

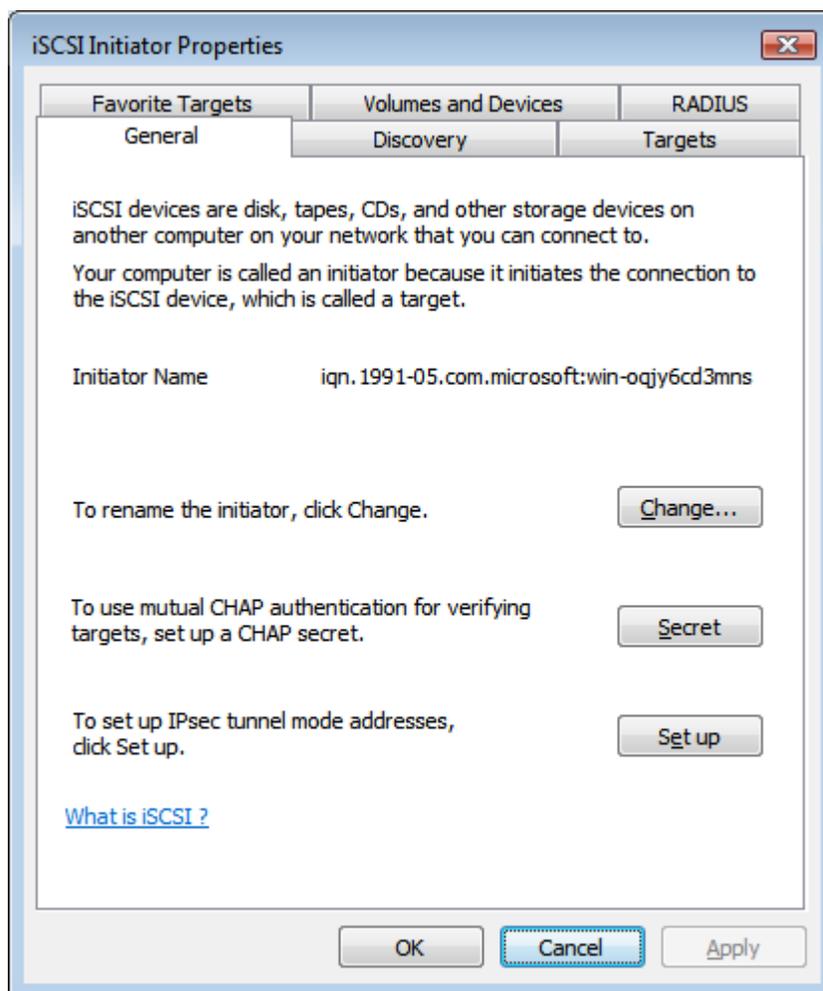
## Lab 2: Create and Setup 2 virtual filers (1 per cluster node)

Follow the script below (see comments for details) – you can copy/paste or create a source script

### Step 1 – Install the Microsoft iSCSI Initiator on your laptop

\*\* Download the Microsoft iSCSI initiator and install (without mpio)  
Get the iscsi nodename of you windows machine from the control panel iscsi control panel.

**WRITE DOWN YOUR iSCSI NODENAME for the IGROUP entry for both vFilers later in steps 2 and 3.**



## Step 2 – fas6080a – setup fas6080a\_vfiler1

# Use the console, or telnet/ssh to 192.168.150.100

# Create and assign ns1 to ipspacel

```
fas6080a> ipspace create ipspacel
```

```
fas6080a> ipspace assign ipspacel ns1
```

# Create a vfiler

```
fas6080a> vfiler create fas6080a_vfiler1 -s ipspacel -i 192.168.150.103  
/vol/fas6080a_vfiler1_root /vol/fas6080a_vfiler1_nas /vol/fas6080a_vfiler1_san
```

Setting up vfiler fas6080a\_vfiler1

Configure vfiler IP address 192.168.150.103? [y]:

Interface to assign this address to {ns1}: ns1

Netmask to use: [255.255.255.0]:

The administration host is given root access to the filer's /etc files for system administration. To allow /etc root access to all NFS clients enter RETURN below.

Please enter the name or IP address of the administration host:

Do you want to run DNS resolver? [n]: y

Please enter DNS domain name []: localhost

You may enter up to 3 nameservers

Please enter the IP address for first nameserver []: 192.168.150.2

Do you want another nameserver? [n]:

Do you want to run NIS client? [n]:

useradmin.added.deleted:info]: The user 'root' has been added.

Default password for root on vfiler fas6080a\_vfiler1 is "".

New password: netapp

Retype new password: netapp

This process will enable CIFS access to the filer from a Windows(R) system. Use "?" for help at any prompt and Ctrl-C to exit without committing changes.

