

SimpliStor

NETWORK STORAGE SOLUTIONS BY



White Paper

Virtual Tape Library: An Example Using AMANDA Open Source Software

Date: May 9, 2017



Table of Contents

Introduction	2
Environment	2
Conventions.....	2
Installation and Setup.....	2
AMANDA-Server.....	2
Server First Steps.....	2
Configuring AMANDA Server	3
AMANDA Communications	4
Auth “bsdtcp” - Server.....	5
Auth “ssh” - Server	5
AMANDA-Client.....	6
Client First Steps.....	6
Auth “bsdtcp” - Client	6
Auth “ssh” - Client	8
Performing AMANDA Dump, Report and Recover	11
Conclusion	15

Introduction

With the continued decrease in price for hard disk drive storage, it has become harder and harder to justify the high cost of magnetic tape for backup. Many organizations have shifted to using “virtual tape” as the primary backup medium and reserve magnetic tape for long term archival requirements. The AMANDA open source software developed at the University of Maryland is freely available and supported by Zmanda, a division of Carbonite Company. Our Engineering team has developed this guide for installing and configuring the AMANDA backup software on a SimplStor storage server as an example of a virtual tape library (VTL). AMANDA server is included in the distribution of RHEL-7/CentOS-7 that powers the SimplStor. The principles and approach described here are easily translated to other commercial or open source backup environments such as Bacula, Comodo, Netbackup, TSM/Spectrum Protect, Veeam and others.

Environment

The SimplStor server is installed with Red Hat Enterprise Linux 7 or CentOS 7 (EL7), depending on the customer’s request. The operating system is installed on a RAID-1 pair of SSD drives and the bulk data storage is presented as a RAID-6 volume mounted on /data. Your system may vary somewhat depending on specific customer request. SELinux may be set to either enabled or permissive, and iptables firewall is enabled. In this guide, we describe the AMANDA server on EL7 and a separate AMANDA client configured on an EL7 system. AMANDA clients are available for many releases of Linux, Unix, Windows and MacOS.

Conventions

Where possible we will describe the use of native EL7 utilities when installing and configuring system and network software. Please refer to your documentation for detailed descriptions of these utilities. Command line prompts used in this guide are:

System	Super-user – “root”	Amanda user – “amandabackup”
AMANDA Server	server# <code>cmd</code>	server\$ <code>cmd</code>
AMANDA Client	client# <code>cmd</code>	client\$ <code>cmd</code>

Installation and Setup

AMANDA-Server

Server First Steps

The ‘amanda-server’ software components should be install by default on the SimplStor server. You can verify this with the command.

```
server# yum list amanda*
Loaded plugins: langpacks, product-id, search-disabled-repos,
subscription-manager
Installed Packages
amanda.x86_64                               3.3.3-17.el7                                @rhel-7-server-rpms
```

SimplStor Division:

sales@simplstor.com

support@simplstor.com

amanda-libs.x86_64	3.3.3-17.e17	@rhel-7-server-rpms
amanda-server.x86_64	3.3.3-17.e17	@rhel-7-server-rpms
Available Packages		
amanda-client.x86_64	3.3.3-17.e17	rhel-7-server-rpms

If necessary, you can install the required packages with the following command. All prerequisite packages will also be installed. Note that the `polycoreutils-python` package is needed for SELinux commands.

```
server# yum -y install amanda-server polycoreutils-python
```

AMANDA client-server communication will use the fully qualified hostname of both the client and server, so ensure that DNS name resolution is working properly on the server. If necessary, make entries for the server and client systems in the `/etc/hosts` file. On the SimplStor, the data volume is usually mounted on `/data`. Create the virtual tape library (VTL) subdirectory for a backup dataset named “daily”.

```
server# mkdir -p /data/amanda/daily
```

We will also need to log in remotely to the AMANDA client system, so let us setup the required `ssh` directory (we will create the required keys below) and set the ownership of the AMANDA directories to the “`amandabackup`” user.

```
server# mkdir /var/lib/amanda/.ssh
server# chown -R amandabackup:disk /etc/amanda /data/amanda
/var/lib/amanda
```

