ls -l /dev/scsi/changer
total 2
lrwxrwxrwx   1 root     root          91 Sep  3 09:01
c3t500104F0007BF86Ed0 ->
../../../devices/pci@7c0/pci@0/pci@8/SUNW,emlxs@0,1/fp@0,0/sgen@w500104f0007bf86e,0:changer
```

Amanda Enterprise uses *mtx* command to access the tape changer. This package can be installed from the Solaris dependency packages available in the Zmanda Network. The package CSWmtx was installed. Use *mtx status* command to verify the drives as well as the slots that are available in the SL500 library.

```
$ /opt/csw/sbin/mtx -f /dev/scsi/changer/c3t500104F0007BF86Ed0
 status
 Storage Changer /dev/scsi/changer/c3t500104F0007BF86Ed0:2 Drives,
131 Slots ( 12 Import/Export )
Data Transfer Element 0:Full (Storage Element 2 Loaded):VolumeTag = KIA071
Data Transfer Element 1:Full (Storage Element 1 Loaded):VolumeTag = 000097
     Storage Element 1:Empty
     Storage Element 2:Empty
     Storage Element 3:Empty
     Storage Element 4:Empty
     Storage Element 5:Empty
     Storage Element 6:Empty
     Storage Element 7:Empty
     Storage Element 8:Empty
```

```
     Storage Element 9:Full :VolumeTag=KIA036
<<Output removed>>
       Storage Element 108:Empty
     Storage Element 109:Empty
     Storage Element 110:Empty
     Storage Element 111:Full :VolumeTag=ISR077
     Storage Element 112:Empty
     Storage Element 113:Empty
     Storage Element 114:Empty
     Storage Element 115:Empty
     Storage Element 116:Empty
     Storage Element 117:Empty
     Storage Element 118:Empty
     Storage Element 119:Empty
     Storage Element 120 IMPORT/EXPORT:Empty
     Storage Element 121 IMPORT/EXPORT:Empty
     Storage Element 122 IMPORT/EXPORT:Empty
     Storage Element 123 IMPORT/EXPORT:Empty
     Storage Element 124 IMPORT/EXPORT:Empty
     Storage Element 125 IMPORT/EXPORT:Empty
     Storage Element 126 IMPORT/EXPORT:Empty
     Storage Element 127 IMPORT/EXPORT:Empty
     Storage Element 128 IMPORT/EXPORT:Empty
     Storage Element 129 IMPORT/EXPORT:Empty
     Storage Element 130 IMPORT/EXPORT:Empty
     Storage Element 131 IMPORT/EXPORT:Empty
```

Amanda Enterprise 3.0™

Amanda Enterprise is Zmanda's flagship network backup and recovery product that supports multiple platforms/operating systems including Solaris (including Open Solaris), Linux, Windows and Mac OS X and various media configurations. It supports Disks, Tape changers and libraries, Optical libraries as well as storage clouds such as Amazon S3.

Amanda eases day- to-day backup and recovery tasks with its Web-based Zmanda Management Console (ZMC). Configuration of backup policies and schedules, addition of new clients, restoration of files, monitoring backup jobs as well as standard and custom reporting can be done using Zmanda Management Console. The management console integrates with the Zmanda Network to provide on-line documentation and other support services for Amanda Enterprise.

Amanda Enterprise is based on popular open source network backup and recovery software and as well as uses open data formats for backup images.

Zmanda offers Amanda Enterprise edition with various Zmanda clients for different platforms, Zmanda Agents for different applications and various storage media options. In the test configuration, basic Amanda backup server configuration was

used. The backup server configuration includes a backup client as well as support for disk and tape changer media with multiple tape drives.

Amanda Configuration

To install Amanda Enterprise on the Solaris 10/SPARC server, follow these overall steps, which are explained in more detail in subsequent sections.

1. From the Zmanda Network web site (which requires registration), download the following:

- `amanda-enterprise-3.0-installer-sparc.bin`
- Amanda Enterprise 3.0.2 patch and other relevant patches
- Solaris 10/SPARC dependency packages
- Zmanda License file

2. Install the Solaris 10/SPARC dependency packages and their dependencies. It is easier to install the packages using *pkg_util* tool available from http://www.blastwave.org.

3.Install the Zmanda license file as per the instructions on the Zmanda Network.

4. Extract the binary package and run the Zmanda Rapid Installer to install Amanda Enterprise.

5. After the installation is complete, the ZMC Login Page is displayed on the browser. The URL will be *https://<server name>:443/* The port number might be different if 443 is already used. Installer will provide the exact port number to use.

