

Integrating HP Data Protector 6.1 with SAN Virtualization Services Platform



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Abstract

This document shows how to perform a Zero Downtime Backup (ZDB) integrated with the SAN Virtualization Services Platform (SVSP). To do this, we'll be using the Virtual Service Manager (VSM) Command Line Interface (CLI) and the accompanying pre- and post-exec scripts. Please note that no typical DP ZDB agents are involved in this operation. The SVSP version mentioned and tested here is 2.1.

Limitations

- Instant Recovery is not supported until the SVSP is fully integrated in Data Protector.
- There is a security issue due to the unencrypted password used in the script for the connection to the Virtual Services Manager (VSM).
- Although the VSM CLI also supports Unix, this solution is a Windows only solution. It should be possible to adapt it in a Unix environment but that's beyond the scope of this document. For further help please refer to the *HP StorageWorks SAN Virtualization Services Manager command line interface user guide*.

Introduction

In order to do a Zero Downtime Backup while utilizing the SVSP functionality, a specific configuration is required. In this document we'll describe this configuration and use the SVSP features by using pre-exec and post-exec scripts.

The *ZDB Integrated with SVSP* section describes the necessary steps to perform a Zero-Downtime Backup while using the VSM.

The *Appendix A* section contains the scripts used, as well as a typical session output.

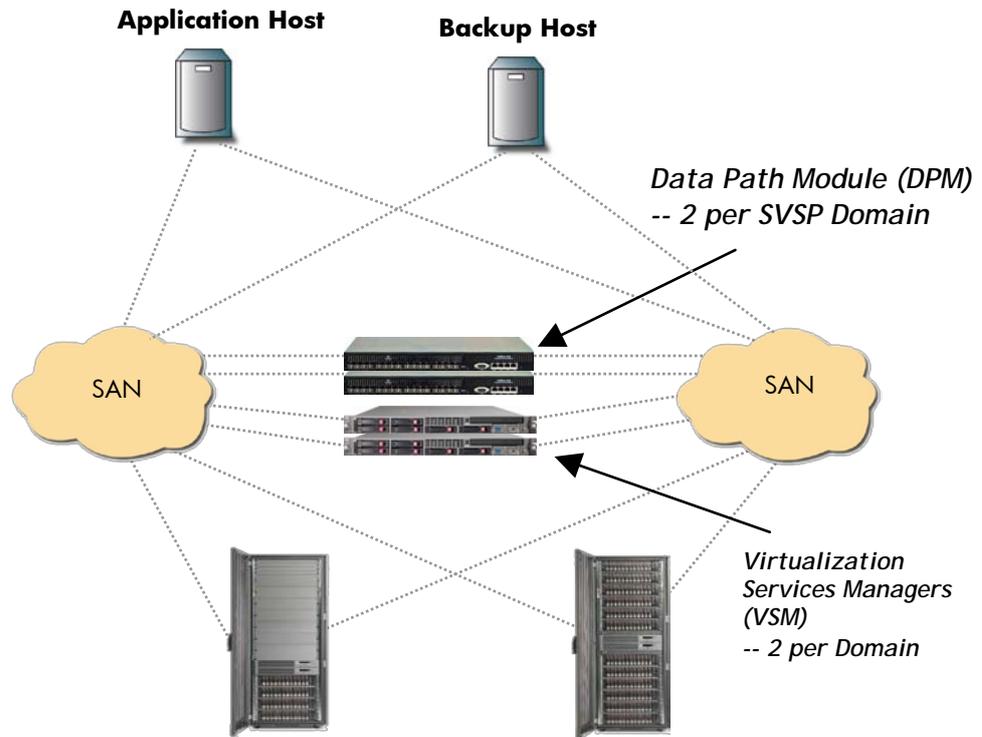
The *Appendix B* section contains detailed information on creating users and virtual disks with the VSM GUI.

For more information on the VSM CLI, please read the *HP StorageWorks SAN Virtualization Services Manager command line interface user guide*.

Concepts

The following figure shows a sample SAN topology diagram and describes the process of a typical Zero Downtime Backup in an SVSP environment. Initially we need to add two Virtual Services Managers and two Data Path Modules per SVSP domain.

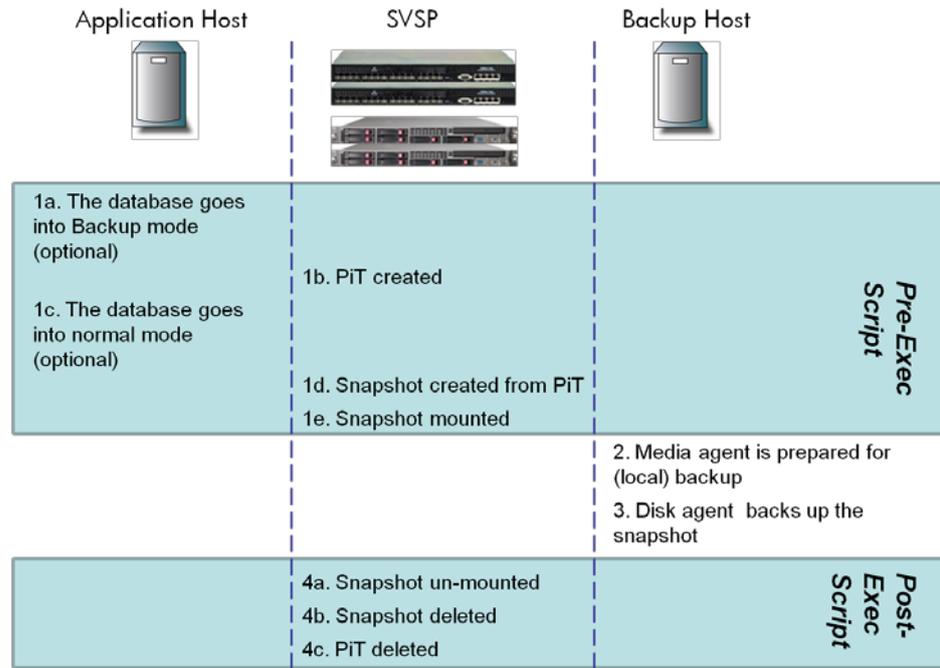
Figure 1: Concepts



During the ZDB the following actions take place:

1. Session pre-exec script is executed.
 - a. (Optional) The database on the application host goes into Backup mode.
Note: This should be done from within the application host through scripts which are not covered in this document.
 - b. Point in time of the application host's volume is created.
 - c. (Optional) Database goes back into normal mode through DB client (as above, also not covered in this document).
 - d. Snapshot is created from the PiT.
 - e. Snapshot is mounted on the backup host.
2. Media agent is prepared for the (local) backup.
3. Disk agent backs up the snapshot.
4. Session post-exec script is executed.
 - a. The snapshot is un-mounted from the backup host.
 - b. Snapshot is deleted.
 - c. Point in Time is deleted.

Figure 2: Backup flow



ZDB Integrated with SVSP

Configuration

SVSP CLI support configuration

A user name and password are used in any SVSP CLI operation as the first operation before running commands. For security reasons, you should define an SVSP user, which will run the CLI commands. To create an SVSP user through the VSM GUI and configure your SVSP system, see *Appendix B*. To check if your system is ready, test the interactive CLI (VSM_CLI.exe):

Figure 3: VSM CLI

```

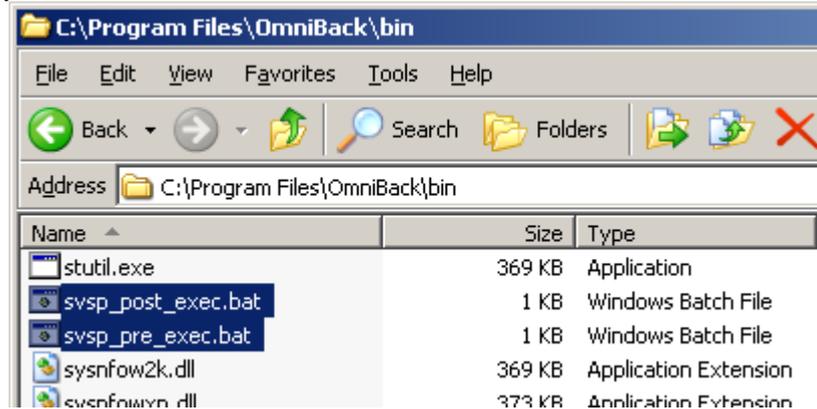
c:\VSM SAN CLI
>>> NOTE: This USM CLI requires USM version U4.R3 or higher.
C:\Program Files (x86)\Hewlett-Packard\USM CLI\Bin\USM_CLI.exe syntax is:
C:\Program Files (x86)\Hewlett-Packard\USM CLI\Bin\USM_CLI.exe
C:\Program Files (x86)\Hewlett-Packard\USM CLI\Bin\USM_CLI.exe -SD ...
C:\Program Files (x86)\Hewlett-Packard\USM CLI\Bin\USM_CLI.exe -SD ... -O ...
-I ...
C:\Program Files (x86)\Hewlett-Packard\USM CLI\Bin\USM_CLI.exe -SD ... -O ...
-C ...
-SD DomainName UserName Password
-O output_file <may use '-OX output_file' instead>
-I input_file
-C command_name ARG_NAME1 arg_value1 , ARG_NAME2 arg_value2
Note:
1. When used, '-SD' must be the first parameter in the command line.
2. By default: output_file is the standard output and
   input_file is the standard input.
3. -C and -I are mutually exclusive <they cannot be used together>.
Now reading from console
-
  
```

Copying and editing the scripts

The scripts should be placed on the "backup host" in the <DP Installation Path>\bin folder, which is by default C:\Program Files\OmniBack\bin. You can however, copy the

scripts into a different folder, but then you must use the full path in the Data Protector Backup Specifications instead of just the filename.

Figure 4: Copy location



The scripts must be edited to match your environment needs. Right click on the “svsp_pre_exec.bat” script and select edit. The pre-exec script contains the following variables that should be edited:

Variable Name	Description
BACKUPHOST	The name of the Backup host as it's set in the SVSP environment.
STORAGEPOOL1	The name of the Storage Pool as it's set in the SVSP environment.
VIRTUALDISK1	The name of the Virtual Disk as it's set in the SVSP environment.
MOUNTPOINT1	The Mount point which should be used on the backup host.
POINTINTIME1	The name of the Point in Time to be created.
SNAPSHOT1	The name of the Snapshot.

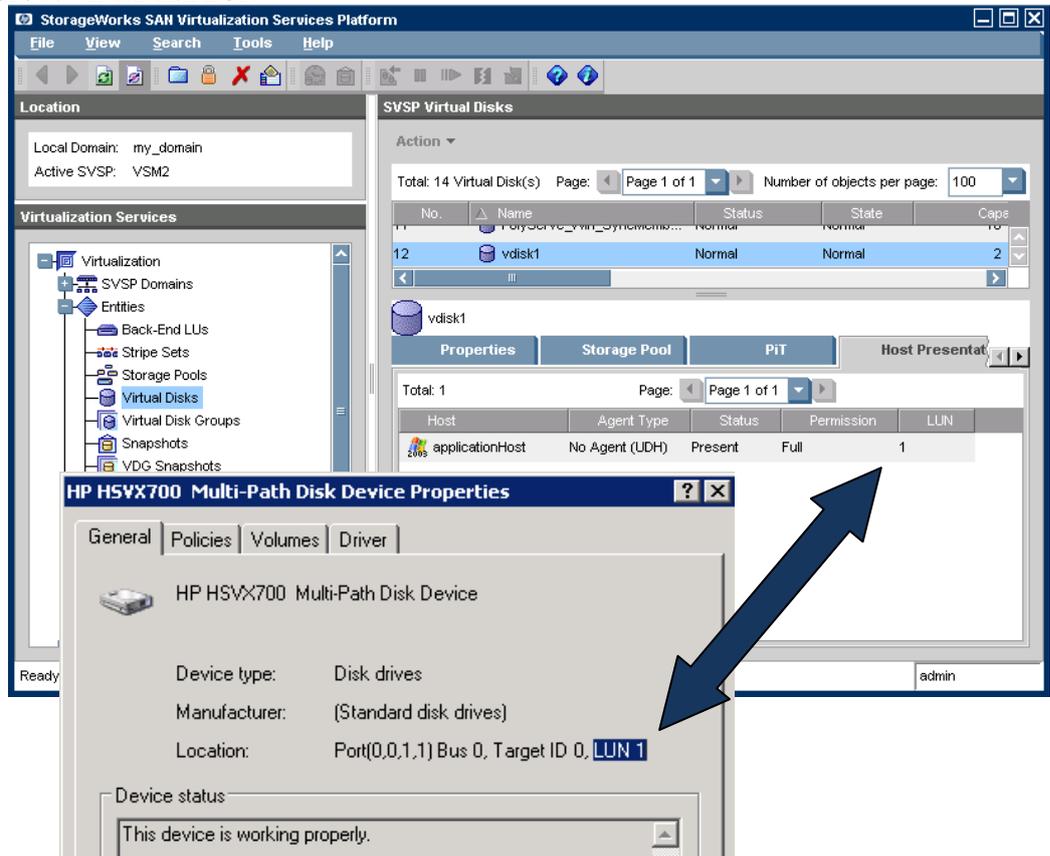
The snapshot and pit variables can also be left unchanged (by default the backup session ID is appended). If you change any of the snapshot and/or pit variables, you must also change them in the svsp_post_exec.bat script. Also note that the mount-point and backupHost values must be equivalent as the ones defined in the Data Protector backup specifications (Figure 15: **Mount point**). In the svsp_pre_exec.bat script, the mount-point value must have double backslashes (“\\”) for each DP GUI backslash (“\”) and must end with two backslashes. Also, when a folder is used as a mount-point, it must be an empty or non-existing folder.

