



BakBone[™]
SOFTWARE

NETVAULT

APM/plugin user's guide

for the SnapVault
Manager
Plugin

Copyrights

Software Copyright © 9/24/04 BakBone Software

APM/Plugin User's Guide for the SnapVault Manager Plugin

Copyright © 9/24/04 BakBone Software

Printed and online versions.

This software product is copyrighted and all rights are reserved. The distribution and sale of this product are intended for the use of the original purchaser only per the terms of the License Agreement. All other product trademarks are the property of their respective owners.

The *APM/Plugin User's Guide for the SnapVault Manager Plugin* documentation is copyrighted and all rights are reserved.

This document may not, in whole or part, be copied, photocopied, reproduced, translated, reduced or transferred to any electronic medium or machine-readable form without prior consent in writing from BakBone Software.

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

THIS PUBLICATION COULD INCLUDE TECHNICAL INACCURACIES OR TYPOGRAPHICAL ERRORS. CHANGES ARE PERIODICALLY ADDED TO THE INFORMATION HEREIN; THESE CHANGES WILL BE INCORPORATED INTO NEW EDITIONS OF THE PUBLICATION. BAKBONE SOFTWARE MAY MAKE IMPROVEMENTS AND/OR CHANGES IN THE PRODUCT(S) AND/OR THE PROGRAM(S) DESCRIBED IN THIS PUBLICATION AT ANY TIME.

BakBone Software

SnapVault Manager Plugin

SV.0.0 - The SnapVault Manager Plugin - An Overview.....	5
• SV.0.1 - About Network Appliance's SnapVault	5
- <i>SV.0.1.a - Terminology</i>	5
• SV.0.2 - About NetVault's SnapVault Manager Plugin	6
- <i>SV.0.2.a - SnapVault Manager Plugin Target Audience</i>	6
SV.1.0 - The SnapVault Backup System.....	6
• SV.1.1 - Planning a SnapVault Backup System	8
SV.2.0 - Installation of the SnapVault Manager Plugin.....	9
• SV.2.1 - Pre-Installation Requirements	9
• SV.2.2 - Installation Procedure	11
• SV.2.3 - Removing the SnapVault Manager Plugin	12
SV.3.0 - Configuration of the SnapVault Manager Plugin.....	12
• SV.3.1 - Step 1: Adding a SnapVault Secondary	13
• SV.3.2 - Step 2: Adding SnapVault Primaries	14
• SV.3.3 - Additional Available Pop-up Menu Commands	15
- <i>SV.3.3.a - Additional SV Secondary Pop-up Menu Commands</i>	16
- <i>SV.3.3.b - Additional SV Primary Pop-up Menu Commands</i>	17
SV.4.0 - Generating Snapshots.....	20
• SV.4.1 - System to System Backup Data Transfer Methodology	20
• SV.4.2 - Step 1: Establishing a Service on the SV Secondary	20
• SV.4.3 - Step 2: Establishing a Relationship on an SV Primary	22
• SV.4.4 - Step 3: The Initial Synchronization and Updates	24
- <i>SV.4.4.a - Viewing Initial Synchronization and Update Progress</i>	24
• SV.4.5 - Additional Pop-Up Menus and their Commands	25
- <i>SV.4.5.a - Commands Available from a Volume within a Secondary</i>	25
- <i>SV.4.5.b - Commands Available from a Generated Service</i>	26
- <i>SV.4.5.c - Commands Available for Generated Relationships</i>	26
SV.5.0 - Restoring with the SnapVault Manager Plugin.....	27
• SV.5.1 - Restoring a Complete Relationship	28
• SV.5.2 - Renaming/Relocating a Restore	30
- <i>SV.5.2.a - Renaming a Restore</i>	30
- <i>SV.5.2.b - Relocating a Restore</i>	30
- <i>SV.5.2.c - Renaming and Relocating a Restore</i>	31
• SV.5.3 - Retargeting a Restore	31



SnapVault Manager Plugin

SV.0.0 The SnapVault Manager Plugin - An Overview

NetVault's **SnapVault Manager Plugin** works with Network Appliance's SnapVault software via the NetVault GUI. This guide gives background information on SnapVault as well as detailed instructions on the use of the Plugin with NetVault.

SV.0.1 About Network Appliance's SnapVault

SnapVault is a disk-based storage backup feature of Network Appliance's Data ONTAP software that enables data contained on a primary filer and primary Open System (a non-filer, e.g., a UNIX/Windows-based machine) to be backed up to a central, secondary storage filer system in a quick and efficient manner. This data is saved as a "snapshot" in read-only format and in the event of data loss or corruption on the aforementioned primaries, it can be restored from the SnapVault secondary storage system with less downtime and less of the uncertainty associated with conventional tape backup and restore operations.

SV.0.1.a Terminology

Various terms are associated with a SnapVault environment and are referenced throughout this document. Brief definitions are offered below for each.

- **Open System** - This refers to any system that is not a Network Appliance Filer (e.g., an individual Windows or UNIX system). These systems can be included in a backup/restore operation in an NDMP environment through the use of SnapVault.
- **Relationship** - Established on a **SnapVault Primary** once a **Service** has been created on the **SV Secondary**, a Relationship in SnapVault describes a link established between the two that allows for the transfer of backup data from the **SV Primary** to the **SV Secondary**.
- **Service** - Also referred to as a SnapVault Snapshot Schedule, this is created on the **SV Secondary**. A **Service** opens up the qtrees of a specified volume to serve as a destination for **SV Primary** backup data. As well, a **Service** sets up a schedule which is utilized to perform snapshots of this data at set intervals and saves these snapshots in this allocated space.
- **SnapVault Primary (a.k.a. SV Primary)** - This refers to a SnapVault client with data to be backed up (or restored to). An **SV Primary** can be either a Network Appliance filer running **DataOnTap 6.4 (or later)** or an **Open System** with the **Open System SnapVault (OSSV) Software** installed.

