

Lab 9: Move existing vfiler0 to a vfiler (advanced lab)

OPTIONAL ADVANCED LAB

This advanced lab is an example of how to take an existing NetApp installation and convert it into a virtual filer. The actual implementation is quick but the planning can take some time. This lab gives examples of some of the considerations when moving vfiler0 resources to a vfiler to leverage the benefits of MultiStore.

We will create CIFS, NFS and iSCSI in vfiler0, then stop all services, convert all to vfiler1, leaving vfiler0 only as the management of the physical controller with a single root volume.

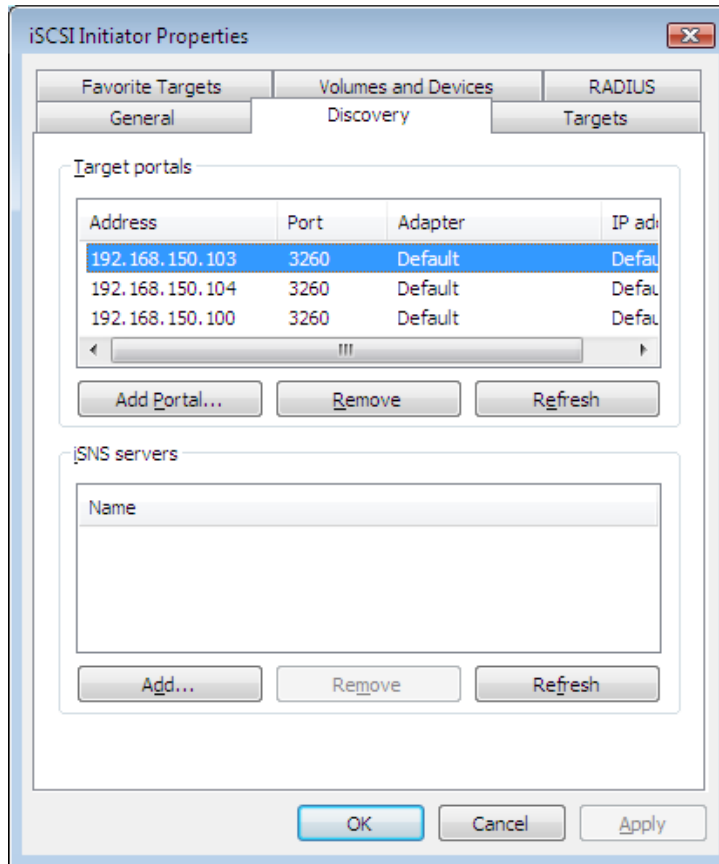
This lab will be done all on the FAS6080A and FAS6080B. The vfiler0 setup before MultiStore will be a customer who already replicates and wants to implement a vfiler on the FAS6080A source and a dr vfiler on the FAS6080B target.

Step-by-Step First, Setup vfiler0 with no additional vfilers (to simulate an existing installation without MultiStore)