The VSM login and the copy location must also be defined in both .bat files.

To determine the virtual disk value, you must manually resolve the disk LUN:

1. From the application host, go to Computer Management (right click my computer and select manage). Then click on Disk Management, select the disk and right click.
2. From the VSM GUI, go to Entities > Virtual Disks. Select the disk and click on the Host Presentation tab.
3. The LUNs should be the same.

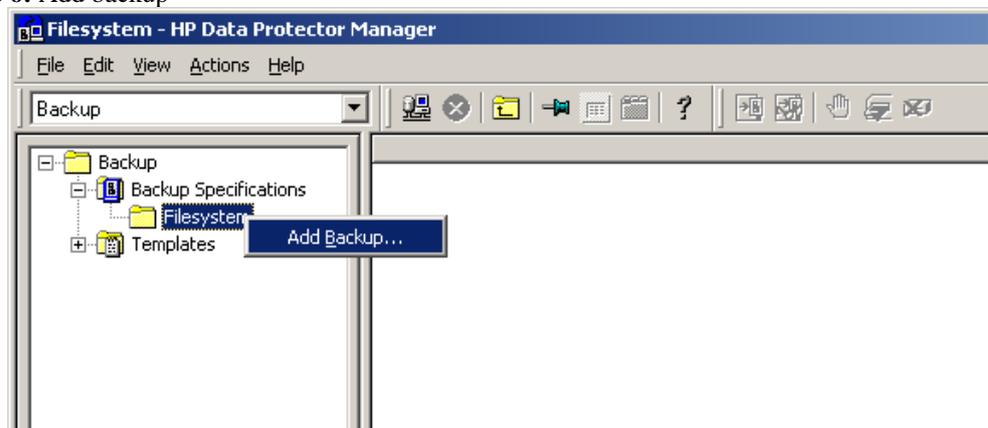
Figure 5: Virtual disk LUN



Performing Backup

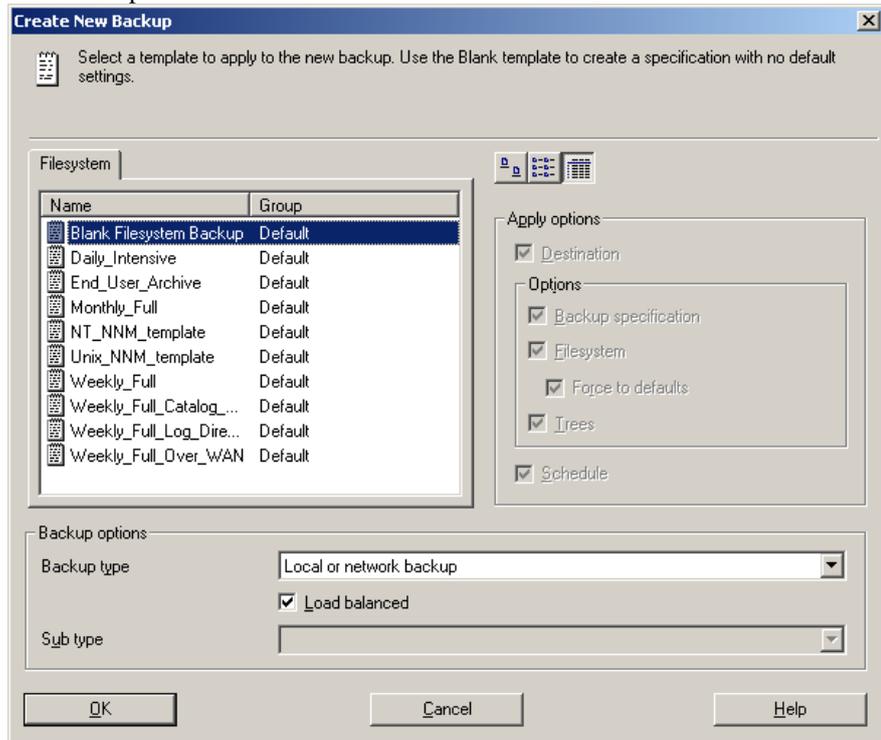
This section shows how to create a backup specification from scratch. Select the Backup context in the Data Protector GUI and create a new filesystem backup specification by right clicking "Filesystem" and selecting "Add Backup...".

Figure 6: Add backup



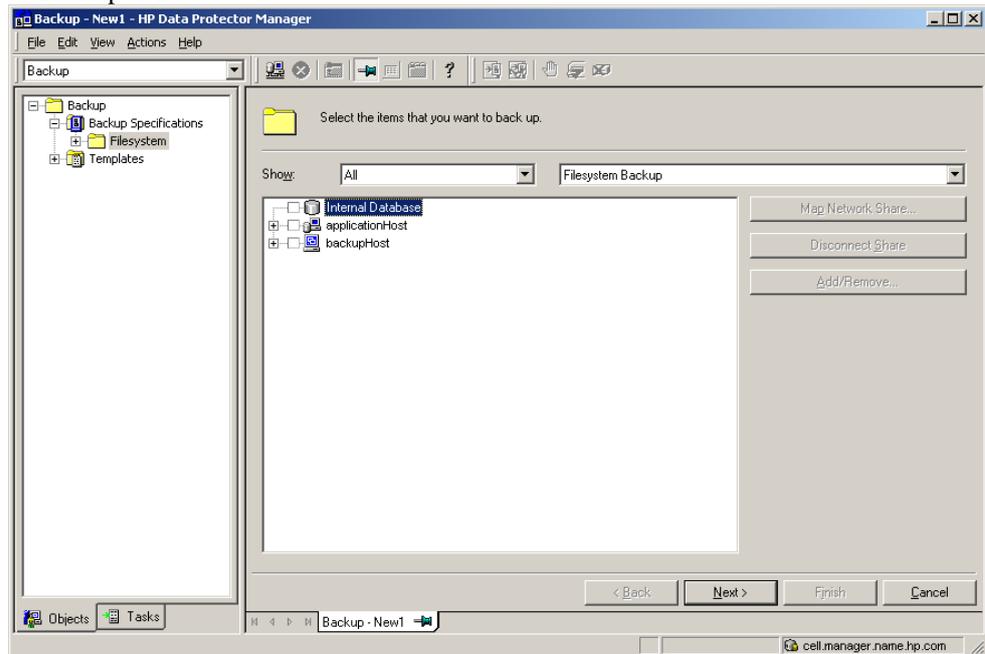
Select the "Blank Filesystem Backup" template and click "OK".

Figure 7: Create backup



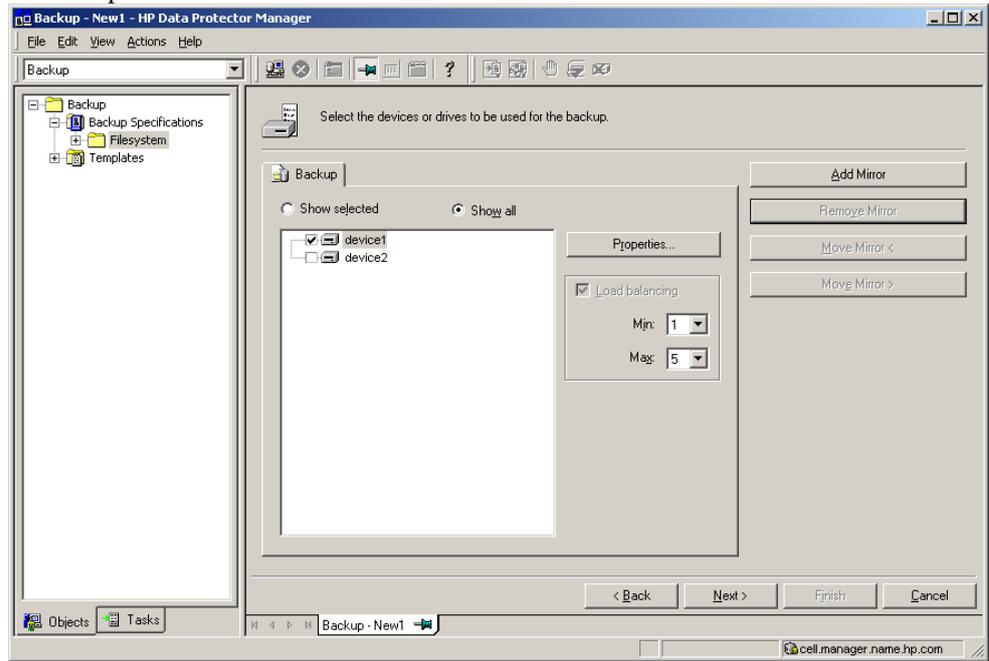
In the backup items panel, don't select anything, just click "Next".

Figure 8: Backup items



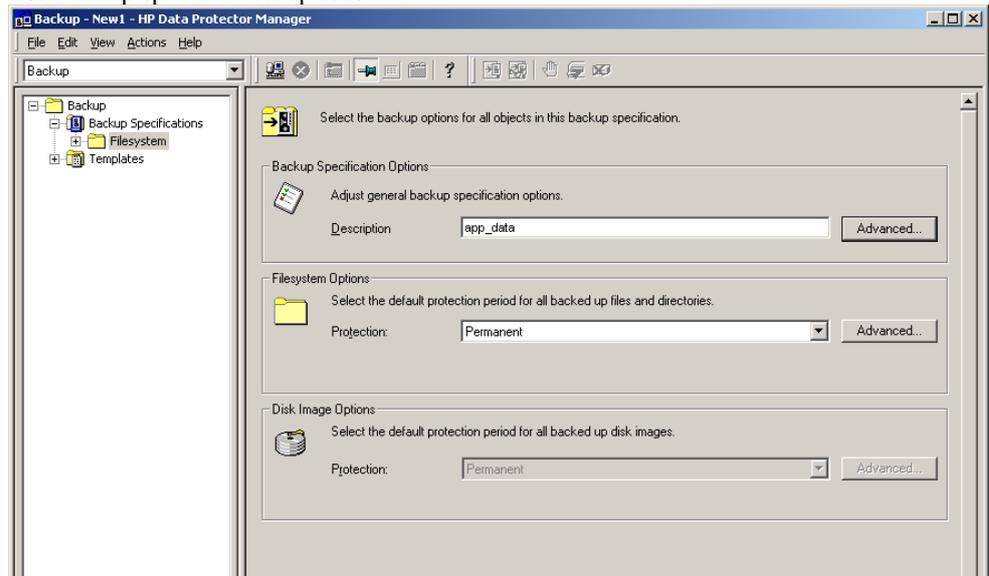
Select the device or drive that will be used for this backup and then click "Next". It is recommended to use a device "directly" (via SAN) attached to the backup host (local backup) and also to the application host (local restore).