Note: The **OSSV Software** is available from Network Appliance and is supported on the following operating systems:

- | | | | |
|-----------------------|--------------------|---------------------|---------------------|
| ■ AIX 4.3.x, 5.1, 5.2 | ■ Linux Kernel 2.4 | ■ Solaris 2.6/7/8/9 | ■ Windows 2000/2003 |
| ■ HP-UX 10.2, 11, 11i | ■ SGI 6.5 | ■ Windows NT 4.0 | |

- **SnapVault Secondary (a.k.a. SV Secondary)** - This is the SnapVault server, (e.g., a Network Appliance R150 Filer). This machine will serve as storage for snapshots taken from various **SV Primaries**. It must be running **DataOnTap 6.4 or later**.
- **Initial Synchronization** - This refers to the initial transfer of selected data from an **SV Primary** to a **SV Secondary**; or simply put, it is a **Full Backup**.
- **Update** - This refers to secondary and further transfers of the same selected data as sent with an **Initial Synchronization** from an **SV Primary** to an **SV Secondary**. In this instance only data that has changed is included (e.g., an **Incremental Backup**).

SV.0.2 About NetVault's SnapVault Manager Plugin

This Plugin manages the schedules, snapshots and Relationships between **SV Primaries** and **SV Secondaries**. These **SV Primaries** can be a mixture of **Open Systems** and Network Appliance Filers. An **SV Secondary** can only be a Network Appliance Filer (e.g., an R150 Filer).

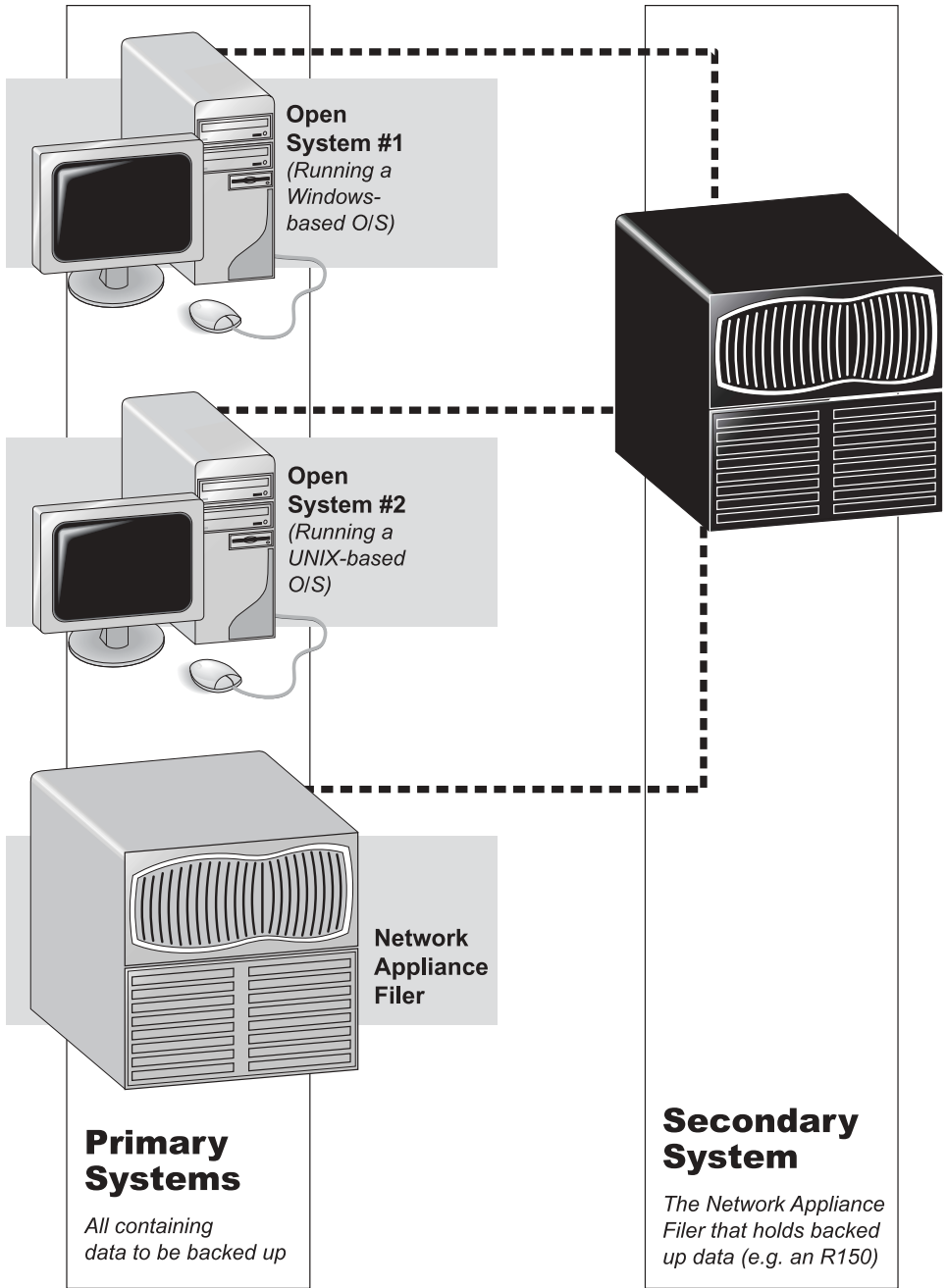
SV.0.2.a SnapVault Manager Plugin Target Audience

An understanding of the NDMP protocol, Network Appliance filers, Snapshot Management and the SnapVault application are required to successfully use this plugin.

