HP OpenView

Storage Virtual Replicator reference guide

command line interface

Storage Virtual Replicator command line interface reference guide

Contents

About this guide

This guide provides information about using the following command line interfaces:

- SnapMgr
- SmartSnap

Intended audience

This guide is intended for HP OpenView Storage Virtual Replicator (SVR) users.

Prerequisites

Using this guide requires basic knowledge of:

- Microsoft Windows 2000 and 2003 servers and workstations
- Microsoft Cluster Server (MSCS) servers

Related documentation

The following documents provide additional information about this product:

- *HP OpenView Storage Virtual Replicator system administrator's guide*
- *HP OpenView Storage Virtual Replicator installation instructions*
- *HP OpenView Storage Virtual Replicator release notes*
- HP OpenView Storage Virtual Replicator online help (accessible from the Storage Virtual Replicator user interface)
- HP OpenView Storage Virtual Replicator Online Volume Growth online help(accessible from the Online Volume Growth user interface)
- HP OpenView Storage Virtual Replicator Scheduling Wizards online help (accessible from the Scheduling Wizards user interface)
- HP OpenView Storage Virtual Replicator planning charts

You can find these documents on the Storage Virtual Replicator web site:

http://h18006.www1.hp.com/products/sanworks/vr/index.html

Document conventions and symbols

Table 1 Document conventions

Convention	Element
Medium blue text: Figure 1	Cross-reference links and e-mail addresses
Medium blue, underlined text (http://www.hp.com)	Web site addresses
Bold font	• Key names • Text typed into a GUI element • GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes
Italics font	Text emphasis
`Monospace font`	• File and directory names • System output • Code • Commands
`Monospace, italic font`	• Code variables • Command line variables
`Monospace, bold font`	Emphasis of file and directory names, system output, code, and commands

△ **CAUTION:** Indicates that failure to follow directions could result in damage to equipment or data.

IMPORTANT: Provides clarifying information or specific instructions.

NOTE: Provides additional information.

☼ **TIP:** Provides helpful hints and shortcuts.

HP technical support

Telephone numbers for worldwide technical support are listed on the HP support web site:
http://www.hp.com/support/.

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

For continuous quality improvement, calls may be recorded or monitored.

HP strongly recommends that customers sign up online using the Subscriber's choice web site:
http://www.hp.com/go/e-updates.

- Subscribing to this service provides you with e-mail updates on the latest product enhancements, newest versions of drivers, and firmware documentation updates as well as instant access to numerous other product resources.
- After signing up, you can quickly locate your products by selecting **Business support** and then **Storage** under Product Category.

HP-authorized reseller

For the name of your nearest HP-authorized reseller:

- In the United States, call 1-800-282-6672.
- Elsewhere, visit the HP web site: http://www.hp.com. Then click **Contact HP** to find locations and telephone numbers.

Helpful web sites

For other product information, see the following HP web sites:

- http://www.hp.com
- http://www.hp.com/go/storage
- http://www.hp.com/support/
- http://www.docs.hp.com

1 Command line interface overview

This chapter provides an overview of SnapMgr, the command line interface (CLI) for Storage Virtual Replicator (SVR).

Using SnapMgr

You can use `SnapMgr` to manage pools, virtual disks, and snapshots. You can also use it to create batch jobs to automate tasks. This section describes the following topics:

- Accessing SnapMgr, page 11
- Managing remote computers, page 11
- Managing security and privileges, page 12
- Syntax guidelines, page 12
- SnapMgr command summary, page 13

Accessing SnapMgr

To access `SnapMgr`:

- Select **Start > Run** and enter `snapmgr` to open the `SnapMgr` command prompt window.
- Select **Start > Run** and enter `cmd` to open a command prompt window.
  When using the command prompt window, you must include the `SNAPMGR` prefix before the command:
  ```
  C:\> SNAPMGR SNAPSHOT MySnapshot /DELETE
  ```

From the command prompt window, enter the following command to switch to the `SnapMgr` command prompt:

```
C:\> SNAPMGR
```

When using the `SnapMgr` command prompt, you can omit the `SNAPMGR` prefix:

```
SnapMgr> SNAPSHOT MySnapshot /DELETE
```

> **NOTE:** Throughout this guide, both command prompts are used interchangeably.

Managing remote computers

You can use `SnapMgr` commands to manage both local and remote computers and clusters. By default, you manage the local stand–alone computer or cluster. (See "MANAGE" on page 27 for more information.)

To use a stand–alone computer to manage pools on a remote cluster, install the Cluster Administrator software and the SVR management tools on that computer. The Cluster Administrator software is on the Microsoft Cluster Server (MSCS) distribution CD-ROM. Run the MSCS setup program to install the Cluster Administrator software.

Managing security and privileges

By default in Windows, the Domain Admins global group is a member of the local Administrators group on every computer. Any user in the Domain Admins group can use `SnapMgr` to manage any computer or cluster in the domain.

Creating a group

To enable users to manage SVR without having the privileges of the Domain Admins group:

1. Create the SWVR Admins group on the domain controller. You must have Domain Admins privileges to create this group.
2. Add users to the SWVR Admins group.
3. Add the SWVR Admins group to the local administrators group on each computer you want users to manage, including each cluster node.

Managing other domains

You can manage a computer in another domain if:

• The domains are compatible (trust relationship).
• Your user account belongs to the local administrators group on every computer you want to manage, including each cluster node.

Syntax guidelines

This section describes syntax guidelines.

Abbreviating commands

You can abbreviate `SnapMgr` commands to three letters or less, but do not abbreviate the `SNAPMGR` prefix.

For example, these commands are the same:

```
SnapMgr> SNAPSHOT MySnapshot /DELETE

SnapMgr> SNAPS MySnapshot /DEL

SnapMgr> SNA MySnapshot /D

C:\> SNAPMGR SNAPS MySnapshot /DEL
```

Using mixed case

You can enter the commands in upper case, lower case, or mixed case:

```
SnapMgr> DRIVES

SnapMgr> Drives

SnapMgr> drives

SnapMgr> drIVes
```

Using quotation marks

If the name of the pool, virtual disk, or snapshot contains spaces, enclose the name in quotation marks. For example:

```
SnapMgr> POOL "New Pool" /DELETE
```

The only exception is the `"mount path"` parameter, which you must always enclose in quotation marks.

SnapMgr command summary

Table 2 is a summary of the `SnapMgr` commands and their functions:

Table 2 SnapMgr commands

Function	Command
Delete a pool containing snapshots and virtual disks	`DELTREE /POOL:pool_name`
Delete a virtual disk containing snapshots	`DELTREE /VIRT:virtual_disk_name`
Show available drive letters	DRIVES [/NODE:nodename]
Manage remote computer	MANAGE computername
Manage local computer	MANAGE /LOCAL
Show managed computer	MANAGE
Migrate data	MIGRATE pool /SOURCE:sourcedisk /DESTINATION:destinationdisk [/REMOLD] [/CHUNK:chunk]
Create a pool	POOL pool /UNITS:disknumbers [/SEGSIZE:segsize]
Add a storage unit	POOL pool /ADD:disknumber
Import a storage unit	POOL pool /IMPORT:disknumber
Show storage units available for import	POOL pool /SNAPINUNITS
Remove storage units from a pool	POOL pool /REMOVE:disknumber
Delete a pool	POOL pool /DELETE
Show pools	POOL pool POOL /STATISTICS POOL pool /UNITS
Create a snapshot	SNAPSHOT snapshot /PARENT:parent
Map a snapshot	SNAPSHOT snapshot /MAP:drive
Unmap a snapshot	SNAPSHOT snapshot /UNMAP
Delete a snapshot	SNAPSHOT snapshot /DELETE
Assign a mount point to a snapshot	SNAPSHOT snapshot /MOUNT:"mount path"
List mount points for a snapshot	SNAPSHOT snapshot /LISTMOUNT
Remove a mount point of a snapshot	SNAPSHOT snapshot /UNMOUNT:"mount path"
Show snapshots	SNAPSHOT snapshot
Show available storage units	UNITS
Enable support for incremental backups of virtual disks	UTILITY /RESET virtualdisk /SNAPSHOT:"snapshot" [/LOGFILE:"logfile"] `UTILITY /RESET virtualdisk /TIME:"MM-DD-YYYY-hh:mm:ss" [/MARGIN:mmm] [/LOGFILE:"logfile"]`
Recover Windows Registry namespace	UTILITY /RECOVER:NAMESPACE

Table 2 SnapMgr commands

Function	Command
Upgrade SVR from a standalone system to a cluster	SNAPMGR.EXE UTILITY /CLUSTER:INSTALL
Downgrade SVR from a cluster to a standalone system	SNAPMGR.EXE UTILITY /CLUSTER:UNINSTALL
Create a virtual disk	VIRTUALDISK virtualdisk /POOL:pool /CAPACITY:mb
Map a virtual disk	VIRTUALDISK virtualdisk /MAP:drive
Format a virtual disk	VIRTUALDISK virtualdisk /FORMAT [/ALLOCATIONSIZE:nsize]
Unmap a virtual disk	VIRTUALDISK virtualdisk /UNMAP
Delete a virtual disk	VIRTUALDISK virtualdisk /DELETE
Assign a mount point to a virtual disk	VIRTUALDISK virtualdisk /MOUNT:"mount path"
List mount points for a virtual disk	VIRTUALDISK virtualdisk /LISTMOUNT
Remove a mount point of a snapshot	VIRTUALDISK virtualdisk /UNMOUNT:"mount path"
Restore a virtual disk from a snapshot	VIRTUALDISK virtualdisk /RESTORE:snapshot
Show virtual disks	VIRTUALDISK virtualdisk
Grow a virtual disk	VIRTUALDISK virtualdisk /GROW:mb

Using SmartSnap

You can use the SmartSnap command to maintain multiple snapshots of a virtual disk.