Figure 9: Backup device



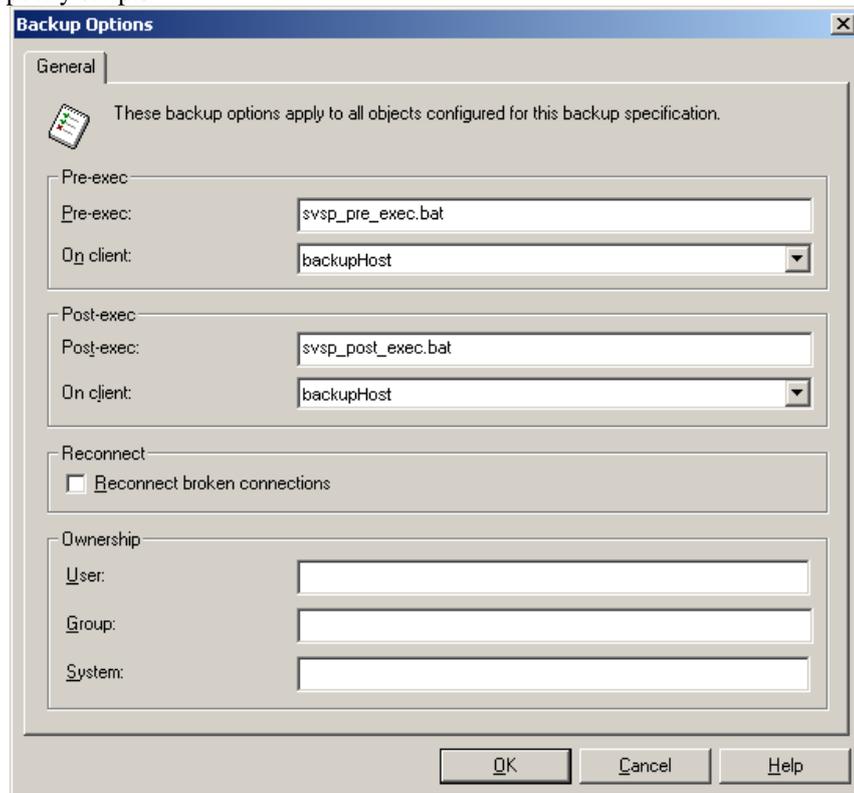
Optionally fill in a “Description” for the “Backup Specification Options” and then click the “Advanced” in the “Backup Specification Options” area.

Figure 10: Backup specification options



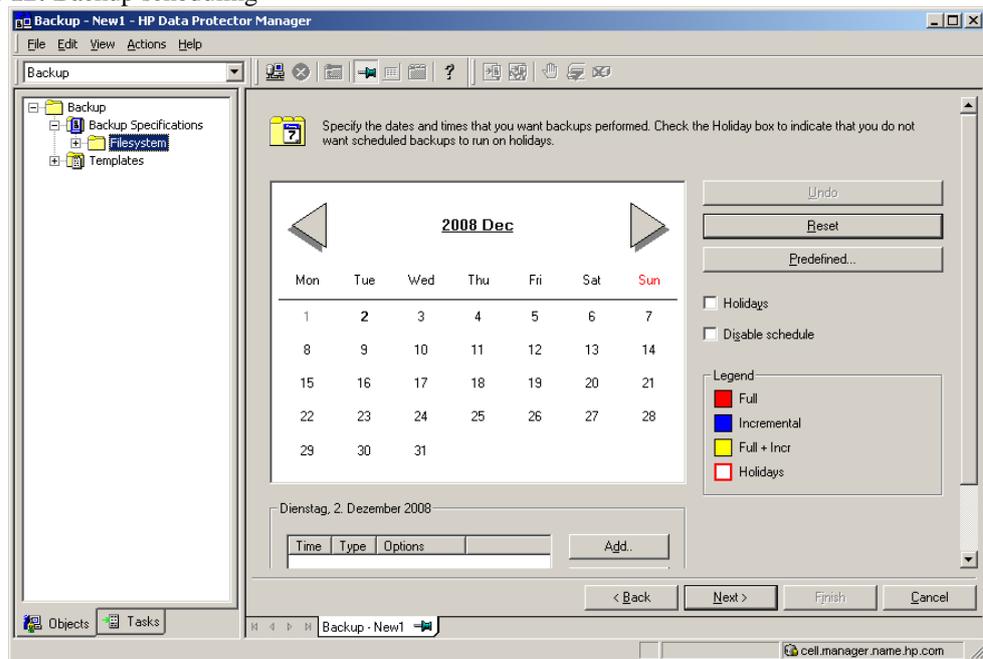
In the Backup Options panel, type the filenames of the pre-exec and post-exec scripts and select the backupHost. The scripts (samples can be found in Appendix) should previously be copied into the default folder (<Data Protector Installation Folder>\bin), otherwise the full path must be specified.

Figure 11: Specify scripts



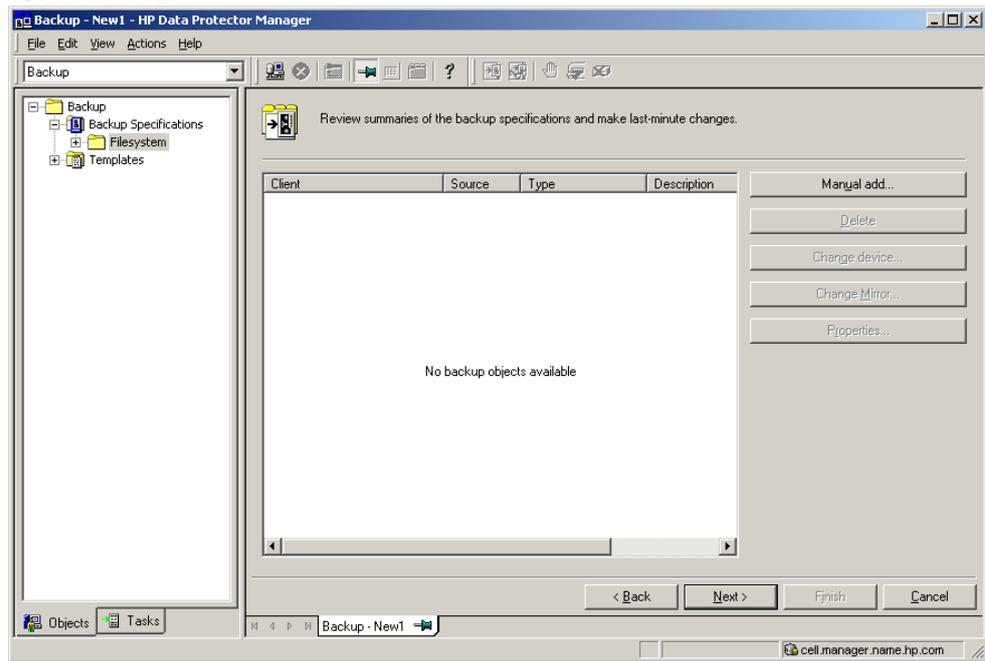
Select the date(s) on which the backup should be performed and click "Next".

Figure 12: Backup scheduling



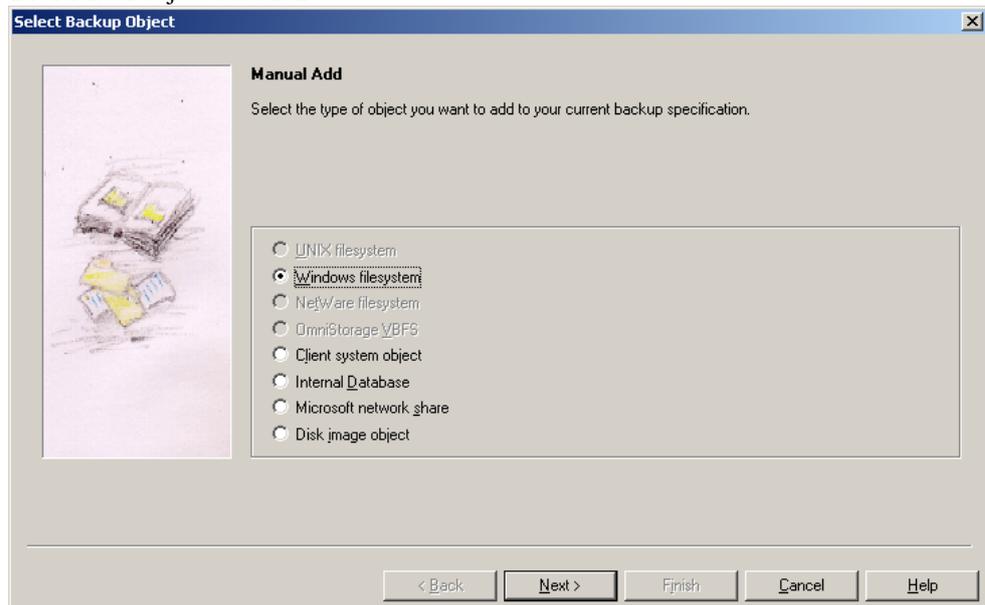
Click "Manual add...".

Figure 13: Manual add



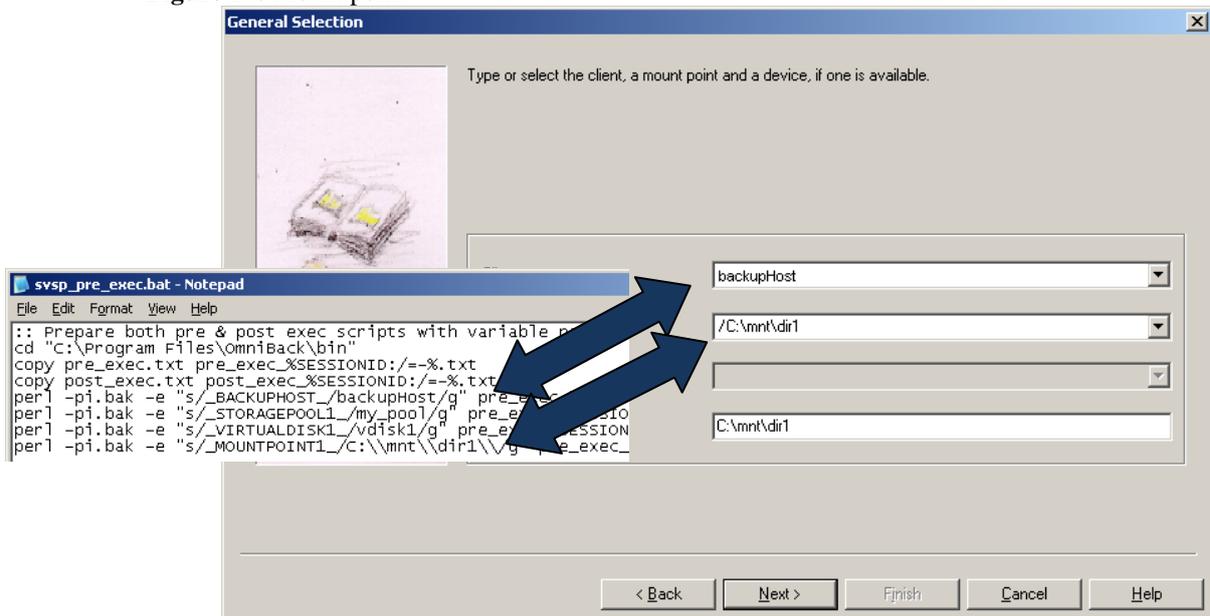
Select "Windows filesystem" and click "Next".

