

ISCSI snapvault update and troubleshooting:

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This document covers all the troubleshooting steps to fix the snapvault update for ISCSI Luns.

Topics:

1. Customized snapvault scripts
2. Setting up the SSH Key trust for iscsisv user.
3. Few Troubleshooting scenarios.

1. Customized snapvault scripts

There are two different customized scripts are been used to update the snapvault and the other to clean the snapvault snapshots on the destinations.

- a. lun_snapvault_update.pl
- b. lun_snapvault_cleanup.pl

a. lun_snapvault_update.pl

This script performs snapvault updates for any volumes that contain LUNs. It uses DFM reports to determine which volumes containing LUNs require a snapvault update, and only contacts primary or secondary filers when relationships need to be updated. This should be run nightly from a cron job, with at least 2 hours between successive runs, so that the DFM data gathering has time to discover snapshot updates before the next run.

b.lun_snapvault_cleanup.pl

This script performs snapvault snapshot cleanup for any snapvault destination volumes that contain LUNs. It also performs snapshot cleanup on primary storage for volumes that have LUNs but do not se SMSQL (as denoted by the "wid_" volume prefix). It uses DFM reports to determine which snapshots to remove. This script should be run once nightly from a cron job.

Above two scripts has the crontab entry in almost all the DFM servers (all sites).Crontab will looks like this,

```
5 1,3,5,19,21,23 * * * netapp /dfm/netapp/scripts/lun_snapvault_update.pl >> /dfm/netapp/scripts/lun_snapvault_update.log 2>&1
5 4 * * * netapp /dfm/netapp/scripts/lun_snapvault_cleanup.pl >> /dfm/netapp/scripts/lun_snapvault_cleanup.log 2>&1
```

2. Setting up the SSH Key trust for iscsisv user.

- a. Check whether the SSH is enabled on the Vfiler ends (backup filer end). All backup vfilers taking iSCSI snap vaults must have SSH enabled,

```
nidaros:~ # rsh eg-nascorpbkp-h02-mgmt vfiler run corph2 secureadmin status
===== corph2
ssh2      - inactive
ssh1      - inactive
```

```
nidaros:~ # rsh eg-nascorpbkp-h02-mgmt vfiler run corph2 secureadmin setup -f -q ssh 768 512 768
===== corph2
```

```
nidaros:~ # rsh eg-nascorpbkp-h02-mgmt vfiler run corph2 secureadmin status
===== corph2
ssh2      - active
ssh1      - inactive
```

- b. Check and make sure that the "iscsisv" user is created on backup filer vfiler end (the iscsisv user is required for WISP snap vaults to work properly):

```
nidaros:~ # rsh eg-nascorpbkp-h02-mgmt vfiler run corph2 useradmin user list

===== corph2
Name: administrator
Info: Built-in account for administering the filer
Rid: 500
Groups: Administrators

Name: iscsi
Info:
Rid: 131079
Groups: iscsi-admin
```

```
Name: iscsisv
Info:
Rid: 131077
Groups: iscsisv-admin
```

Name: root
Info: Default vfiler root
Rid: 131073
Groups: Administrators

Usually iscsisv user will be setup correctly when the snapvault relationship was created.

- c. The next requirement to check is to ensure that user "netapp" has its public SSH key installed in the iscsisv's authorized_key file on the backup vfiler,

```
nidaros:~ # mount corph2:/vol/corph2_root /mnt/sant
```

```
nidaros:~ # cd /mnt/sant/
```

```
nidaros:/mnt/sant # ls  
etc home .snapshot
```

```
nidaros:/mnt/sant # cd etc/
```

```
nidaros:/mnt/sant/etc # ls
```

```
.a00100          cifssec.bak exports.bak group          httpd.mimetypes.sample lclgroups.bak  passwd  registry.bck  registry.local.1  
sshd  
cifsconfig_setup.cfg cifssec.cfg exports.bak2 hosts keymgr lclgroups.cfg quotas registry.default registry.local.bck tmp  
cifsconfig_share.cfg configs exports.new hosts.bak krb log registry registry.lastgood resolv.conf usermap.cfg  
cifs_homedir.cfg exports exports.old hosts.equiv krb5auto.conf nsswitch.conf registry.0 registry.local rmtab vfiler-  
storage cifs_nbalias.cfg exports_arc filersid.cfg hosts.equiv.bak krb5.keytab nsswitch.conf.bak registry.1 registry.local.0  
sm .zapi
```

```
nidaros:/mnt/sant/etc # cd sshd/
```

```
nidaros:/mnt/sant/etc/sshd # ls
```

```
ssh_host_dsa_key ssh_host_dsa_key.pub ssh_host_key ssh_host_key.pub ssh_host_rsa_key ssh_host_rsa_key.pub
```

