



# **Configure and use SnapVault backups in a SAN environment**

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# Configure and use SnapVault backups in a SAN environment

## Configure and use SnapVault backups in a SAN environment overview

SnapVault configuration and use in a SAN environment is very similar to configuration and use in a NAS environment, but restoring LUNs in a SAN environment requires some special procedures.

SnapVault backups contain a set of read-only copies of a source volume. In a SAN environment you always back up entire volumes to the SnapVault secondary volume, not individual LUNs.

The procedure for creating and initializing the SnapVault relationship between a primary volume containing LUNs and a secondary volume acting as a SnapVault backup is identical to the procedure used with FlexVol volumes used for file protocols. This procedure is described in detail in [Data Protection](#).

### Data protection

It is important to ensure that LUNs being backed up are in a consistent state before the Snapshot copies are created and copied to the SnapVault secondary volume. Automating the Snapshot copy creation with a product like SnapManager for Microsoft SQL Server ensures that backed up LUNs are complete and usable by the original application.

There are three basic choices for restoring LUNs from a SnapVault secondary volume:

- You can map a LUN directly from the SnapVault secondary volume and connect a host to the LUN to access the contents of the LUN.

The LUN is read-only and you can map only from the most recent Snapshot copy in the SnapVault backup. Persistent reservations and other LUN metadata are lost. If desired, you can use a copy program on the host to copy the LUN contents back to the original LUN if it is still accessible.

The LUN has a different serial number from the source LUN.

- You can clone any Snapshot copy in the SnapVault secondary volume to a new read-write volume.

You can then map any of the LUNs in the volume and connect a host to the LUN to access the contents of the LUN. If desired, you can use a copy program on the host to copy the LUN contents back to the original LUN if it is still accessible.

- You can restore the entire volume containing the LUN from any Snapshot copy in the SnapVault secondary volume.

Restoring the entire volume replaces all of the LUNs, and any files, in the volume. Any new LUNs created since the Snapshot copy was created are lost.

The LUNs retain their mapping, serial numbers, UUIDs, and persistent reservations.

# Access a read-only LUN copy from a SnapVault backup

You can access a read-only copy of a LUN from the latest Snapshot copy in a SnapVault backup. The LUN ID, path, and serial number are different from the source LUN and must first be mapped. Persistent reservations, LUN mappings, and igroups are not replicated to the SnapVault secondary volume.

## What you'll need

- The SnapVault relationship must be initialized and the latest Snapshot copy in the SnapVault secondary volume must contain the desired LUN.
- The storage virtual machine (SVM) containing the SnapVault backup must have one or more LIFs with the desired SAN protocol accessible from the host used to access the LUN copy.
- If you plan to access LUN copies directly from the SnapVault secondary volume, you must create your igroups on the SnapVault SVM in advance.

You can access a LUN directly from the SnapVault secondary volume without having to first restore or clone the volume containing the LUN.

## About this task

If a new Snapshot copy is added to the SnapVault secondary volume while you have a LUN mapped from a previous Snapshot copy, the contents of the mapped LUN changes. The LUN is still mapped with the same identifiers, but the data is taken from the new Snapshot copy. If the LUN size changes, some hosts automatically detect the size change; Windows hosts require a disk rescan to pick up any size change.

## Steps

1. Run the `lun show` command to list the available LUNs in the SnapVault secondary volume.

In this example, you can see both the original LUNs in the primary volume `srcvolA` and the copies in the SnapVault secondary volume `dstvolB`:

```
cluster::> lun show
```

| Vserver  | Path               | State  | Mapped   | Type    | Size    |
|----------|--------------------|--------|----------|---------|---------|
| -----    | -----              | -----  | -----    | -----   | -----   |
| vserverA | /vol/srcvolA/lun_A | online | mapped   | windows | 300.0GB |
| vserverA | /vol/srcvolA/lun_B | online | mapped   | windows | 300.0GB |
| vserverA | /vol/srcvolA/lun_C | online | mapped   | windows | 300.0GB |
| vserverB | /vol/dstvolB/lun_A | online | unmapped | windows | 300.0GB |
| vserverB | /vol/dstvolB/lun_B | online | unmapped | windows | 300.0GB |
| vserverB | /vol/dstvolB/lun_C | online | unmapped | windows | 300.0GB |

```
6 entries were displayed.
```

2. If the igroup for the desired host does not already exist on the SVM containing the SnapVault secondary volume, run the `igroup create` command to create an igroup.