Do you want to make the system visible via WINS? [n]:

A filer can be configured for multiprotocol access, or as an NTFS-only filer. Since multiple protocols are currently licensed on this filer, we recommend that you configure this filer as a multiprotocol filer

(1) Multiprotocol filer

(2) NTFS-only filer

Selection (1-2)? [1]:

CIFS requires local /etc/passwd and /etc/group files and default files will be created. The default passwd file contains entries for 'root', 'pcuser', and 'nobody'.

Enter the password for the root user []:netapp

Retype the password: netapp

The default name for this CIFS server is 'FILER'.

Would you like to change this name? [n]: y

Enter the CIFS server name for the filer []: fas6080a\_vf1

Data ONTAP CIFS services support four styles of user authentication. Choose the one from the list below that best suits your situation.

- (1) Active Directory domain authentication (Active Directory domains only)
- (2) Windows NT 4 domain authentication (Windows NT or Active Directory domains)
- (3) Windows Workgroup authentication using the filer's local user accounts
- (4) /etc/passwd and/or NIS/LDAP authentication

Selection (1-4)? [1]: **3** (Unless you have a domain you can authenticate to)

What is the name of the Workgroup? [WORKGROUP]:

CIFS - Starting SMB protocol...

It is recommended that you create the local administrator account (FAS6080A\_VF1\administrator) for this filer.

Do you want to create the FAS6080A\_VF1\administrator account? [y]:

Enter the new password for FAS6080A\_VF1\administrator: **netapp01**

Retype the password: **netapp01**

**# Create CIFS share for nas volume**

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

**# Setup SnapMirror and SSH**

```
fas6080a> vfiler run fas6080a_vfiler1 options snapmirror.enable on
```

```
fas6080a> vfiler run fas6080a_vfiler1 options snapmirror.access
```

```
host=192.168.150.100,192.168.150.101,192.168.150.102,192.168.150.103,192.168.150.104
```

```
#
```

```
fas6080a> vfiler run fas6080a_vfiler1 secureadmin setup ssh # enter all all defaults
```

```
fas6080a> vfiler run fas6080a_vfiler1 secureadmin enable ssh
```

**# Export NFS**

```
fas6080a> vfiler run * exportfs -av
```

**# Setup iSCSI LUNs and Initiator Groups for the vfiler**

```
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 create -o noreserve -s 32m -t windows /vol/fas6080a_vfiler1_san/fas6080a_lun1
```

```
fas6080a> vfiler run fas6080a_vfiler1 lun map
```

```
/vol/fas6080a_vfiler1_san/fas6080a_lun1 fas6080a_iscsi_multistore
```

```
fas6080a> [ENTER]
```

### Step 3 – fas6080b – setup fas6080b\_vfiler1

# Use the console, or telnet/ssh to 192.168.150.101

# Create and assign ns1 to ipspacel

```
fas6080b> ipspace create ipspacel
```

```
fas6080b> ipspace assign ipspacel ns1
```

# Create a vfiler

```
fas6080b> vfiler create fas6080b_vfiler1 -s ipspacel -i 192.168.150.104  
/vol/fas6080b_vfiler1_root /vol/fas6080b_vfiler1_nas /vol/fas6080b_vfiler1_san
```

Setting up vfiler fas6080b\_vfiler1

Configure vfiler IP address 192.168.150.104? [y]:

Interface to assign this address to {ns1}: ns1

Netmask to use: [255.255.255.0]:

The administration host is given root access to the filer's /etc files for system administration. To allow /etc root access to all NFS clients enter RETURN below.

Please enter the name or IP address of the administration host:

Do you want to run DNS resolver? [n]: y

Please enter DNS domain name []: localhost

You may enter up to 3 nameservers

Please enter the IP address for first nameserver []: 192.168.150.2

Do you want another nameserver? [n]:

Do you want to run NIS client? [n]:

useradmin.added.deleted:info]: The user 'root' has been added.

Default password for root on vfiler fas6080b\_vfiler1 is "".

New password: netapp

Retype new password: netapp

This process will enable CIFS access to the filer from a Windows(R) system. Use "?" for help at any prompt and Ctrl-C to exit without committing changes.

Do you want to make the system visible via WINS? [n]:

A filer can be configured for multiprotocol access, or as an NTFS-only filer. Since multiple protocols are currently licensed on this filer, we recommend that you configure this filer as a multiprotocol filer

(1) Multiprotocol filer

(2) NTFS-only filer

Selection (1-2)? [1]:

CIFS requires local /etc/passwd and /etc/group files and default files will be created. The default passwd file contains entries for 'root', 'pcuser', and 'nobody'.

Enter the password for the root user []:netapp

Retype the password: netapp

The default name for this CIFS server is 'FILER'.

Would you like to change this name? [n]: y

Enter the CIFS server name for the filer []: fas6080b\_vf1

Data ONTAP CIFS services support four styles of user authentication. Choose the one from the list below that best suits your situation.