Figure 14: Manual object selection



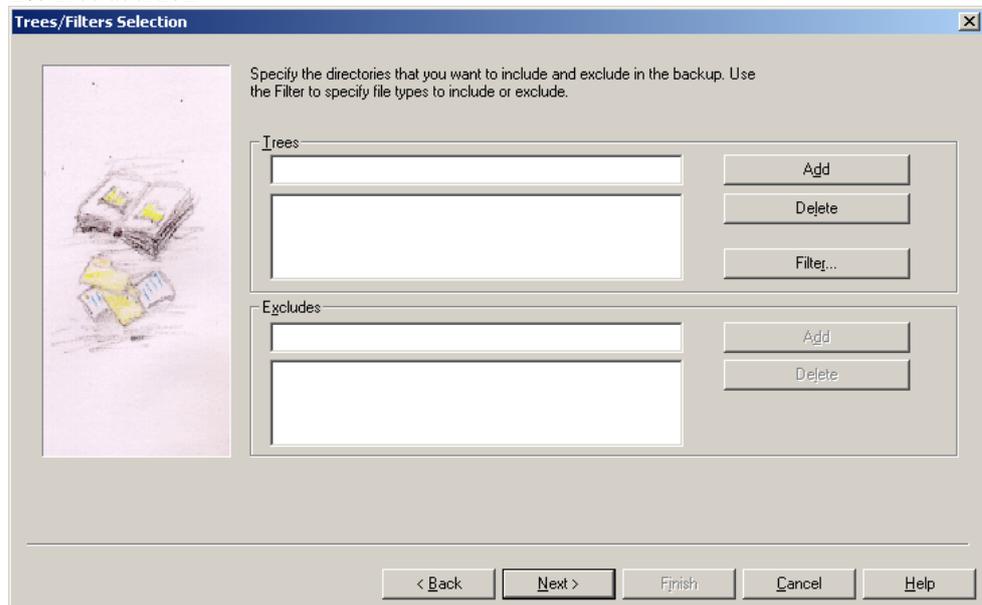
Specify the mount point which must be the same as the one in the pre_exec script described in Copying and editing the scripts". It is recommended to have only one partition per disk although it could possibly also work with more than one through the proper script configuration. For more information refer to the *HP StorageWorks SAN Virtualization Services Manager command line interface user guide*. Note that on the GUI there is a leading forward slash ("/) which is not needed in the script. Then click "Next".

Figure 15: Mount point



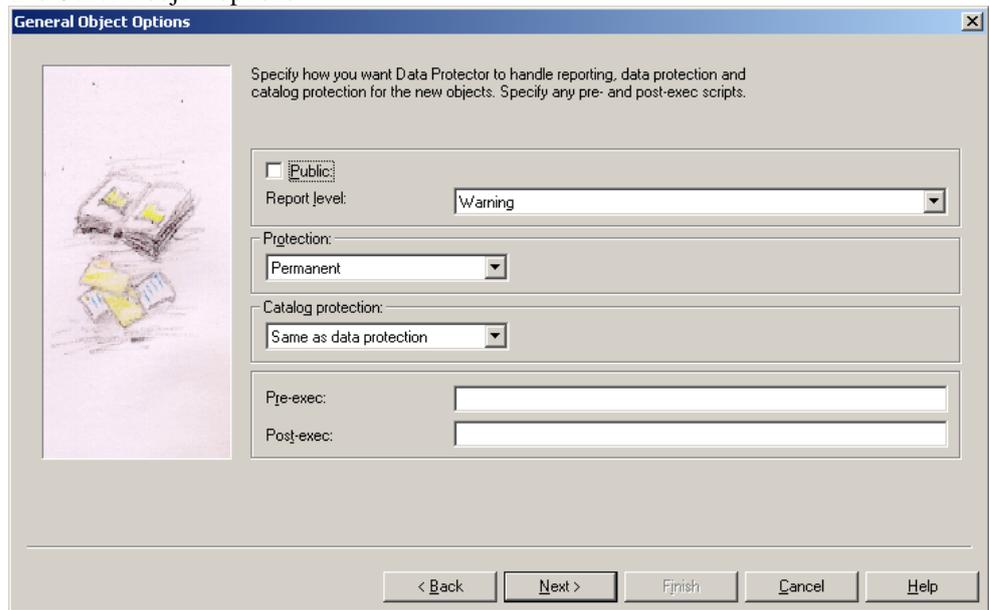
There's no need to select a Tree so simply click "Next".

Figure 16: Tree addition



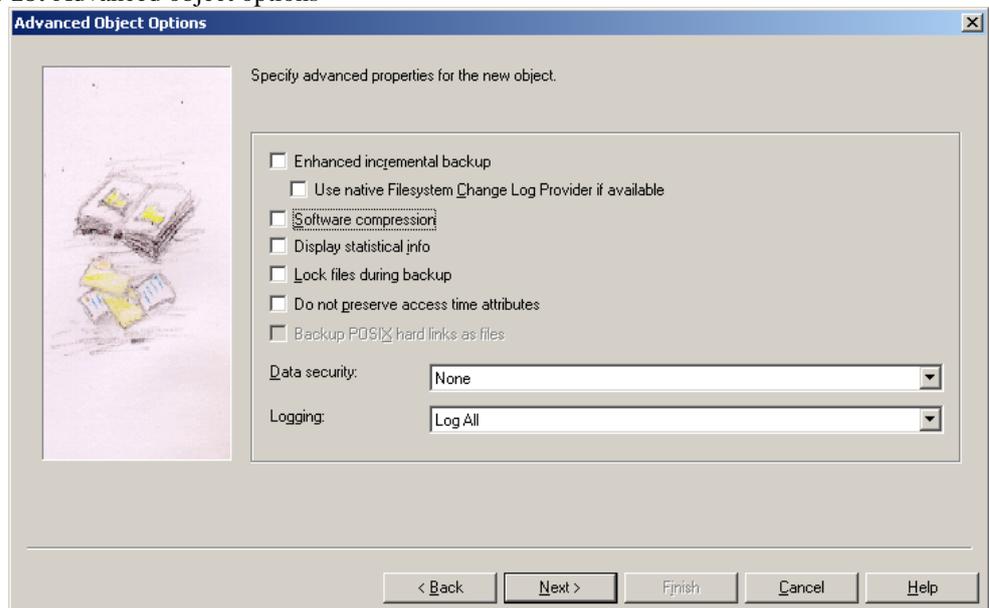
Enter your general object options and click "Next".

Figure 17: General object options



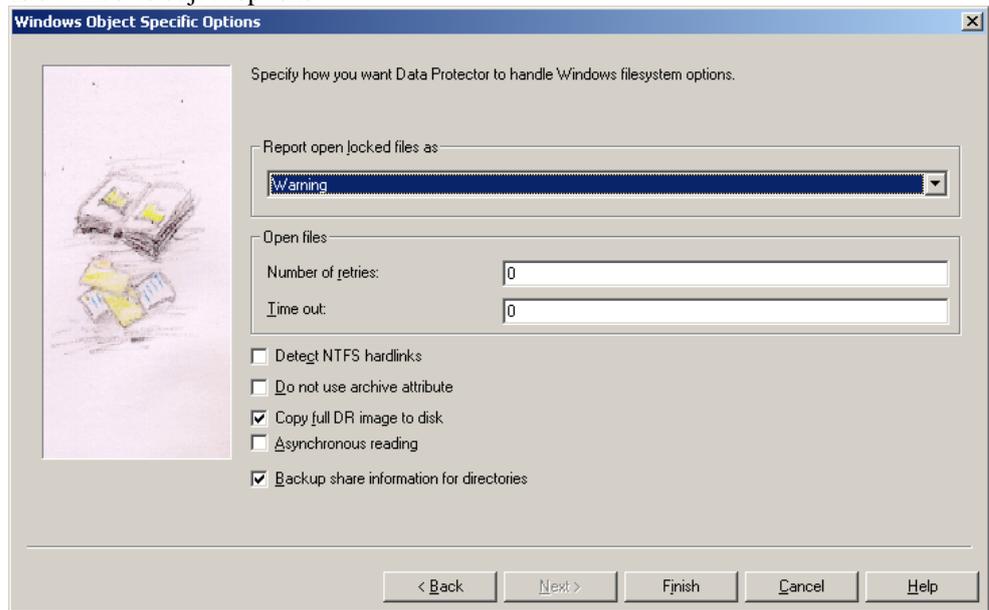
Give your advanced object options and click "Next".

Figure 18: Advanced object options



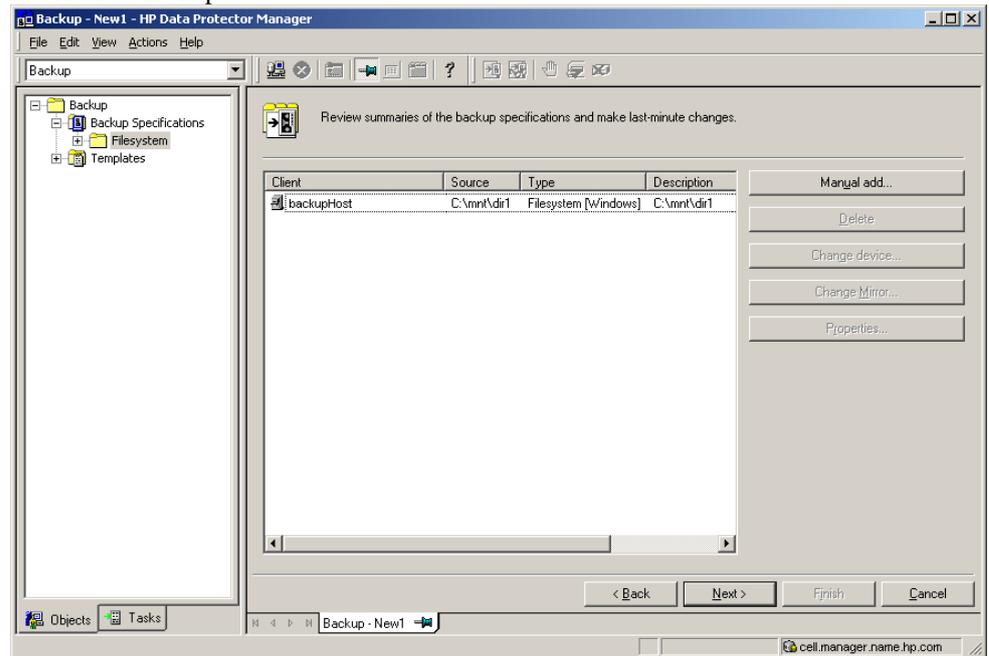
Enter your Windows object options and click "Finish".

Figure 19: Windows object options



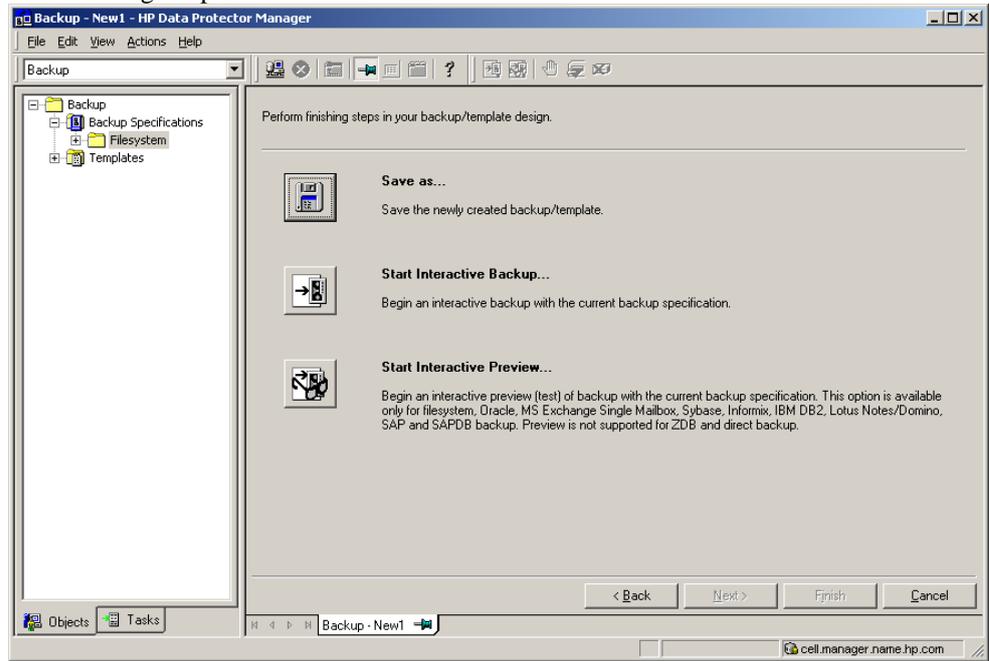
Review that the correct objects are selected. If there are more disks to backup, repeat the process described from Figure 13: **Manual add** until here and then press “Next” in the Review panel. Note that if you need to backup more than one disk, the scripts will need further modifications not mentioned here.

Figure 20: Review backup



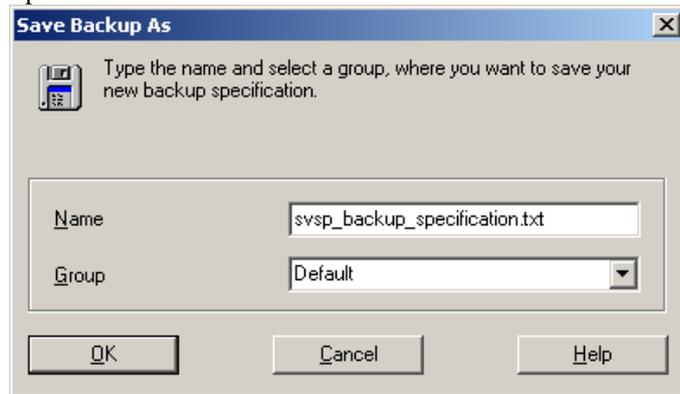
Click “Save as...”.