SV.1.0 The SnapVault Backup System

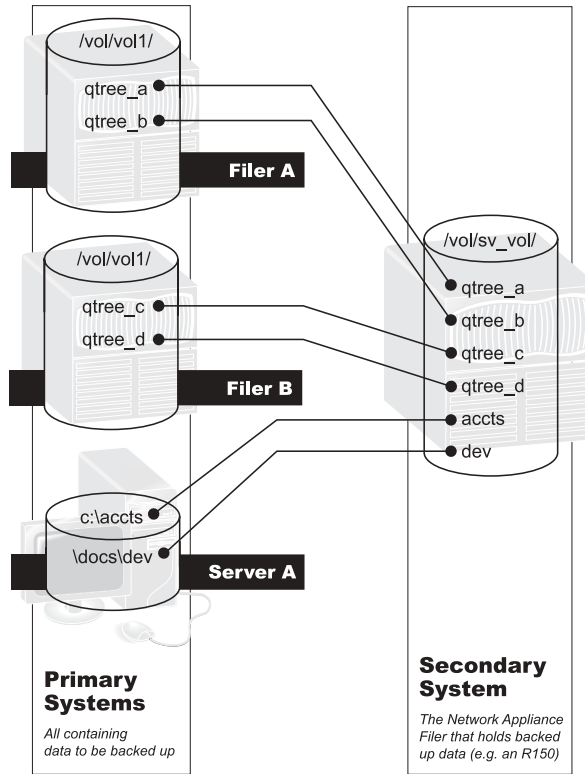
All **SnapVault** backup systems are comprised of at least one **Primary System** and one **Secondary System**. As noted in the terminology section, **Primary Systems** consist of a **Filer** and/or **Open Systems** with data to be backed up to a second **Filer**, which is seen as the **Secondary System** (as illustrated in the figure on the following page). When a **Filer** is acting as a **Primary System**, **SnapVault** will back up primary qtrees to qtree locations on the SnapVault **Secondary System**. With an **Open System** as a Primary, **SnapVault** is capable of backing up directories/drives to qtree locations on the **Secondary System**. This Secondary System is a central, disk-based unit that receives and stores backup data from Filers and Open Systems as "**Snapshots**." Any filer can be configured as a **Secondary**; however, the recommended hardware platform is a *Network Appliance R150 NearStore* system.

Figure SV-1:
 An example SnapVault environment in which two open systems and a Network Appliance Filer (acting as Primary Systems) backup their data to an additional Network Appliance Filer set up for this purpose (and acting as the Secondary System)



SV.1.1 Planning a SnapVault Backup System

Figure SV-2:
A sample of a SnapVault Backup System plan



Some initial planning should be performed prior to setting up a SnapVault Backup System. To start, planning a Relationship between **SV Primaries'** file structures and their corresponding **SV Secondary's** file structure is helpful (e.g., planning the Relationship between the qtrees/directories of a Filer/**Open System** acting as **SV Primaries** and the qtrees of the Filer serving as the **SV Secondary**). As well, multiple **SV Primary** backups (e.g., both the qtrees of a Filer and the directories of an **Open System**) can be performed concurrently to a single volume of the corresponding **SV Secondary's** qtrees (see the figure at left and the table below).

SV Primary Target (qtree/directory)	SV Secondary Destination (qtree)	
Filer_A:	/vol/vol1/qtree_a	/vol/sv_vol/qtree_a
	/vol/vol1/qtree_b	/vol/sv_vol/qtree_b
Filer_B:	/vol/vol1/qtree_c	/vol/sv_vol/qtree_c
	/vol/vol1/qtree_d	/vol/sv_vol/qtree_d
Server_A: (Open System)	C:\acct	/vol/sv_vol/acct
	Server_A:\docs\dev	/vol/sv_vol/dev

Before beginning a SnapVault configuration, it is necessary to plan how many snapshots are required, on a per volume basis; when they are to be updated; and how many of each are to be kept. Scheduling is decided upon based on the various values.

- **Hourly** - Does the data change often enough throughout the day to make it worthwhile to create a snapshot every hour, every two hours or every four hours?
- **Nightly** - Do you want to create a snapshot every night or just workday nights?
- **Weekly** - How many weekly snapshots is it necessary or useful to keep?

In the example represented by the preceding figure and table, the user has six qtrees on the **SV Secondary** volume. Therefore, the user has scheduled the following:

- An **hourly update** every hour from 8:00 a.m. to 7:00 p.m. and 120 of these Snapshots are to be kept.
- A **daily update** is to be performed every Monday through Friday at 8:00 p.m. in which 60 of the Snapshots are to be kept.
- A **weekly update** every Saturday at 9:00 p.m. in which eight Snapshots will be kept.

The end result from this example is that 188 Snapshots will kept in the **SV Secondary's** volume. The limit on snapshots per volume is 251, so the 188 snapshots scheduled in this example is well within this limit.

SV.2.0 Installation of the SnapVault Manager Plugin

SV.2.1 Pre-Installation Requirements

Before installing the **SnapVault Manager Plugin**, the following actions must be performed:

- **Install and Configure SnapVault** - Network Appliance's SnapVault software must be installed and properly configured on all **SV Primaries** and **SV Secondaries** to be used.
- **Install and Configure NetVault Server Software** - The Server version of the NetVault software must be installed on any Open System Primary that is to use the **SnapVault Manager Plugin**.
- **Enable SnapVault** - The SnapVault application must first be enabled on all **SV Primaries** and **SV Secondaries** to be used:
 - ❖ **SV Secondary** - From a command line prompt on an **SV Secondary** to be used, enter the command:

options snapvault.enable on

Follow this with the command:

options snapvault.access <primaries>

This will allow the user to specify the name(s) of the **SV Primaries** to backup and restore. A comma separated list of **SV Primaries** is included

in place of the “<primaries>” value shown above. Eligible values include the actual name of the host (e.g., “**host=melzhost, budzhost**”) or its IP address (e.g., “**182.55.5.1**”).

- ❖ **SV Primary: Filer** - When a Filer is serving as an **SV Primary**, launch a terminal session from the Filer itself, and run the following commands:

- **options snapvault.enable on**
- **options snapvault.access <secondary>**

This will allow the user to specify the name of the **SV Secondary** that it will backup to. The **SV Secondary** is what is named in place of the “<secondary>” value shown above. Eligible values include the actual name of the host (e.g., “**host=R150**”) or its IP address (e.g., “**182.55.5.1**”). In the event that multiple **SV Secondaries** are to be used, a comma separated list of eligible values should be input.

- ❖ **SV Primary: Open System** - In the event that an **Open System** is to serve as an **SV Primary**, the following steps must be taken to enable SnapVault and specify the **SV Secondary** to use:

- a. From the **Open System**, access the SnapVault Configurator Software (svconfigurator).
- b. With the software open, access the **SnapVault** tab.