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- (4) /etc/passwd and/or NIS/LDAP authentication

Selection (1-4)? [1]: **3** (Unless you have a domain you can authenticate to)

What is the name of the Workgroup? [WORKGROUP]:

CIFS - Starting SMB protocol...

It is recommended that you create the local administrator account (FAS6080A\_VF1\administrator) for this filer.

Do you want to create the FAS6080B\_VF1\administrator account? [y]:

Enter the new password for FAS6080B\_VF1\administrator: **netapp01**

Retype the password: **netapp01**

**# Create CIFS share for nas volume**

```
fas6080b> vfiler run fas6080b_vfiler1 cifs shares -add vfiler1_nas /vol/fas6080b_vfiler1_nas
```

**# Setup SnapMirror and SSH**

```
fas6080b> vfiler run fas6080b_vfiler1 options snapmirror.enable on
```

```
fas6080b> vfiler run fas6080b_vfiler1 options snapmirror.access
```

```
host=192.168.150.100,192.168.150.101,192.168.150.102,192.168.150.103,192.168.150.104
```

#

```
fas6080b> vfiler run fas6080b_vfiler1 secureadmin setup ssh # enter all all defaults
```

```
fas6080b> vfiler run fas6080b_vfiler1 secureadmin enable ssh
```

**# Export NFS**

```
fas6080b> vfiler run * exportfs -av
```

**# Setup iSCSI LUNs and Initiator Groups for the vfiler**

```
fas6080b> vfiler run fas6080b_vfiler1 igroup create -i -t windows fas6080b_iscsi_multistore
```

```
fas6080b> vfiler run fas6080b_vfiler1 igroup add fas6080b_iscsi_multistore iqn.1991-05.com.microsoft:{yourIQNinfo}
```

```
fas6080b> vfiler run fas6080b_vfiler1 lun create -o noreserve -s 32m -t windows /vol/fas6080b_vfiler1_san/fas6080b_lun1
```

```
fas6080b> vfiler run fas6080b_vfiler1 lun map /vol/fas6080b_vfiler1_san/fas6080b_lun1 fas6080b_iscsi_multistore
```

```
fas6080b> [ENTER]
```