Figure 21: Finishing template



Specify the name of the backup specification and click "OK".

Figure 22: Save backup

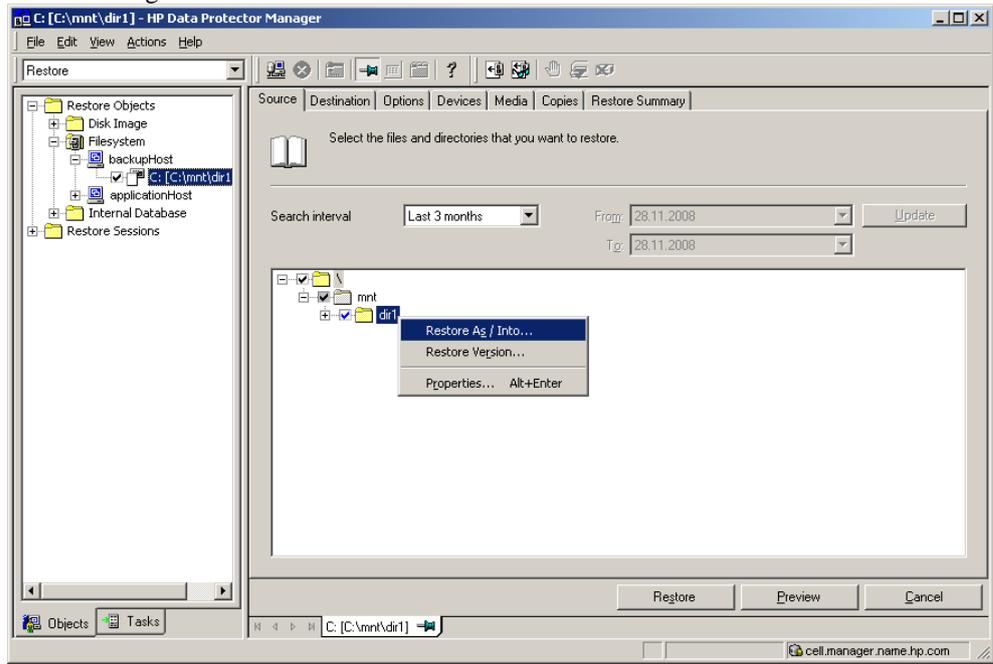


You can now run the newly created backup. A typical backup session output can be found in Appendix A. During the next time you open this backup specification, and try to expand the source tree a message will come up stating that there's a reference to an inexistent mountpoint. Please click "Yes" to leave this orphan object in the backup specification.

Performing Restore

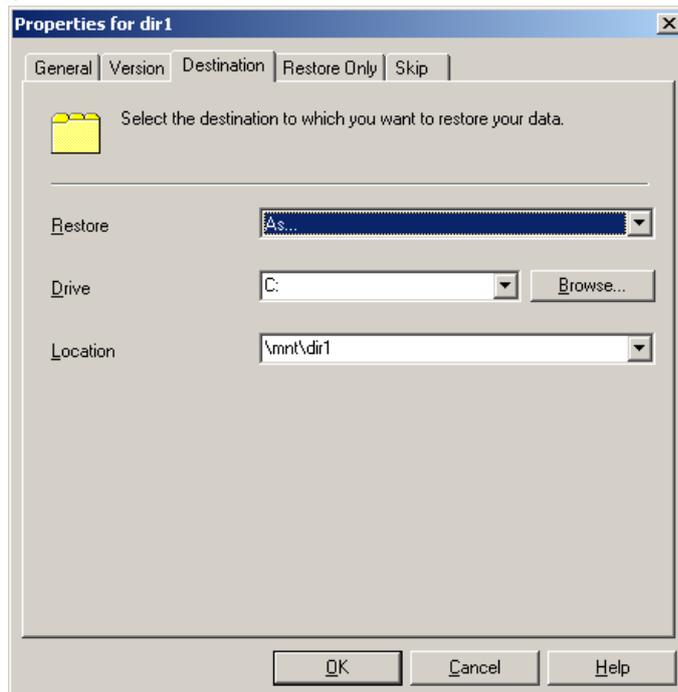
The backup created above can be restored using the Data Protector GUI. Select the Restore context in the Data Protector GUI. Then select the backup host and the folder you want to restore. Then right click on the directory you wish to restore and select "Restore As/Into...":

Figure 23: Restoring



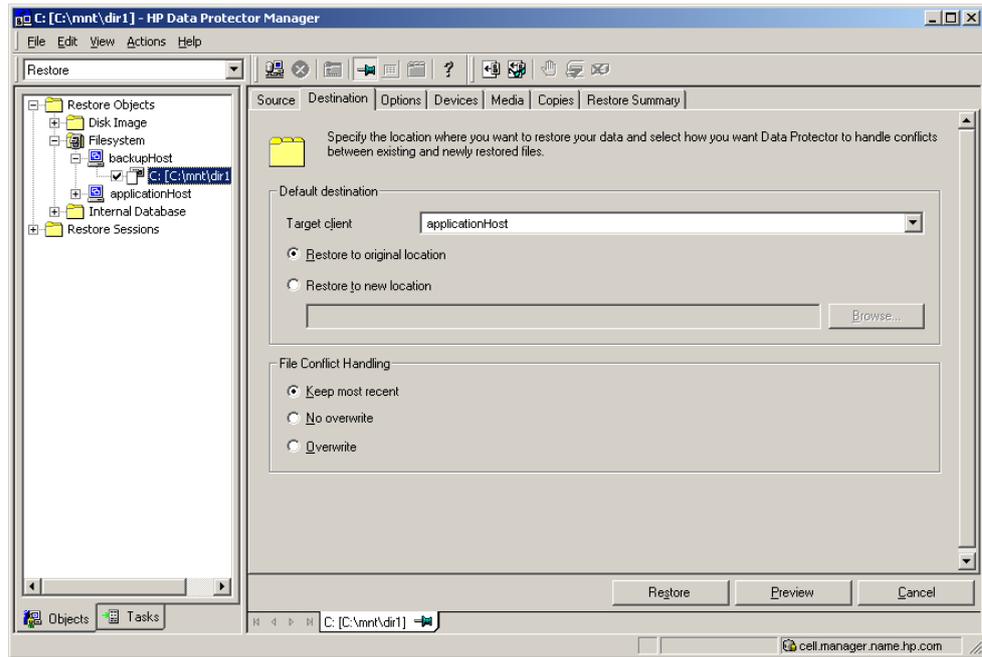
Select Restore "As.." the drive and the location in which the data should be restored.

Figure 24: Restore As



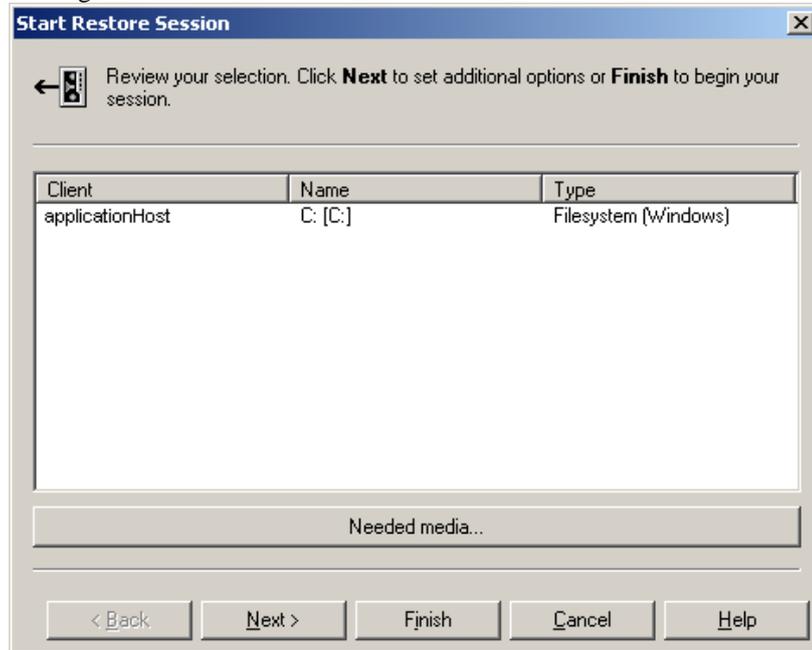
Make sure that the destination is set to the application host.

Figure 25: Restore destination



A confirmation window appears. Click "Finish" to start the restore session.

Figure 26: Performing restore



Appendix A

Currently we use 4 scripts, 2 pre-exec and 2 post-exec. In each execution phase (pre- and post-execution), one file is the .bat file executed by Data Protector and the other serves as a template for the actual SVSP script executed by the .bat file. Both .bat files need to be modified to suit the actual environment, i.e. at least all the variables values enclosed in "<...>". Note that the '<' and '>' signs must be removed as well. These files must be copied as stated in the section *Copying and editing the scripts*.

Sample Pre-exec Scripts

Filename: svsp_pre_exec.bat
Contents:
<pre>:: Prepare both pre & post exec scripts with variable names cd "<C:\Program Files\OmniBack\bin>" copy pre_exec.txt pre_exec_%SESSIONID:/=-%.txt copy post_exec.txt post_exec_%SESSIONID:/=-%.txt perl -pi.bak -e "s/_BACKUPHOST_<backupHost>/g" pre_exec_%SESSIONID:/=-%.txt perl -pi.bak -e "s/_STORAGEPOOL1_<my_pool>/g" pre_exec_%SESSIONID:/=-%.txt perl -pi.bak -e "s/_VIRTUALDISK1_<vdisk1>/g" pre_exec_%SESSIONID:/=-%.txt perl -pi.bak -e "s/_MOUNTPOINT1_<mountPoint1>/g" pre_exec_%SESSIONID:/=-%.txt perl -pi.bak -e "s/_POINTINTIME1_/pit1_%SESSIONID:/=-%/g"^ pre_exec_%SESSIONID:/=-%.txt perl -pi.bak -e "s/_POINTINTIME1_/pit1_%SESSIONID:/=-%/g"^ post_exec_%SESSIONID:/=-%.txt perl -pi.bak -e "s/_SNAPSHOT1_/snap1_%SESSIONID:/=-%/g"^ pre_exec_%SESSIONID:/=-%.txt perl -pi.bak -e "s/_SNAPSHOT1_/snap1_%SESSIONID:/=-%/g"^ post_exec_%SESSIONID:/=-%.txt vsm_cli -sd <domain> <username> <password> -I pre_exec_%SESSIONID:/=-%.txt</pre>

Filename: pre_exec.txt
Contents:
<pre># start actual work OnErrorGoto ExitScript # --- Quiesce application (if applicable) # --- Flush OS cache - on App Server! (Win2003 only) # --- FlushCache -VirtualDisk "_VIRTUALDISK1_" OnErrorGoto CleanPiT CreatePiT -VirtualDisk "_VIRTUALDISK1_", ~ -PiT "_POINTINTIME1_", -TIMEOUT 900 # --- Resume application (if applicable) OnErrorGoto CleanAll CreateSnapshot -PiT "_POINTINTIME1_", -snapshot "_SNAPSHOT1_", ~ -StoragePool "_STORAGEPOOL1_", -host "_BACKUPHOST_" RW , ~ -cluster 0, -TIMEOUT 900 RescanDevices MountVirtualDisk -MountPoint "_MOUNTPOINT1_", -VirtualDisk "_SNAPSHOT1_", ~ -Override Goto ExitScript CleanAll: AllowExecErrors UnmountVirtualDisk -VirtualDisk "_SNAPSHOT1_" DeletePiTOrSnapshot -name "_SNAPSHOT1_", -TIMEOUT 900 DeletePiTOrSnapshot -name "_POINTINTIME1_", -TIMEOUT 10800 DisallowExecErrors Goto ExitScript</pre>

```

CleanPiT:
    AllowExecErrors
        # --- Resume application (if applicable)
        DeletePiTOrSnapshot -name "_POINTINTIME1_", -TIMEOUT 10800
    DisallowExecErrors
ExitScript:
    Quit