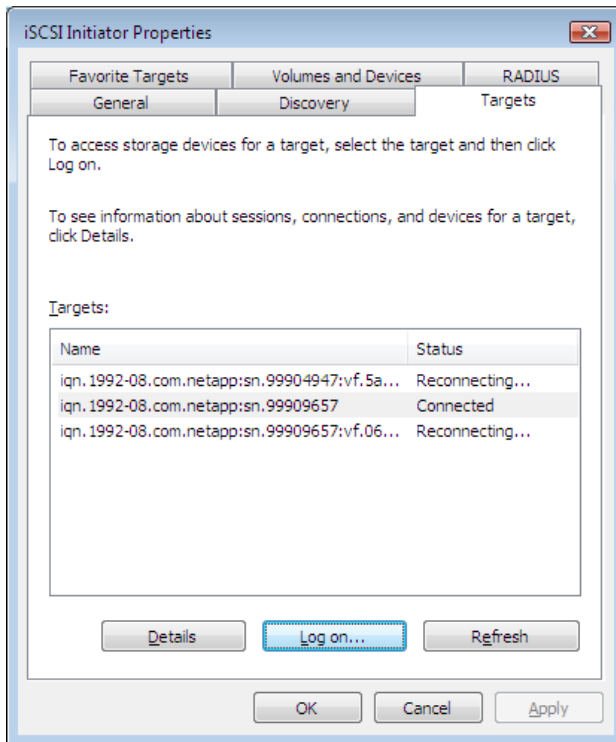
1. Pre-work
 - Halt the fas3170
 - i. fas3170> halt
 - **Boot each fas6080 node** (a and b) by double clicking the 2 cluster icons on the desktop
 - **On each 6080 node, delete all vfilers except vfiler0. Both nodes have fas6080b_vfiler1 running... the B node is active and the A node is the dr vfiler.**
 - i. fas6080a> vfiler status
 - ii. fas6080a> vfiler stop fas6080b_vfiler1
 - iii. fas6080a> vfiler destroy fas6080b_vfiler1 # enter yes
 - iv. fas6080b> vfiler status
 - v. fas6080b> vfiler stop fas6080b_vfiler1
 - vi. fas6080b> vfiler dr delete [fas6080b_vfiler1@192.168.150.101](#)
 - Confirm there are no other vfilers running
 - i. fas6080a> vfiler status
 - ii. fas6080b> vfiler status
2. CIFS is already setup in workgroup from prior labs. Create a share to existing volume
 - fas6080a> cifs shares -add vfiler1_nas /vol/fas6080a_vfiler1_nas
3. **Test the share and write some files to the share**
 - [\\192.168.150.100\vfiler1_nas](#)
4. Export NFS (should be done already)
 - fas6080a> exportfs -av
 - **Test the nfs mount**
 - From the UBUNTU Linux Image – click “TERMINAL”

- user@FAS6080A:~\$ sudo su -
- root@FAS6080A:/# cd /
- root@FAS6080A:/# mkdir -p /lab9/fas6080a_vfiler1
- (Similar to prior labs) The mounts below will take some time from the simulator (same nfs client as the sims) but works instantly on an external nfs client or another nfs client sim. If it fails, then the mount is trying over eth0 instead of eth1. To force eth1 to work, we need to create host routes from that IP address...not normally needed but in this case since we are forcing on the local sim.
 - root@FAS6080A:/# ifconfig -a
 - note eth0 and eth1 IPs
 - my sim is eth0: 192.168.150.139 and eth1:192.168.150.140. So, the routes are needed from .140 to .100
 - root@FAS6080A:/lab3# route add -host 192.168.150.100 gw 192.168.150.140
- Now mount each virtual filer (note: it takes a few minutes on the sim image for each mount..no error is good and no response is good in this case... this doesn't occur on any client other than this since it's the same image as the sim with an extra interface).
 - root@FAS6080A:/# mount 192.168.150.100:/vol/fas6080a_vfiler1_nas /lab9/fas6080a_vfiler1
 - root@FAS6080A:/# ls /lab9/fas6080a_vfiler1 # confirm files from cifs

5. Create iSCSI initiator group and map it to the lun (note: the lun already exists from prior labs)
 - fas6080a> **iscsi start** # note.. it is not running on vfiler0 and doesn't autostart like a vfiler
 - fas6080a> **igroup create -i -t windows fas6080a_iscsi_multistore**
 - fas6080a> **igroup add fas6080a_iscsi_multistore iqn.1991-05.com.microsoft: {yourIQNinfo}**
 - fas6080a> **lun map /vol/fas6080a_vfiler1_san/fas6080a_lun1 fas6080a_iscsi_multistore**
 - **Setup iSCSI LUN (already formatted in prior lab)**
 - Open the iSCSI control panel
 - Click the "Discovery" Tab
 - Click the "Add Portal..." button
 - Enter "192.168.150.100" and click OK



- Click the “Targets” Tab
- Click the “Refresh” button
- Click on the “inactive” IQN, then click the “Log on...” button.
- Click “OK”
- Click “OK” to close the iSCSI control panel
- Use Disk Manager to verify the lun is available (should be drive “N:” from prior lab signature)



6. Mirror the NAS and SAN Volumes from the FAS6080A to the FAS6080B

- fas6080b> vol restrict fas6080a_vfiler1_nas
- fas6080b> vol restrict fas6080a_vfiler1_san
- fas6080b> snapmirror initialize -S 192.168.150.100:fas6080a_vfiler1_nas
fas6080a_vfiler1_nas
- fas6080b> snapmirror initialize -S 192.168.150.100:fas6080a_vfiler1_san
fas6080a_vfiler1_san
- fas6080b> snapmirror status