Now set the `ssh_home` SELinux context on this `/var/lib/amanda/.ssh` directory.

```
server# semanage fcontext -a -t ssh_home_t /var/lib/amanda/.ssh
server# restorecon -R -v /var/lib/amanda/
```

Configuring AMANDA Server

AMANDA provides the “`amserverconfig`” utility to create the appropriate folders and parameter files for a given AMANDA backup configuration. This utility ensures that all components of the dataset are created consistently. In our example, we will create a backup configuration called “daily” using the “`harddisk`” template. Our tape cycle will consist of 25 virtual tapes on weekly schedule with 7 backups/week. The following command, run as the “`amandabackup`” user, will create the virtual tapes and all the necessary configuration files and directories.

```
server# su - amandabackup
server$ amserverconfig daily --template harddisk --tapedev
/data/amanda/daily --dumpcycle 1week --runspcycle 7 --tapecycle 25
Logging to /var/log/amanda/amserverconfig.20170406153432.debug
mkdir /etc/amanda/daily
/var/lib/amanda/gnutar-lists directory exists
/etc/amanda/daily/advanced.conf created and updated
```

SimplStor Division:

sales@simplstor.com

support@simplstor.com

```
mkdir /etc/amanda/daily/curinfo
mkdir /etc/amanda/daily/index
curinfo and index directory created
tapelist file created
disklist file created
Creating custom configuration using templates
custom amanda.conf created
creating vtape directory
amlabel vtapes
mkdir slot1
mkdir slot11
mkdir slot12
mkdir slot13
mkdir slot14
mkdir slot15
mkdir slot16
mkdir slot17
mkdir slot18
mkdir slot19
mkdir slot20
mkdir slot21
mkdir slot22
mkdir slot23
mkdir slot24
mkdir slot25
changer is reset
/var/lib/amanda/example/xinetd.amandaserver contains the latest Amanda
server daemon configuration.
Please merge it to /etc/xinetd.d/amandaserver.
DONE.
```

You can ignore the last few lines concerning xinetd.amandaserver as these do not apply to EL7. Now check the “daily” configuration for completeness with “amcheck”.

```
server$ amcheck daily
Amanda Tape Server Host Check
-----
slot 1: volume 'daily-1'
Will write to volume 'daily-1' in slot 1.
NOTE: skipping tape-writable test
Server check took 0.213 seconds

Amanda Backup Client Hosts Check
-----
Client check: 0 hosts checked in 0.000 seconds. 0 problems found.
(brought to you by Amanda 3.3.3)
```

AMANDA Communications

AMANDA can utilize several different network transport and authentication options between the client and server. We will describe the configuration of the two most common “Auth” methods: unencrypted “bsdtcp” and encrypted “ssh”.

SimplStor Division:

sales@simplstor.com

support@simplstor.com

Auth “bsdtcp” - Server

The release of AMANDA provided in EL-7.3 contains a bug¹ that prevents recovery with amrecover using “bsdtcp” transport. Red Hat reports that this will be fixed in a future release. In the meanwhile, to correct this issue manually, edit the file </usr/lib/systemd/system/amanda@.service> and change line 8 as shown:

```
8c8
< ExecStart=/usr/sbin/amandad -auth=bsdtcp amdump
---
> ExecStart=/usr/sbin/amandad -auth=bsdtcp amdump amindexd amidxtaped
```

With this complete, enable and start up the AMANDA socket protocol service under “systemd”, and enable the firewall port for amanda.

```
server# systemctl enable amanda.socket
server# systemctl start amanda.socket

server# firewall-cmd --add-service amanda-client --permanent
server# firewall-cmd --reload
server# firewall-cmd --list-all
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens192
  sources:
  services: amanda-client dhcpv6-client ftp http smtp ssh
  ports: 443/tcp 162/udp 161/udp
  protocols:
  masquerade: no
  forward-ports:
  sourceports:
  icmp-blocks:
  rich rules:
```

Auth “ssh” - Server

Communication using ssh will utilize public keys for authorization in both directions: server-to-client and client-to-server. The first step is to create the RSA public key for the server “amandabackup” user account.

```
server# su - amandabackup
server$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/var/lib/amanda/.ssh/id_rsa):
Created directory '/var/lib/amanda/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /var/lib/amanda/.ssh/id_rsa.
```

¹ BUG: https://bugzilla.redhat.com/show_bug.cgi?id=1299761

Your public key has been saved in `/var/lib/amanda/.ssh/id_rsa.pub`.