6. Login as the default user (admin) and with default password. You can start configuring backup sets.

Once completed, the following software components are installed:

1. Amanda Enterprise backup server and client software (Package name: *AmandaEnterpriseBackupServer*)
2. Zmanda Management Console with MySQL™, PHP, Apache, Perl and various Perl modules and their dependencies. These are installed under the */opt/zmanda/amanda* and */opt/zmanda/common* directories. Solaris package names are *ZMC* and *zmandazmctools.*

Configuring Backup set

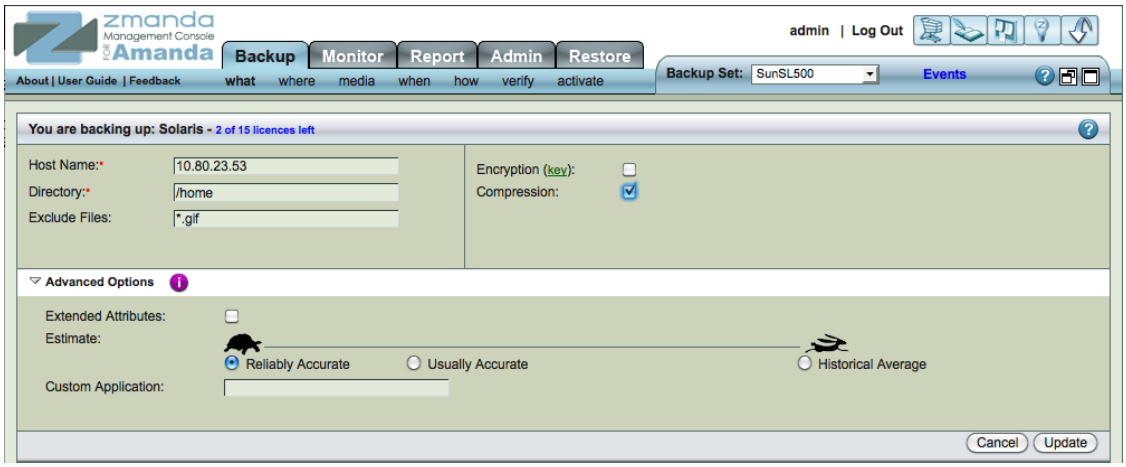
In Amanda, all configuration is performed in terms of a backup set. Backup set defined what should be backed up, where it should be backed up to, how it should be backed up and when should backup occur. These backup set operations match the the sub-tabs under **Backup** tab.

Create a backup set *SunSL500* and assign ownership to default ZMC user *admin*. Choose the backup set name from the backup set drop down menu.

What to backup

The **Backup What** page (click on **Backup** tab followed by **what** sub-tab) allows user to configure filesystems, applications and databases in the backup set. All these objects are backed up together and assigned to the same backup policy.

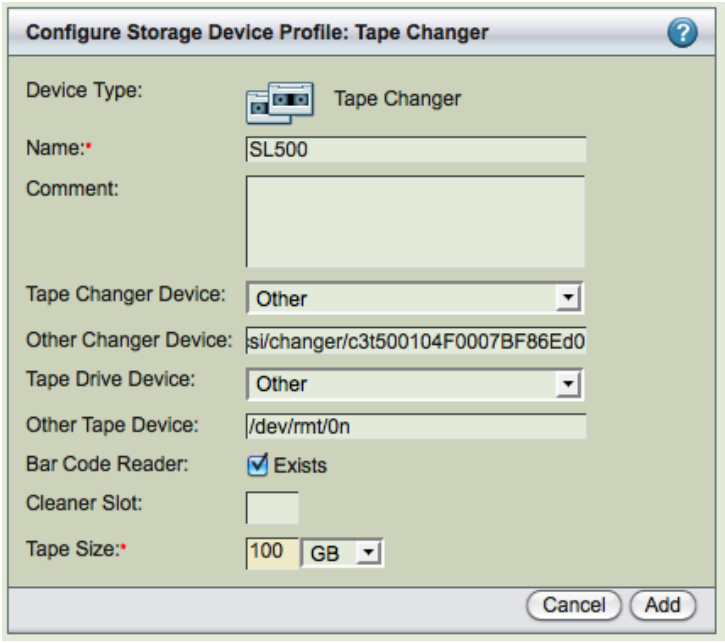
In this case, **Solaris file system** was selected. The Host Name (in this case, local IP address), the directory to be backed up was specified. Backups will be compressed on the client. After making changes as shown below, the configuration should be saved.