```

Sample Post-exec Scripts

Filename
svsp_post_exec.bat
Contents
<pre> cd "<C:\Program Files\OmniBack\bin>" vsm_cli -sd <domain> <username> <password> -I post_exec_%SESSIONID:/=-%.txt :: Delete session created scripts. del pre_exec_%SESSIONID:/=-%.txt.bak del post_exec_%SESSIONID:/=-%.txt.bak del pre_exec_%SESSIONID:/=-%.txt del post_exec_%SESSIONID:/=-%.txt </pre>

Filename
post_exec.txt
Contents
<pre> # Cleanup after last run. AllowExecErrors UnmountVirtualDisk -VirtualDisk "_SNAPSHOT1_" DeletePiTOrSnapshot -name "_SNAPSHOT1_", -TIMEOUT 900 DeletePiTOrSnapshot -name "_POINTINTIME1_", -TIMEOUT 10800 DisallowExecErrors </pre>

Session Output

This section shows us the typical output after running the backup mentioned in the *ZDB Integrated with SVSP*. The output might vary depending on your environment.

```

[Normal] From: BSM@cell.manager.name.hp.com "svsp_backup_specification.txt"
Time: 5/27/2009 6:32:35 PM
    Starting to execute "svsp_pre_exec.bat"
    on host backupHost...

C:\WINDOWS\system32>cd "C:\Program Files\OmniBack\bin"

C:\Program Files\OmniBack\bin>copy pre_exec.txt pre_exec_2009-05-27-28.txt
    1 file(s) copied.

C:\Program Files\OmniBack\bin>copy post_exec.txt post_exec_2009-05-27-28.txt
    1 file(s) copied.

C:\Program Files\OmniBack\bin>perl -pi.bak -e "s/_BACKUPHOST_/backupHost/g"
pre_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>perl -pi.bak -e "s/_STORAGEPOOL1_/my_pool/g"
pre_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>perl -pi.bak -e "s/_VIRTUALDISK1_/vdisk1/g"
pre_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>perl -pi.bak -e
"s/_MOUNTPOINT1_/C:\\mnt\\dir1\\g" pre_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>perl -pi.bak -e "s/_POINTINTIME1_/pit1_2009-05-

```

27-28/g" pre_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>perl -pi.bak -e "s/_POINTINTIME1_/pit1_2009-05-27-28/g" post_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>perl -pi.bak -e "s/_SNAPSHOT1_/snap1_2009-05-27-28/g" pre_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>perl -pi.bak -e "s/_SNAPSHOT1_/snap1_2009-05-27-28/g" post_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>vsm_cli -sd my_domain admin password -I pre_exec_2009-05-27-28.txt

=====

>>> Selected VSM domain: 'my_domain' for user: 'admin'.

=====

>>> Selecting VSMDomain: 'my_domain', with: User: 'admin', PW: *****

Wed May 27 18:31:56 2009
Operation 'CreatePiT' started.

Create PiT: 'pit1_2009-05-27-28' on VirtualDisk: 'vdisk1'

Operation ended successfully.
Returned status: OK.

=====

Wed May 27 18:32:02 2009
Operation 'CreateSnapshot' started.

Create snapshot: 'snap1_2009-05-27-28', on PiT: 'pit1_2009-05-27-28'
using storage pool: 'my_pool' for 1 hosts.
Cluster support flag: 0
Host: 'backupHost', Presentation: RW

Operation ended successfully.
Returned status: OK.

=====

Wed May 27 18:32:08 2009
Operation 'RescanDevices' started.

Microsoft DiskPart version 5.2.3790.3959
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: backupHost

Please wait while DiskPart scans your configuration...

DiskPart has finished scanning your configuration.

Operation ended successfully.
Returned status: OK.

=====

Wed May 27 18:33:18 2009
Operation 'MountVirtualDisk' started.

Mounted successfully virtual disk/snapshot 'snap1_2009-05-27-28', Partition '-1' on 'C:\mnt\dir1\
'Override/Free Mount Point' flag (0 - reset, otherwise - set): 0 .
Note: Partition '-1' stands for: Select the first partition.

Operation ended successfully.
Returned status: OK.

>>> GoTo command in (non-comment) line number: 8
Skipping to the label: 'ExitScript:'

>>> Starting to execute from (non-comment) line number: 21
(Following the label: 'ExitScript:')

Quit Message: Quit

Completion Status: CLI Script completed with NO errors.

[Normal] From: BSM@cell.manager.name.hp.com "svsp_backup_specification.txt"
Time: 5/27/2009 6:34:02 PM
Session remote exec script "svsp_pre_exec.bat"
on host backupHost has completed.

[Normal] From: BMA@backupHost "device1_Drive_1" Time: 5/27/2009 6:34:07 PM
STARTING Media Agent "device1_Drive_1"

[Normal] From: BMA@backupHost "device1_Drive_1" Time: 5/27/2009 6:34:08 PM
Loading medium from slot 2 to device Tape_1

[Normal] From: VBDA@backupHost "C:\mnt\dir1" Time: 5/27/2009 6:33:33 PM
STARTING Disk Agent for backupHost:C:\mnt\dir1 "C:\mnt\dir1".

[Normal] From: VBDA@backupHost "C:\mnt\dir1" Time: 5/27/2009 6:33:35 PM
COMPLETED Disk Agent for backupHost:C:\mnt\dir1 "C:\mnt\dir1".

[Normal] From: BMA@backupHost "device1_Drive_1" Time: 5/27/2009 6:34:15 PM
Unloading medium to slot 2 from device device1_Drive_1

[Normal] From: BMA@backupHost "device1_Drive_1" Time: 5/27/2009 6:34:15 PM
COMPLETED Media Agent "device1_Drive_1"

[Normal] From: BSM@cell.manager.name.hp.com "svsp_backup_specification.txt"
Time: 5/27/2009 6:34:16 PM

Backup Statistics:

Session Queuing Time (hours)	0.00

Completed Disk Agents	1
Failed Disk Agents	0
Aborted Disk Agents	0

Disk Agents Total	1
=====	
Completed Media Agents	1
Failed Media Agents	0
Aborted Media Agents	0

Media Agents Total	1
=====	
Mbytes Total	1 MB
Used Media Total	1
Disk Agent Errors Total	0

[Normal] From: BSM@cell.manager.name.hp.com "svsp_backup_specification.txt"

Time: 5/27/2009 6:34:16 PM
Starting to execute "svsp_post_exec.bat"
on host backupHost...

C:\WINDOWS\system32>cd "C:\Program Files\Omniback\bin"

C:\Program Files\OmniBack\bin>vsm_cli -sd my_domain admin password -I
post_exec_2009-05-27-28.txt

=====

>>> Selected VSM domain: 'my_domain' for user: 'admin'.

=====

>>> Selecting VSMDomain: 'my_domain', with: User: 'admin', PW: *****

Wed May 27 18:33:35 2009

Operation 'UnmountVirtualDisk' started.

Unmounted partition successfully: virtual disk/snapshot 'snap1_2009-05-27-28' ,
Partition '-1'.

Note: Partition '-1' stands for: Select the first partition.

Operation ended successfully.

Returned status: OK.

=====

Wed May 27 18:33:36 2009

Operation 'DeletePiTORSnapshot' started.

Delete snapshot or PiT: snap1_2009-05-27-28.

Operation ended successfully.

Returned status: OK.

=====

Wed May 27 18:33:42 2009

Operation 'DeletePiTORSnapshot' started.

Delete snapshot or PiT: pit1_2009-05-27-28.

Operation ended successfully.

Returned status: OK.

=====

=====

Completion Status: CLI Script completed with NO errors.

=====

C:\Program Files\OmniBack\bin>del pre_exec_2009-05-27-28.txt.bak

C:\Program Files\OmniBack\bin>del post_exec_2009-05-27-28.txt.bak

C:\Program Files\OmniBack\bin>del pre_exec_2009-05-27-28.txt

C:\Program Files\OmniBack\bin>del post_exec_2009-05-27-28.txt

[Normal] From: BSM@cell.manager.name.hp.com "svsp_backup_specification.txt"

Time: 5/27/2009 6:34:35 PM

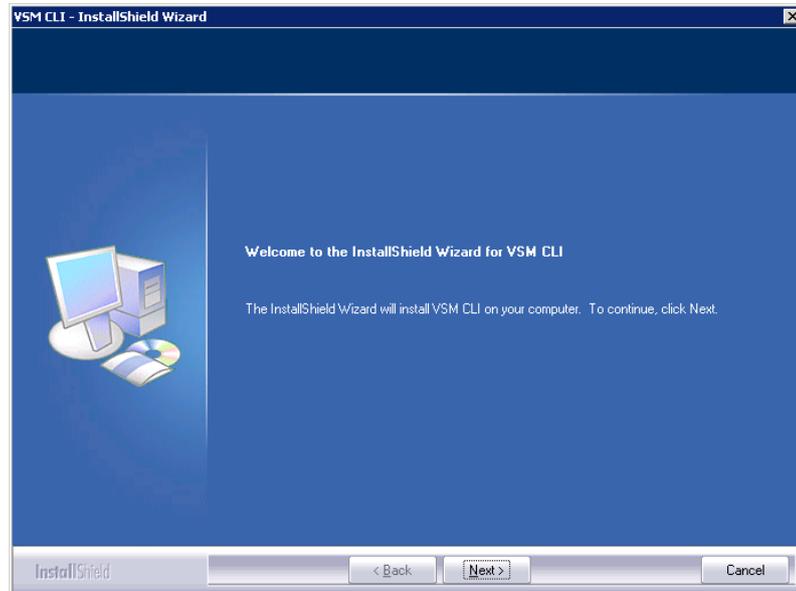
Session remote exec script "svsp_post_exec.bat"

on host backupHost has completed.

Appendix B

In this section we will create an SVSP SANAPI virtual disk and a user for SVSP. Before we go on to the VSM GUI you should install the VSM CLI Library on the system used (in our example the backup host).

Figure 27: VSM CLI installation



To access the VSM GUI:

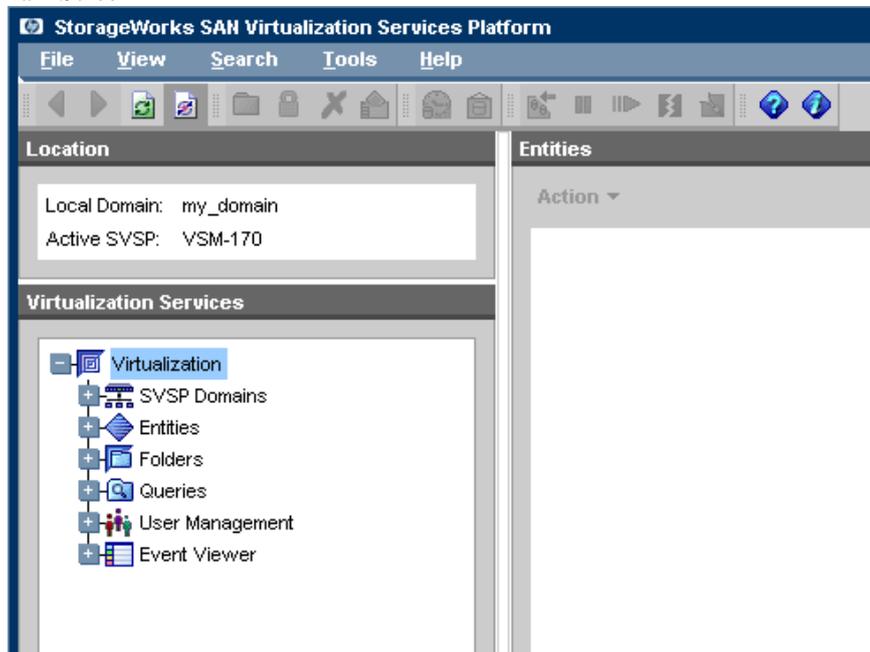
1. Connect your Internet browser to <IP address>:<Port_Number>, where <IP address> is the IP address of the VSM server, and <Port_Number> is the TCP port number through which the VSM server is exposed to the IP network.
2. Click "Start VSM Client". The *Login* screen appears.
If this is the first time you are connecting to a specific VSM server, select *Connect to Server* and enter the IP address of the VSM server in the *Connect to Server* field.
3. If this is not the first time you are connecting to a specific VSM server, you can alternatively select "Connect to Domain", and then select the VSM domain name from the dropdown box.
4. In the "Port" field, enter the TCP port number configured as the port through which the VSM server is exposed to the IP network.
5. If you want to connect using a secure HTTP (HTTPS) connection, check "Http is Secure".
6. Click "OK".