NOTE: SmartSnap supports snapshots that you create using Volume Shadow copy Support (VSS).

2 DELTREE

This chapter describes the `DELTREE` command.

DELTREE /POOL

Use the `DELTREE /POOL` command to delete a pool that contains snapshots and virtual disks. When you delete the specified pool, you will also delete the snapshots and virtual disks within that pool.

⚠ **CAUTION:** Once you delete the pool, you cannot recover the data contained within the pool.

Syntax

```
DELTREE /POOL:pool_name
```

pool_name is the name of the pool you wish to delete.

Example

This command delete the `Test` pool, even if it contains snapshots and virtual disks:

```
SnapMgr> DELTREE /POOL:Test
```

DELTREE /VIRT

Use the `DELTREE /VIRT` command to delete a virtual disk and the snapshots it contains. This is an alternative to deleting the snapshots first and then deleting the virtual disk.

Syntax

```
DELTREE /VIRT:virtual_disk_name
```

`virtual_disk_name` is the name of the virtual disk you wish to delete.

Example

This command delete the `vdisk1` virtual disk and any snapshots it contains:

```
SnapMgr> DELTREE /VIRT:vdisk1
```

3 DRIVES

This chapter describes the DRIVES command.

DRIVES

Use the DRIVES command to determine which drive letters are available to map to virtual disks and snapshots.

In a cluster, the DRIVES command displays the drive letters that are available on every cluster node.

If one cluster node is down, use the /NODE parameter to determine which drive letters are available on a particular node. The DRIVES command fails if one of the nodes is down and you do not use the /NODE parameter.

Syntax

```
DRIVES [/NODE:nodename]
```

nodename is the name of the cluster node for which you want to view available drive letters.

Examples

This command displays all available drive letters:

```
SnapMgr> DRIVES
Available drive letters: DGHMNPQ
```

In this example, you issue the MANAGE command first to switch management to the HQ cluster. Then, you issue the DRIVES command to display the available drive letters on all cluster nodes:

```
SnapMgr> MANAGE HQ
SnapMgr> DRIVES

Available drive letters: DGHMNPQ
```

This command displays the available drive letters on the stand–alone computer Backup:

```
C:\> SNAPMGR Backup DRIVES

Available drive letters: DEFGHMNPQRSTVW
```

This command displays the available drive letters on the local cluster node Accounts1:

```
SnapMgr> MANAGE /LOCAL
SnapMgr> DRIVES /NODE:Accounts1

Available drive letters: GHKMNPQRST
```

4 MANAGE

This chapter describes the `MANAGE` commands:

- MANAGE, page 19
- MANAGE computername, page 20
- MANAGE /LOCAL, page 21

MANAGE

Use the `MANAGE` command to determine which stand–alone computer or cluster you are currently managing. Subsequent commands that you enter affect only the computer or cluster you are managing.

Syntax

```
MANAGE
```

Examples

These commands show that you are currently managing the node `Backup`:

```
SnapMgr> MANAGE
Managing node BACKUP
```

This command shows that you are currently managing the `Accounts` cluster, which contains the nodes `Accounts1` and `Accounts2`:

```
SnapMgr> MANAGE
Managing cluster node ACCOUNTS1
Managing cluster ACCOUNTS
Cluster members: ACCOUNTS1 ACCOUNTS2
```

MANAGE computername

Use the MANAGE *computername* command to manage a remote computer or cluster. By default, you manage the local stand–alone computer or cluster. Subsequent commands that you enter affect only the computer or cluster you are managing.

When managing a cluster, you typically specify the cluster *name*. However, if you create a pool or add a storage unit to a pool, you must specify the cluster *node* that owns the cluster name resource because the disk numbers may be different on each cluster node.

Syntax

MANAGE *computername*

computername is the name of the stand–alone computer or cluster that you want to manage.

📝 **NOTE:**   Use LANMAN names only, such as Accounts. SVR does not support DNS names, such as accounts.domain.com or 123.45.67.122.

Example

This command enables you to manage the remote computer Accounts:

SnapMgr> MANAGE Accounts

MANAGE /LOCAL

Use the `MANAGE /LOCAL` command to manage the local computer or cluster. If you issued a `MANAGE` command to manage a remote computer or cluster, use this command to return management to the local computer or cluster. Subsequent commands that you enter affect only the local stand–alone computer or cluster.

Syntax

```
MANAGE /LOCAL
```

Examples

In this example, you issue the `MANAGE` command to switch management to the `Accounts` cluster. You then issue the `DRIVES` command to display the available drive letters on the `Accounts` cluster:

```
SnapMgr> MANAGE Accounts
SnapMgr> DRIVES
Available drive letters: GHKMNPQRST
```

In this example, you issue the `MANAGE` command to switch management to the local cluster. You then issue the `DRIVES` command to display the available drive letters on the local cluster:

```
SnapMgr> MANAGE /LOCAL
SnapMgr> DRIVES
Available drive letters: DGHMNPQ
```

5 MIGRATE

This chapter describes the `MIGRATE` command.

MIGRATE

Use the `MIGRATE` command to migrate data from a source disk in a pool to a specified destination disk. The destination disk can be a basic disk or a disk in a pool. Ensure that the destination disk has enough free space to accommodate the data residing on the source disk.

> **NOTE:** When using the CLI, you specify only one source disk in a data migration operation.

Issuing this command launches the data migration wizard, which guides you through the process. You can pause and resume the migration wizard at any time.

If you specify a unit that is not in a pool as the destination disk, the unit is added to the pool before migrating the data from the source disk to the destination disk.

In a cluster, the `MIGRATE` command fails if the pool cluster resource is offline.

Syntax

MIGRATE *pool* /SOURCE:*sourcedisk* /DESTINATION:*destinationdisk* [/REMOLD]
[/CHUNK:*chunk*]

The command parameters are:

- *pool*—The name of the pool on which data migration will occur.
- *sourcedisk*—The disk in the pool from which you want to migrate data.
- *destinationdisk*—The disk to which you want to migrate data.
- *REMOLD*—This parameter removes the source disk from the pool when data migration is complete. If you do not specify this parameter, the source disk remains in the pool when data migration is complete.
- *chunk*—The amount of data transferred from the source disk to the destination disk for each data transfer operation. Valid values are 128, 256, 512, and 1024. If you do not specify this parameter, the default value is 256.

> **NOTE:** If the source disk remains in the pool after data migration, it can be used for other SVR pool operations.

Examples

This command migrates data from disk 10 to disk 11, and removes disk 10 from the pool when data migration is complete:

```
SnapMgr> MIGRATE pool /SOURCE:10 /DESTINATION:11 /REMOLD
```

This command migrates data from disk 2 to disk 9, and retains disk 2 in the pool when data migration is complete:

```
SnapMgr> MIGRATE mypool /SOURCE:2 /DESTINATION:9
```

6 POOL

This chapter describes the POOL commands:

POOL

Use the POOL command to display the following information about all online pools for the stand–alone computer or cluster you are managing:

- **Name**—The name of the pool.
- **Capacity**—The capacity of the pool, rounded up to the nearest megabyte.
- **Free Space**—The amount of free space available in the pool, rounded down to the nearest megabyte.
- **Owner**—The name of the cluster node that owns the pool. On a stand–alone computer, this is the name of that computer.

📝 **NOTE:** The POOL command does not display information about pools in a cluster that are currently offline.

Syntax

```
POOL
```

Examples

This command displays information about all online pools for the computer you are managing:

```
SnapMgr> POOL

Name        Capacity (MB)   Free Space (MB)    Owner

--------------------------------------------------

MyPool      2009            345                MYPC
```

In this example, you issue the MANAGE command first to switch management to the HQ cluster. Then, you issue the POOL command to display information about all online pools in the cluster:

```
SnapMgr> MANAGE HQ
SnapMgr> POOL

Name        Capacity (MB)   Free Space (MB)    Owner

---------------------------------------------------------

RAID_Pool   17288           8232               HQ-NODE1
NewsPool    6074            3073               HQ-NODE2
```

POOL pool

When you specify a pool name, the POOL command displays summary information for that pool (see "POOL" on page 26), plus the following details:

- **Segment size**—The segment size of the pool. A segment is the smallest unit of data that can be copied.
- **Created**—The date and time the pool was created.
- **Modified**—The date and time a storage unit was added to the pool.
- **Version**—The version number of the pool's on-disk structures.
- Summary information about the pool's virtual disks and snapshots, including disk name, disk type, capacity, Delspace, drive letter, and family. (For more information, see "SNAPSHOT" on page 49 and "VIRTUALDISK" on page 71.)

Syntax

```
POOL pool
```

pool is the name of the pool whose information you want to view.

Example

This command displays information for the pool RAID_Pool:

```
SnapMgr> POOL RAID_Pool

Pool: RAID_Pool

Capacity: 17288 MB

Free space: 8232 MB

Segment size: 32 KB

Created: 03/06/03 08:38 AM

Modified: 05/23/03 08:45 AM

Version: 1.0

Owner node: HQ-NODE1
```

Disk name	Type	Capacity (MB)	Delspace (MB)	Drive	Family
Accounts_Data	Virtual	4500	0	Z:	1
Engineering Data	Virtual	3000	3000	Y:	2
Accounts_Mon	Snapshot	4500	573	W:	1
Accounts_Tue	Snapshot	4500	2729	T:	1

POOL /ADD

Use the `POOL /ADD` command to add a storage unit to a pool. When you add a storage unit to a pool, the unit is marked as offline, so that users cannot access it.

You can add a storage unit to a pool while users access its virtual disks and snapshots.

In a cluster, the `POOL /ADD` command fails if any of the nodes in the cluster is down or if the pool cluster resource is offline.

📝 **NOTE:** In a cluster, ensure that you first specify the cluster node, not the cluster name. Disk numbers may vary on each cluster node. If you specify the cluster name only, the `POOL /ADD` command adds the storage unit to the pool on the node that owns the cluster name resource.

Syntax

POOL *pool* /ADD:*disknumber*

The command parameters are:

- *pool*—The name of the pool to which you are adding a storage unit.
- *disknumber*—The disk number of the storage unit you want to add to the pool. Use the `UNITS` command to determine the available storage units and their disk numbers. (See "UNITS" on page 61 for more information.)

Examples

This command adds disk 9 to the pool `MyPool`:

SnapMgr> POOL MyPool /ADD:9

In this example, you issue the `MANAGE` command first to switch management to the `HQ-NODE1` node in the `HQ` cluster. Then, you issue the `UNITS` command to determine which storage units are available on `HQ-NODE1`. Finally, you issue the `POOL /ADD` command to add disk 6 to the pool.

SnapMgr> MANAGE HQ-NODE1

SnapMgr> UNITS

Capacity (MB)   Disk Number   Type

4091   1   Shared
4091   6   Shared

SnapMgr> POOL RAID_Pool /ADD:6

In this example, you issue the `UNITS` command first to determine which storage units are available on `HQ-NODE1`. Then, you issues the `POOL /ADD` command to add disk 1 to the pool.

C:\> SNAPMGR HQ-NODE1 UNITS

Capacity (MB)   Disk Number   Type

4091   1   Shared

C:\> SNAPMGR HQ-NODE1 POOL NewsPool /ADD:1

POOL /DELETE

Use the `POOL /DELETE` command to delete a pool, which frees the storage units and brings them online so you can access them. Use these storage units to create a new pool or partition and format the storage units as basic disks.

In a cluster, this command fails if the pool cluster resource is offline.

📝 **NOTE:** You must delete all virtual disks and snapshots in a pool before you delete the pool. In a cluster, the command deletes the pool cluster resource and all storage unit cluster resources. If the pool group is empty, it deletes the group.

Syntax

`POOL pool /DELETE`

`pool`—The name of the pool you want to delete.

Examples

This command deletes the pool `Pool2:10`:

`SnapMgr> POOL "Pool2:10" /DELETE`

📝 **NOTE:** You must enclose the name in quotation marks if the name contains special characters. Examples of special characters are colons, commas, and asterisks.

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `POOL /DELETE` command to delete the pool `NewsPool`:

`SnapMgr> MANAGE HQ`

`SnapMgr> POOL NewsPool /DELETE`

This command deletes the pool `Test` from the standalone computer `JudyPC`:

`C:\> SNAPMGR JudyPC POOL Test /DELETE`

POOL /IMPORT

Use the `POOL /IMPORT` command to import storage units with existing partitions and data to a pool. Each logical drive (or partition) on the disk becomes a virtual disk in the pool. Any free space on the disk is added to the pool's free space.

When importing storage units, consider the following:

- Ensure that the pool's free space is equal to or greater than 1% of the storage unit's capacity.
- SVR does not support the FAT file system. If the storage unit you want to import has FAT partitions, you must convert them to NTFS before you import the unit.
- In a cluster, the storage unit you want to import must be a shared disk and a cluster resource.

Syntax

```
POOL pool /IMPORT:disknumber
```

The command parameters are:

- *pool*—The name of the pool to which you want to import the storage unit.
- *disknumber*—The disk number of the storage unit you want to import. Use the `SNAPINUNITS` command to determine the available storage units and their disk numbers.
  (See "POOL /SNAPINUNITS" on page 32 for more information.)

Examples

This command imports disk 9 to the pool `MyPool`:

```
SnapMgr> POOL MyPool /IMPORT:9
```

In this example, you issue the `SNAPINUNITS` command first to identify the available storage units and their disk numbers on the node `HQ-NODE1`. Then, you issue the `POOL /IMPORT` command to import disk 1 to the pool `NewsPool`.

```
C:\> SNAPMGR HQ-NODE1 SNAPINUNITS
```

Capacity (MB)	Disk Number	Type
4091	1	Shared

```
C:\> SNAPMGR HQ-NODE1 POOL NewsPool /IMPORT:1
```

POOL /REMOVE

Use the `POOL/ REMOVE` command to remove a storage unit from a pool.

Syntax

```
POOL pool /REMOVE:disknumber
```

The command parameters are:

- *pool*—The name of the pool from which you want to remove a storage unit.
- *disknumber*—The disk number of the storage unit you want to remove.
  Use the `POOL /UNITS` command to identify the disk numbers of the storage units in the pool. (See "POOL /UNITS" on page 34 for more information.)

Example

This command removes disk 9 from the pool `MyPool`:

```
SnapMgr> POOL MyPool /REMOVE:9
```

POOL /SNAPINUNITS

Use the `POOL /SNAPINUNITS` command to display the following information about storage units you can import to a pool:

- **Capacity**—The capacity of the storage unit.
- **Disk Number**—The disk number of the storage unit. In a cluster, it is the disk number of the node you are currently managing.
- **Type**—The value **Shared** indicates that the disk is in a cluster on a shared storage bus and can be viewed by all nodes in the cluster. The value **Local** indicates that the disk is a physical disk attached to the stand–alone computer.
- **Partition/s**—The number of the partition on the storage unit, including the capacity, type, and drive letter assignment of each partition.

  When you import a storage unit, each partition becomes a virtual disk in the pool.

  The command output includes FAT partitions. You must convert FAT partitions to NTFS before importing the storage unit.
- **Free Space**—The amount of free space on the storage unit. When you import a storage unit, any free space is added to the pool's free space.

📝 **NOTE:** The `POOL /SNAPINUNITS` command only displays logical storage units with partitions.

In a cluster, the `POOL /SNAPINUNITS` command fails if the pool cluster resource is offline.

⚠ **CAUTION:** On a single–boot system, this command does not display the boot disk. However, on a dual-boot system, this command displays the system disk that contains the boot partition. Do not import this disk to a pool because you could lose the disk data.

Syntax

```
POOL pool /SNAPINUNITS
```

`pool`—The name of the pool whose storage units you want to view.

Example

This command displays the storage units you can import to a pool. (See "POOL /IMPORT" on page 30 for more information.)

```
SnapMgr> POOL MyPool /SNAPINUNITS

Capacity     Disk Number   Type     Partition/s     Free Space

--------------------------------------------------------------

4087 MB      1             Local    Num   :  1      87 MB

                                    Cap   :         4000 MB

                                    Type  :  FAT32

                                    Drive :  E:

17360 MB     5             Local    Num   :  1      16333 MB

                                    Cap   :         1027 MB

                                    Type  :  NTFS

                                    Drive :  F:
```

POOL /STATISTICS

Use the `POOL /STATISTICS` command to display the following information about input/output (I/O) activity for a pool:

- **Copy-outs**—The number of segments copied to preserve snapshot data.
- **Read requests**—The number of read I/O requests the pool has received.
- **Write requests**—The number of write I/O requests the pool has received.
- **Disk reads**—The number of read I/O requests the pool has issued to disk. This includes reads caused by copy-out operations and split reads.
- **Disk writes**—The number of write I/O requests the pool has issued to disk. This includes writes caused by copy-out operations and split writes.
- **Split reads**—The number of read I/O requests that were split into two or more requests before being issued to disk. This occurs because the read request crossed a segment boundary, and the next segment was not contiguous with the current segment.
- **Split writes**—The number of write I/O requests that were split into two or more requests before being issued to disk. This occurs because the write request crossed a segment boundary, and the next segment was not contiguous with the current segment.

The counters are reset to zero when the stand–alone computer restarts or when a pool fails over in a cluster.

Syntax

```
POOL pool /STATISTICS
```

Example

This command displays statistics for the pool `RAID_Pool`:

```
C:\> SNAPMGR HQ POOL RAID_Pool /STATISTICS

Pool: RAID_Pool

Copy-outs: 12345

Read requests: 827652

Write requests: 123456

Disk reads: 73654

Disk writes: 3569

Split reads: 34

Split writes: 11
```

POOL /UNITS

Use the `POOL /UNITS` command to display the following information about each storage unit in a pool:

- **Capacity**—The capacity of the storage unit, rounded up to the nearest megabyte.
- **Disk Number**—The disk number of the storage unit. In a cluster, it is the disk number on the node that owns the pool resource. The disk number may change when you restart the computer or when the pool resource fails over in the cluster.
- **Type**—The value **Shared** indicates that the disk is in a cluster on a shared storage bus and can be viewed by all nodes in the cluster. The value **Local** indicates that the disk is a physical disk attached to the stand–alone computer.

Syntax

```
POOL pool /UNITS
```

Example

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `POOL /UNITS` command to display the storage units in `RAID_Pool`:

```
SnapMgr> MANAGE HQ

SnapMgr> POOL RAID_Pool /UNITS

Capacity (MB)     Disk Number       Type
--------------------------------------
8678              3                 Shared
8678              4                 Shared
```

POOL /UNITS [/SEGSIZE]

Use the `POOL /UNITS [/SEGSIZE]` command to create a pool from the storage units you specify. These storage units are marked as offline to prevent users from accessing them.

In a cluster, this command fails if any cluster node is down.

For more information about pools, refer to "Managing Pools" in the *HP OpenView Storage Virtual Replicator system administrator's guide*.

Syntax

`POOL pool /UNITS:disknumbers [/SEGSIZE:segsize]`

The command parameters are:

- *pool*—The name of the new pool. The name can be up to 23 characters. Ensure that you specify a unique name; every pool, virtual disk, and snapshot must have a unique name. In a cluster, the pool name must be different from any cluster group or resource.

> **NOTE:** After you create a pool, you cannot change its name.

- *disknumbers*—The disk numbers of the storage units you want to use in the pool. Use commas to separate the disk numbers you specify; do not use spaces. Use the UNITS command to determine the storage units available and their disk numbers. See
- *segsize*—The size, in kilobytes, of the pool segment. Valid values are 32, 64, 128, and 256.

Examples

This command creates a pool called `MyPool` from disks 3, 4, and 5:

`SnapMgr> POOL MyPool /UNITS:3,4,5`

In this example, you issue the MANAGE command first to switch management to the node `HQ-NODE1` in the HQ cluster. Then, you issue the UNITS command to determine the storage units available on `HQ-NODE1`. Then, you issue the POOL /UNITS command to create the pool `RAID_Pool` using disks 3 and 4:

> **NOTE:** In a cluster, you must specify the cluster node because disk numbers may vary on each cluster node.

```
SnapMgr> MANAGE HQ-NODE1

SnapMgr> UNITS

Capacity (MB)    Disk Number    Type
-----------------------------------------
4091             1              Shared
8768             3              Shared
8768             4              Shared
4091             6              Shared
2007             7              Shared
SnapMgr> POOL RAID_Pool /UNITS:3,4
```

In this example, you issue the `UNITS` command first to determine the storage units available on the node `HQ-NODE1` in the `HQ` cluster. Then, you issue the `POOL /UNITS` command to create the pool `NewsPool` using disk 7:

```
C:\> SNAPMGR HQ-NODE1 UNITS

Capacity (MB)          Disk Number      Type

----------------------------------------

4091                   1                Shared

4091                   6                Shared

2007                   7                Shared

C:\> SNAPMGR HQ-NODE1 POOL NewsPool /UNITS:7
```

7 SNAPSHOT

This chapter describes the SNAPSHOT commands:

SNAPSHOT

Use the SNAPSHOT command to display the following information about all online snapshots on the stand–alone computer or cluster you are managing:

- **Name**—The name of the snapshot.
- **Pool**—The name of the pool that contains the snapshot.
- **Drive**—The drive letter that is mapped to the snapshot.
- **Family**—The name of the family that contains the snapshot.
- **Owner**—The name of the cluster node that owns the snapshot's pool. On a stand–alone computer, this is the name of that computer.

NOTE: In a cluster, the SNAPSHOT command does not display information about snapshots in pools that are offline.

Syntax

```
SNAPSHOT
```

Examples

This command displays information about all online snapshots on the computer you are managing:

```
SnapMgr> SNAPSHOT

Name                Pool      Drive     Family     Owner

----------------------------------------------------------

Sports_Snapshot    MyPool    X:        0          MYPC
```

In this example, you use the MANAGE command first to switch management to the HQ cluster. Then, you use the SNAPSHOT command to display information about all snapshots in pools that are online in the HQ cluster:

```
SnapMgr> MANAGE HQ
SnapMgr> SNAPSHOT

Name                Pool      Drive     Family     Owner

----------------------------------------------------------

Accounts_Mon       RAIDPool   W:        1          HQ-NODE1

Accounts_Tue       RAIDPool   T:        1          HQ-NODE1
```

SNAPSHOT snapshot

Use the SNAPSHOT *snapshot* command to display the following information about the specified snapshot:

- **Snapshot**—The name of the snapshot.
- **Capacity**—The capacity of the snapshot. The file system uses this value. For example, Windows Explorer uses this value to display the snapshot's size. Capacity also represents the maximum pool space the snapshot can use if you modified the entire contents of the snapshot or the parent disk.
- **Delspace**—The amount of space you will gain if you delete the snapshot. The Delspace is the amount of pool space used exclusively by the snapshot; it is not shared by any other snapshots in its family. If you do not have any snapshots, only a virtual disk, the Delspace is the total capacity of the virtual disk. Refer to "Calculating Delspace" in the *HP OpenView Storage Virtual Replicator system administrator's guide* for more information.
- **Drive letter**—The drive letter that is mapped to the snapshot.
- **Family**—The name of the family that contains the snapshot.
- **Created**—The date and time that the snapshot was created.
- **Pool**—The name of the pool that contains the snapshot.

Syntax

```
SNAPSHOT snapshot
```

snapshot—The name of the snapshot whose information you want to view.

Example

This command displays information for the snapshot Accounts_Mon on the HQ cluster:

```
C:\> SNAPMGR HQ SNAPSHOT Accounts_Mon

Snapshot: Accounts_Mon
Capacity: 4500 MB
Delspace: 573 MB
Drive letter: W:
Family: 1
Created: 1/26/99 9:07 PM
Pool: RAID Pool
```

SNAPSHOT /DELETE

Use the SNAPSHOT /DELETE command to delete a snapshot from a pool. This command deletes the data on the snapshot but does not delete the data on the parent disk or any other disks in the family.

In a cluster, this command fails if the pool cluster resource is offline.

For more information about deleting snapshots, refer to "Managing Snapshots" in the *HP OpenView Storage Virtual Replicator system administrator's guide*.

Syntax

SNAPSHOT *snapshot* /DELETE

snapshot—The name of the snapshot you want to delete.

Examples

This command deletes the snapshot Sports_Snapshot:

SnapMgr> SNAPSHOT "Sports_Snapshot" /DELETE

📝 **NOTE:** You must enclose the name in quotation marks if the name contains special characters. Examples of special characters are colons, commas, and asterisks.

In this example, you issue the MANAGE command first to switch management to the HQ cluster. Then, you issue the SNAPSHOT /DELETE command to delete the snapshot Accounts_Mon:

SnapMgr> MANAGE HQ

SnapMgr> SNAPSHOT "Accounts_Mon" /DELETE

This command deletes the snapshot Accounts_Tue on the HQ cluster:

C:\> SNAPMGR HQ SNAPSHOT "Accounts_Tue" /DELETE

SNAPSHOT /LISTMOUNT

Use the SNAPSHOT /LISTMOUNT command to display all mount points for a snapshot.

NOTE: You cannot use Windows Remote Management to list mount points for snapshots or virtual disks.

Syntax

SNAPSHOT *snapshot* /LISTMOUNT

snapshot—The name of the snapshot whose mount points you want to view.

Example

This command displays all mount points for the snapshot Sports:

SnapMgr> SNAPSHOT Sports /LISTMOUNT

Available Mount Points

----

z:\Cricket\

SNAPSHOT /MAP

Use the `SNAPSHOT /MAP` command to map a drive letter to a snapshot. The drive letter is consistent—the next time you restart the computer, that drive letter is mapped automatically to the snapshot, provided that the letter is available.

HP recommends that you select a letter near the end of the alphabet because the pool starts late in the startup sequence. This reduces the probability that the drive letter will be allocated to another disk. In a cluster, if the drive letter is not available when the pool fails over to another node, no drive letter is mapped to the snapshot.

In a cluster, the `SNAPSHOT /MAP` command fails if the pool cluster resource is offline.

Syntax

```
SNAPSHOT snapshot /MAP:drive
```

The command parameters are:

- `snapshot`—The name of the snapshot to which you want to map a drive letter.
- `drive`—The drive letter you want to map to the snapshot.

Examples

This command maps the drive letter `Z` to the snapshot `Sports1`:

```
SnapMgr> SNAPSHOT Sports1 /MAP:Z
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `SNAPSHOT /MAP` command to map the drive letter `W` to the snapshot `Accounts_Mon`:

```
SnapMgr> MANAGE HQ

SnapMgr> SNAPSHOT Accounts_Mon /MAP:W
```

This command maps the drive letter `T` to the snapshot `Accounts_Tue` on the `HQ` cluster:

```
C:\> SNAPMGR HQ SNAPSHOT Accounts_Tue /MAP:T
```

SNAPSHOT /MOUNT

Use the `SNAPSHOT /MOUNT` command to move a snapshot to a mount point (or folder). By default, the path you specify is consistent—the next time you restart the computer, that path is mapped automatically to the snapshot, provided that the path is available.

SVR does not support nested mount points. For example, if the mount point `V:\temp` has a mount point, `V:\temp\xyz`, that mount point is not supported.

> **NOTE:** You cannot use Windows Remote Management to assign mount points to a virtual disk or snapshot.

Syntax

`SNAPSHOT` *snapshot* `/MOUNT:`*"mount path"*

The command parameters are:

- *snapshot*—The name of the snapshot you want to mount.
- *"mount path"*—The path to an empty folder on an NTFS formatted virtual disk in the same pool. Be sure to include the quotation marks.

Example

This command mounts the snapshot `SportsSnap` to the specified folder:

`SnapMgr> SNAPSHOT SportsSnap /MOUNT:"Z:\SportsSnap"`

SNAPSHOT /PARENT

Use the SNAPSHOT /PARENT command to create a snapshot of a disk in a pool. The disk is called the *parent disk* and can be a virtual disk or another snapshot. You do not need to map a drive letter to the disk.

In a cluster, this command fails if the pool cluster resource is offline.

The new snapshot is offline until you map a drive letter to it. Use the SNAPSHOT /MAP command, not Disk Administrator, to map a drive letter to the snapshot. (See "SNAPSHOT /MAP" on page 42 for more information.)

For more information about snapshots, refer to "Managing Snapshots" in the *HP OpenView Storage Virtual Replicator system administrator's guide*.

Syntax

SNAPSHOT *snapshot* /PARENT:*parent*

The command parameters are:

- *snapshot*—The name of the new snapshot. The name can be up to 23 characters. Ensure that you specify a unique name; every pool, virtual disk, and snapshot must have a unique name. Once you create a snapshot, you cannot change its name.
- *parent*—The name of the virtual disk or snapshot that is the source of the new snapshot.

Examples

This command creates the snapshot Sports_Snapshot of the virtual disk Sports:

SnapMgr> SNAPSHOT Sports_Snapshot /PARENT:Sports

In this example, you issue the MANAGE command first to switch management to the HQ cluster. Then, you issue the SNAPSHOT /PARENT command to create the snapshot Accounts_Mon of the virtual disk Accounts_Data:

SnapMgr> MANAGE HQ

SnapMgr> SNAPSHOT Accounts_Mon /PARENT:Accounts_Data

This command creates the snapshot ScratchSnap of the virtual disk Scratch in the HQ cluster:

C:\> SNAPMGR HQ SNAPSHOT ScratchSnap /PARENT:Scratch

SNAPSHOT /PARENT /VSS

Use the `SNAPSHOT /PARENT /VSS` command to create a snapshot of a disk in a pool, using the Volume Shadow copy Service (VSS) in Windows Server 2003. The disk is called the *parent disk* and can be a virtual disk or another snapshot. You do not need to map a drive letter to the disk.

📝 **NOTE:** Only Windows Server 2003 supports this command.

In a cluster, this command fails if the pool cluster resource is offline.

The new snapshot is offline until you map a drive letter to it. Use the `SNAPSHOT /MAP` command, not Disk Administrator, to map a drive letter to the snapshot. (See "SNAPSHOT /MAP" on page 42 for more information.)

For more information about snapshots, refer to "Managing Snapshots" in the *HP OpenView Storage Virtual Replicator system administrator's guide*. For more information about VSS, refer to the Microsoft Volume Shadow copy Service documentation.

Syntax

```
SNAPSHOT snapshot /PARENT:parent /VSS
```

The command parameters are:

- *snapshot*—The name of the new snapshot. The name can be up to 23 characters. Ensure that you specify a unique name; every pool, virtual disk, and snapshot must have a unique name. Once you create a snapshot, you cannot change its name.
- *parent*—The name of the virtual disk or snapshot that is the source of the new snapshot.
- `/VSS`—Creates the snapshot using VSS in Windows Server 2003.

Examples

This command creates the snapshot `Sports_Snapshot` of the virtual disk `Sports` using VSS:

```
SnapMgr> SNAPSHOT Sports_Snapshot /PARENT:Sports /VSS
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `SNAPSHOT /PARENT /VSS` command to create the snapshot `Accounts_Mon` of the virtual disk `Accounts_Data` using VSS:

```
SnapMgr> MANAGE HQ
```

```
SnapMgr> SNAPSHOT Accounts_Mon /PARENT:Accounts_Data /VSS
```

This command creates the snapshot `ScratchSnap` of the virtual disk `Scratch` on the `HQ` cluster using VSS:

```
C:\> SNAPMGR HQ SNAPSHOT ScratchSnap /PARENT:Scratch /VSS
```

SNAPSHOT /UNMAP

Use the `SNAPSHOT /UNMAP` command to unmap the drive letter from a snapshot. This takes the snapshot offline.

The `SNAPSHOT /UNMAP` command fails if any files on the snapshot are open or if, in a cluster, the pool cluster resource is offline.

In a cluster, the `SNAPSHOT /UNMAP` command unmaps the drive letter throughout the cluster. If the pool fails over to another node, the snapshot will not have a drive letter.

Syntax

```
SNAPSHOT snapshot /UNMAP
```

`snapshot`—The name of the snapshot from which you want to unmap the drive letter.

Examples

This command unmaps the drive letter from the snapshot `Sports_Snapshot`:

```
SnapMgr> SNAPSHOT Sports_Snapshot /UNMAP
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `SNAPSHOT /UNMAP` command to unmap the drive letter from the snapshot `Accounts_Mon`:

```
SnapMgr> MANAGE HQ
```

```
SnapMgr> SNAPSHOT Accounts_Mon /UNMAP
```

This command unmaps the drive letter from the snapshot `Accounts_Tue` on the `HQ` cluster:

```
C:\> SNAPMGR HQ SNAPSHOT Accounts_Tue /UNMAP
```

SNAPSHOT /UNMOUNT

Use the SNAPSHOT /UNMOUNT command to remove the mount point from a snapshot.

> **NOTE:** You cannot use Windows Remote Management to remove mount points from a virtual disk or snapshot.

Syntax

SNAPSHOT *snapshot* /UNMOUNT:"*mount path*"

The command parameters are:

- *snapshot*—The name of the snapshot you want to unmount.
- "*mount path*"—The path you are removing. Be sure to include the quotation marks.

Example

This command unmounts the mount point from the snapshot Sports_Snap:

SnapMgr> SNAPSHOT Sports_Snap /UNMOUNT:"Z:\Sports_Snap"

8 UNITS

This chapter describes the UNITS command.

UNITS

Use the UNITS command to display the following information about the storage units you can use to create a pool or add to an existing pool:

- **Capacity**—The capacity of the storage unit.
- **Disk Number**—The disk number of the storage unit. In a cluster, it is the disk number of the node you are currently managing.
- **Type**—The value **Shared** indicates that the disk is in a cluster on a shared storage bus and can be viewed by all nodes in the cluster. The value **Local** indicates that the disk is a physical disk attached to the stand–alone computer.

> **NOTE:** Before you issue the UNITS command in a cluster, be sure to specify a cluster node, not the cluster name. Disk numbers may vary on each cluster node. If you specify the cluster name only, the UNITS command displays the disk numbers on the node that owns the cluster name resource.

The UNITS command:

- Fails if any node in the cluster is down.
- Displays nonremovable logical units that are online.
- Does not display units that contain partitions.
- Does not display virtual disks or snapshots.
- Displays disks created with Disk Administrator that are part of volume sets, mirror sets, and stripe sets. Do not use these disks when creating pools—you may lose the data on the volume, mirror, or stripe set. This is not a problem in clusters, because the Microsoft Cluster Server (MSCS) software does not support these disk types.
- Displays all disks in a cluster as **Shared** if one cluster node is shut down. Before adding one of these shared disks to a pool, check the physical system to verify that is indeed a shared disk. You should not add local disks to a pool because the pool will not fail over in a cluster.

Syntax

    UNITS

Examples

This command displays the available storage units on the node you are currently managing:

```
SnapMgr> UNITS

Capacity (MB)     Disk Number        Type

-----------------------------------------

200               2                  Shared

100               6                  Local

100               8                  Shared
```

In this example, you issue the MANAGE command first to switch management to the node HQ-NODE2. Then, you issue the UNITS command to display the available storage units on that node:

```
SnapMgr> MANAGE HQ-NODE2

SnapMgr> UNITS

Capacity (MB)       Disk Number          Type

------------------------------------------------

4091                1                    Shared

8678                3                    Shared

8678                4                    Shared

4091                6                    Shared

2007                7                    Shared
```

9 UTILITY

This chapter describes the UTILITY commands:

SNAPMGR.EXE UTILITY /CLUSTER:INSTALL

When you convert from a stand-alone system to a cluster system, the conversion may force SVR into an error state, preventing you from accessing pools, virtual disks, and snapshots. Upgrading SVR resolves this problem. Use this command to perform the upgrade.

To upgrade SVR, enter the following command:

```
C:\> SNAPMGR.EXE UTILITY /CLUSTER:INSTALL
```

📝 **NOTE:** You cannot execute this command remotely.

A window displays the progress of the upgrade.

When the upgrade is complete, all pools, virtual disks, and snapshots are recovered automatically and SVR is fully operational on the cluster. If the upgrade is unsuccessful, the window displays the reason for the failure. You can run the Recover Namespace utility to restore the Windows registry.
(See "UTILITY /RECOVER:NAMESPACE" on page 54 for more information.)

SNAPMGR.EXE UTILITY /CLUSTER:UNINSTALL

When you convert from a cluster system to a stand-alone system, the conversion may force SVR into an error state, preventing you from accessing pools, virtual disks, and snapshots. Downgrading SVR resolves this problem. Use this command to perform the downgrade.

NOTE: Before you downgrade to a stand–alone system, disconnect the cables from the shared storage to one node in the cluster. See "Resource Sharing" for more information.

To downgrade SVR, enter the following command:

```
C:\> SNAPMGR.EXE UTILITY /CLUSTER:UNINSTALL
```

NOTE: You cannot execute this command remotely.

A window displays the progress of the downgrade.

When the downgrade is complete, all pools, virtual disks, and snapshots are recovered automatically and SVR is fully operational on the stand–alone system. If the downgrade is unsuccessful, the window displays the reason for the failure. You can run the Recover Namespace utility to restore the Windows registry. (See "UTILITY /RECOVER:NAMESPACE" on page 54 for more information.)

Resource Sharing

When you downgrade SVR from a cluster system to a stand–alone system, each cluster node becomes a stand-alone node. If each node is still connected to the shared storage after the downgrade, the shared resources are available on each node. As a result, if you perform management tasks on one node, it will affect each node, which may cause unexpected results. Therefore, before you downgrade to a stand-alone system, ensure that the shared storage is connected to only one node.

UTILITY /RECOVER:NAMESPACE

SVR uses the Windows registry to manage the names of pools, virtual disks, snapshots, and logical drives that are added to a pool. If you migrate storage to another system or rebuild your current system, the registry information becomes unavailable.

Use the `UTILITY /RECOVER: NAMESPACE` command to rebuild the SVR registry, based on the online pools. You can use this command on stand–alone and cluster systems.

This command is useful if namespace errors occur. For example, if a pool fails, The pool and its children are not displayed in the Replication Manager window, but the names are still listed in the Windows registry. If you create a pool, virtual disk, or snapshot using a name that is in the registry, an error message is displayed because each pool, virtual disk, and snapshot must have a unique name.

To rebuild the SVR registry, enter one of the following commands:

`C:\> SNAPMGR.EXE UTILITY /RECOVER:NAMESPACE`

`SNAPMGR:\> UTILITY /RECOVER:NAMESPACE`

When you issue this command on one cluster node, it updates information about all online pools, virtual disks, and snapshots on all cluster nodes.

If you reinstall MSCS and SVR, and you had pools from a previous SVR cluster installation, you must issue this command on one cluster node to restore the previous pools.

UTILITY /RESET

Use the `UTILITY /RESET` command to enable support for backup tools that perform incremental backups. The Incremental Backup Support utility prevents unnecessary backups by turning off the archive bit of files for a virtual disk that contains a backed up snapshot.

Syntax

`UTILITY /RESET virtualdisk /SNAPSHOT: "snapshot" [/LOGFILE:"logfile"]`

> or

`UTILITY /RESET virtualdisk /TIME:"MM-DD-YYYY-hh:mm:ss" [/MARGIN:mmm] [/LOGFILE:"logfile"]`

> **NOTE:** Where noted, be sure to include the quotation marks.

The command parameters are:

- **virtualdisk**—The name of the virtual disk whose archive bits you want to turn off.
- **"snapshot"**—The name of the snapshot that was backed up.
- **"logfile"**—The name of the log file, which can be a simple file name or a full path name (with a local drive letter and directory names). Do not specify a mapped network drive because the command may not have access to that drive. If you do not specify a full path name, SVR creates the log file in the root directory of your system drive.
- **"MM-DD-YYYY:hh:mm:ss"**—The date and time you want to turn off the archive bits. All files on the virtual disk that are older than the specified date and time are turned off. If the virtual disk does not contain snapshots, the archive bits are reset. If you use this parameter, you must enter a date, but entering a time is optional. Use the 24–hour format; for example, 23:00:00 indicates 11:00 p.m.
- **mmm**—The amount of time, in minutes, subtracted from the date and time you specified. Valid values range from 0 to 999. Use this parameter to ensure all files will be backed up.

> **NOTE:** You cannot specify milliseconds with the `/TIME` option. SVR automatically adds 999 milliseconds to the time you specify. This ensures that the archive bits are turned off for files on the virtual disk that were created up to 999 milliseconds after the time you specify.

Examples

This command turns off the archive bits for files on the virtual disk `Accounts_Data`, based on the snapshot `Accounts_Mon`, and creates the log file `Accounts Data Log`:

`SnapMgr> UTILITY /RESET Accounts_Data`

`/SNAPSHOT:"Accounts_Mon"`

`/LOGFILE:"Accounts Data Log"`

This command turns off the archive bits for files that are older than August 1, 2003 at 11:00 p.m. on the virtual disk named `Sports`:

`SnapMgr> UTILITY /RESET Sports /TIME: "8-1-2003-23:00:00"`

10 VIRTUALDISK

This chapter describes the VIRTUALDISK commands:

VIRTUALDISK

Use the `VIRTUALDISK` command to display the following information about all virtual disks in pools that are online on the stand–alone computer or cluster you are managing:

- **Name**—The name of the virtual disk.
- **Pool**—The name of the pool that contains the virtual disk.
- **Drive**—The drive letter that is mapped to the virtual disk.
- **Family**—The name of the family that contains the virtual disk.
- **Owner**—The name of the cluster node that owns the virtual disk's pool. On a stand–alone computer, this is the name of that computer.

Syntax

```
VIRTUALDISK
```

Examples

This command displays all virtual disks:

```
SnapMgr> VIRTUALDISK

Name       Pool        Drive      Family      Owner

----------------------------------------------------

Sports     MyPool      X:         1           MYPC
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `VIRTUALDISK` command to display all virtual disks in pools that are online in the cluster:

```
SnapMgr> MANAGE HQ

SnapMgr> VIRTUALDISK

Name               Pool        Drive      Family     Owner

----------------------------------------------------------

Accounts_Data      RAID_Pool   Z:         1          HQ-NODE1

Engineering_Data   RAID_Pool   Y:         2          HQ-NODE1

Usenet_News        News_Pool   X:         0          HQ-NODE2
```

VIRTUALDISK virtualdisk

Use the VIRTUALDISK virtualdisk command to display the following information about the specified virtual disk:

- **Name**—The name of the virtual disk.
- **Capacity**—The capacity of the virtual disk.
- **Delspace**—The amount of space you will gain if you delete the virtual disk. The Delspace is the amount of pool space used exclusively by the virtual disk, unless there are snapshots in its family. If a virtual disk contains snapshots, you cannot delete the virtual disk and the Delspace is 0 (zero). Refer to "Calculating Delspace" in the *HP OpenView Storage Virtual Replicator system administrator's guide* for more information.
- **Drive letter**—The drive letter that is mapped to the virtual disk.
- **Family**—The name of the family that contains the virtual disk.
- **Created**—The date and time the virtual disk was created.
- **Pool**—The name of the pool that contains the virtual disk.
- **Disk Map**—The mapping of the virtual disk to the physical disk.

Syntax

```
VIRTUALDISK virtualdisk
```

virtualdisk—The name of the virtual disk whose information you want to view.

Example

This command displays information for the virtual disk `Accounts_Data` in the `HQ` cluster:

```
C:\> SNAPMGR HQ VIRTUALDISK Accounts_Data

Snapshot: Accounts_Data

Capacity: 4500 MB

Delspace: 0 MB

Drive letter: Z:

Family: 1

Created: 3/26/04 9:07 PM

Pool: RAID Pool


Disk Map:
----------
Unit Number       Capacity MB
---------------------------------
13                4500
```

VIRTUALDISK /DELETE

Use the `VIRTUALDISK /DELETE` command to delete a virtual disk from a pool. This increases the pool's free space by the capacity of the virtual disk. You cannot delete a virtual disk if there are snapshots in its family.

△ **CAUTION:**　Deleting a virtual disk removes all data on the disk.

In a cluster, the `VIRTUALDISK /DELETE` command fails if the pool cluster resource is offline for the pool in which the virtual disk resides.

Syntax

```
VIRTUALDISK virtualdisk /DELETE
```

virtualdisk—The name of the virtual disk you want to delete.

Examples

This command deletes the virtual disk `TempDisk#1`:

```
SnapMgr> VIRTUALDISK "TempDisk#1" /DELETE
```

📝 **NOTE:**　You must enclose the name in quotation marks if the name contains special characters. Examples of special characters are colons, commas, and asterisks.

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `VIRTUALDISK /DELETE` command to delete the virtual disk `TempDisk#2`:

```
SnapMgr> MANAGE HQ
```

```
SnapMgr> VIRTUALDISK "TempDisk#2" /DELETE
```

This command deletes the virtual disk `Scratch`:

```
C:\> SNAPMGR VIRTUALDISK Scratch /DELETE
```

VIRTUALDISK /FORMAT

Use the `VIRTUALDISK /FORMAT` command to format a virtual disk using NTFS. This ensures the volume label and virtual disk name are the same.

You must map a drive letter to the virtual disk before you can format it. (See "VIRTUALDISK /MAP" on page 64 for more information.)

In a cluster, the `VIRTUALDISK /FORMAT` command fails if the pool cluster resource is offline.

Syntax

```
VIRTUALDISK virtualdisk /FORMAT [/ALLOCATIONSIZE:nsize]
```

The command parameters are:

- **virtualdisk**—The name of the virtual disk you want to format.
- **nsize**—The size, in bytes, of the allocation unit. This parameter overrides the default size set by the operating system. Valid values are 512, 1024, 2048, 4096, 8192, 16384, 32768, and 65536. HP recommends that you use the default size to minimize the amount of lost space and fragmentation on the volume.

Examples

This command formats the virtual disk `Sports`:

```
SnapMgr> VIRTUALDISK Sports /FORMAT
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `VIRTUALDISK /FORMAT` command to format the virtual disk `Accounts_Data`:

```
SnapMgr> MANAGE HQ

SnapMgr> VIRTUALDISK Accounts_Data /FORMAT
```

This command formats the virtual disk `Engineering_Data` on the `HQ` cluster:

```
C:\> SNAPMGR HQ VIRTUALDISK Engineering_Data /FORMAT
```

VIRTUALDISK /GROW

Use the `VIRTUALDISK /GROW` command to grow a virtual disk in a pool. When you increase the size of a virtual disk, you reduce the amount of free space for snapshots. If you have multiple snapshots in the pool or if snapshot data is changing rapidly, the pool may run out of free space. Therefore, ensure that the pool has adequate free space before you grow a virtual disk.

> **NOTE:** Before you grow a virtual disk, back up the data on the disk.

The `VIRTUALDISK /GROW` command fails if:

- You are using SVR version 1.1 or version 2.0 on Windows NT 4.0.
- The virtual disk exceeds the maximum size allowed in the pool.
- There is not enough free space in the pool.

When you grow a virtual disk in a cluster, issue the command from the node that owns the SCE Pool resource for the pool containing the virtual disk. Although you can issue many `SnapMgr` commands remotely, you cannot grow a virtual disk remotely from a cluster node that does not own the pool resource.

Syntax

```
VIRTUALDISK virtualdisk /GROW:mb
```

The command parameters are:

- *virtualdisk*—The name of the virtual disk you want to grow.
- *mb*—The number of megabytes by which you want to grow the virtual disk. The number is limited by the pool's free space and segment size.

Examples

This command grows the virtual disk `Sports` by 750 MB:

```
SnapMgr> VIRTUALDISK Sports /GROW:750
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue `VIRTUALDISK /GROW` command to grow the virtual disk `Accounts_Data` by 2000 MB:

```
SnapMgr> MANAGE HQ

SnapMgr> VIRTUALDISK Accounts_Data /GROW:2000
```

VIRTUALDISK /LISTMOUNT

Use the `VIRTUALDISK /LISTMOUNT` command to display the mount points available for a virtual disk.

NOTE: You cannot use Windows Remote Management to list mount points for virtual disks.

Syntax

```
VIRTUALDISK virtualdisk /LISTMOUNT
```

virtualdisk—The name of the virtual disk whose mount points you want to view.

Example

This command displays the mount points available for the virtual disk `Sports`:

```
SnapMgr> VIRTUALDISK Sports /LISTMOUNT

Available Mount Points

-----------------------------

z:\Cricket\
```

VIRTUALDISK /MAP

Use the `VIRTUALDISK /MAP` command to map a drive letter to a virtual disk. The drive letter is consistent—the next time you restart the computer, that drive letter is mapped automatically to the virtual disk, provided that the letter is available.

HP recommends that you select a letter near the end of the alphabet because the pool starts late in the startup sequence. This reduces the probability that the drive letter will be allocated to another disk. In a cluster, if the drive letter is not available when the pool fails over to another node, no drive letter is mapped to the virtual disk.

In a cluster, the `VIRTUALDISK /MAP` command fails if the pool cluster resource is offline.

Syntax

```
VIRTUALDISK virtualdisk /MAP:drive
```

The command parameters are:

- `virtualdisk`—The name of the virtual disk to which you want to map a drive letter.
- `drive`—The the drive letter you want to map to the virtual disk.