This command creates an igroup for a Windows host that uses the iSCSI protocol:

```
cluster::> igroup create -vserver vserverB -igroup temp_igroup
               -protocol iscsi -ostype windows
               -initiator iqn.1991-05.com.microsoft:hostA
```

3. Run the `lun mapping create` command to map the desired LUN copy to the igroup.

```
cluster::> lun mapping create -vserver vserverB -path /vol/dstvolB/lun_A
               -igroup temp_igroup
```

4. Connect the host to the LUN and access the contents of the LUN as desired.

## Restore a single LUN from a SnapVault backup

You can restore a single LUN to a new location or to the original location. You can restore from any Snapshot copy in the SnapVault secondary volume. To restore the LUN to the original location, you first restore it to a new location and then copy it.

### What you'll need

- The SnapVault relationship must be initialized and the SnapVault secondary volume must contain an appropriate Snapshot copy to restore.
- The storage virtual machine (SVM) containing the SnapVault secondary volume must have one or more LIFs with the desired SAN protocol that are accessible from the host used to access the LUN copy.
- The igroups must already exist on the SnapVault SVM.

### About this task

The process includes creating a read-write volume clone from a Snapshot copy in the SnapVault secondary volume. You can use the LUN directly from the clone, or you can optionally copy the LUN contents back to the original LUN location.

The LUN in the clone has a different path and serial number from the original LUN. Persistent reservations are not retained.

### Steps

1. Run the `snapmirror show` command to verify the secondary volume that contains the SnapVault backup.

```
cluster::> snapmirror show
```

| Source Path      | Type | Dest Path        | Mirror State | Relation Status | Total Progress | Healthy | Last Updated |
|------------------|------|------------------|--------------|-----------------|----------------|---------|--------------|
| vserverA:srcvolA |      |                  |              |                 |                |         |              |
|                  | XDP  | vserverB:dstvolB |              |                 |                |         |              |
|                  |      |                  | Snapmirrored |                 |                |         |              |
|                  |      |                  |              | Idle            | -              | true    | -            |

2. Run the `volume snapshot show` command to identify the Snapshot copy that you want to restore the LUN from.

```
cluster::> volume snapshot show
```

| Vserver  | Volume  | Snapshot              | State | Size  | Total% | Used% |
|----------|---------|-----------------------|-------|-------|--------|-------|
| vserverB |         |                       |       |       |        |       |
|          | dstvolB |                       |       |       |        |       |
|          |         | snap2.2013-02-10_0010 | valid | 124KB | 0%     | 0%    |
|          |         | snap1.2013-02-10_0015 | valid | 112KB | 0%     | 0%    |
|          |         | snap2.2013-02-11_0010 | valid | 164KB | 0%     | 0%    |

3. Run the `volume clone create` command to create a read-write clone from the desired Snapshot copy.

The volume clone is created in the same aggregate as the SnapVault backup. There must be enough space in the aggregate to store the clone.

```
cluster::> volume clone create -vserver vserverB
-flexclone dstvolB_clone -type RW -parent-volume dstvolB
-parent-snapshot daily.2013-02-10_0010
[Job 108] Job succeeded: Successful
```

4. Run the `lun show` command to list the LUNs in the volume clone.

```
cluster::> lun show -vserver vserverB -volume dstvolB_clone
```

| Vserver  | Path                     | State  | Mapped   | Type    |
|----------|--------------------------|--------|----------|---------|
| vserverB | /vol/dstvolB_clone/lun_A | online | unmapped | windows |
| vserverB | /vol/dstvolB_clone/lun_B | online | unmapped | windows |
| vserverB | /vol/dstvolB_clone/lun_C | online | unmapped | windows |

```
3 entries were displayed.
```

5. If the igroup for the desired host does not already exist on the SVM containing the SnapVault backup, run the `igroup create` command to create an igroup.

This example creates an igroup for a Windows host that uses the iSCSI protocol:

```
cluster::> igroup create -vserver vserverB -igroup temp_igroup
               -protocol iscsi -ostype windows
               -initiator ign.1991-05.com.microsoft:hostA
```

6. Run the `lun mapping create` command to map the desired LUN copy to the igroup.

```
cluster::> lun mapping create -vserver vserverB
               -path /vol/dstvolB_clone/lun_C -igroup temp_igroup
```

7. Connect the host to the LUN and access the contents of the LUN, as desired.

The LUN is read-write and can be used in place of the original LUN. Because the LUN serial number is different, the host interprets it as a different LUN from the original.

8. Use a copy program on the host to copy the LUN contents back to the original LUN.

## Restore all LUNs in a volume from a SnapVault backup

If one or more LUNs in a volume need to be restored from a SnapVault backup, you can restore the entire volume. Restoring the volume affects all LUNs in the volume.

### What you'll need

The SnapVault relationship must be initialized and the SnapVault secondary volume must contain an appropriate Snapshot copy to restore.

### About this task

Restoring an entire volume returns the volume to the state it was in when the Snapshot copy was made. If a LUN was added to the volume after the Snapshot copy, that LUN is removed during the restore process.

After restoring the volume, the LUNs remain mapped to the igroups they were mapped to just before the restore. The LUN mapping might be different from the mapping at the time of the Snapshot copy. Persistent

reservations on the LUNs from host clusters are retained.

## Steps

1. Stop I/O to all LUNs in the volume.
2. Run the `snapmirror show` command to verify the secondary volume that contains the SnapVault secondary volume.

```
cluster::> snapmirror show
```

| Source Path      | Type | Dest Path        | Mirror State | Relation Status | Total Progress | Healthy | Last Updated |
|------------------|------|------------------|--------------|-----------------|----------------|---------|--------------|
| vserverA:srcvolA | XDP  | vserverB:dstvolB | Snapmirrored | Idle            | -              | true    | -            |

3. Run the `volume snapshot show` command to identify the Snapshot copy that you want to restore from.

```
cluster::> volume snapshot show
```

| Vserver  | Volume  | Snapshot              | State | Size  | Total% | Used% |
|----------|---------|-----------------------|-------|-------|--------|-------|
| vserverB | dstvolB | snap2.2013-02-10_0010 | valid | 124KB | 0%     | 0%    |
|          |         | snap1.2013-02-10_0015 | valid | 112KB | 0%     | 0%    |
|          |         | snap2.2013-02-11_0010 | valid | 164KB | 0%     | 0%    |

4. Run the `snapmirror restore` command and specify the `-source-snapshot` option to specify the Snapshot copy to use.

The destination you specify for the restore is the original volume you are restoring to.

```
cluster::> snapmirror restore -destination-path vserverA:srcvolA  
-source-path vserverB:dstvolB -source-snapshot daily.2013-02-10_0010
```

Warning: All data newer than Snapshot copy hourly.2013-02-11\_1205 on volume vserverA:src\_volA will be deleted.

Do you want to continue? {y|n}: y

[Job 98] Job is queued: snapmirror restore from source "vserverB:dstvolB" for the snapshot daily.2013-02-10\_0010.

5. If you are sharing LUNs across a host cluster, restore the persistent reservations on the LUNs from the



affected hosts.

## Restoring a volume from a SnapVault backup

In the following example, the LUN named lun\_D was added to the volume after the Snapshot copy was created. After restoring the entire volume from the Snapshot copy, lun\_D no longer appears.

In the `lun show` command output, you can see the LUNs in the primary volume srcvolA and the read-only copies of those LUNs in the SnapVault secondary volume dstvolB. There is no copy of lun\_D in the SnapVault backup.

```
cluster::> lun show
```

| Vserver  | Path               | State  | Mapped   | Type    | Size    |
|----------|--------------------|--------|----------|---------|---------|
| vserverA | /vol/srcvolA/lun_A | online | mapped   | windows | 300.0GB |
| vserverA | /vol/srcvolA/lun_B | online | mapped   | windows | 300.0GB |
| vserverA | /vol/srcvolA/lun_C | online | mapped   | windows | 300.0GB |
| vserverA | /vol/srcvolA/lun_D | online | mapped   | windows | 250.0GB |
| vserverB | /vol/dstvolB/lun_A | online | unmapped | windows | 300.0GB |
| vserverB | /vol/dstvolB/lun_B | online | unmapped | windows | 300.0GB |
| vserverB | /vol/dstvolB/lun_C | online | unmapped | windows | 300.0GB |

7 entries were displayed.

```
cluster::> snapmirror restore -destination-path vserverA:srcvolA
        -source-path vserverB:dstvolB
        -source-snapshot daily.2013-02-10_0010
```

```
Warning: All data newer than Snapshot copy hourly.2013-02-11_1205
on volume vserverA:src_volA will be deleted.
Do you want to continue? {y|n}: y
[Job 98] Job is queued: snapmirror restore from source
"vserverB:dstvolB" for the snapshot daily.2013-02-10_0010.
```

```
cluster::> lun show
```

| Vserver  | Path               | State  | Mapped   | Type    | Size    |
|----------|--------------------|--------|----------|---------|---------|
| vserverA | /vol/srcvolA/lun_A | online | mapped   | windows | 300.0GB |
| vserverA | /vol/srcvolA/lun_B | online | mapped   | windows | 300.0GB |
| vserverA | /vol/srcvolA/lun_C | online | mapped   | windows | 300.0GB |
| vserverB | /vol/dstvolB/lun_A | online | unmapped | windows | 300.0GB |
| vserverB | /vol/dstvolB/lun_B | online | unmapped | windows | 300.0GB |
| vserverB | /vol/dstvolB/lun_C | online | unmapped | windows | 300.0GB |

6 entries were displayed.

After the volume is restored from the SnapVault secondary volume, the source volume no longer contains

lun\_D. You do not need to remap the LUNs in the source volume after the restore because they are still mapped.

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