AMANDA will also need an authorization key to execute the backup remotely from the server. The expected name of this key is `id_rsa_amdump`. You could create a new key just for this purpose if desired, or you can simply copy the key you just made to the required file name.

```
server$ cp .ssh/id_rsa .ssh/id_rsa_amdump
```

You can now add the `id_rsa.pub` key to the `~/.ssh/authorized_keys` file for the “amandabackup” user on the AMANDA client.

AMANDA-Client

Client First Steps

The first step to configuring the AMANDA client is to install the required software. On a minimal EL7 client system this would include `amanda-client` and `polycoreutils-python` packages (`polycoreutils-python` is used to configure SELinux). After installing the AMANDA client, create the needed `ssh` directory and set the ownership of the AMANDA directories to the “amandabackup” user.

```
client# yum -y install amanda-client polycoreutils-python
client# mkdir /var/lib/amanda/.ssh
client# chown -R amandabackup:disk /etc/amanda /var/lib/amanda
```

Setup the required `ssh` directory and `authorized_keys` file on the client with the correct SELinux context. Switch to the “amandabackup” user to complete this step.

```
server# su - amandabackup
server$ vi ~/.ssh/authorized_keys
[add the /var/lib/amanda/.ssh/id_rsa.pub key from the server]
```

Now set the `ssh_home` SELinux context on the `/var/lib/amanda/.ssh` directory.

```
server# semanage fcontext -a -t ssh_home_t /var/lib/amanda/.ssh
server# restorecon -R -v /var/lib/amanda/
```

Auth “bsdtcp” - Client

Enable and start up the `amanda` socket protocol service under “systemd” and enable the firewall port for `amanda`.

```
client# systemctl enable amanda.socket
client# systemctl start amanda.socket

client# firewall-cmd --add-service amanda-client --permanent
client# firewall-cmd --reload
client# firewall-cmd --list-all
public (active)
```

```
target: default
icmp-block-inversion: no
interfaces: ens192
sources:
services: amanda-client dhcpv6-client ftp http smtp ssh
ports: 443/tcp 162/udp 161/udp
protocols:
masquerade: no
forward-ports:
sourceports:
icmp-blocks:
rich rules:
```

The remaining configuration of the AMANDA client software can now be done from the AMANDA SERVER using “amaddclient”. Login to the SERVER as the “amandabackup” user.

```
server# su - amandabackup
Last login: Thu Apr 6 16:59:47 EDT 2017 on pts/1
```

Connect manually from the server to the client once using ssh to accept the host-key.

```
server$ ssh client.zw.net
The authenticity of host 'client.zw.net (192.168.100.29)' can't be
established.
ECDSA key fingerprint is
21:42:87:1b:d7:cd:a5:84:a4:96:d0:0c:34:7c:4a:a0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'client.zw.net,192.168.100.29' (ECDSA) to
the list of known hosts.
client$ exit
```

Now run “amaddclient” with the appropriate arguments to configure the client. In addition to specifying auth bsdtcp, we select a dumptype of user-tar. See the Amanda documentation for other available dumptypes (/var/lib/amanda/template.d/dumtypes).

```
server$ amaddclient --config daily --client client.zw.net --diskdev /
--auth bsdtcp --dumptype user-tar
Logging to /var/log/amanda/amaddclient.20170406170952.debug
/etc/amanda/daily/disklist updated
updating /var/lib/amanda/.amandahosts on server.zw.net
Attempting to update /var/lib/amanda/.amandahosts on client.zw.net
.amandahosts          100% 1181      1.2KB/s   00:00
.amandahosts.tmp      100% 1218      1.2KB/s   00:00
client.zw.net:/var/lib/amanda/.amandahosts updated successfully
Creating amanda-client.conf for client.zw.net
Creating /etc/amanda/daily on client.zw.net
amanda-client.conf-client.zw.net    100% 377      0.4KB/s   00:00
Copy /var/lib/amanda/amanda-client.conf-client.zw.net to client.zw.net
successfully
File /var/lib/amanda/example/xinetd.amandaclient contains the latest
Amanda client daemon configuration.
Please merge it to /etc/xinetd.d/amandaclient.
```