- c. In the **QSM Access List** field, input the **SV Secondary** that this **SV Primary** is to backup to.

Eligible values include the actual name of the host (e.g., “**host=R150**”) or its IP address (e.g., “**182.55.5.1**”). In

the event that multiple **SV Secondaries** are to be used, a comma separated list of eligible values should be input.

- d. Click **OK** to commit the changes and close the SnapVault Configurator.

- **SnapVault Software License(s)** - The SnapVault software installed on the **SV Secondary** must have the proper license keys installed. Please contact Network Appliance for details on obtaining license keys.

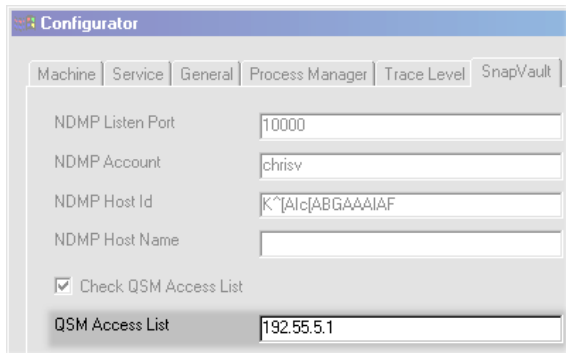


Figure SV-3:
The QSM
Access List
field of the
SnapVault
Configurator

Important Notes:

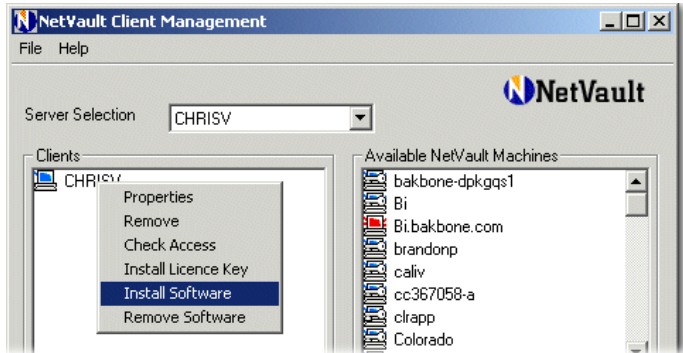
1. For complete details on the installation and configuration of Network Appliance’s SnapVault software, please see the relevant Network Appliance documentation.

2. The **SnapVault Manager Plugin** will only function on a **Server** installation of NetVault. For details on installing NetVault, please see the *NetVault Administrator's Guide*.
3. The above mentioned procedures must be performed **before** the **SnapVault Manager Plugin** is installed on an **Open System** serving as an **SV Primary**.

SV.2.2 Installation Procedure

Figure SV-4:
The Client Management window of the NetVault GUI

1. Open the NetVault **Client Management** window by clicking the **Client Management** button on the NetVault GUI (or select **Client Management** from the **Administration** pull-down menu).



2. Right-click on the NetVault server in the **Clients** list.
3. Choose **Install Software** from the pop-up menu (as shown in the figure on the previous page).
4. Navigate to the location of the **“.npk”** installation file (e.g., the NetVault APM Installation CD or the directory the file was downloaded to). Select the file (e.g., **nsvxxxx.npk**) and click on **Open** and the installation process will begin.
5. When the installation has completed, a successful installation message will appear in the **Install Software** dialog box, shown at right:
6. Close NetVault. It is now necessary to stop and then restart NetVault services in order to allow the Plugin to take affect (for complete details on starting and stopping NetVault Services, please see the *NetVault Administrator's Guide*).

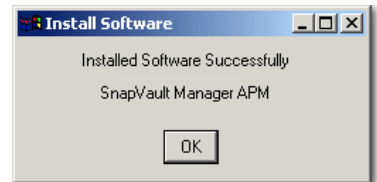


Figure SV-5:
The confirmation dialog box that appears after a successful installation.

Important Notes:

1. This Plugin must be installed on the NetVault Server.
2. NetVault Services must be stopped and then restarted after a successful installation in order for this Plugin to function correctly.

SV.2.3 Removing the SnapVault Manager Plugin

1. Access the **Client Management** window as described in the installation procedure above.
2. Right-click on the NetVault Server displayed in the **Clients** list to reveal a pop-up menu and select **Remove Software**.
3. Select the **SnapVault Manager Plugin** item from the displayed list and click the **Remove** button.
4. A dialog box will appear asking for confirmation of the remove command. Click on **OK** to proceed (or **Cancel** to abort). Clicking **OK** results in the removal of the software and a confirmation message will appear. Click **OK** to close this dialog box and return to the **Client Management** window.

Figure SV-6:
The Remove Software window

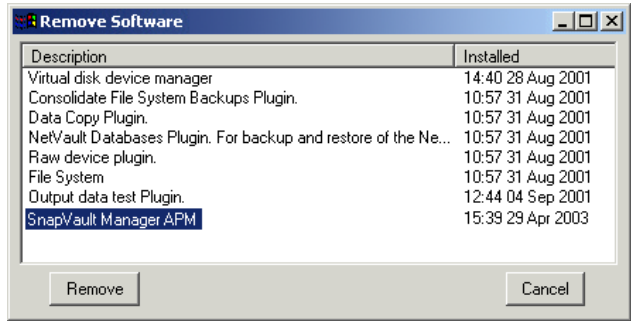
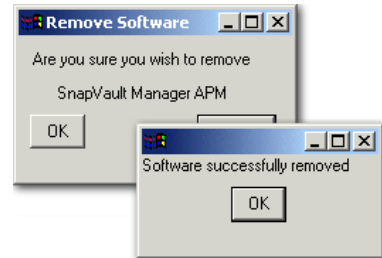


Figure SV-7:
The Remove Software request dialog box and the confirmation dialog box that appear upon successful removal of the Plugin



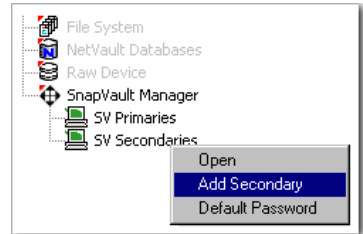
SV.3.0 Configuration of the SnapVault Manager Plugin

Since this plugin is designed to regulate Snapshots taken of **SV Primary** data that is to be stored on an **SV Secondary**, it is necessary to add both of these machines to the NetVault Server for use (including the NetVault Server itself, acting as an **SV Primary**). These steps must be performed before it is possible to generate and manage Snapshots with this plugin. Not only are instructions provided in this section that illustrate the steps necessary to properly add each type of device, a section is offered detailing the configuration options available for use with this plugin.