7. Do things that will need to be addressed for the move of resources from vfiler0 to vfiler1

- CIFS Netbios Alias
 - i. fas6080a> wrfile /etc/cifs_nbalias.cfg

fas6080a_alias

CTRL-C
 - ii. fas6080a> cifs nbalias load
 - iii. fas6080a> cifs nbalias # show aliases
- CIFS HomeDir
 - i. fas6080a> qtree create /vol/fas6080a_vfiler1_nas/home
 - ii. fas6080a> wrfile /etc/cifs_homedir.cfg

/vol/fas6080a_vfiler1_nas/home

CTRL-C

- iii. fas6080a> **cifs homedir load -f**
- iv. fas6080a> **cifs homedir** # show homedirs
- Setup a usermapping
 - i. fas6080a> **wrfile /etc/usermap.cfg**

```
*\root => ""  
"" <= administrator
```

CTRL-C

- Setup Quotas
 - i. fas6080a> **wrfile /etc/quotas**

```
/vol/fas6080a_vfiler1_nas/home tree 300m 500m 250m 200m 400m
```

CTRL-C

- ii. fas6080a> **quota on fas6080a_vfiler1_nas**
- iii. fas6080a> **quota status** # show quotas are enabled

Step-by-Step move the resources in vfiler0 (created above) to vfiler1 and move all vfiler0 settings to vfiler1 so users don't know

Implementing a vFiler on existing Physical Controller vFiler0 Considerations (migrating vfiler0 to a vfiler) – things you may need to disable on vfiler0 and setup on vfiler1

- A vFiler needs it's own small root volume
 - Create a root volume (already exists in our case)
- Hostname
 - Need a new hostname (either for vfiler0 or vfiler1 depending on which keeps the original hostname)
- IPSpaces
 - Do you need to create?
- IP and Interface, DNS, NIS, LDAP
 - You need a new IP (in this case for vfiler0 since we will move the vfiler0 IP to vfiler1)
- Domain Membership, FilerSID, Recreate shares and exports
 - We need to rejoin the domain from vfiler1 using the same netbios name we had in vfiler0, then rejoin with vfiler0 with a new netbios name
- SnapMirror Relationships
 - Need to manually setup additional volumes and then create the dr vfiler manually ,then resync it.
- NDMP Backups
 - If any backups are set to run against vfiler0 and it's ip changes, change the backup software to authenticate to vfiler0's new IP/name. Unless you want to ndmp from the vfiler1 (not likely)
- VSCAN
 - If any vscanners are set to run against vfiler0 and it's ip changes, change the backup software to authenticate to vfiler0's new IP/name. Unless you want to ndmp from the vfiler1.
- Netbios Aliasing
 - If any netbios aliases are used by vfiler0, they need to be moved to vfiler1.
NOTE: this might be an issue if you leave resources on vfiler0 that also need the alias. The same alias can't be in more than one filer (virtual or physical). If all resources move to vfiler1, we can move it from vfiler0, but if not, users may be impacted.
- AutoHome directories
 - If any autohome directories are setup for any volumes moving from vfiler0 to vfiler1, they must be removed from vfiler0 and setup again in vfiler1.
- Local User Accounts (I didn't create any in this lab since we have already shown how to do this in lab7, but always check if local user accounts need to move from vfiler0 to the vfiler)
 - If any accounts in vfiler0 need to be in vfiler1, see lab 7 **“SI-113-Lab 7 - Copy vfiler0 users to a vfiler and vice-versa _registry commands.pdf”**
- SNMP
 - Match SNMP settings if any snmp monitors are used (OpsManager, etc.)

