

Backup of ESXi Virtual Machines using Affa

From SME Server



Skill level: Advanced

The instructions on this page may require deviations from procedure, a good understanding of linux and SME is recommended.

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Introduction

Affa supports hot backing up virtual machines running on the VMWare ESXi server. It uses the VMware Infrastructure Perl Toolkit to communicate with the EXSi and rsync over ssh to transfer the data. Before the backup starts, the state of the running VM is frozen by creating a snapshot of all its disks. After the frozen virtual disk files were backed up, the snapshot is deleted and the config points to the just backed up disks again. Then, as a last step the config files are backed up.

A restore of a VM can be done by simply copying back all archived files to the original location on the ESXi host. It is also possible to copy the files to a different directory (or to another ESXi server) and add the vmx file to the inventory. Alternatively with SambaShare=yes the VMWare Converter tool can be used.



Note:

This document is applicable to ESX3i with an USB boot device. It will most likely not work with other type of boot devices

 **Warning:**

This software comes 'as is' without any warranty. Errors in design and/or implementation cannot be completely eliminated. Therefore take precautions to avoid negative impacts to your system.

Preparing the Affa Server

Affa Installation

Install the Affa program as described here: [Affa#Installation_or_Update](#)

VMware Infrastructure (VI) Perl Toolkit Installation

Configure the DAG repository

The following command will configure the dag repository on SME Server.

```
/sbin/e-smith/db yum_repositories set dag repository \  
Name 'Dag - EL4' \  
BaseURL 'http://apt.sw.be/redhat/el4/en/$basearch/dag' \  
EnableGroups no \  
GPGCheck yes \  
GPGKey http://dag.wieers.com/packages/RPM-GPG-KEY.dag.txt \  
Visible no \  
Exclude freetype,htop,iptraf,rsync,syslinux \  
status disabled
```

After adding it to the database we have to update the changes to the configuration file:

```
signal-event yum-modify
```

Login as root and run:

```
/usr/bin/yum install openssl-devel \  
/usr/bin/yum --enable=dag install perl-XML-SAX
```

Install the VMware Infrastructure (VI) Perl Toolkit

Download the VI Perl Toolkit tarball from the VMWare web site: <http://www.vmware.com/support/developer/viperltoolkit/>

```
tar xzf VMware-VIPerl-1.6.0-104313.i386.tar.gz \  
cd vmware-viperl-distrib
```

Edit the vmware-install.pl script and comment out these lines

```
4738 #     if ( -d '/proc/xen' ) {
4739 #         error('You cannot install ' .
4740 #             vmware_product_name() .
4741 #             ' on a system running a xen kernel. ');
4742 #     }
```

Run the script

```
./vmware-install.pl
```

Ignore this warning: The following Perl modules were found on the system but may be too old to work with VIPerl: URI XML::NamespaceSupport

Preparing the ESXi Host for use with Affa

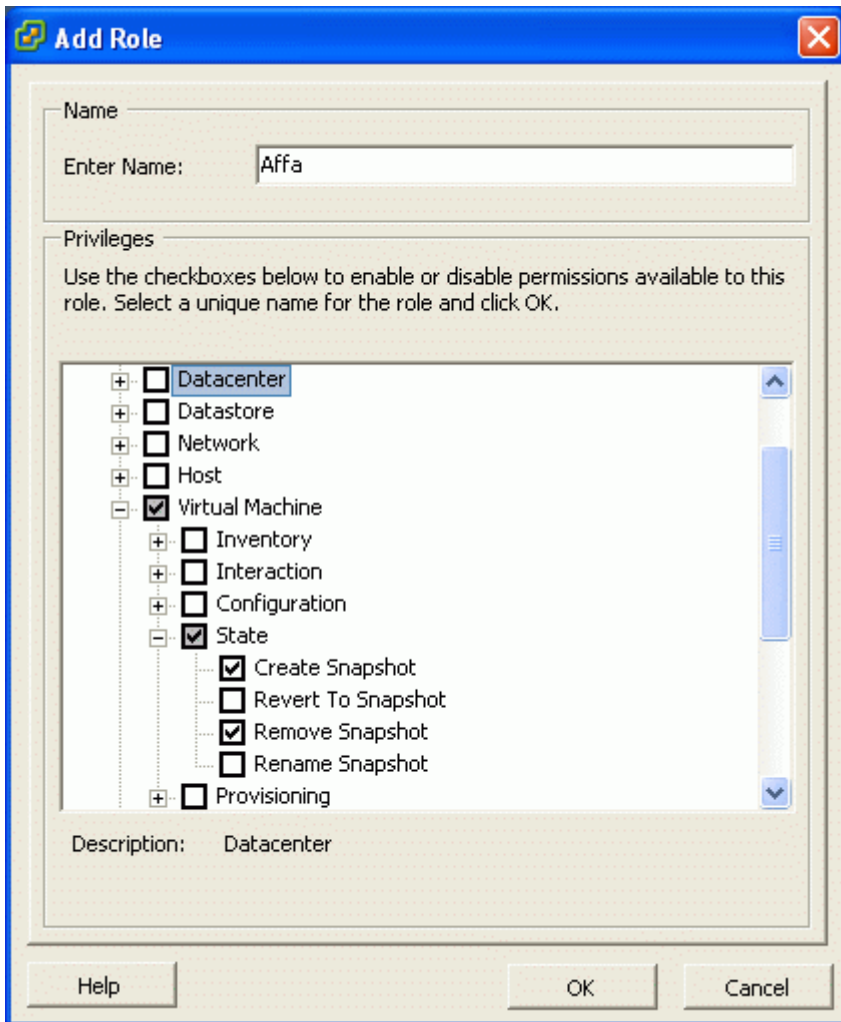
To make the ESXi server ready to cooperate with Affa you must install the rsync program, enable the ssh service, configure passwordless ssh login and add a user for API communication using the VMware Infrastructure (VI) Perl Toolkit.