## MultiStore Lab Eye Chart

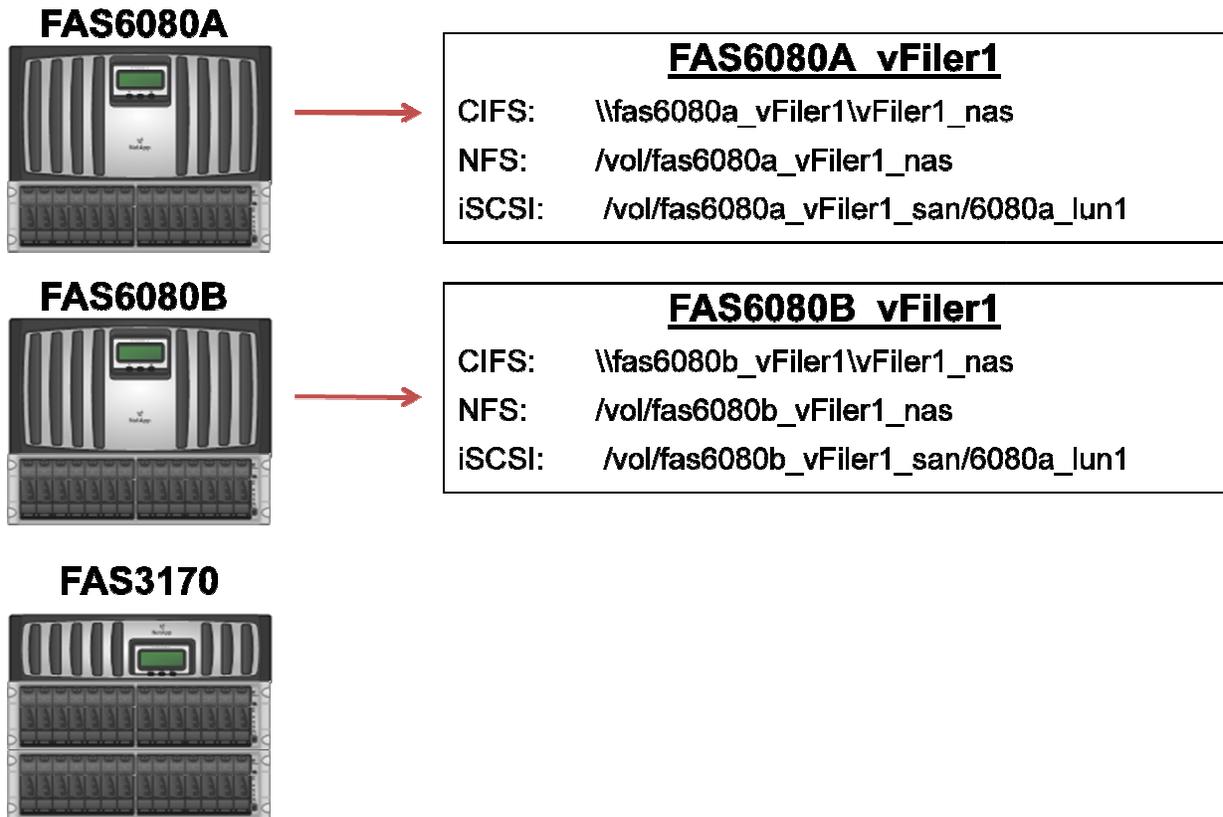
Settings Should Match below



# MultiStore® Lab Demo Setup Information

Physical Nodes	FAS6080A	FAS6080B	FAS3170
user	root	root	root
passwd	netapp	netapp	netapp
IP	192.168.150.100	192.168.150.101	192.168.150.102
Subnet	255.255.255.0	255.255.255.0	255.255.255.0
GW	192.168.150.2	192.168.150.2	192.168.150.2
dns domainname	localdomain	localdomain	localdomain
dns server	192.168.150.2	192.168.150.2	192.168.150.2
rootvol	root	root	root
Virtual Nodes	fas6080a_vFiler1	fas6080b_vFiler1	
user	root	root	
passwd	netapp	netapp	
IP	192.168.150.103 (ns1)	192.168.150.104 (ns1)	
Subnet	255.255.255.0	255.255.255.0	
GW	192.168.150.2	192.168.150.2	
dns domainname	localdomain	localdomain	
dns server	192.168.150.2	192.168.150.2	
rootvol	fas6080a_vFiler1_root	fas6080b_vFiler1_root	
nasvol	fas6080a_vFiler1_nas	fas6080b_vFiler1_nas	
sanvol	fas6080a_vFiler1_san	fas6080b_vFiler1_san	
CIFS	workgroup	workgroup	
CIFS Netbios Name	fas6080a_vf1	fas6080b_vf1	
CIFS Admin	administrator	administrator	
CIFS Passwd	netapp01	netapp01	
CIFS Share	vFiler1_nas	vFiler1_nas	
NFS Export	/vol/fas6080a_vFiler1_nas	/vol/fas6080b_vFiler1_nas	
iSCSI LUN	/vol/fas6080a_vFiler1_san/6080a_lun1	/vol/fas6080b_vFiler1_san/6080b_lun1	

## Three Physical FAS Controllers, Two Virtual Filers



## Step 4 – ifconfig and route add for each vfiler (edit /etc/rc...don't trust the auto rc edits)

# On both FAS6080A and FAS6080B, the 'ifconfig' for 'ns1' was automatically added (but make sure if a vif the ifconfig was added below the vif create..sometimes is added above the vif create). Also, manually add the route statement to the /etc/rc file (and if auto added by ONTAP, manually check correct location of 'vfiler run route add'). Vfilers don't have their own rc file so any commands at startup must be in the vfiler0 rc file. When opening the rc file, choose wordpad instead of notepad in case of CRLF (hex: 0D0A) where windows wraps the entire file.. wordpad handles unix format. Since we are on the same subnet for all labs, the route isn't required. But as a best practice, edit the rc file and put a route add for the vfiler after all ifconfig and route add for vfiler0. I have seen cases where multistore using vlans and/or aliases will put route adds or alias commands above the vif creation, so the rc file would fail on boot for that network. Always check the rc file after any vfiler network changes or creation/deletion.

**This will also test that cifs is working for each vfiler0 on the cluster.**

### FAS6080A

Go to the CIFS share of vfiler0

[\\192.168.150.100\c\\$\etc](\\192.168.150.100\c$\etc)

# user: **administrator**  
# password: **netapp01**

Edit /etc/rc with to add the route add command below and also enter the command manually on fas6080a so you don't have to reboot

```
fas6080a> vfiler run fas6080a_vfiler1 route add default 192.168.150.2 1
```

### FAS6080B

Go to the CIFS share of vfiler0

[\\192.168.150.101\c\\$\etc](\\192.168.150.101\c$\etc) # enter administrator : netapp01 credentials

# user: **administrator**  
# password: **netapp01**

Edit /etc/rc with to add the route add command below and also enter the command manually on fas6080b so you don't have to reboot

```
fas6080b> vfiler run fas6080b_vfiler1 route add default 192.168.150.2 1
```