SV.3.1 Step 1: Adding a SnapVault Secondary

Figure SV-8:
Selecting the Add Secondary command from the pop-up menu

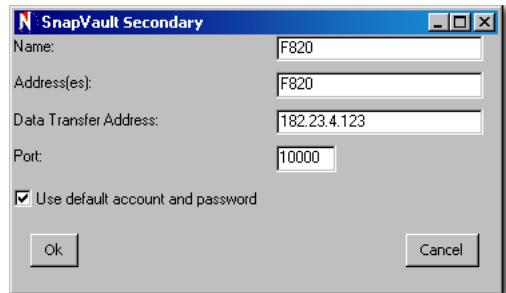
The first step in successfully adding SnapVault systems is to add the Filer acting as the **SV Secondary**.



1. With the **Backup** window of the NetVault GUI active, right-click on the **SnapVault Manager Plugin** and select **Open** from the pop-up menu (or double-click on it) to open it and reveal the **SV Primaries** and **SV Secondaries** icons.
2. Right-click on the **SV Secondaries** icon and select the **Add Secondary** command from the pop-up menu.

Figure SV-9:
The SnapVault Secondary window and the options that are initially available once it is accessed

3. The **SnapVault Secondary** window will launch containing the following fields and options:



- **Name field** - Input a value in this field that NetVault will recognize as the name of the **SV Secondary** to be used. Allowable characters for input include, **A-Z**, **0-9**, “-” (minus) and “_” (underscore). This is a required field. Once the **SV Secondary** is successfully added, this name is how it will be displayed in the **Selections** tab of the **Backup** window.
- **Address(es) field** - Input value(s) in this field that represent the IP address(es) or resolvable name(s) of the **SV Secondary** to be used. More than one can be entered, included in a comma separated list.
- **Data Transfer Address field** - Input an IP address to serve as an optional data transfer address (if desired).
- **Port field** - Input the port value for the NDMP channel that an initial connection is to be made on (default = 10000).
- **Use Default Account and Password checkbox** (default selected) - With this option default selected, the log on credentials input via the **Default Password** option will be used for the purpose of adding the **SV Secondary** (if applicable). When this option is **de-selected**, the **Account Details** frame will be made available, which allows for the input of **Account** and **Password** values specific to the desired **SV Secondary**.

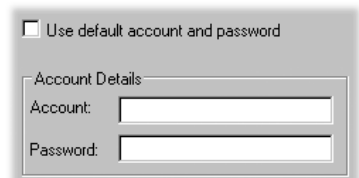


Figure SV-10:
The additional fields that appear when the Use Default Account and password option is de-selected

Note: The **Default Password** option noted above is accessed via a pop-up menu when the **SV Secondaries** icon is right-clicked in the **Selections** tab (see the section *Options from the SV Secondaries Icon*, below for more details).

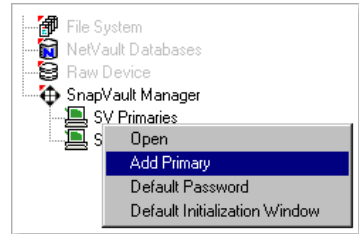
4. With values properly input, click on **OK** and the **SV Secondary** will be added, appearing beneath the **SV Secondaries** icon in the **Selections** tab. It is now necessary to continue on to the section *Step 2: Adding SnapVault Primaries* on page 14, to complete the configuration.

SV.3.2 Step 2: Adding SnapVault Primaries

The next step is to add any systems acting as **SV Primaries** to the NetVault Server. This includes any Filers or **Open Systems** (including the NetVault Server itself) with data to be backed up to the **SV Secondary**.

Figure SV-11:
The Add Primary command available from the pop-up menu

1. With the **SnapVault Manager Plugin** still open, right-click on the **SV Primaries** icon and select the **Add Primary** command from the pop-up menu.
2. The **SnapVault Primary** window will launch containing the following fields and options:



- **Name field** - Input a value in this field that NetVault will recognize as the name of the **SV Secondary** to be used. Allowable characters for input include, **A-Z, 0-9, "-"** (minus) and **"_"** (underscore). This is a required field and once the **SV Primary** is successfully added, this name is how it will be displayed in the **Selections** tab of the **Backup** window.
- **Address(es) field** - Input value(s) in this field that represent the IP address(es) or resolvable name(s) of the **SV Primary** that is being added. If the **SV Primary** to be added is recognized under various IP Addresses (i.e., it has multiple NIC cards), each address can be input here, separated by a comma.

Figure SV-12:
The SnapVault Primary window and the options that are initially available once it is accessed

Figure SV-13:
The additional fields that appear when the Use Default Account and password option is de-selected

- **Data Transfer Address field** - Input an IP address to serve as an optional data transfer address (if desired).
- **Port field** - Input the port value for the NDMP channel that an initial connection is to be made on (default = 10000).
- **Use Default Account and Password checkbox** (default selected) - With this option selected, the log on credentials input via the **Default Password** option will be used for the purpose of adding the **SV Primary**. When this option is **de-selected**, the **Account Details** frame will be made available, which allows for the input **Account** and **Password** values specific to this **SV Primary**.