Adding an ESXi User with restricted Permissions

Run the Virtual Infrastructure Client and logon to the ESXi host.

Adding Affa role

Switch to the *Administration* module and add a new role with permissions to create and delete snapshots



Adding Affa user

Switch back to the *Inventory* module and add a new user with password:

Add New User

User Information

Login: affa UID:

User Name: Affa

User name and UID are optional

Enter password

Password:

Confirm:

Group membership

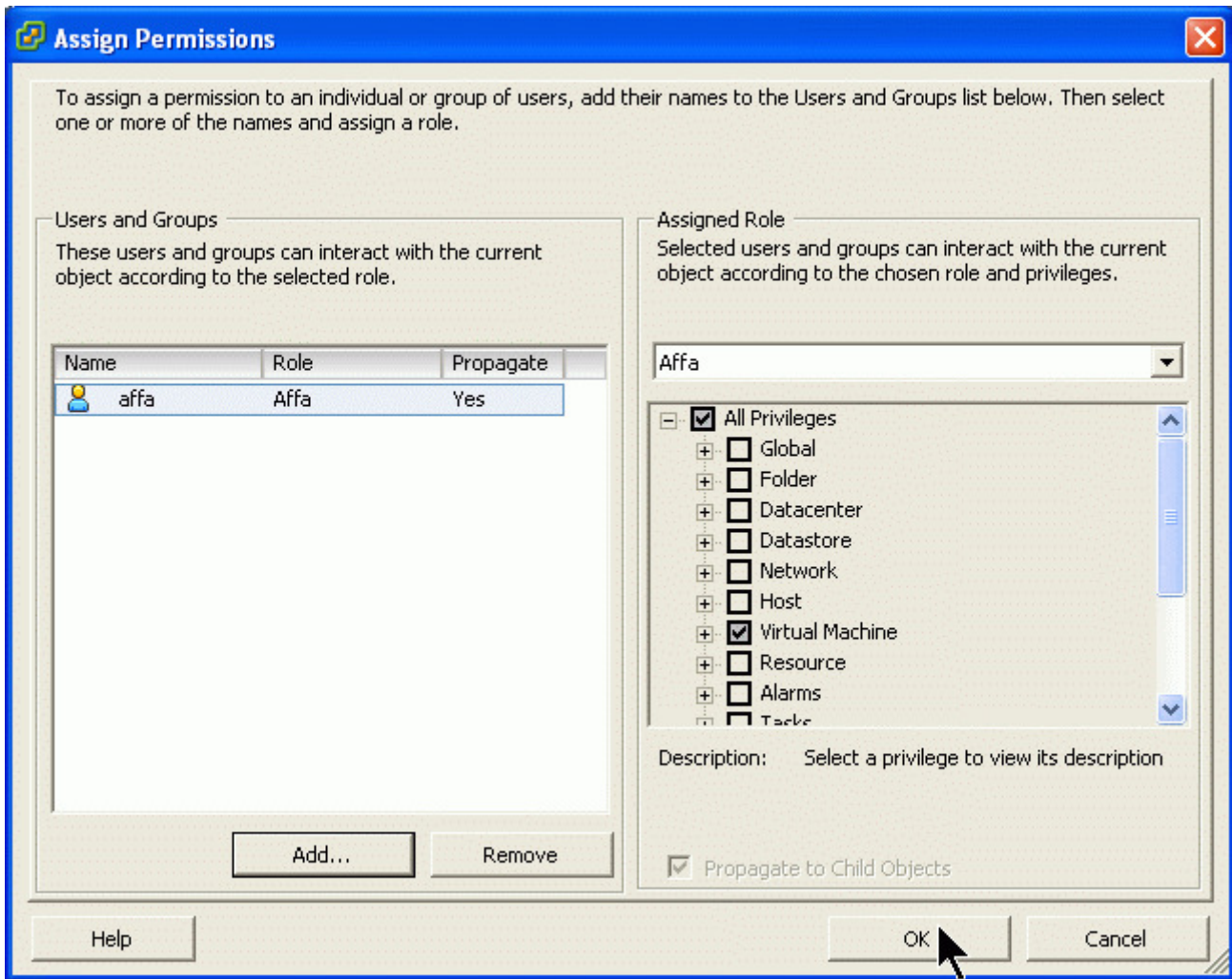
Group: Add

Remove

OK Cancel

Assigning permissions

In the *Permission Tab* assign the new role to the new user.



Configuring SSH and RSYNC on the ESX3i Host

On ESXi the SSH service Dropbear is installed but disabled. To use rsync the SSH service must be enabled and the rsync program must be installed. To enable passwordless login a `.ssh` directory for storing the keys must be created.

A script `affa-setup.sh` is provided that does this:

- enable SSH service by configuring `inetd.conf` and restarting the `inetd` service
- install `rsync` (statically linked binary)
- create a `/root` home directory with a `.ssh` sub directory to store the public keys for password-less login
- link the `.ssh` directory to the non-volatile USB device
- add a command to `/etc/rc.local` that executes all the steps above at boot time

Download and install the script

On the ESXi Server console hit Alt-F1 to get the service shell. Now blind-type the word **unsupported** to unlock the shell.

Login with the root password.

```
You have activated Tech Support Mode.  
The time and date of this activation have been sent to the system logs.
```

```
WARNING - Tech Support Mode is not supported unless used in  
consultation with VMware Tech Support. Tech Support Mode may be  
disabled by an administrative user. Disabling requires a reboot of  