SimplStor Division:

sales@simplstor.com

support@simplstor.com

As with the AMANDA server, we can ignore the last few lines concerning xinetd.amandaclient on an EL7 system. Check the server to see that the entry in disklist and .amandahosts were successful and confirm with amcheck:

```
server$ tail -1 /etc/amanda/daily/disklist
client.zw.net / user-tar

server$ tail -1 ~/.amandahosts
client.zw.net root amindexd amidxtaped

server$ amcheck daily
Amanda Tape Server Host Check
-----
slot 1: volume 'daily-1'
Will write to volume 'daily-1' in slot 1.
NOTE: skipping tape-writable test
NOTE: host info dir /etc/amanda/daily/curinfo/client.zw.net does not
exist
NOTE: it will be created on the next run.
NOTE: index dir /etc/amanda/daily/index/client.zw.net does not exist
NOTE: it will be created on the next run.
Server check took 0.242 seconds
```

```
Amanda Backup Client Hosts Check
-----
```

```
Client check: 1 host checked in 0.215 seconds. 0 problems found.
```

```
(brought to you by Amanda 3.3.3)
```

You can also check the CLIENT for the amanda-client.conf file, which should reflect the configuration options just entered with “amaddclient”.

```
server$ ssh client.zw.net cat /etc/amanda/daily/amanda-client.conf
#amanda-client.conf - Amanda client configuration file.
conf "daily"
index_server "server.zw.net"
tape_server "server.zw.net"
# auth - authentication scheme to use between server and client.
# Valid values are 'bsdtcp' or 'ssh'
auth "bsdtcp"
# ssh keys file if ssh auth is used
ssh_keys "/var/lib/amanda/.ssh/id_rsa_amrecover"
```

Auth “ssh” - Client

The AMANDA client will need a ssh key to initiate restorations from the server using “amrecover”. By default, this key is named /var/lib/amanda/.ssh/id_rsa_amrecover. Create the key pair now from the “amandabackup” user on the client.

```
client2$ ssh-keygen -t rsa -f ~/.ssh/id_rsa_amrecover
Generating public/private rsa key pair.
```

SimplStor Division:

sales@simplstor.com

support@simplstor.com

```
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in .ssh/id_rsa_amrecover.
Your public key has been saved in .ssh/id_rsa_amrecover.pub.
```

This new public key should now be copied and added to the `~/.ssh/authorized_keys` file of the “amandabackup” user on the server.

```
client2$ cat ~/.ssh/id_rsa_amrecover.pub
ssh-rsa
BBBBC4MzaC1yc2EAAAADAQABAAQQAQC+Cina+fOLXxQ0aofRZk/cJAY2Oj5+xhetvU92A40
2uWiwYz+vdZxgpG21d5fk9biqhu7PwIv0WMiomNTtUQe8t1DgIWTvAUt2uS0fgo2hyVsnAS
xhV0Hvdn9vXsc8wjaFVjIpbiWI9ZjoODDBCjyxV3kiweZrri0+ByGzAYPz3e7ohhcfIK+6U
yQeDa+rRT2YBijAKH0RC7w8L3Z9GryNsvco8DBSE0DIFxzvlfYnGeGsojLfEGzIH6VP/Cs0
MSBSI7x0IGWLiSVqI9w9cvyNcUGFH6TYJzITIVt6h/9XlqwylFEteK1lkDyoOut8uyMj3TL
7ajulKkqZ5/+3CS3eN amandabackup@client.company.net
```

The remaining configuration of the AMANDA client software can now be done from the AMANDA server using “amaddclient”. Login to the SERVER as the “amandabackup” user.

```
server# su - amandabackup
Last login: Thu Apr 6 16:59:47 EDT 2017 on pts/1
```