Important Notes:

1. Network Appliance's SnapVault Client software must first be installed and properly configured on each **SV Primary** (i.e., regardless if it is a Filer or an **Open System**) before it can be added to NetVault. For complete details on the installation of this software, please see the relevant Network Appliance documentation.
2. In the event that an Open System is to serve as an **SV Primary**, the **Account** and **Password** information used for the purpose of adding it refers to the values that were generated when Network Appliance's SnapVault Client software was originally installed and configured on said **SV Primary** (e.g., when installed, a User Name and Password are requested). When adding multiple Open Systems as **SV Primaries**, the **Use Default Account and Password** option will only be valid if all **Open Systems** were configured with this same user name and password. Otherwise, it is necessary to de-select this option and manually input this information for each **SV Primary**.
3. In the event that a Filer is acting as an **SV Primary**, the **root account** and **password** must be specified in these fields.
4. The **Default Password** option noted above is accessed via a pop-up menu when the **SV Primaries** icon is right-clicked in the **Selections** tab (see the section *Options from the SV Primaries Icon*, below for more details).

3. With values properly input, click on **OK** and the **SV Primary** will be added, appearing beneath the **SV Primaries** icon in the **Selections** tab.
4. Repeat steps 1-3 to add any additional **SV Primaries**, as desired.

SV.3.3 Additional Available Pop-up Menu Commands

Additional pop-up menu options can be used from the various levels of the tree for both the **SV Secondaries** and **SV Primaries** icons. As well, once either an **SV Secondary** or **SV Primary** is successfully added, additional pop-up menu commands are accessible. The options are all detailed in this section.

SV.3.3.a Additional SV Secondary Pop-up Menu Commands

Commands are accessible via a pop-up menu from both the **SV Secondaries** icon and an individual **SV Secondary** once it has been successfully added.

Commands from the SV Secondaries Icon

These commands can be accessed by right-clicking on this icon in the **Backup** window:

- **Open** - Use this command to open this icon and display any previously added **SV Secondaries**. This command is replaced by the **Close** command once it has been opened. It is also possible to open the **SV Secondaries** icon by simply double-clicking on it.
- **Add Secondary** - Allows for the addition of an **SV Secondary** for use (see the section *Step 1: Adding a SnapVault Secondary* on page 13 for more details).
- **Default Password** - Launches a window containing fields that allow for the root account of an **SV Secondary** to be configured for the purpose of adding all **SV Secondaries**. These settings, once made, can be overridden on a per **SV Secondary** basis (see the **Use Default Account and Password** option, in the previous section for more details).

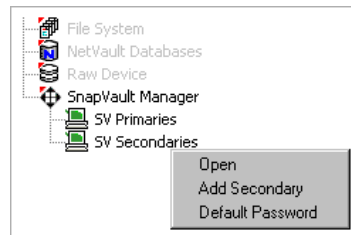


Figure SV-14:
The
commands
available when
the SV
Secondaries
icon is right-
clicked

Commands from an Added SV Secondary

Once an **SV Secondary** has been successfully added, it can be right-clicked in order to access a pop-up menu containing the following commands:

- **Open** - Use this command to open an **SV Secondary** and display all available volumes on the Filer. This command is replaced by the **Close** command once it has been opened. It is also possible to open an **SV Secondary** by simply double-clicking on it.
- **Edit Secondary** - Selecting this option will launch the **SnapVault Secondary** window with all of its previously configured settings loaded for editing.
- **Set Access** - Selecting this command will launch the SnapVault Secondary Access window in which access details can be modified
- **Remove Secondary** - Select this command to remove a previously added **SV Secondary**.

SV.3.3.b Additional SV Primary Pop-up Menu Commands

More commands can be accessed via a pop-up menu from both the **SV Primaries** icon and via an individual **SV Primary** once it has been successfully added.

Commands from the SV Primaries Icon

These commands can be accessed by right-clicking on this icon in the **Backup** window:

- **Open** - Use this command to open this icon and display any added **SV Primaries**. This command is replaced by the **Close** command once it has been opened. It is also possible to open this icon by simply double-clicking on it.
- **Add Primary** - Allows for the addition of an **SV Secondary** for use (see the section *Step 2: Adding SnapVault Primaries* on page 14 for details).
- **Default Password** - Launches a window containing fields that allow for the root account of an **SV Primary** to be configured for the purpose of adding all **SV Primaries**. These settings, once made, can be overridden on a per **SV Primary** basis (see the **Use Default Account and Password** option, in the previous section for more details).

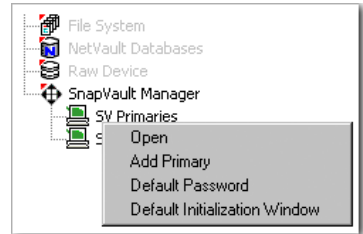


Figure SV-15:
The commands available when the SV Primaries icon is right-clicked

Note: Please see Important Notes #3 and #4 in the preceding **Important Notes** dialog box for important details regarding the use of this option.

- **Default Initialization Window** - Selecting this command will open the **Default Initialization** window in which it is possible to set a time frame in which the Initial Synchronization (e.g., the Initial Full Backup) will occur. To utilize this window, first select the **Enable Default Initialization Window** option and based on a 24-hour clock, input time values in the **Begin** fields to represent a starting time followed by values in the **End** fields to represent a finishing time.

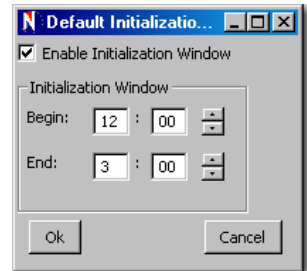


Figure SV-16:
The Default Initialization window with values input creating a time frame in which the Initial Synch. for each added SV Primary is to take place

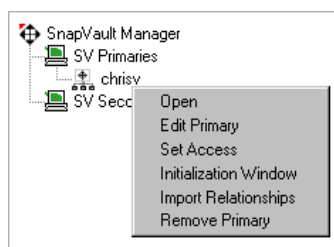
Important Notes:

1. If the default values are left in these fields, an **Initial Synchronization** will occur for an **SV Primary** as soon as a **Relationship** is created between it and an **SV Secondary**.
2. A time frame defined in this window applies to all currently added **SV Primaries** as well as any added in the future, but they can be overridden on a per **SV Primary** basis (via the **Initialization Window** command available from an individual **SV Primary** -- see the *Commands from an Added SV Primary* section, below).