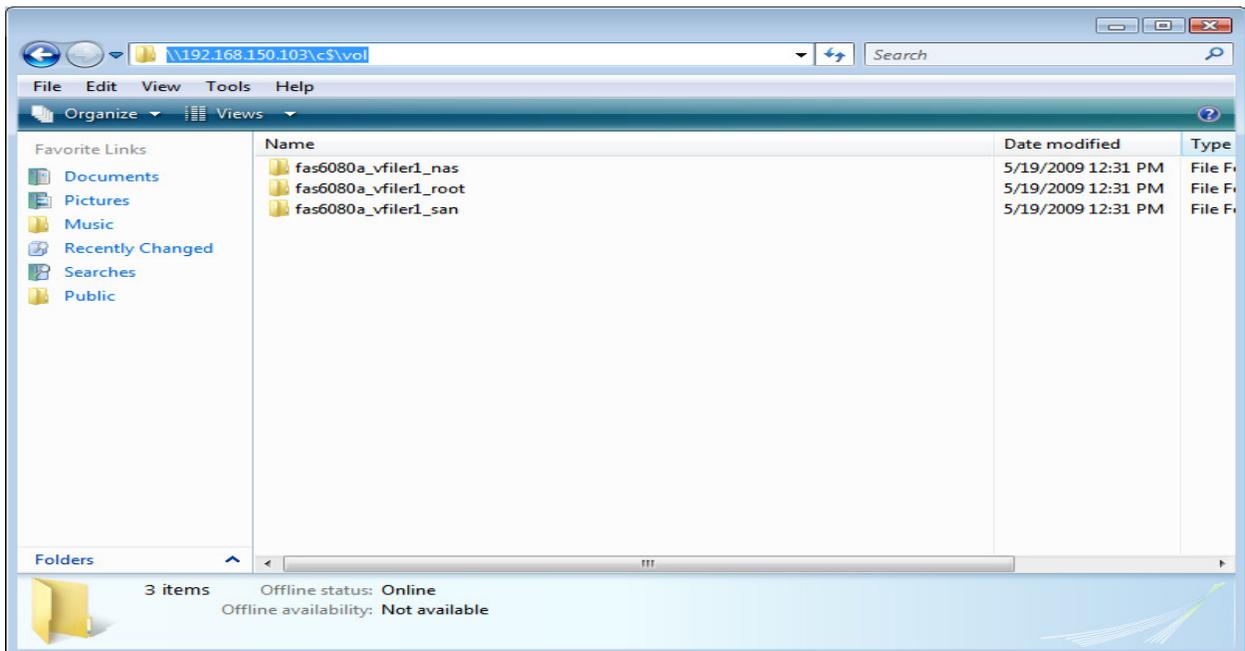
## Step 5 - Test vfiler CIFS share and write/create files in each share

NOTE: vfilers will show all volumes from their c\$\vol share which is automatically created for administration. All volumes are available even without explicit cifs shares (to administrator only) via this method. You need to open the c\$ share first, then click on vol.

### Test each c\$ vfiler share for access to all volumes

[\\192.168.150.103\c\\$](http://192.168.150.103/c$) # double click "vol" to see all volumes

[\\192.168.150.104\c\\$](http://192.168.150.104/c$) # double click "vol" to see all volumes



### Go directly to each explicit cifs share and write/create files

[\\192.168.150.103\vfiler1\\_nas](http://192.168.150.103/vfiler1_nas) #fas6080a\_vfiler1

**Write files into the vfiler1\_nas share**

[\\192.168.150.104\vfiler1\\_nas](http://192.168.150.104/vfiler1_nas) #fas6080b\_vfiler1

**Write files into the vfiler1\_nas share**

## Step 6 - Test NFS mount and view file written by CIFS in step 5

NOTE: The simulator puts the eth0 linux interface in promiscuous mode and that interface cannot be used to mount the simulators. However, eth1 can mount and also has an IP address on the 192.168.150.0 /24 subnet.

### Double click TERMINAL on the Ubuntu desktop

Note that ping fails, but ping -I eth1 works to each vfiler.

```
root@FAS6080A:/# ping 192.168.150.103 # fails since it uses eth0
```

```
root@FAS6080A:/# ping -I eth1 192.168.150.103
64 bytes from 192.168.150.103: icmp_seq=1 ttl=255 time=0.349 ms
```

- From the UBUNTU Linux Image – click “TERMINAL”

```
user@FAS6080A:~$ sudo su -
root@FAS6080A:/# cd /
root@FAS6080A:/# mkdir -p /lab2/fas6080a_vfiler1
root@FAS6080A:/# mkdir -p /lab2/fas6080b_vfiler1
```

Mount does not have a “-I” option like ping so we have to add a static route to force eth1 to mount the vfilers. If you have Workstation/Fusion and another Linux VM, you can However, this works with VMPlayer since player can only run one VM at a time. The mounts below will take 2-3 minutes on the simulator (same nfs client as the sims). If it fails, then the mount is trying over eth0 instead of eth1. To force eth1 to mount, 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 .103 and .104 to each vfiler
    - root@FAS6080A:/lab2 # **route add -host 192.168.150.103 gw 192.168.150.140**
    - root@FAS6080A:/lab2 # **route add -host 192.168.150.104 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 in promiscuous mode).