- Quotas
 - If any quotas are set on volumes moving from vfiler0 to vfiler1, the /etc/quotas entries need to be removed from /etc/quotas on vfiler0 and created in /etc/quotas on vfiler1, then "quota on volname" in vfiler1 for the volume.
- User Mappings
 - Copy usermap.cfg entries needed in vfiler1 from vfiler0 (modify / copy / delete as needed for each vfiler)
- CIFS, NFS, iSCSI Options
 - List all options from vfiler0 and match on vfiler1
- SSH, RSH setup
- Volume Names and Volume names must be the same on the source and destination.
- **Procedure to migrate vfiler0 to vfiler1 (all but vfiler0 root)**

1. License MultiStore if not licensed (simulator is licensed already)

```
fas6080a> license add xxxxxxxx
fas6080b> license add xxxxxxxx
```

2. Create Root Volume for NEW vfiler1 (already done in prior lab)

```
fas6080a> vol create fas6080a_vfiler1_root aggr1 20m
```

3. Both vfiler0 san and nas volumes were mirrored already. Mirror the root aggregate manually to fas6080b.

```
fas6080b> vol create fas6080a_vfiler1_root aggr1 20m # already done in prior lab
```

```
fas6080b> vol restrict fas6080a_vfiler1_root
```

```
fas6080b> snapmirror initialize -S 192.168.150.100:fas6080a_vfiler1_root
fas6080a_vfiler1_root
```

```
fas6080b> snapmirror status # confirm mirrors initialized
```

4. Remove CIFS Shares on the volumes from vfiler0 to move volumes to a vfiler1 (we can't move a volume between vfilers if it has active shares). We may need to terminate cifs and restart if users are connected.

- List CIFS Shares
 - fas6080a> cifs shares
 - fas6080a> cifs shares -delete vfiler1_nas
- Remove/Move/Copy Netbios Alias, CIFS Homedir, usermap and Quotas (blank out...normally edit but for this lab, just wipe out the files)

- CIFS Netbios Alias
 - i. fas6080a> **wrfile /etc/cifs_nbalias.cfg**

 - [ENTER]**

 - CTRL-C**

 - ii. fas6080a> **cifs nbalias load -f**
 - iii. fas6080a> **cifs nbalias** # show aliases (none)
- CIFS HomeDir
 - i. fas6080a> **qtree create /vol/fas6080a_vfiler1_nas/home**
 - ii. fas6080a> **wrfile /etc/cifs_homedir.cfg**

 - [ENTER]**

 - CTRL-C**

 - iii. fas6080a> **cifs homedir load -f**
 - iv. fas6080a> **cifs homedir** # show homedirs (none)
- Remove mappings (might not want to leave if vfiler0 used for other shares/exports)
 - i. fas6080a> **wrfile /etc/usermap.cfg**

 - [ENTER]**

 - CTRL-C**
- Setup Quotas
 - i. fas6080a> **wrfile /etc/quotas**

 - [ENTER]**

 - CTRL-C**

 - ii. fas6080a> **quota off fas6080a_vfiler1_nas**
 - iii. fas6080a> **quota status** # show quotas are enabled

5. LUNs – disconnect LUN from windows, then unmap the lun

- fas6080a> **lun unmap /vol/fas6080a_vfiler1_san/fas6080a_lun1
fas6080a_iscsi_multistore**

6. Network – use a new IP for vfiler0 and move vfiler0 IP to vfiler1

Re-assign ns0 to .120 and assign .100 to vfiler1 on ns1 so the vfiler keeps the same IP users are used to using and a new .120 address for admin of the physical vfiler0

MAKE SURE YOU HAVE CONSOLE OR RLM ACCESS... WE ARE GOING TO HAVE NETWORK DOWNTIME FROM THESE STEPS FORWARD (fast, but still downtime). Simulator is a console from the Ubuntu image.

- fas6080a> ifconfig ns0 192.168.150.120 mediatype auto partner ns0

***** UPDATE /etc/rc and /etc/hosts for new IP information**

7. With the NEW IP Address for fas6080a physical node, rejoin the domain with a different netbios name...

- fas6080a> cifs terminate
- fas6080a> cifs setup # use a new name... not the "fas6080a" netbios name

8. Create new VFILER... and add route in this case we won't use a new IPspace. Use the .100 IP from vfiler0 that was changed

- fas6080a> vfiler create fas6080a_vfiler1 -i 192.168.150.100 /vol/fas6080a_vfiler1_root /vol/fas6080a_vfiler1_san /vol/fas6080a_vfiler1_nas
- ### Go through Setup and choose ns1 as the interface
- ### for CIFS Setup, change the netbios name to "FAS6080A" to match what is was in vfiler0