Commands from an Added SV Primary

Once an **SV Primary** has been successfully added, it can be right-clicked in order to access a pop-up menu containing the following commands:

- **Open** - Use this command to open an **SV Primary** and display the root node(s) available on the **SV Primary** (e.g., hard disk drive(s) on an **Open System** or the root node on a Filer). This command is replaced by the **Close** command once the **SV Primary** has been opened. It is also possible to open an **SV Primary** by simply double-clicking on it.
- **Edit Primary** - Selecting this option will launch the **SnapVault Primary** window with all of the selected **SV Primary**'s previously configured settings loaded for editing.
- **Set Access** - Selecting this command will launch the **SnapVault Primary Access** window in which access details can be modified.



- **Initialization Window** - Functioning in much the same manner as the **Default Initialization** window (as detailed on page 17), this window can be accessed in order to set a time frame for the **Initial Synchronization** on a per **SV Primary** basis. At default when this option is selected, the **Use Default Initialization Window** checkbox is selected and no other options are available. De-select this option to make an additional option, **Enable Initialization Window**, available and select it. Values can now be input for this purpose.

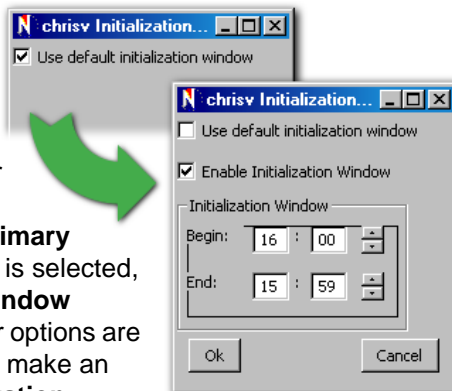
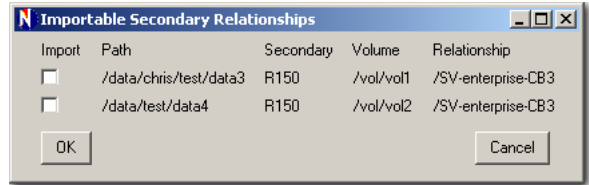


Figure SV-17:
The commands available when an SV Primary is right-clicked and its pop-up menu accessed

Figure SV-18:
The Initialization window that appears once the Use Default Initialization Window option is de-selected

Figure SV-19:
The Importable Secondary Relationships window which contains a list of eligible Secondaries that can be imported for use

- **Import Relationships** - Select this command if any Relationships exist on the **SV Primary**, but do not exist in the



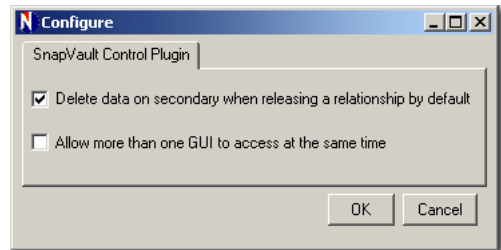
SnapVault Manager database, in order to add them to it and configure them for use. Once selected, the **Importable Secondary Relationships** window will appear. This window contains a list of eligible Relationships, complete with detailed information on each, including the **Path**, **Secondary**, **Volume** and **Relationship** name. Select the desired Relationship(s) by clicking the associated checkbox in the **Import** column and click on **OK** to continue (clicking on **Cancel** will abort this entire process). Once selected in this manner, the **Import New Primary Relationships** window will be launched. This additional window allows the user to input names for selected Relationships, and Services can be established for each (i.e., this window functions in the same manner as the **Add Secondary Service** window which is fully detailed in the section *Step 1: Establishing a Service on the SV Secondary on page 20*).

- **Remove Primary** - Select this command to remove the **SV Primary**.

SV.3.4 Additional Configuration Options

Figure SV-20:
The Configure window for the SnapVault Manager Plugin

If the **SnapVault Manager Plugin** node is right-clicked, a pop-up menu will be revealed containing various commands. By selecting the **Configure** command from this menu, the **Configure** window can be accessed in order to set the following available options:



- **Delete Data on Secondary When Releasing a Relationship by Default (Default Selected)** - This option controls the default selection status of the option, **Remove Data on Secondaries** option. When this option is **selected**, the **Remove Data on Secondaries** option will **always** appear default selected when the **Remove Primary Relationship** window is revealed. When de-selected, the **Remove Data on Secondaries** option will appear as de-selected whenever this window is accessed. For complete details on the **Remove Data on Secondaries** option and its associated window, please see the description of the **Remove Primary** command on page 26.
- **Allow More than One GUI to Access at the Same Time** - With this option selected, multiple instances of the NetVault GUI can access the **SnapVault**

Manager Plugin and its functionality (e.g., on the same machine, or via NetVault's Domain Management utility, in which it is possible to control a NetVault Server's operations from a remote NetVault Server).

SV.4.0 Generating Snapshots

With the desired **SV Secondary** and all of the necessary **SV Primaries** added and successfully configured, it is then possible to generate snapshots. This is accomplished in two phases:

SV.4.1 System to System Backup Data Transfer Methodology

Below is a brief synopsis of how, once a SnapVault Backup System is setup and configured, backup data is transferred in the system.

- **Step 1: A Service is Established on the SV Secondary** - Initially, the SnapVault Snapshot Schedule (simply referred to as "**Service**" in this Plugin) is created on the **SV Secondary**; this allows for the qtrees of a selected volume on the **SV Secondary** to serve as a destination for **SV Primary** data, which in turn is snapshot at scheduled intervals (set during the creation of the **Service**) and these snapshots are held on the **SV Secondary**.
- **Step 2: Relationships are Established** - Next, individual SnapVault **Relationships** are created between an **SV Primary's** qtrees/directories and the **SV Secondary's** qtrees.
- **Step 3: Initial Synchronization and Updates Occur on the SV Primaries** - With the **Relationship** established, the **Initial Synchronization** (e.g., full backup) of the selected **SV Primaries** occurs to the destination set via the **Service** on the **SV Secondary**. Each time the scheduled **Service** takes place, an **Update** transfer (e.g., an incremental backup) will occur for each established **Relationship**, and once all update transfers are complete, a Snapshot is taken which is stored on the **SV Secondary**.