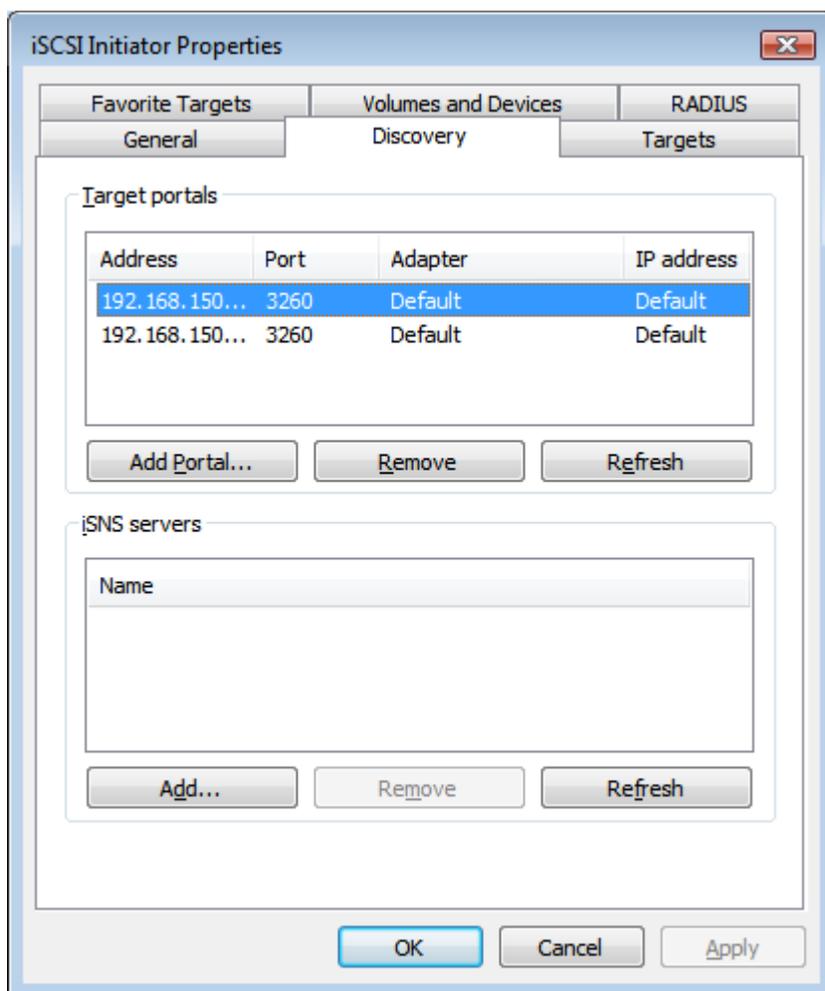
- root@FAS6080A:/# **mount 192.168.150.103:/vol/fas6080a\_vfiler1\_nas /lab2/fas6080a\_vfiler1**
- root@FAS6080A:/# **mount 192.168.150.104:/vol/fas6080b\_vfiler1\_nas /lab2/fas6080b\_vfiler1**

View Contents of the mount to confirm files written by the CIFS client

- root@FAS6080A:/# **ls -l /lab2/fas6080a\_vfiler1**
- root@FAS6080A:/# **ls -l /lab2/fas6080b\_vfiler1**