Connect manually from the server to the client once using ssh to accept the host-key.

```
server$ ssh client2.zw.net
The authenticity of host 'client2.zw.net (192.168.100.30)' can't be
established.
ECDSA key fingerprint is
21:42:87:1b:d7:cd:a5:84:a4:96:d0:0c:34:7c:4a:a0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'client2.zw.net,192.168.100.30' (ECDSA) to
the list of known hosts.
client2$ exit
```

On the server check the dumptype and ssh_keys name that will be used by AMANDA.

```
server$ grep ssh ~/template.d/dumptypes
# "rsh" and "ssh"
define dumptype nocomp-ssh {
    comment "ssh authorization and dumped with tar"
    auth "ssh"
    ssh_keys "/var/lib/amanda/.ssh/id_rsa_amdump"
```

Now run “amaddclient” with the appropriate arguments to configure the client, this time using the ssh parameters for the auth and dumptype.

```
server$ amaddclient --config daily --client client2.zw.net --diskdev /
--auth ssh --dumptype nocomp-ssh
Logging to /var/log/amanda/amaddclient.20170412182251.debug
/etc/amanda/daily/disklist updated
updating /var/lib/amanda/.amandahosts on server.zw.net
```

SimplStor Division: sales@simplstor.com support@simplstor.com

```

Attempting to update /var/lib/amanda/.amandahosts on client2.zw.net
.amandahosts                100% 1181    1.2KB/s   00:00
.amandahosts.tmp            100% 1218    1.2KB/s   00:00
client2.zw.net:/var/lib/amanda/.amandahosts updated successfully
Creating amanda-client.conf for client2.zw.net
Creating /etc/amanda/daily on client2.zw.net
amanda-client.conf-client2.zw.net 100% 374    0.4KB/s   00:00
Copy /var/lib/amanda/amanda-client.conf-client2.zw.net to
client2.zw.net successfully
File /var/lib/amanda/example/xinetd.amandaclient contains the latest
Amanda client daemon configuration.
Please merge it to /etc/xinetd.d/amandaclient.

```

Check the server to see that the entry in disklist and .amandahosts were successful, and confirm with amcheck:

```

server$ tail -1 /etc/amanda/daily/disklist
client2.zw.net / nocomp-ssh

server$ tail -1 ~/.amandahosts
client2.zw.net root amindexd amidxtaped

server$ amcheck daily
Amanda Tape Server Host Check
-----
slot 2: volume 'daily-2'
Will write to volume 'daily-2' in slot 2.
NOTE: skipping tape-writable test
NOTE: host info dir /etc/amanda/daily/curinfo/client2.zw.net does not
exist
NOTE: it will be created on the next run.
NOTE: index dir /etc/amanda/daily/index/client2.zw.net does not exist
NOTE: it will be created on the next run.
Server check took 0.256 seconds

Amanda Backup Client Hosts Check
-----
Client check: 2 hosts checked in 0.434 seconds. 0 problems found.

(brought to you by Amanda 3.3.3)

```

You can also check the CLIENT for the amanda-client.conf file, which should reflect the configuration options just entered with “amaddclient”.

```

server$ ssh client2.zw.net cat /etc/amanda/daily/amanda-client.conf
#amanda-client.conf - Amanda client configuration file.
conf                "daily"
index_server        "server.zw.net"
tape_server         "server.zw.net"
# auth - authentication scheme to use between server and client.
#           Valid values are 'bsdtcp' or 'ssh'
auth                "ssh"
# ssh keys file if ssh auth is used

```

SimplStor Division:

sales@simplstor.com

support@simplstor.com

```
ssh_keys "/var/lib/amanda/.ssh/id_rsa_amrecover"
```

In a previous step you added the client `~/ssh/id_rsa_amrecover.pub` key to the `/var/lib/amanda/.ssh/authorized_keys` file on the server. Prior to using “amrecover” you must make the connection from the “root” account on the client once manually to exchange the needed host key.

```
client2# ssh -i /var/lib/amanda/.ssh/id_rsa_amrecover
amandabackup@server.zw.net
The authenticity of host 'server.zw.net (192.168.100.28)' can't be
established.
ECDSA key fingerprint is
21:42:87:1b:d7:cd:a5:84:a4:96:d0:0c:34:7c:4a:a0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'server.zw.net,192.168.100.28' (ECDSA) to
the list of known hosts.
-bash-4.2$ exit
logout
Connection to server.zw.net closed.
```

You should now be able to complete the dump, report, and recovery tests.