Multiple backup objects can be added to the same the backup set. The configuration is automatically checked and errors, if any, are reported in the **Backup What** page table.

Device configuration

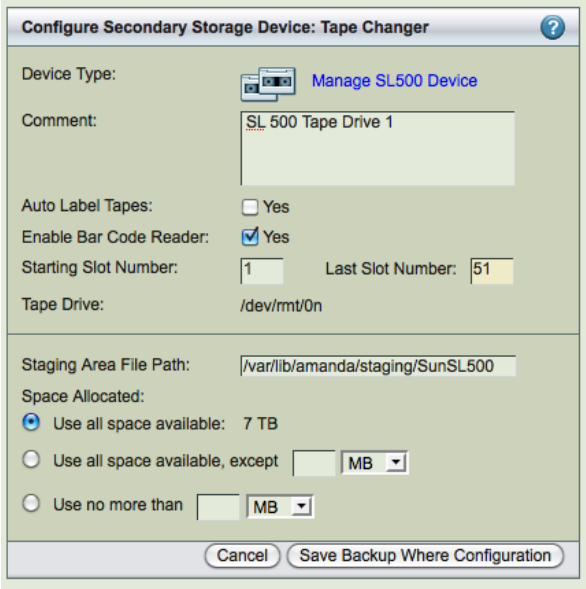
The tape changer has to be configured in Amanda and then bound to a backup set. The configuration of tape changer is performed in **Admin Devices** page.



The tape changer device and device names will have to be provided. SL500 has tape bar code reader and should be enabled. The size of tape that will be used needs to be provided. The changes are added as **SL500** device profile as shown above. To add other tape drive, create another device profile with second tape drive device.

After creation of device profile, the device can be bound to a backup set using **Backup Where** page. An example **Backup Where** page is shown in the next page. This page allows users to configure specific slots in the tape changer for the specific backup set. You can enable or disable the use of bar codes to search for tapes in the backup set. The tapes can be automatically labelled by Amanda on the first use of the tape. Amanda uses disk staging area to increase the parallelism of backup threads from the client. Local disk can be used as staging area.

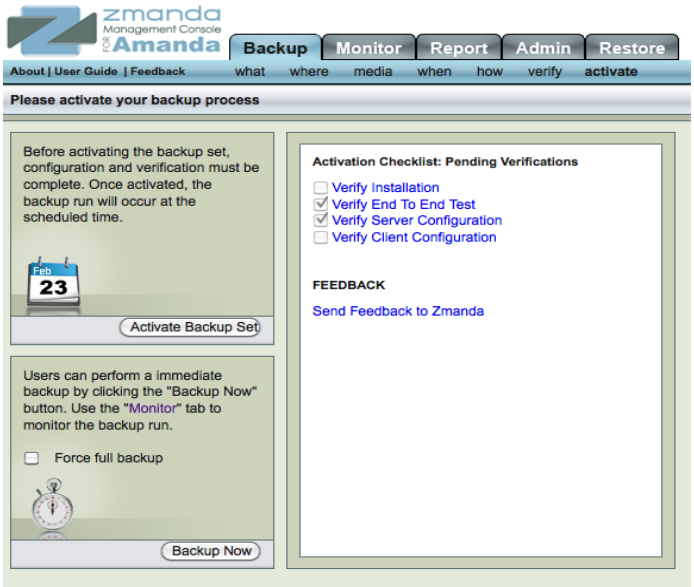
After saving the configuration, you can run the Amanda command *amtape <config name> show* on the Amanda server to verify that tape changer and slot contents are seen by Amanda.



After configuration of backup devices, backups can be scheduled or immediately performed. You can also use backup verification to verify backup configuration.

Performing backups

Backups can be performed immediately after activation of backup set. This can be done in **Backup activate** page.



Monitoring, Reporting and Restoration of backup images can be performed from Zmanda Management Console.

Summary

This document is an introduction to configuring Sun StorageTek SL500 with Amanda Server and how to perform backup in this configuration.

Here are a few additional resources:

1. Amanda Enterprise: https://www.zmanda.com/amanda-features-and-benefits.html

2. Amanda Enterprise customers can download binaries and documentation from the Zmanda network: https://network.zmanda.com/

3. Sun StorageTek SL 500 Series : https://www.sun.com/storage/tape_storage/tape_libraries/sl500/