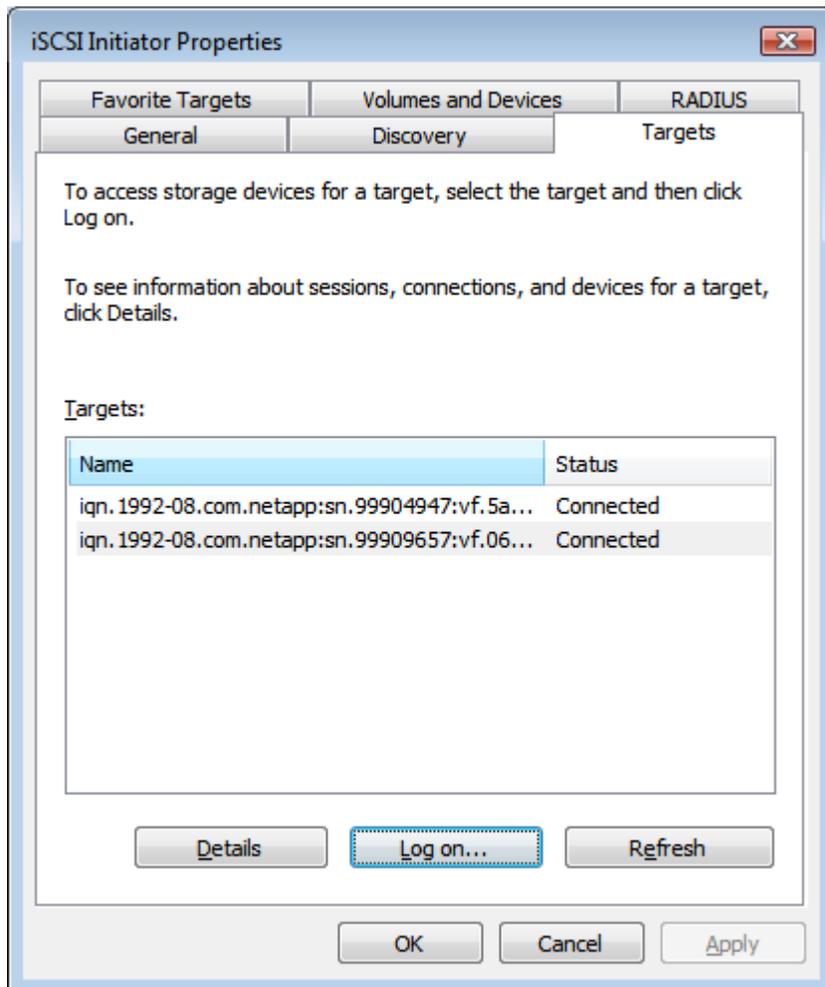
**Step 7 - Mount iSCSI LUNs (created earlier) to each vFiler (without snapdrive, but you could use snapdrive to automate the process if Windows Server) and write/create files in each lun**

- Open the iSCSI control panel
- Click the “Discovery” Tab
- Click the “Add Portal...” button
- Enter “192.168.150.103” and click OK
- Click the “Add Portal...” button again
- Enter “192.168.150.104” and click OK

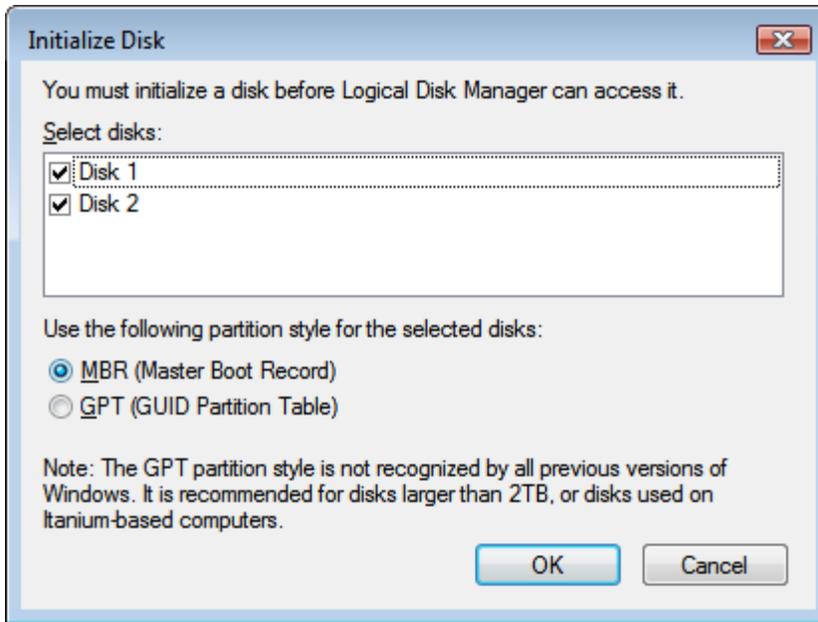


- Click the “Targets” Tab
- Click the “Refresh” button
- Click on the first IQN, then click the “Log on...” button.
- Click “OK”