Figure 28: SVSP login



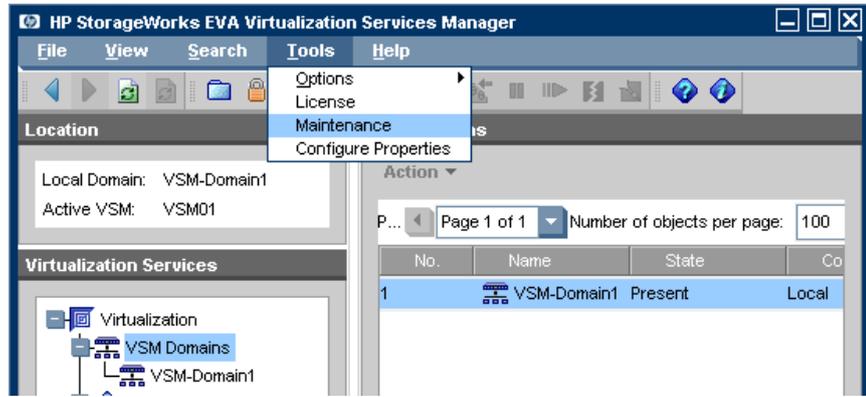
After a successful login the VSM client window appears.

Figure 29: Main Screen



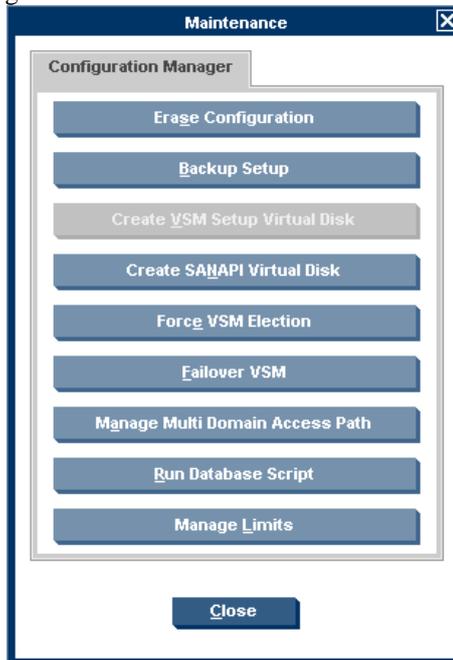
To create a VSM CLI Virtual Disk and assign it to the server, select **Tools > Maintenance**.

Figure 30: Maintenance



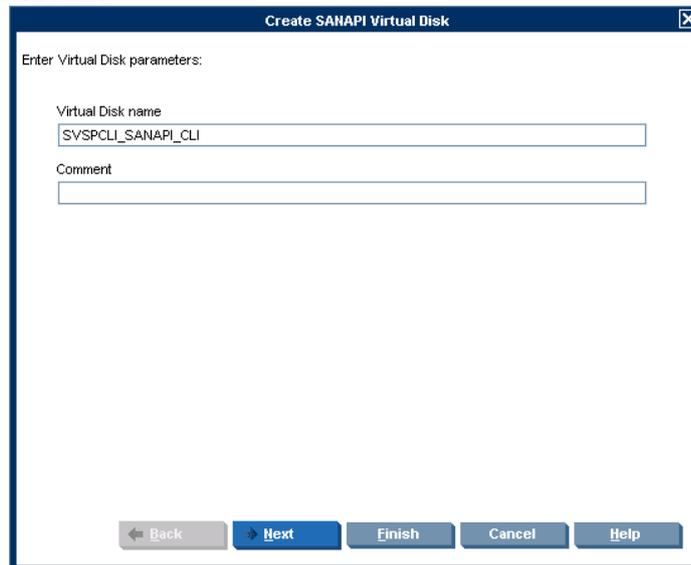
Click **Create SANAPI Virtual Disk**.

Figure 31: Configuration manager



Enter the name of the Virtual Disk and click **Next**.

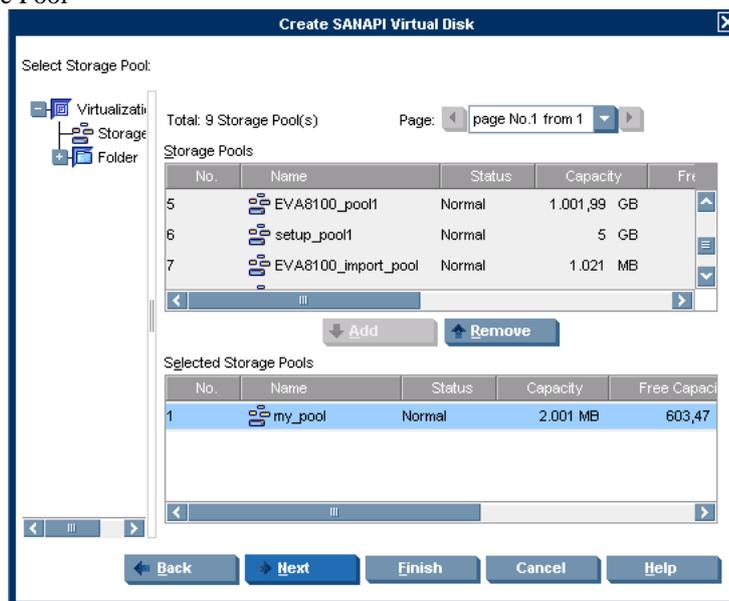
Figure 32: Virtual Disk name



To select the storage pool and the size of the virtual disk:

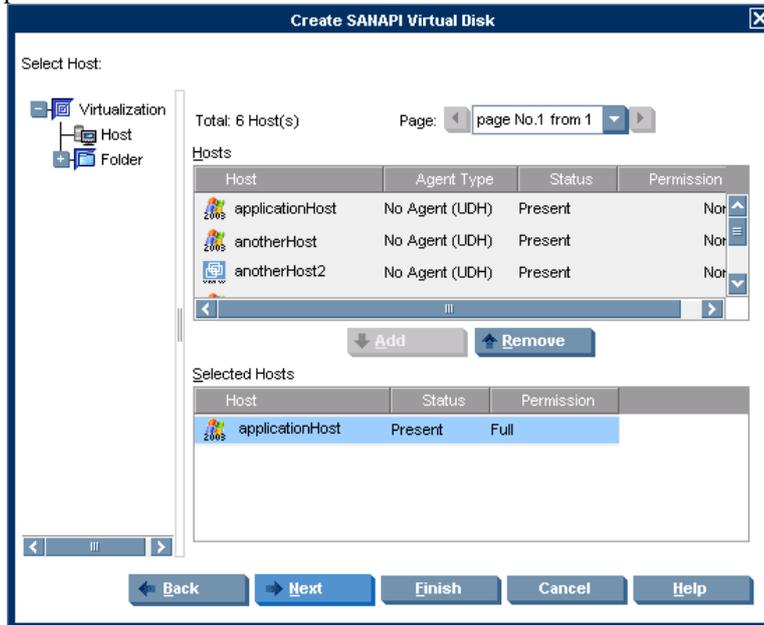
1. In the top area of the screen, select a storage pool from which you wish to create the Virtual Disk.
2. Click **Add**. The object you selected appears in the lower area of the screen. If you want to deselect the object, select the object in the lower area and click **Remove**.
3. In the lower area, double click on the disk capacity to change it.
4. Click **Next**.

Figure 33: Storage Pool



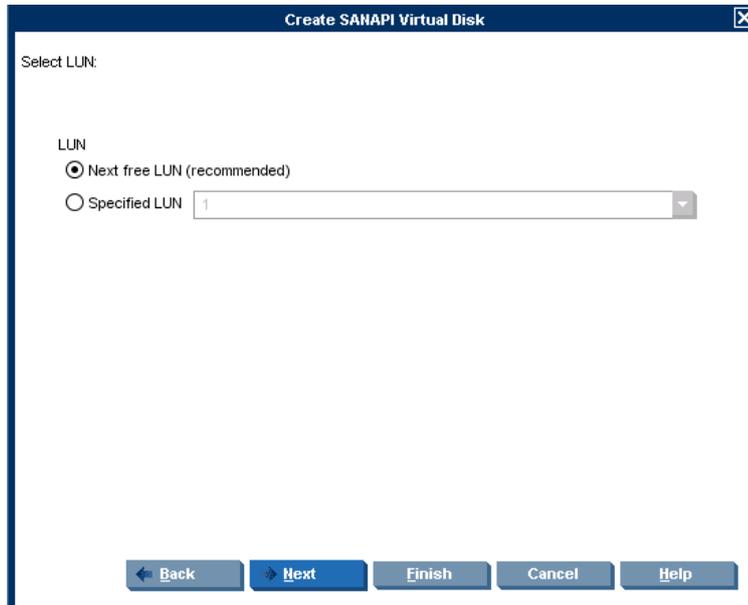
Select the hosts to which you want to present the virtual disk and click **Next**.

Figure 34: Host presentation



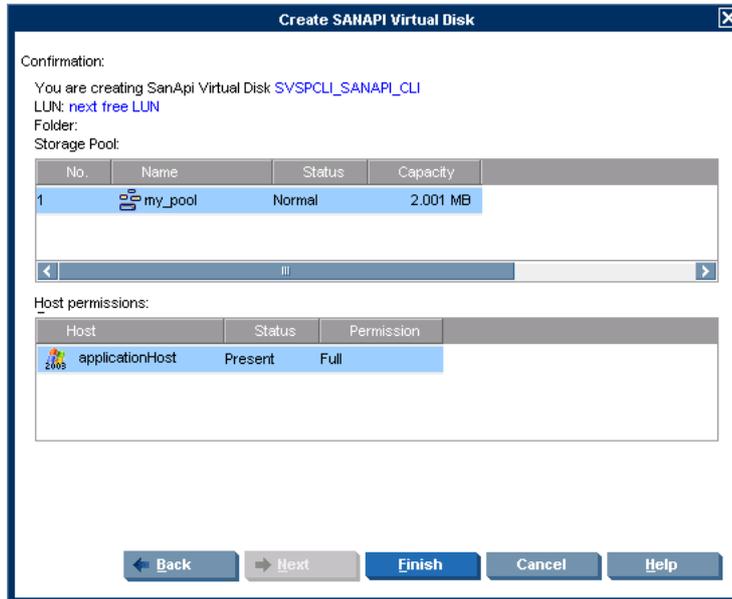
Select the LUN used for the disk and click **Next**.

Figure 35: LUN



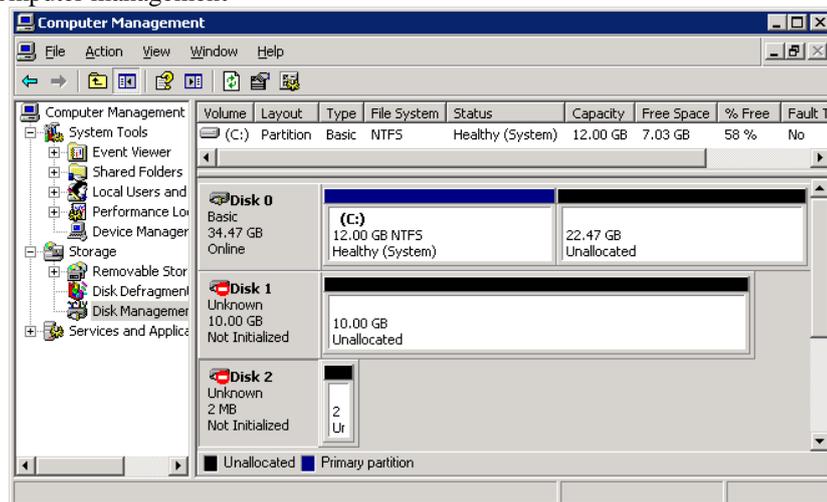
Confirm your settings and click **Finish**.