9. RE-CREATE CIFS SHARES in the VFILER and users will have access..and create a new share for the vfiler root volume

- fas6080a> vfiler run fas6080a_vfiler1 cifs shares -add vfiler1_nas /vol/fas6080a_vfiler1_nas

10. Recreate NFS Exports

- Edit /etc/exports and vfiler_root/etc/exports
- fas6080a> vfiler run fas6080a_vfiler1 exportfs -av

11. Recreate igroup and lun mappings

- fas6080a> vfiler run fas6080a_vfiler1 igroup create -i -t windows fas6080a_iscsi_multistore
- fas6080a> vfiler run fas6080a_vfiler1 igroup add fas6080a_iscsi_multistore iqn.1991-05.com.microsoft: {yourIQNinfo}
- fas6080a> vfiler run fas6080a_vfiler1 lun map /vol/fas6080a_vfiler1_san/fas6080a_lun1 fas6080a_iscsi_multistore

12. Setup DR Virtual FILER (without reinitializing mirrors since mirrors already exist to the DR site)

- Per multistore FAQ / internal KB33588

- ***** NOTE: the dr resync will update snapmirror.conf to 3 minutes... change back when done...**
- fas6080b> **rdfile /etc/snapmirror.conf # save output**
- fas6080b> **snapmirror quiesce fas6080a_vfiler1_root**
- fas6080b> **snapmirror quiesce fas6080a_vfiler1_san**
- fas6080b> **snapmirror quiesce fas6080a_vfiler1_nas**
- fas6080b> **snapmirror break fas6080a_vfiler1_root**
- fas6080b> **snapmirror break fas6080a_vfiler1_san**
- fas6080b> **snapmirror break fas6080a_vfiler1_nas**

13. Manually Create the vfiler (do this instead of vfiler dr configure which will re-init all mirrors). We can manually create, fix the ip, stop then resync. STOP the vfiler immediately after creation

- fas6080b> **vfiler create fas6080a_vfiler1 -i 192.168.150.100 /vol/fas6080a_vfiler1_root /vol/fas6080a_vfiler1_san /vol/fas6080a_vfiler1_nas**
- fas6080b> **vfiler stop fas6080a_vfiler1**

14. FIX/Set the IP address... if needed while running...choose where to assign...if different than source...note: setup will backup several /etc files to .bak then modify to defaults so you may have to fix exports, resolv.conf, hosts, hosts.equiv,etc.

- fas6080a> **ifconfig ns1 192.168.150.100 netmask 255.255.255.0 up**
 - –OR- if the interface is in use already, use an alias
 - fas6080b> **ifconfig ns1 alias 192.168.150.100**
 - –OR- if you want to use setup (caveats of files whacked)
 - fas6080b> **vfiler run fas6080a_vfiler1 setup -e ins1:192.168.150.100:255.255.255.0**

15. RESYNC the DR VFILER...one command to update all 3 mirrors, shares, and give 1 command activation and resync

- **Update options snapmirror.access for .120**
 - fas6080a> **options snapmirror.access**
- fas6080b> **vfiler dr resync -c secure -l root:netapp fas6080a_vfiler1@192.168.150.120**
- fas6080b> **vfiler status**
- fas6080b> **snapmirror status**

16. Reset alias, cifs homedir, usermap and quotas in fas6080a_vfiler1

- CIFS Netbios Alias
 - fas6080a> **wrfile /vol/fas6080a_vfiler1_root/etc/cifs_nbalias.cfg**

fas6080a_alias

CTRL-C

- fas6080a> **vfiler run fas6080a_vfiler1 cifs nbalias load**
- fas6080a> **vfiler run fas6080a_vfiler1 cifs nbalias** # show
aliases

○ CIFS HomeDir

- fas6080a> **vfiler run fas6080a_vfiler1 qtree create**
/vol/fas6080a_vfiler1_nas/home
- fas6080a> **wrfile /vol/fas6080a_vfiler1_root/etc/cifs_homedir.cfg**

/vol/fas6080a_vfiler1_nas/home

CTRL-C

- fas6080a> **vfiler run fas6080a_vfiler1 cifs homedir load**
- fas6080a> **vfiler run fas6080a_vfiler1 cifs homedir** # show
homedirs