Performing AMANDA Dump, Report and Recover

Invoking “amdump” on the AMANDA server will perform the backup of all systems in the named dumpset. This can be done initially at the command line as the “amandabackup” user, and is usually then setup as a regular cron job.

```
server$ amdump daily
```

At any time, you may run “amreport” to get a report on the status of backups at that point in time. This report is also created and emailed to the “root” user at the end of each “amdump” run.

```
server$ amreport daily
Hostname: server.zw.net
Org      : daily
Config   : daily
Date     : April 12, 2017
```

```
These dumps were to tape daily-2.
The next tape Amanda expects to use is: 1 new tape.
The next new tape already labelled is: daily-3.
STATISTICS:
```

	Total	Full	Incr.	Level:#
	-----	-----	-----	-----
Estimate Time (hrs:min)	0:00			
Run Time (hrs:min)	0:03			
Dump Time (hrs:min)	0:02	0:02	0:00	
Output Size (meg)	1784.0	1758.3	25.7	
Original Size (meg)	1784.0	1758.3	25.7	
Avg Compressed Size (%)	100.0	100.0	100.0	

SimplStor Division:

sales@simplstor.com

support@simplstor.com

All rights reserved. The information contained herein is subject to change without notice. Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws. SimplStor is a trademark of Zerowait Corporation. The Zerowait Logo, ZHA, and Zerowait are registered trademarks of the Zerowait Corporation. ©2017 Zerowait Corporation. Page 11

```

DLEs Dumped                2                1                1  1:1
Avg Dump Rate (k/s)        13872.6         13791.2         23277.2

Tape Time (hrs:min)        0:02            0:02            0:00
Tape Size (meg)            1784.0          1758.3          25.7
Tape Used (%)              35.7            35.2            0.5
DLEs Taped                 2                1                1  1:1
Parts Taped                 2                1                1  1:1
Avg Tp Write Rate (k/s)    13839.5         13744.5         26280.0

```

USAGE BY TAPE:

```

Label           Time           Size           %  DLEs Parts
daily-2         0:02           2G    35.7     2     2

```

NOTES:

```

planner: Adding new disk client2.zw.net:/.
taper: Slot 2 with label daily-2 is usable
taper: tape dialy-2 kb 1826810 fm 2 [OK]

```

DUMP SUMMARY:

TAPER STATS		DUMPER STATS					
HOSTNAME	DISK	L	ORIG-GB	OUT-GB	COMP%	MMM:SS	KB/s
MMM:SS	KB/s						
client.zw.net	/	1	0	0	--	0:01	23272.3
0:01	26280.0						
client2.zw.net	/	0	2	2	--	2:11	13791.1
2:11	13744.5						

(brought to you by Amanda version 3.3.3)

While the AMANDA dump is invoked on the server, restoration must be performed on the client. Restoring the client requires “root” privileges even though the communications are specified in files owned by the “amandabackup” user. Using the “bsdtcp” communications protocol depends on the patch to [amanda@.service](#) on the server described above. Using the “ssh” communication protocol requires that the CLIENT /var/lib/amanda/.ssh/id_rsa_amrecover.pub key is added on the SERVER to /var/lib/amanda/.ssh/authorized_keys file. With these communications requirements in place, the restoration of file can be performed by the “root” user on the CLIENT using “amrecover”.

```

client# amrecover daily
AMRECOVER Version 3.3.3. Contacting server on server.zw.net ...
220 ss2u12 AMANDA index server (3.3.3) ready.
Setting restore date to today (2017-04-14)
200 Working date set to 2017-04-14.
200 Config set to daily.
501 Host client.zerowait.com is not in your disklist.
Trying host client.zerowait.com ...
501 Host client.zerowait.com is not in your disklist.
Trying host client.zw.net ...