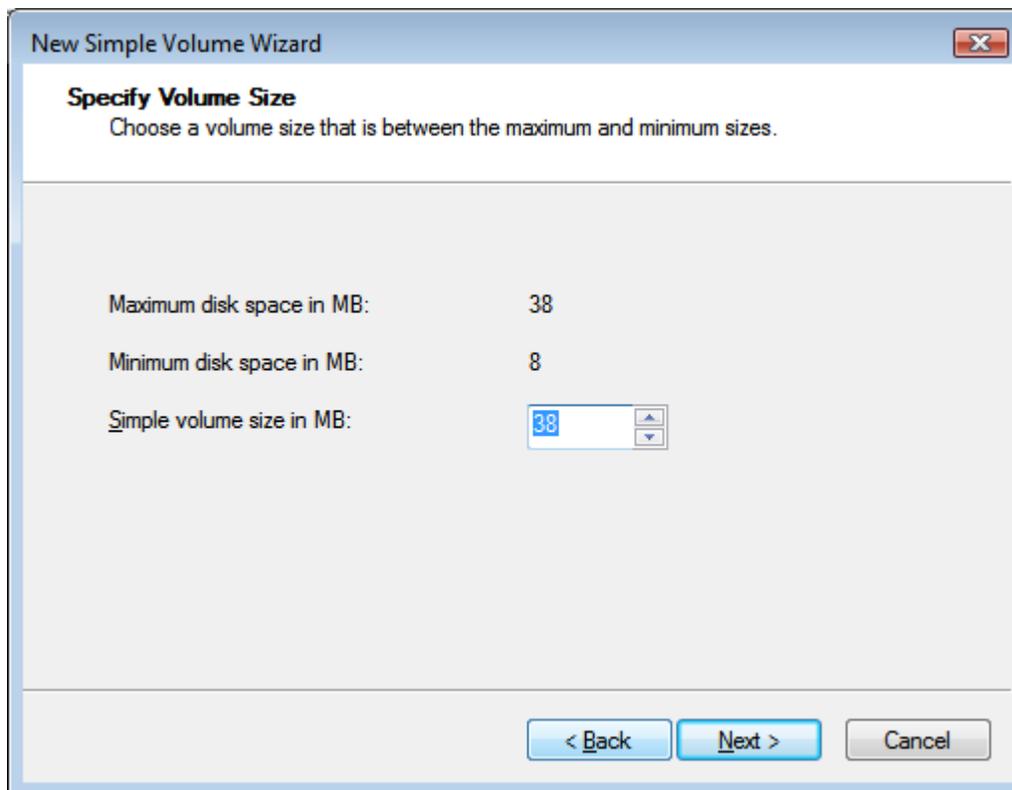
- Click on the second IQN, then click the “Log on...” button.
- Click “OK”
- Click “OK” to close the iSCSI control panel

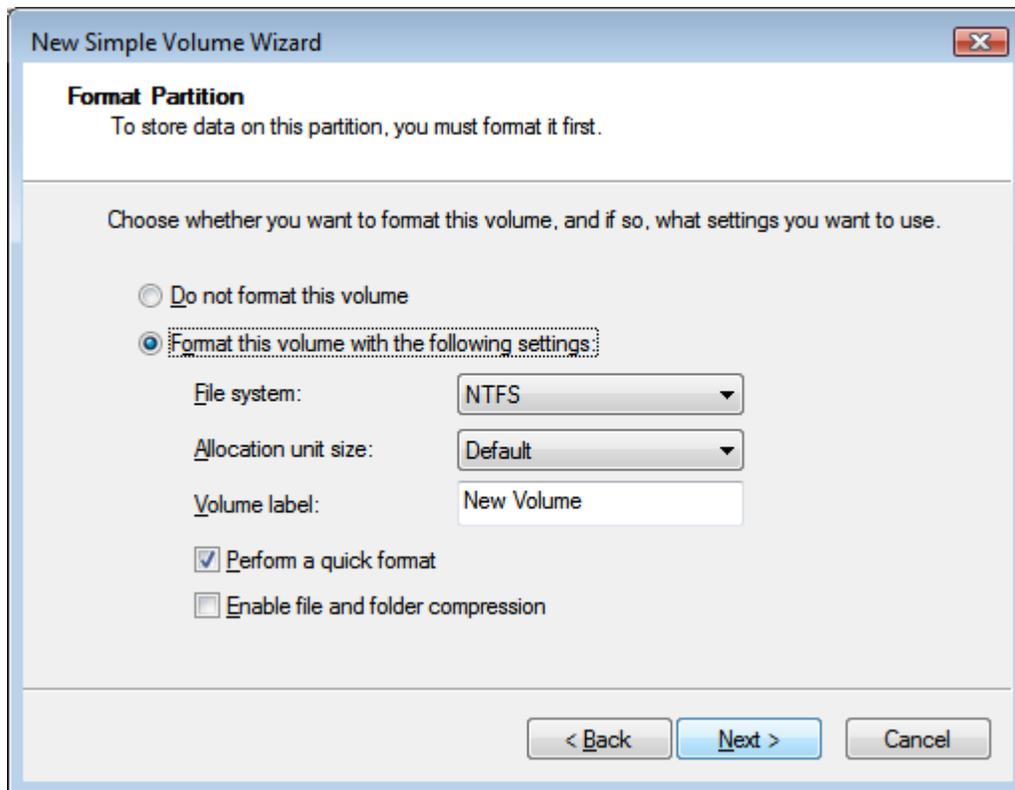


- **Open Disk Manager to see the LUNs and format them**
  - Right click “My Computer”, Click “Manage”, click “Disk Management”
  - If you do NOT see targets. Reboot your windows machine..it is common with windows and the simulator to need a reboot.
- **Initialize Disks**



- **Format Disks.. Use “N” and “O” drive and check the box for “Quick Format”**





- Write/Create a few data files in each drive N: and O: