

**Command Line
Interface Reference
Guide**

HP OpenView Storage Virtual Replicator

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Part Number: T3591-96004

This guide describes how to use the command line interface for Storage Virtual Replicator (SVR).



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Storage Virtual Replicator Command Line Interface Reference Guide
Eighth Edition (April 2005)
Part Number: T3591–96004



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About This Guide

This guide provides information to help you:

- Use SnapMgr commands.
- Use the SmartSnap command.

“About This Guide” describes the following topics:

- [Overview](#), page 8
- [Conventions](#), page 9
- [Getting help](#), page 11

Overview

This section describes the following topics:

- [Intended audience](#)
- [Related documentation](#)

Intended audience

Readers must be familiar with SVR as well as the following:

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

Related documentation

Refer to the following documentation for more information about SVR:

- *HP OpenView Storage Virtual Replicator System Administrator's Guide*
- *HP OpenView Storage Virtual Replicator Installation Instructions*
- HP OpenView Storage Virtual Replicator Online Help
- HP OpenView Storage Virtual Replicator Online Volume Growth Online Help
- HP OpenView Storage Virtual Replicator Scheduling Wizards Online Help
- HP OpenView Storage Virtual Replicator Planning Charts

Conventions

Conventions consist of the following:

- Document conventions
- Text symbols
- Equipment symbols

Document conventions

This document follows the conventions in [Table 1](#).

Table 1: Document conventions

Convention	Element
Blue text: Figure 1	Cross-reference links
Bold	Menu items, buttons, and key, tab, and box names
<i>Italics</i>	Text emphasis and document titles in body text
Monospace font	User input, commands, code, file and directory names, and system responses (output and messages)
<i>Monospace, italic font</i>	Command-line and code variables
Blue underlined sans serif font text (http://www.hp.com)	Web site addresses

Text symbols

The following symbols may be found in the text of this guide. They have the following meanings:



WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or death.



Caution: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or data.

Tip: Text in a tip provides additional help to readers by providing nonessential or optional techniques, procedures, or shortcuts.

Note: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Equipment symbols

The following equipment symbols may be found on hardware for which this guide pertains. They have the following meanings:



Any enclosed surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of personal injury from electrical shock hazards, do not open this enclosure.



Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. Contact with this surface could result in injury.

WARNING: To reduce the risk of personal injury from a hot component, allow the surface to cool before touching.



Power supplies or systems marked with these symbols indicate the presence of multiple sources of power.

WARNING: To reduce the risk of personal injury from electrical shock, remove all power cords to completely disconnect power from the power supplies and systems.



Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manually handling material.

Getting help

If you still have a question after reading this guide, contact an HP authorized service provider or access our web site: <http://www.hp.com>.

HP technical support

Telephone numbers for worldwide technical support are listed on the following HP web site: <http://www.hp.com/support/>. From this web site, select the country of origin.

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

Be sure to have the following information available 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 questions

HP storage web site

The HP web site has the latest information on this product, as well as the latest drivers. Access storage at: <http://www.hp.com/country/us/eng/prodserv/storage.html>. From this web site, select the appropriate product or solution.

HP authorized reseller

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the HP web site for locations and telephone numbers: <http://www.hp.com>.

Command Line Interface Overview



This chapter provides an overview of the command line interface (CLI) for Storage Virtual Replicator (SVR). It describes the following topics:

- [Using SnapMgr](#), page 14
- [Using SmartSnap](#), page 19

Using SnapMgr

You can use SnapMgr (the CLI) 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](#)
- [Managing remote computers](#)
- [Managing security and privileges](#)
- [Syntax guidelines](#)
- [SnapMgr command summary](#)

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 the following topics:

- [Abbreviating commands](#)
- [Using mixed case](#)
- [Using quotation marks](#)

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	<code>DELTREE /POOL:pool_name</code>
Delete a virtual disk containing snapshots	<code>DELTREE /VIRT:virtual_disk_name</code>
Show available drive letters	<code>DRIVES [/NODE:nodename]</code>
Manage remote computer	<code>MANAGE computername</code>
Manage local computer	<code>MANAGE /LOCAL</code>
Show managed computer	<code>MANAGE</code>
Migrate data	<code>MIGRATE pool /SOURCE:sourcedisk /DESTINATION:destinationdisk [/REMOLD] [/CHUNK:chunk]</code>
Create a pool	<code>POOL pool /UNITS:disknumbers [/SEGSIZE:segsizesize]</code>
Add a storage unit	<code>POOL pool /ADD:disknumber</code>
Import a storage unit	<code>POOL pool /IMPORT:disknumber</code>
Show storage units available for import	<code>POOL pool /SNAPINUNITS</code>
Remove storage units from a pool	<code>POOL pool /REMOVE:disknumber</code>
Delete a pool	<code>POOL pool /DELETE</code>
Show pools	<code>POOL pool</code> <code>POOL /STATISTICS</code> <code>POOL pool /UNITS</code>
Create a snapshot	<code>SNAPSHOT snapshot /PARENT:parent</code>
Map a snapshot	<code>SNAPSHOT snapshot /MAP:drive</code>
Unmap a snapshot	<code>SNAPSHOT snapshot /UNMAP</code>
Delete a snapshot	<code>SNAPSHOT snapshot /DELETE</code>
Assign a mount point to a snapshot	<code>SNAPSHOT snapshot /MOUNT:"mount path"</code>
List mount points for a snapshot	<code>SNAPSHOT snapshot /LISTMOUNT</code>
Remove a mount point of a snapshot	<code>SNAPSHOT snapshot /UNMOUNT:"mount path"</code>
Show snapshots	<code>SNAPSHOT snapshot</code>
Show available storage units	<code>UNITS</code>

Table 2: SnapMgr commands

Function	Command
Enable support for incremental backups of virtual disks	<pre>UTILITY /RESET virtualdisk /SNAPSHOT:"snapshot" [/LOGFILE:"logfile"] UTILITY /RESET virtualdisk /TIME:"MM-DD-YYYY-hh:mm:ss" [/MARGIN:mmm] [/LOGFILE:"logfile"]</pre>
Recover Windows Registry namespace	<pre>UTILITY /RECOVER:NAMESPACE</pre>
Upgrade SVR from a standalone system to a cluster	<pre>SNAPMGR.EXE UTILITY /CLUSTER:INSTALL</pre>
Downgrade SVR from a cluster to a standalone system	<pre>SNAPMGR.EXE UTILITY /CLUSTER:UNINSTALL</pre>
Create a virtual disk	<pre>VIRTUALDISK virtualdisk /POOL:pool /CAPACITY:mb</pre>
Map a virtual disk	<pre>VIRTUALDISK virtualdisk /MAP:drive</pre>
Format a virtual disk	<pre>VIRTUALDISK virtualdisk /FORMAT [/ALLOCATIONSIZE:nsize]</pre>
Unmap a virtual disk	<pre>VIRTUALDISK virtualdisk /UNMAP</pre>
Delete a virtual disk	<pre>VIRTUALDISK virtualdisk /DELETE</pre>
Assign a mount point to a virtual disk	<pre>VIRTUALDISK virtualdisk /MOUNT:"mount path"</pre>
List mount points for a virtual disk	<pre>VIRTUALDISK virtualdisk /LISTMOUNT</pre>
Remove a mount point of a snapshot	<pre>VIRTUALDISK virtualdisk /UNMOUNT:"mount path"</pre>
Restore a virtual disk from a snapshot	<pre>VIRTUALDISK virtualdisk /RESTORE:snapshot</pre>
Show virtual disks	<pre>VIRTUALDISK virtualdisk</pre>
Grow a virtual disk	<pre>VIRTUALDISK virtualdisk /GROW:mb</pre>

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).

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
```


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
```

MANAGE

4

This chapter describes the `MANAGE` commands:

- [MANAGE](#), page 28
- [MANAGE computername](#), page 29
- [MANAGE /LOCAL](#), page 30

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
```

MIGRATE

5

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
```


POOL

6

This chapter describes the POOL commands:

- [POOL](#), page 36
- [POOL pool](#), page 37
- [POOL /ADD](#), page 38
- [POOL /DELETE](#), page 40
- [POOL /IMPORT](#), page 41
- [POOL /REMOVE](#), page 42
- [POOL /SNAPINUNITS](#), page 43
- [POOL /STATISTICS](#), page 45
- [POOL /UNITS](#), page 46
- [POOL /UNITS](#), page 46

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 36), 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 `My Pool`:

```
SnapMgr> POOL MyPool /DELETE
```

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 43 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 46 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 41 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
```

SNAPSHOT

7

This chapter describes the `SNAPSHOT` commands:

- `SNAPSHOT`, page 50
- `SNAPSHOT snapshot`, page 51
- `SNAPSHOT /DELETE`, page 52
- `SNAPSHOT /LISTMOUNT`, page 53
- `SNAPSHOT /MAP`, page 54
- `SNAPSHOT /MOUNT`, page 55
- `SNAPSHOT /PARENT`, page 56
- `SNAPSHOT /PARENT /VSS`, page 57
- `SNAPSHOT /UNMAP`, page 59
- `SNAPSHOT /UNMOUNT`, page 60

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
```