Note that the sshd directory exist or not ,if does not have an "iscsisv/.ssh/" subdirectory . Please create the directory and place the correct key file in the place,

```
nidaros:/mnt/sant/etc/sshd # mkdir iscsisv
```

```
nidaros:/mnt/sant/etc/sshd # cd iscsisv/
```

```
nidaros:/mnt/sant/etc/sshd/iscsisv # ls
```

```
nidaros:/mnt/sant/etc/sshd/iscsisv # mkdir .ssh
```

```
nidaros:/mnt/sant/etc/sshd/iscsisv # cd .ssh
```

```
nidaros:/mnt/sant/etc/sshd/iscsisv/.ssh # cp /filers/admin/etc/keys/netapp authorized_keys
```

```
nidaros:/mnt/sant/etc/sshd/iscsisv/.ssh # cd /
```

```
nidaros:/ # umount /mnt/sant
```

- d. check whether it works and see if we can connect to the BACKUP vfiler as user iscsisv from user netapp on a DFM server WITHOUT a password (using SSH):

```
netapp@nerstrand:~> whoami
```

```
netapp
```

```
netapp@nerstrand:~> ssh iscsisv@corph2 snapvault status
```

```
Snapvault secondary is ON.
```

Source	Destination	state	Lag	Status
prod-corp-f0172:/vol/infra_c111qtt_vms_snap07	corph2:/vol/sv_07_infra_c111qtt_vms_snap07/1			Snapvaulted 09:47:19 Idle
clnt-corp-e0302.int.westgroup.com:/vol/infra_nss_snap0	corph2:/vol/sv_07_infra_nss_snap0/1			Snapvaulted 09:47:05 Idle

Make sure the above configuration is working fine.Finally check make sure that the DFM server on the primary vfiler's site has the snapvault cleanup and update cron-jobs configured.

```
cmpl11cwq:~ # cat /etc/crontab |grep -i lun  
# Run lun_snapvault update and cleanup scripts.  
5 1,3,5,19,21,23 * * * netapp /dfm/netapp/scripts/lun_snapvault_update.pl >> /dfm/netapp/scripts/lun_snapvault_update.log 2>&1  
5 4 * * * netapp /dfm/netapp/scripts/lun_snapvault_cleanup.pl >> /dfm/netapp/scripts/lun_snapvault_cleanup.log 2>&1  
cmpl11cwq:~ #
```

At this point in time you can either wait for the next replication crontab to take off via CRON per the schedule or manually initiate it if you need to by running the above command as user "netapp" on the DFM server. Note that these scripts **MUST** run as user **netapp** because of how we have just configured the SSH trust relationship.

This configuration only has to run one time on each backup vfiler and the sv-setup.pl script attempts to detect this and fix it at implementation time; however, sometimes it will be required to troubleshoot this type of configuration problem.

2. Few Troubleshooting scenarios:

Please find few of the scenarios where we fixed the issues,

Scenario 1:

```
netapp@cmp111mgc:~> /dfm/netapp/scripts/lun_snapvault_update.pl
Fri Jan 20 07:10:10 2012: INFO: Starting a run of lun_snapvault_update.pl Fri Jan 20 07:10:15 2012: ERROR: Could not
connect to clnt-corp-e0384.int.westgroup.com via ssh as iscsisv!
Fri Jan 20 07:10:15 2012: WARNING: No snapvault relationship found for clnt-corp-
e0384.int.westgroup.com:/vol/infra_wi_dbadev1_info_snap/luns.
Skipping.
Fri Jan 20 07:10:15 2012: ERROR: Could not connect to clnt-corp-e0384.int.westgroup.com via ssh as iscsisv!
Fri Jan 20 07:10:15 2012: WARNING: No snapvault relationship found for clnt-corp-
e0384.int.westgroup.com:/vol/infra_wi_dbadev2_info_snap/luns.
Skipping.
Fri Jan 20 07:10:16 2012: ERROR: Could not connect to clnt-corp-e0384.int.westgroup.com via ssh as iscsisv!
Fri Jan 20 07:10:16 2012: WARNING: No snapvault relationship found for clnt-corp-
e0384.int.westgroup.com:/vol/infra_wi_dbadev2_usr_snap/luns.
Skipping.
Fri Jan 20 07:10:16 2012: ERROR: Could not connect to prod-corp-e0132.int.westgroup.com via ssh as iscsisv!
Fri Jan 20 07:10:16 2012: WARNING: No snapvault relationship found for prod-corp-
e0132.int.westgroup.com:/vol/trs_wi_scholarone_greatplains_prod_i
nfo_snap/luns. Skipping.
Fri Jan 20 07:10:16 2012: ERROR: Could not connect to prod-corp-e0132.int.westgroup.com via ssh as iscsisv!
Fri Jan 20 07:10:16 2012: WARNING: No snapvault relationship found for prod-corp-
e0132.int.westgroup.com:/vol/trs_wi_scholarone_greatplains_prod_u
sr_snap/luns. Skipping.
Fri Jan 20 07:10:17 2012: ERROR: Could not connect to prod-corp-e0226.int.westgroup.com via ssh as iscsisv!
Fri Jan 20 07:10:17 2012: WARNING: No snapvault relationship found for prod-corp-
e0226.int.westgroup.com:/vol/infra_wi_changeauditorprod_info_snap
/luns. Skipping.
Fri Jan 20 07:10:17 2012: ERROR: Could not connect to prod-corp-e0226.int.westgroup.com via ssh as iscsisv!
Fri Jan 20 07:10:17 2012: WARNING: No snapvault relationship found for prod-corp-
e0226.int.westgroup.com:/vol/infra_wi_changeauditorprod_tsys_nosn
ap/luns. Skipping.
Fri Jan 20 07:10:17 2012: ERROR: Could not connect to prod-corp-e0226.int.westgroup.com via ssh as iscsisv!
Fri Jan 20 07:10:17 2012: WARNING: No snapvault relationship found for prod-corp-
e0226.int.westgroup.com:/vol/infra_wi_changeauditorprod_usr_snap/
luns. Skipping.
```

Which means that the following needs to be fixed ,

1. clnt-corp-e0384

```
netapp@cmp111mgc:~ % ssh iscsisv@clnt-corp-e0384 df iscsisv@clnt-corp-e0384's
password: <-- this should not happen, need authorized_keys file installed
```

Note: No root directory exported for this vFiler:

```
netapp@cmp111mgc:~> /usr/sbin/showmount -e clnt-corp-e0384
Export list for clnt-corp-e0384:
/vol/infra_wi_dbadev2_info_snap (everyone)
/vol/infra_wi_dbadev1_info_snap (everyone)
/vol/infra_wi_dbadev1_tsys_nosnap (everyone)
/vol/infra_wi_dbadev2_tsys_nosnap (everyone)
/vol/infra_wi_dbadev2_usr_snap (everyone)
/vol/infra_wi_dbadev1_usr_snap (everyone)
```

Let's export it:

```
cmp111mgc:~ # mkdir /tmp/sant
mkdir: cannot create directory `/tmp/sant': File exists
cmp111mgc:~ # mount clnt-corp-e0384:/vol/clnt_corp_e0384_root /tmp/sant
cmp111mgc:~ # cd /tmp/sant
cmp111mgc:/tmp/sant # ls
etc .snapshot
cmp111mgc:/tmp/sant # cd etc
cmp111mgc:/tmp/sant/etc # cd sshd/
cmp111mgc:/tmp/sant/etc/sshd # ls
ssh_host_dsa_key      ssh_host_key          ssh_host_rsa_key
ssh_host_dsa_key.pub  ssh_host_key.pub      ssh_host_rsa_key.pub
cmp111mgc:/tmp/sant/etc/sshd # mkdir -p iscsisv/.ssh
cmp111mgc:/tmp/sant/etc/sshd # cp /filers/admin/etc/keys/netapp iscsisv/.ssh/authorized_keys
cmp111mgc:/tmp/sant/etc/sshd # cd /
cmp111mgc:/ # umount /tmp/sant
cmp111mgc:/ # rmdir /tmp/sant
cmp111mgc:/ # exit
u0151210@cmp111mgc:~> sudo bash
su cmp111mgc:~ # su - netapp
netapp@cmp111mgc:~> ssh iscsisv@clnt-corp-e0384 df
Permission denied, user iscsisv does not have access to df
```

```
netapp@cmp111mgc:~> ssh iscsisv@clnt-corp-e0384 snapvault status
Snapvault primary is ON.
Source          Destination
State          Lag          Status
clnt-corp-e0384:/vol/infra_wi_dbadev1_info_snap/luns corpf2:/vol/sv_14_infra_wi_dbadev1_info_snap/luns Source 383:37:56 Idle
clnt-corp-e0384:/vol/infra_wi_dbadev1_usr_snap/luns corpf2:/vol/sv_14_infra_wi_dbadev1_usr_snap/luns Source 06:19:28 Idle
clnt-corp-e0384:/vol/infra_wi_dbadev2_info_snap/luns corpf2:/vol/sv_14_infra_wi_dbadev2_info_snap/luns Source 383:39:21 Idle
clnt-corp-e0384:/vol/infra_wi_dbadev2_usr_snap/luns corpf2:/vol/sv_14_infra_wi_dbadev2_usr_snap/luns Source 383:36:13 Idle
```

Next, look at prod-corp-e0132 (it's probably the same problem):

Scenario: 2 prod-corp-e0132

Problem: missing iscsisv authorized_keys file
Solution: install key file from copy located in /filers/admin/etc/keys/netapp

```
netapp@cmp111mgc:~> ssh iscsisv@prod-corp-e0132 snapvault status iscsisv@prod-corp-e0132's password:

netapp@cmp111mgc:~>
netapp@cmp111mgc:~> /usr/sbin/showmount -e prod-corp-e0132 | grep root /vol/prod_corp_e0132_root
nerstrand.int.westgroup.net,newnan.int.westgroup.net,nidaros.int.westgroup.net,norfork.int.westgroup.net,nobleton.int.westgroup.net,newpoint.int.westgroup.net,cmp111mgc.int.westgroup.com,cmp111cwq.int.westgroup.com,cmp111xjq.int.westgroup.com,cmp111dfm.int.westgroup.com,cmp111xpx.int.westgroup.com,cmp111nqc.int.westgroup.com,cmp111srn.int.westgroup.com,c111ujr.int.westgroup.com
netapp@cmp111mgc:~> logout
cmp111mgc:~ # mkdir /tmp/sant
cmp111mgc:~ # mount prod-corp-e0132:/vol/prod_corp_e0132_root /tmp/sant
cmp111mgc:~ # cd /tmp/sant
cmp111mgc:/tmp/sant # ls etc
cmp111mgc:/tmp/sant # cd etc
cmp111mgc:/tmp/sant/etc # ls
.a00100 exports.old httpd.mimetypes.sample nsswitch.conf registry.bck registry.local.1 sshd
configs filersid.cfg keymgr quotas registry.default registry.local.bck vfiler-storage exports hosts
lclgroups.bak registry registry.lastgood resolv.conf .zapi exports_arc hosts.bak lclgroups.cfg
registry.0 registry.local rmtab exports.bak hosts.equiv log registry.1 registry.local.0 sm

cmp111mgc:/tmp/sant/etc # ls sshd/
oracle ssh_host_dsa_key ssh_host_dsa_key.pub ssh_host_key ssh_host_key.pub ssh_host_rsa_key ssh_host_rsa_key.pub
cmp111mgc:/tmp/sant/etc # mkdir -p sshd/iscsisv/.ssh
cmp111mgc:/tmp/sant/etc # cp /filers/admin/etc/keys/netapp sshd/iscsisv/.ssh/authorized_keys
cmp111mgc:/tmp/sant/etc # cd /
cmp111mgc:/ # umount /tmp/sant
cmp111mgc:/ # rmdir /tmp/sant
cmp111mgc:/ # exit
u0151210@cmp111mgc:~> sudo bash
cmp111mgc:~ # su - netapp
netapp@cmp111mgc:~> ssh iscsisv@prod-corp-e0132 snapvault status Snapvault primary is ON.
Source
Destination          State          Lag          Status
prod-corp-e0132:/vol/trs_wi_scholarone_greatplains_prod_info_snap/luns corpf2:/vol/sv_14_trs_wi_scholarone_greatplains_prod_info_snap/luns Source 1726:45:38 Idle
prod-corp-e0132:/vol/trs_wi_scholarone_greatplains_prod_usr_snap/luns corpf2:/vol/sv_14_trs_wi_scholarone_greatplains_prod_usr_snap/luns Source 1726:46:28 Idle
```

Scenaroi 3. prod-corp-e0226

Problem: snapvault lag / missing iscsisv authorized_keys file
solution: install key file from copy located in /filers/admin/etc/keys/netapp

```
netapp@cmp111mgc:~> ssh iscsisv@prod-corp-e0226 snapvault status iscsisv@prod-corp-e0226's password:

^^^^^^ PROBLEM Confirmed is it should not ask for a password if DFM user is netapp
```

```
netapp@cmp111mgc:~> /usr/sbin/showmount -e prod-corp-e0226 | grep root /vol/prod_corp_e0226_root
nerstrand.int.westgroup.net,newnan.int.westgroup.net,nidaros.int.westgroup.net,norfork.int.westgroup.net,nobleton.int.westgroup.net,newpoint.int.westgroup.net,cmp111mgc.int.westgroup.com,cmp111cwq.int.westgroup.com,cmp111xjq.int.westgroup.com,cmp111dfm.int.westgroup.com,cmp111xpx.int.westgroup.com,cmp111nqc.int.westgroup.com,cmp111srn.int.westgroup.com
netapp@cmp111mgc:~> logout
cmp111mgc:~ # mkdir /tmp/sant
cmp111mgc:~ # mount prod-corp-e0226:/vol/prod_corp_e0226_root /tmp/sant
cmp111mgc:~ # cd /tmp/sant/etc
cmp111mgc:/tmp/sant/etc # ls
.a00100 exports.old httpd.mimetypes.sample nsswitch.conf registry.bck registry.local.1 sshd
configs filersid.cfg keymgr quotas registry.default registry.local.bck vfiler-storage exports hosts
lclgroups.bak registry registry.lastgood resolv.conf .zapi exports_arc hosts.bak lclgroups.cfg
registry.0 registry.local rmtab exports.bak hosts.equiv log registry.1 registry.local.0 sm
cmp111mgc:/tmp/sant/etc # ls sshd/
oracle ssh_host_dsa_key ssh_host_dsa_key.pub ssh_host_key ssh_host_key.pub ssh_host_rsa_key ssh_host_rsa_key.pub
```

```

cmp111mgc:/tmp/sant/etc # mkdir -p sshd/iscsisv/.ssh
cmp111mgc:/tmp/sant/etc # cp /filers/admin/etc/keys/netapp sshd/iscsisv/.ssh/authorized_keys
cmp111mgc:/tmp/sant/etc # cd /
cmp111mgc:/ # umount /tmp/sant
cmp111mgc:/ # rmdir /tmp/sant
cmp111mgc:/ # exit
u0151210@cmp111mgc:~> sudo bash
cmp111mgc:~ # su - netapp
netapp@cmp111mgc:~> ssh iscsisv@prod-corp-e0226 snapvault status Snapvault primary is ON.
Source                               Destination                               State Lag           Status
prod-corp-e0226:/vol/infra_wi_changeauditorprod_info_snap/luns corph2:/vol/sv_7_infra_wi_changeauditorprod_info_snap/luns Source
3599:01:28 Idle
prod-corp-e0226:/vol/infra_wi_changeauditorprod_usr_snap/luns corph2:/vol/sv_7_infra_wi_changeauditorprod_usr_snap/luns Source
3071:23:59 Idle

```

Scenario: 4 Socket errors when trying to update the snapvault from the backup filer or vfiler end.

On the source filer:

```
netapp@nidaros:~> /dfm/netapp/scripts/lun_snapvault_update.pl
```

Fri Jan 20 06:26:19 2012: INFO: Starting a run of lun_snapvault_update.pl

Fri Jan 20 06:26:34 2012: INFO: Running snapvault update from prod-ecom-h0138.clrrs.loc:/vol/tta_wi_formsourced9_usr_snap/luns to cps-ttabkp-2900:/vol/sv_45_tta_wi_formsourced9_usr_snap/luns with snapshot sqlsnap__c111nnbfrmsql_01-19-2012_22.00.29.

If you notice the backup filer end(check the backup filer /etc/messages file),we can see the socket error message as below,

On the backup vfiler:

```

Fri Jan 20 06:28:21 CST [cps-ttabkp-2900@replication.dst.err:error]: SnapVault: destination transfer from prod-ecom-
h0138:/vol/tta_wi_formsourced9_usr_snap/luns to /vol/sv_45_tta_wi_formsourced9_usr_snap/luns : could not read from socket.

```

Solution : Check for the source and target filers 'snapvault.access ' options. It should be set to 'all' or it should have the access for the specific correct backup filers. If not please make sure to check and provide the necessary access to the filer/Vfilers.