the system. Please consult the ESX Server 3i Configuration Guide  
for important additional information.
```

```
Password :
```

```
Tech Support Mode successfully accessed.  
The time and date of this access have been sent to the system logs.
```

```
WARNING - Tech Support Mode is not supported unless used in  
consultation with VMware Tech Support.
```

```
~ # vi /etc/inetd.conf
```

Download the tarball. The tarball contains the rsync binary and the script.

```
cd /bootbank  
wget http://mirror.contribs.org/smeserver/contribs/michaelw/sme7/Affa2/affa-esxi-setup-02.tgz
```

Verify the download

```
wget http://mirror.contribs.org/smeserver/contribs/michaelw/sme7/Affa2/affa-esxi-setup-02.tgz.md5sum  
md5sum -c affa-esxi-setup-02.tgz.md5sum
```

Unpack it

```
tar xzf affa-esxi-setup-02.tgz  
rm affa-esxi-setup-02.tgz*
```

and run the script

```
./bexi/affa-setup.sh
```

Now you can ssh login and use rsync.

Setting up an Affa job

The following assumes, that you are already familiar with configuring Affa and only focus on the ESXi specific parts.

Assume you want to backup the virtual machine named 'myvm' on ESXi server with IP 10.200.48.5.

- log into the 'affabox' and copy the config helper script

```
cp -a /usr/lib/affa/jobconfig-esxi-sample.pl /root/esxi-myvm-job.pl
```

- edit /root/esxi-myvm-job.pl and set

```
my $jobname='esxi-myvm';
```

and

```
'remoteHostName'=>'10.200.48.5',
```

- tell Affa that this job backs up a ESXi virtual machine

```
'ESXi' => 'yes',
```

- set the VM name

```
'ESXiVMName' => 'myvm',
```

- set the username and password (this is the ESXi User with restricted permissions created above)

```
'ESXiUsername' => 'affa',  
'ESXiPassword' => 'secret',
```

- configure virtual disk files to be compressed and chunked

```
'chunkFiles' => '*.vmdk',
```

- save the script, then run it

```
/root/esxi-myvm-job.pl
```

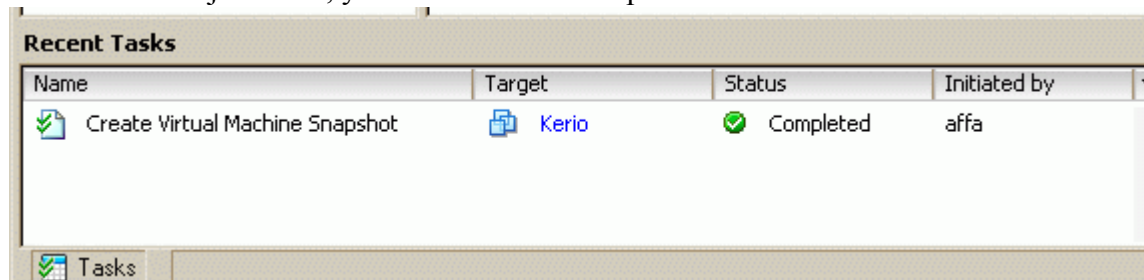
- send the public key

```
affa --send-key esxi-myvm
```

- run the job manually

```
affa --run esxi-myvm
```

When the Affa job starts, you can watch the snapshot create task in the Virtual Infrastructure Client.



The name of the snapshot starts with "BEXI-". Do not delete it or revert to it while Affa is running.

Uninstall

SSH login as root on the ESXi host and run these commands **carefully**:

```
grep -v "#BEXI" < /etc/rc.local >/etc/rc.local.affa; mv -f /etc/rc.local.affa /etc/rc.local
sed -e 's#^\(root:.*\)\/(:/root:\/)\(.*\)#1:/:3#' < /etc/passwd > /etc/passwd.affa; mv -f /etc/passwd.affa
sed -e 's/^\(ssh.*\)\/#\1/' < /etc/inetd.conf > /etc/inetd.conf.affa; mv -f /etc/inetd.conf.affa /etc/inetd.
kill -HUP `ps | grep inetd | sed -e 's/ .*//`
rm -rf /bin/rsync /root /bootbank/bexi
tar -C / -xzf /bootbank/environ.tgz sbin/dropbearmulti
```

Additional Information

How to update the ESXi System Image

Shutdown the ESXi server. Remove the USB Memory stick and plug it into a linux computer. run the `dmesg` command to find out the device the memory stick is assigned to. The following example assumes that it is `/dev/sdf`. Replace is by the correct device.

```
mkdir -p /mnt/esxi
mount -t vfat /dev/sdf5 /mnt/esxi
```

Save `local.tgz` and the `bexi/` directory to the local machine

```
cp -a /mnt/esxi/local.tgz /mnt/esxi/bexi .
umount /mnt/esxi
```

Download the ISO from the VMWare website (<http://www.vmware.com/download/esxi/>) and extract the image.

```
mount -o loop VMware-VMvisor-InstallerCD*iso /mnt/esxi/
mkdir -p /tmp/esxi
tar -xvzf /mnt/esxi/install.tgz -C /tmp/esxi/
umount /mnt/esxi
cd /tmp/esxi/usr/lib/vmware/installer/
bzip2 -d VMware-VMvisor-big*.dd.bz2
```

Write the new image to the memory stick. Make sure that you use the correct target device of=...

```
dd if=VMware-VMvisor-big-3.5.0_Update_3-123629.i386.dd of=/dev/sdf
rm -rf /tmp/esxi
```

Copy `local.tgz` and the `bexi/` directory to the memory stick.

```
mount -t vfat /dev/sdf5 /mnt/esxi
cp -a local.tgz bexi /mnt/esxi
umount /mnt/esxi
```

Plug the memory stick into the ESXi server and power on.

Note: Alternatively you can install the new ESXi image on a second memory stick and then remote copy `local.tgz` and `bexi/` from the running ESXi. Then shut down the ESXi server, replace the stick and power on. This minimizes the down time.

How to make a statically linked Rsync Binary

(This is just for information. A pre-build Rsync static is included in the `affa-esxi-setup-.tgz` tarball)*

- download the source from <http://rsync.samba.org/>

- unpack the tarball

```
tar xzf rsync-3.0.4.tar.gz
cd rsync-3.0.4
```

- build the statically linked binary

```
make CFLAGS="-static" EXEEXT="-static"
strip rsync-static
```

References

Wiki article Affa

Retrieved from "http://wiki.contribs.org/Backup_of_ESXi_Virtual_Machines_using_Affa"

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