Figure 36: Create SANAPI Virtual Disk



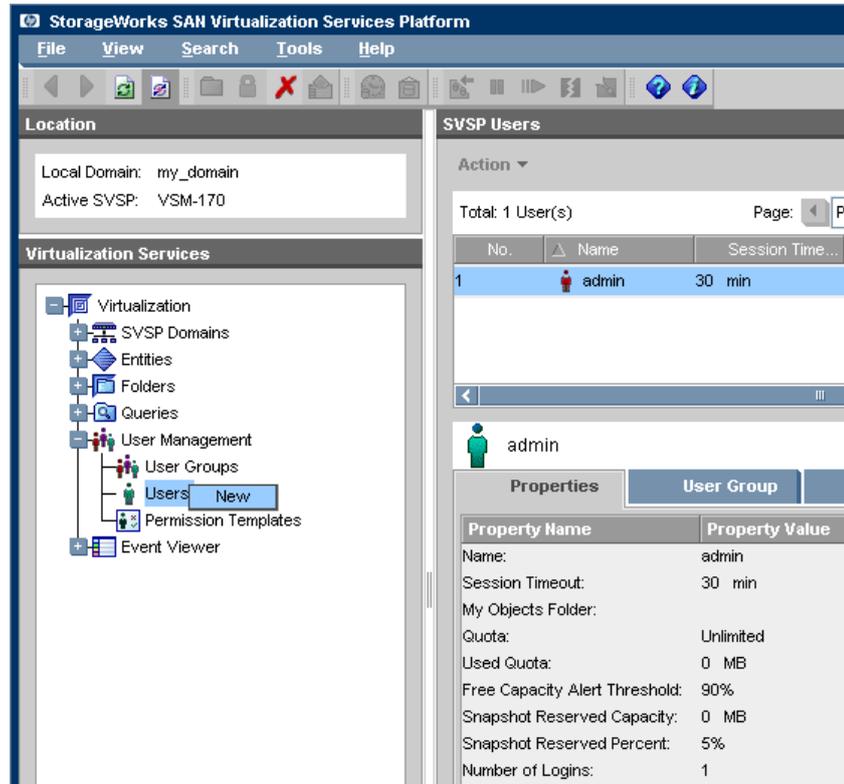
You should also check if the disk is presented to the host that is going to use it. This can be done in Computer Management (right click my computer and select manage). Then select the Disk Management and search for the disk.

Figure 37: Computer management



To create a user go to the navigation tree and expand the "User Management" node. Right-click "User" and select "New".

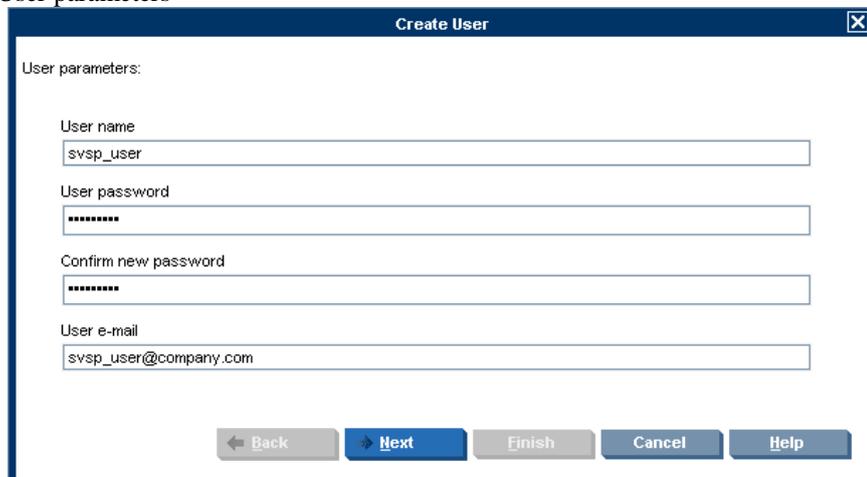
Figure 38: New user



The “Create User” wizard opens for entering the “User parameters”.

1. In the “User name” field, enter a name for the user.
2. In the “User password” field, optionally enter a password for the user.
3. If you entered a password, reenter the password in the “Confirm new password”
4. In the “User e-mail” field, optionally enter the e-mail address for the user.
5. Click “Next”.

Figure 39: User parameters



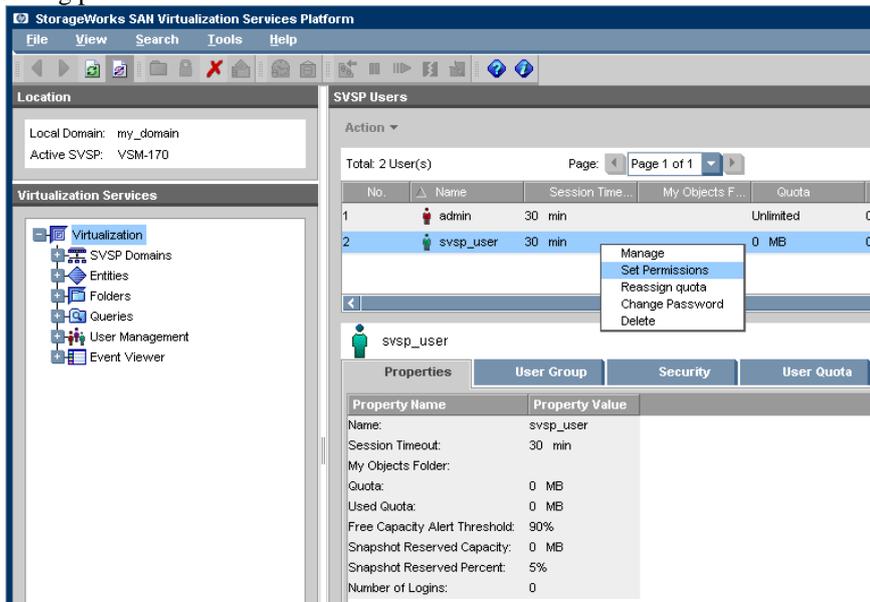
A confirmation screen appears.
Click “Finish”. The new user is created.

Figure 40: Add user



By default, the VSM client automatically adds new users to the read-only user group. Right-click the user to which you want to assign permission to access objects and select “Set Permissions”.

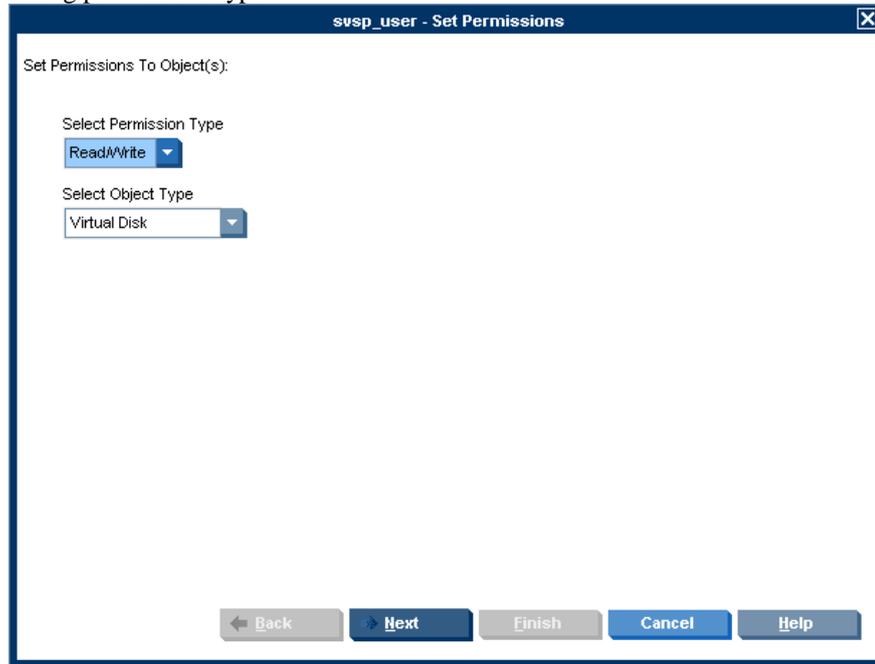
Figure 41: Setting permissions



The *Set Permissions* wizard opens to the *Set Permissions To Object(s)* screen.

1. In the *Select Permission Type* dropdown list, select the type of permission you want to assign to the user for the objects that you will specify.
2. In the *Select Object Type* dropdown list, select the type of object that you want to specify. You can only set permission for objects of one type at once.
3. Click **Next**.

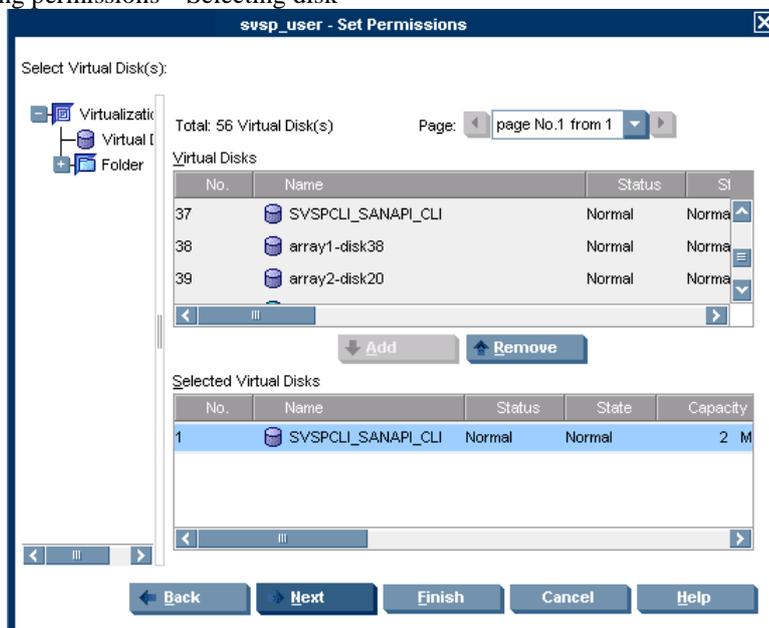
Figure 42: Setting permissions type



A selection screen appears displaying the objects of the type that you selected. For example, if you selected *Virtual Disk* from the *Select Object Type* dropdown list, the *Select Virtual Disk(s)* screen appears.

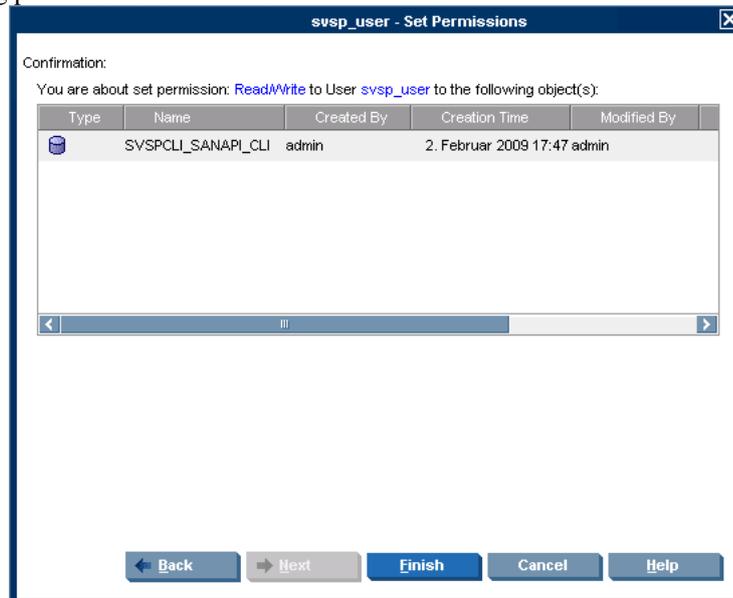
1. In the top area of the screen, select an object to which you would like to assign the user permission.
2. Click **Add**. The object you selected appears in the lower area of the screen. If you want to deselect the object, select the object in the lower area and click **Remove**.
3. Repeat the above steps if necessary until all the objects you want to add to the user are listed in the lower area of the screen.
4. Click **Next**.

Figure 43: Setting permissions – Selecting disk



A confirmation screen appears.
Click **Finish**. The user now has permission to access the objects specified.

Figure 44: Setting permissions confirmation



For more information

For more information on HP SVSP, please visit:

www.hp.com/go/svsp

Further reading

- Learn more about HP StorageWorks virtualization at:
www.hp.com/go/StorageVirtualization
- You can find white papers about the EVA and other HP StorageWorks array solutions at:
<http://h18006.www1.hp.com/storage/arraywhitepapers.html>
- SNIA Virtualization Tutorials:
<http://snia.org/education/tutorials/>

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