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. 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 54 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 54 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"
```

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

UTILITY

9

This chapter describes the `UTILITY` commands:

- [SNAPMGR.EXE UTILITY /CLUSTER:INSTALL](#), page 66
- [SNAPMGR.EXE UTILITY /CLUSTER:UNINSTALL](#), page 67
- [UTILITY /RECOVER:NAMESPACE](#), page 68
- [UTILITY /RESET](#), page 69

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 68 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 68 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* is 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"
```

VIRTUALDISK

10

This chapter describes the VIRTUALDISK commands:

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- [VIRTUALDISK virtualdisk](#), page 73
- [VIRTUALDISK /DELETE](#), page 74
- [VIRTUALDISK /FORMAT](#), page 75
- [VIRTUALDISK /GROW](#), page 76
- [VIRTUALDISK /LISTMOUNT](#), page 77
- [VIRTUALDISK /MAP](#), page 78
- [VIRTUALDISK /MOUNT](#), page 79
- [VIRTUALDISK /POOL /CAPACITY](#), page 80
- [VIRTUALDISK /RESTORE](#), page 81
- [VIRTUALDISK /UNMAP](#), page 82
- [VIRTUALDISK /UNMOUNT](#), page 83

VIRTUALLDISK

Use the `VIRTUALLDISK` 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

```
VIRTUALLDISK
```

Examples

This command displays all virtual disks:

```
SnapMgr> VIRTUALLDISK
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 `VIRTUALLDISK` command to display all virtual disks in pools that are online in the cluster:

```
SnapMgr> MANAGE HQ
SnapMgr> VIRTUALLDISK
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
```

VIRTUALLDISK `virtualdisk`

Use the VIRTUALLDISK `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

```
VIRTUALLDISK 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 VIRTUALLDISK 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
```

VIRTUALLDISK /DELETE

Use the `VIRTUALLDISK /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 `VIRTUALLDISK /DELETE` command fails if the pool cluster resource is offline for the pool in which the virtual disk resides.

Syntax

```
VIRTUALLDISK virtualdisk /DELETE  
virtualdisk—The name of the virtual disk you want to delete.
```

Examples

This command deletes the virtual disk `TempDisk`:

```
SnapMgr> VIRTUALLDISK TempDisk /DELETE
```

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

```
SnapMgr> MANAGE HQ  
SnapMgr> VIRTUALLDISK TempDisk /DELETE
```

This command deletes the virtual disk `Scratch`:

```
C:\> SNAPMGR VIRTUALLDISK 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 78 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
```

VIRTUALLDISK /LISTMOUNT

Use the VIRTUALLDISK /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

```
VIRTUALLDISK 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> VIRTUALLDISK Sports /LISTMOUNT
```

```
Available Mount Points
```

```
-----
```

```
z:\Cricket\  
-----
```

VIRTUALLDISK /MAP

Use the `VIRTUALLDISK /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 `VIRTUALLDISK /MAP` command fails if the pool cluster resource is offline.

Syntax

```
VIRTUALLDISK 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> VIRTUALLDISK Sports /MAP:X
```

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

```
SnapMgr> MANAGE HQ
```

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

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

```
C:\> SNAPMGR HQ VIRTUALLDISK 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"
```

VIRTUALLDISK /POOL /CAPACITY

Use the `VIRTUALLDISK /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 `VIRTUALLDISK /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 `VIRTUALLDISK /MAP` command, not Disk Administrator, to map a drive letter to the virtual disk. (See “[VIRTUALLDISK /MAP](#)” on page 78 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

```
VIRTUALLDISK 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> VIRTUALLDISK Sports /POOL:MyPool /CAPACITY:750
```

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

```
SnapMgr> MANAGE HQ
```

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

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

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

VIRTUALLDISK /RESTORE

Use the `VIRTUALLDISK /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

```
VIRTUALLDISK 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 `VIRTUALLDISK /RESTORE` command to restore the virtual disk `Accounts_Data` from the snapshot `Accounts_Tue`:

```
SnapMgr> MANAGE HQ
```

```
SnapMgr> VIRTUALLDISK Accounts_Data /RESTORE:Accounts_Tue
```

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

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

VIRTUALLDISK /UNMAP

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

The `VIRTUALLDISK /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 `VIRTUALLDISK /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

```
VIRTUALLDISK 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> VIRTUALLDISK Sports /UNMAP
```

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

```
SnapMgr> MANAGE HQ
```

```
SnapMgr> VIRTUALLDISK Accounts_Data /UNMAP
```

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

```
C:\> SNAPMGR HQ VIRTUALLDISK 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"
```


SMARTSNAP

11

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.

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