Examples

This command maps the drive letter X to the virtual disk `Sports`:

```
SnapMgr> VIRTUALDISK Sports /MAP:X
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue `VIRTUALDISK /MAP` command to map the drive letter Z to the virtual disk `Accounts_Data`:

```
SnapMgr> MANAGE HQ
```

```
SnapMgr> VIRTUALDISK Accounts_Data /MAP:Z
```

This command maps the drive letter Y to the virtual disk `Engineering_Data` in the `HQ` cluster:

```
C:\> SNAPMGR HQ VIRTUALDISK Engineering_Data /MAP:Y
```

VIRTUALDISK /MOUNT

Use the `VIRTUALDISK /MOUNT` command to move a virtual disk to a specified mount point (or folder). The path is consistent—the next time you restart the computer, that path is mapped automatically to the virtual disk, provided that the path is available.

SVR does not support nested mount points. For example, if the mount point `V:\temp` has a mount point, `V:\temp\xyz`, that mount point is not supported.

NOTE: You cannot use Windows Remote Management to assign mount points to a virtual disk.

Syntax

VIRTUALDISK *virtualdisk* /MOUNT:"*mount path*"

- *virtualdisk*—The name of the virtual disk you want to mount.
- "*mount path*"—The path to an empty folder on an NTFS formatted virtual disk in the same pool. Be sure to include the quotation marks.

Example

This command mounts the virtual disk `Sports` to the specified folder:

SnapMgr> VIRTUALDISK Sports /MOUNT:"Z:\Sports"

VIRTUALDISK /POOL /CAPACITY

Use the `VIRTUALDISK /POOL /CAPACITY` command to create a virtual disk of the specified capacity in the specified pool. The new virtual disk is the first disk in a new family. Virtual Replicator automatically assigns a number from 0 to 7 to the new family, allowing a maximum of 8 virtual disks in a pool.

In a cluster, the `VIRTUALDISK /POOL /CAPACITY` command fails if the pool cluster resource is offline.

The new virtual disk is offline until you map a drive letter to it. Use the `VIRTUALDISK /MAP` command, not Disk Administrator, to map a drive letter to the virtual disk. (See "VIRTUALDISK /MAP" on page 64 for more information.)

For more information about virtual disks, refer to "Managing Virtual Disks" in the *HP OpenView Storage Virtual Replicator system administrator's guide.*

Syntax

```
VIRTUALDISK virtualdisk /POOL:pool /CAPACITY:mb
```

The command parameters are:

- *virtualdisk*—The name of the virtual disk. The name can be up to 23 characters. Ensure that you specify a unique name; every pool, virtual disk, and snapshot must have a unique name.
- *pool*—The name of the pool in which you want to create the new virtual disk.
- *mb*—The size, in megabytes, of the virtual disk. The minimum size is 10 MB; the maximum size is equal to the pool's free space.

Examples

This command creates a 750 MB virtual disk called `Sports` in the pool `MyPool`:

```
SnapMgr> VIRTUALDISK Sports /POOL:MyPool /CAPACITY:750
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue `VIRTUALDISK /POOL /CAPACITY` command to create a 300 MB virtual disk called `TempDisk` in the pool `RAID_Pool`:

```
SnapMgr> MANAGE HQ
```

```
SnapMgr> VIRTUALDISK TempDisk /POOL:RAID_Pool /CAPACITY:300
```

This command creates a 1,000 MB virtual disk called `Usenet` in the pool `News_Pool`:

```
C:\> SNAPMGR VIRTUALDISK Usenet /POOL:News_Pool /CAPACITY:1000
```

VIRTUALDISK /RESTORE

Use the `VIRTUALDISK /RESTORE` command to restore a virtual disk from a snapshot. During the restore, the drive letters of the virtual disk and snapshot are unavailable.

When the restore is complete, the source snapshot is retained, but all previous copies of the snapshot are deleted.

Syntax

`VIRTUALDISK` *virtualdisk* `/RESTORE:`*snapshot*

The command parameters are:

- *virtualdisk*—The name of the virtual disk you want to restore.
- *snapshot*—The snapshot you want to use as the source of the restore.

Examples

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `VIRTUALDISK /RESTORE` command to restore the virtual disk `Accounts_Data` from the snapshot `Accounts_Tue`:

`SnapMgr> MANAGE HQ`

`SnapMgr> VIRTUALDISK Accounts_Data /RESTORE:Accounts_Tue`

This command restores the virtual disk `Scratch` from the snapshot `ScratchSnap` on the `HQ` cluster:

`C:\> SNAPMGR HQ VIRTUALDISK Scratch /RESTORE:ScratchSnap`

VIRTUALDISK /UNMAP

Use the `VIRTUALDISK /UNMAP` command to unmap the drive letter from a virtual disk. This takes the virtual disk offline.

The `VIRTUALDISK /UNMAP` command fails if any files on the virtual disk are open or if, in a cluster, the pool cluster resource is offline.

In a cluster, the `VIRTUALDISK /UNMAP` command unmaps the drive letter throughout the cluster. If the pool fails over to another node, the virtual disk will not have a drive letter.

Syntax

```
VIRTUALDISK virtualdisk /UNMAP
```

virtualdisk—The name of the virtual disk from which you want to unmap the drive letter.

Examples

This command unmaps the the drive letter from the virtual disk `Sports`:

```
SnapMgr> VIRTUALDISK Sports /UNMAP
```

In this example, you issue the `MANAGE` command first to switch management to the `HQ` cluster. Then, you issue the `VIRTUALDISK /UNMAP` command to unmap the drive letter from the virtual disk `Accounts_Data`:

```
SnapMgr> MANAGE HQ

SnapMgr> VIRTUALDISK Accounts_Data /UNMAP
```

This command unmaps the drive letter from the virtual disk `Engineering_Data` on the `HQ` cluster:

```
C:\> SNAPMGR HQ VIRTUALDISK Engineering_Data /UNMAP
```

VIRTUALDISK /UNMOUNT

Use the `VIRTUALDISK /UNMOUNT` command to remove the mount point from a virtual disk.

NOTE: You cannot use Windows Remote Management to remove mount points from a virtual disk.

Syntax

`VIRTUALDISK *virtualdisk* /UNMOUNT:"*mount path*"`

The command parameters are:

- *virtualdisk*—The name of the virtual disk you want to unmount.
- "*mount path*"—The path you are removing. Be sure to include the quotation marks.

Example

This command unmounts the mount point from the virtual disk `Sports`:

`SnapMgr> VIRTUALDISK Sports /UNMOUNT:"Z:\Sports"`

11 SMARTSNAP

This chapter describes the SMARTSNAP command.

SMARTSNAP.EXE /KEEP

Use the SMARTSNAP.EXE /KEEP command to save multiple snapshots of a virtual disk.

> **NOTE:** SmartSnap supports snapshots you create using Volume Shadow copy Support (VSS) on Microsoft Windows Server 2003 systems.

When you schedule the creation of a snapshot using SVR, SVR retains one snapshot for each virtual disk. You can use SmartSnap to create a snapshot of a virtual disk every day and save a week's worth of snapshots. You can identify a SMARTSNAP snapshot by its name. A sample SMARTSNAP snapshot name is myvdiskSCE~34:

- virtualdisk name (maximum of 17 characters)
- SCE~
- A number between 0 and 99

After you specify the number of snapshots of the virtual disk you want to save, SmartSnap examines the snapshots and determines if there is enough free space for an additional snapshot. If not, SmartSnap delete one of its snapshots to create space for the new snapshot, deleting the oldest one first. SmartSnap only deletes snapshots that are not mapped to drive letters. Any errors that occur during the process are added to the application event log.

When the number of specified snapshots is reached or exceeded, SVR deletes the oldest snapshot not mapped to a drive letter. If all snapshots are mapped to drive letters, SVR creates one snapshot of the virtual disk. This is the only time the maximum number of snapshots is exceeded. If the number of snapshots reaches or exceeds SVR's limit of 12 and no snapshots can be deleted, no further snapshots are created.

To launch SmartSnap, you can:

- Issue the command from the SnapMgr command line interface.
- Issue the AT command.
- Issue the command using the Windows Scheduled Tasks applet.

Syntax

SMARTSNAP.EXE *virtualdisk* [UUID] /KEEP:*n* [/*vss*]

The command parameters are:

- *virtualdisk*—The name of the virtual disk of which you want a snapshot.
- *UUID*—An optional unique character string you use to identify the task.
- *n*—The number of SMARTSNAP snapshots you want to save. The default value is 12.
- *vss*—Creates the snapshot using VSS.

Example

The following procedure describes how to use SMARTSNAP with the Windows Scheduled Tasks applet to schedule 7 snapshots of the virtual disk myvdisk:

1. Add a scheduled task. Refer to "Scheduling Tasks" in the *HP OpenView Storage Virtual Replicator system administrator's guide* for more information.

2. In Windows Explorer, select **Program Files > Hewlett-Packard >OpenView Storage Virtual Replicator > smartsnap.exe**.

3. Enter the parameters for the task, including name, time, and frequency.

4. Open the Advanced Properties dialog box for the task.

5. Add the SMARTSNAP command parameters at the end of the path name:

   `myvdisk /KEEP:7`

   The task is listed in the Scheduled Tasks window. When the task runs at the specified time, it creates one snapshot of myvdisk each day. Before creating the eighth snapshot, SMARTSNAP deletes the oldest snapshot.

Index