○ Setup a usermapping

- fas6080a> **wrfile /vol/fas6080a_vfiler1_root/etc/usermap.cfg**

***\root => ""**
"" <= administrator

CTRL-C

○ Setup Quotas

- fas6080a> **wrfile /vol/fas6080a_vfiler1_root/etc/quotas**

/vol/fas6080a_vfiler1_nas/home tree 300m 500m 250m 200m 400m

CTRL-C

- fas6080a> **vfiler run fas6080a_vfiler1 quota on fas6080a_vfiler1_nas**
- fas6080a> **vfiler run fas6080a_vfiler1 quota status**
show quotas are enabled

17. **BONUS *** UNSUPPORTED Way of Configuring CIFS automatically on the vfiler1 *****

Instead of rejoining the domain (creating a cifs workgroup) and re-creating all shares) there is a way to copy files from vfiler0 (make sure that vfiler0 doesn't restart cifs) and get all CIFS settings, including domain membership and netbios name from vfiler0 to vfiler1. This is NOT officially supported. You would do this before step 4...before deleting shares. Make sure to setup DNS on the vfiler prior to doing this and also manually create the administrator account (or create from the registry method in lab 7)

- Before step 4 of this lab: Backup the following files (copy them to a directory) or create a snapshot of the rootvol for fas6080a.
 - fas6080a> **snap create root backup.0**
- After vfiler creation in step 8 (instead of doing cifs setup)
 - fas6080a> **vfiler run fas6080a_vfiler1 setup -d domain:ip1:ip2:ip3**
 - **See LAB7 – create all local users in vfiler0 in fas6080a_vfiler1**
- **Copy files to the vfiler (in this case I will use cp from java... really not supported, but this is a cool undocumented, unsupported trick). The key is to get the cfg files including the Kerberos files. DO NOT copy the FilerSid file (it will be created by cifs).**
 - fas6080a> **java netapp.cmds.jsh**
 - **java> cp /vol/root/etc/.snapshot/backup.0/lclgroups.cfg /vol/fas6080a_vfiler1_root/etc/lclgroups.cfg**
 - **java> cp /vol/root/etc/.snapshot/backup.0/cifsconfig_setup.cfg /vol/fas6080a_vfiler1_root/etc/cifsconfig_setup.cfg**
 - **java> cp /vol/root/etc/.snapshot/backup.0/cifsconfig_share.cfg /vol/fas6080a_vfiler1_root/etc/cifsconfig_share.cfg #note: YOU MIGHT WANT TO EDIT THIS FILE FIRST ON A LOCAL COPY OR FIX LATER FOR c\$ FROM VFILER0**
 - **java> cp /vol/root/etc/.snapshot/backup.0/cifssec.cfg /vol/fas6080a_vfiler1_root/etc/cifssec.cfg**
 - **java> cp /vol/root/etc/.snapshot/backup.0/krb5.keytab /vol/fas6080a_vfiler1_root/etc/krb5.keytab**
 - **java> cp /vol/root/etc/.snapshot/backup.0/krb5auto.conf /vol/fas6080a_vfiler1_root/etc/krb5auto.conf**
 - **java> cp /vol/root/etc/.snapshot/backup.0/cifs_homedir.cfg /vol/fas6080a_vfiler1_root/etc/cifs_homedir.cfg # RUN CIFS HOMEDIR LOAD**
 - **java> cp /vol/root/etc/.snapshot/backup.0/cifs_nbalias.cfg /vol/fas6080a_vfiler1_root/etc/cifs_nbalias.cfg # RUN CIFS NBALIAS LOAD**
 - **java> cp /vol/root/etc/.snapshot/backup.0/usermap.cfg /vol/fas6080a_vfiler1_root/etc/usermap.cfg**
 - **java> exit**
 - **fas6080> fas6080a> vfiler run fas6080a_vfiler1 cifs restart**
 - **TEST CIFS**
 - **fas6080a> snap delete root backup.0**
 - **Make sure to get rid of the files on vfiler0 so it doesn't restart cifs and have a duplicate netbios name, etc... re-run cifs setup on vfiler0 using a different netbios name than it had before.**