```

SimplStor Division: sales@simplstor.com support@simplstor.com

```

200 Dump host set to client.zw.net.
Use the setdisk command to choose dump disk to recover
amrecover> setdisk /
200 Disk set to /.
amrecover> ls
2017-04-12-21-10-06 var/
2017-04-12-21-10-06 usr/
2017-04-12-21-10-06 tmp/
2017-04-12-21-10-06 sys/
2017-04-12-21-10-06 srv/
2017-04-12-21-10-06 run/
2017-04-12-21-10-06 root/
2017-04-12-21-10-06 proc/
2017-04-12-21-10-06 opt/
2017-04-12-21-10-06 mnt/
2017-04-12-21-10-06 media/
2017-04-12-21-10-06 home/
2017-04-12-21-10-06 etc/
2017-04-12-21-10-06 dev/
2017-04-12-21-10-06 boot/
2017-04-12-21-10-06 .
2017-04-06-01-50-38 sbin
2017-04-06-01-50-38 lib64
2017-04-06-01-50-38 lib
2017-04-06-01-50-38 bin
2017-04-06-01-50-38 1

```

```

amrecover> help
valid commands are:

```

```

add path1 ... - add to extraction list (shell wildcards)
addx path1 ... - add to extraction list (regular expressions)
cd directory - change cwd on virtual file system (shell wildcards)
cdx directory - change cwd on virtual file system (regular
expressions)
clear - clear extraction list
delete path1 ... - delete from extraction list (shell wildcards)
deletex path1 ... - delete from extraction list (regular expressions)
extract - extract selected files from tapes
exit
help
history - show dump history of disk
list [filename] - show extraction list, optionally writing to file
lcd directory - change cwd on local file system
ls - list directory on virtual file system
lpwd - show cwd on local file system
mode - show the method used to extract SMB shares
pwd - show cwd on virtual file system
quit
listhost - list hosts
listdisk [diskdevice] - list disks
listproperty - list property
setdate {YYYY-MM-DD|--MM-DD|---DD} - set date of look
{YYYY-MM-DD-HH-MM-SS} - set date of look

```

SimplStor Division:

sales@simplstor.com

support@simplstor.com

```
setdisk diskname [mountpoint]      - select disk on dump host
sethost host                        - select dump host
setdevice [[-h host] device]       - select tape server and/or device
setproperty [append] [priority] name [value ...] - set a property
setmode smb|tar                    - select the method used to extract
SMB shares
settranslate [on|off]              - set/unset translation of non-ASCII
characters

amrecover>
```

SimplStor Division:

sales@simplstor.com

support@simplstor.com

All rights reserved. The information contained herein is subject to change without notice. Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws. SimplStor is a trademark of Zerowait Corporation. The Zerowait Logo, ZHA, and Zerowait are registered trademarks of the Zerowait Corporation. ©2017 Zerowait Corporation. Page 14

Conclusion

Zerowait Engineering was able to successfully use AMANDA open source disk to disk backup software with SimplStor running EL7. Red Hat has not provided documentation suitable for configuring AMANDA on RHEL7, but using Internet resources, we were able to document and test the process using both “bsdtcp” transport and native “systemd”, as well as using the encrypted “ssh” transport.

Resources

The follow resources were used by Zerowait Engineering to install and configure the AMANDA software on SimplStor:

- <http://www.amanda.org/>
- http://wiki.zmanda.com/index.php/Main_Page
- <https://forums.zmanda.com/showthread.php?5777-Amanda-amp-SELinux>
- http://wiki.zmanda.com/index.php/How_To:Set_up_transport_encryption_with_SSH
- http://wiki.zmanda.com/index.php/How_To:Set_Up_Virtual_Tapes
- <http://amanda.zmanda.com/quick-backup-setup.html>
- https://bugzilla.redhat.com/show_bug.cgi?id=1299761



Zerowait Corporation

707 Kirkwood Hwy.
Wilmington, DE 19805

(302) 996-9408
Toll-Free: 888.811.0808
sales@zerowait.com
www.zerowait.com

SimplStor Division:

sales@simplstor.com

support@simplstor.com

All rights reserved. The information contained herein is subject to change without notice. Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws. SimplStor is a trademark of Zerowait Corporation. The Zerowait Logo, ZHA, and Zerowait are registered trademarks of the Zerowait Corporation. ©2017 Zerowait Corporation. Page 15