SV.4.2 Step 1: Establishing a Service on the SV Secondary

This is where the instructions detailed and the example provided in the section *Planning a SnapVault Backup System* on page 8, come into play. With this in mind follow the instructions below to establish a **Service**.

1. From the **Selections** tab of the **Backup** window, open the **SnapVault Manager Plugin** by double-clicking on it (or right-click on it and select **Open** from the pop-up menu).
2. With the **SV Secondaries** icon visible, double-click on it to open it (or right-click on it and select **Open** from the pop-up menu) and reveal the volumes on this filer.

3. Locate the volume on the filer that is to serve as storage space for **SV Primary** backups (and their snapshotting) and right-click on it. From the pop-up menu that appears, select the **Add Service** command.
4. The **Add Secondary Service** window will appear in which a **Service** can be configured. The following options are available:

Figure SV-21:
The Add
Secondary
Service
window and
the options
available
within

- **Name field** - Input a value in this field that NetVault will recognize as the name for this **Service**. Allowable characters for input include, **A-Z, 0-9, "-"** (minus) and **"_"** (underscore). This is a required field. Once the **Service** is successfully configured, this name is how it will be displayed in NetVault when creating a **Relationship** between it and an **SV Primary**.
- **Enabled checkbox** (default selected) - Indicates that this **Service** will be enabled once created (this option can be de-selected to disable this Service at a later date via the **Edit Service** command, if desired).
- **Secondary Retention Count field** - A value can be input in this field to represent the maximum number of Snapshots to be held in the selected volume before recycling occurs.
- **Default Primary Update Offset (mins) field** - A value can be input in this field that represents the number of minutes before **Updates** will occur for an **SV Primary** that has established a **Relationship** with this **Service**.
- **Run From fields** - These fields allow for the input of time (based on a 24-hour clock) and date values that represent the time that **Updates** (e.g., incremental backups) will begin.

- **Days checkboxes** - These checkboxes allow for the selection of days of the week that **Updates** are to occur.
- **Hours checkboxes** - These checkboxes allow for the selection of hours of the day that **Updates** are to occur.

Note: Unless selections are made for at least one of the **Days** checkboxes and one of the **Hours** checkboxes, only a single **Update** will be performed at the time and date specified in the **Run From** fields.

5. With the desired options set, click on **OK** to add the **Service** to the **SV Secondary**. It will now appear, its icon marked by a yellow “**S**” and labelled with its title, below the volume on which it was set up.

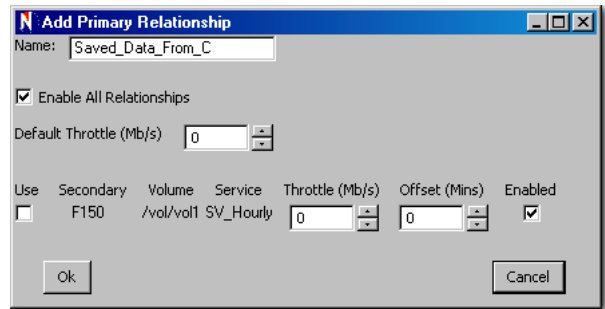
SV.4.3 Step 2: Establishing a Relationship on an SV Primary

With a **Service** set up and in place on an **SV Secondary** the next step is to establish **Relationships** between each **SV Primary** and the **Service**. Follow the steps below to accomplish this.

1. With the **Selections** tab of the **Backup** window still active and the **SnapVault Manager Plugin** open, double-click on the **SV Primaries** icon to open it (or right-click on it and select **Open** from the pop-up menu) and reveal the previously added **SV Primaries**.
2. Locate the desired **SV Primary** and double-click on it to open it (or right-click on it and select **Open** from the pop-up menu) and reveal the volumes/drives available. Drill down each level of the tree structure until the desired level is reached (e.g., an individual directory/qtree).
3. Right-click on the item to be backed up and select **Add Relationship** from the pop-up menu. The **Add Primary Relationship** window will launch revealing various fields for input:
 - **Name field** - Input a value in this field that NetVault will recognize as the name for this **Service**. Allowable characters for input include, **A-Z**, **0-9**, “-” (minus) and “_” (underscore). This is a required field. Once the **Service** is successfully configured, this name is how it will be displayed in NetVault when creating a **Relationship** between it and an **SV Primary**.

Figure SV-22:
The Add
Primary
Relationship
window and its
available
options

- **Enable All Relationships checkbox** (default selected) - Indicates that this **Relationship** will be enabled once created (this option can be de-selected to disable it at a later date via the **Edit**



Relationship command, if desired, or disabled on a per Service basis using the **Enabled** option in the **List of Configured Services**).

- **Default Throttle (Mb/s)** - Input a value in this field to serve as a “throttle” for data transfer. The larger the value input, the larger the amount of bandwidth utilized. The default of “0” indicates that **no set value is to be used** and NetVault will attempt to use the **maximum** allowable amount.
- **List of Configured Services** - As a **Service** is configured on the **SV Secondary**, it will be made available in this list. All currently active **Services** will be displayed here and the following information/option columns are available:
 - ❖ **Use** - Select this option to use this Service
 - ❖ **Secondary** - This column will contain the name of the **SV Secondary** containing the **Service**.
 - ❖ **Volume** - This column will contain the path and name of the volume in use on the **SV Secondary** for this Service.
 - ❖ **Service** - This column will contain the name given to the Service.
 - ❖ **Throttle (Mb/s)** - This column contains a field that allows the user to input a value to be used by the selected Service that will override the value set in the **Default Throttle (Mb/s)** field.
 - ❖ **Offset** - This column contains a field that allows a user to input a value to be used as a number of minutes before **Updates** will occur for this **SV Primary** for this specific Service. Values input here will override settings made in the **Default Primary Update Offset (mins)** field.
 - ❖ **Enabled** - With the **Enable Relationship** option selected, all available **Services** are also selected in this column. The checkboxes in this column allow for individual **Services** to be disabled as desired.

4. With the desired options set, click on **OK** and the **Relationship** will be established. Items with **Relationships** set for them will be marked by a large black “R” in the selection tree.

Important Notes:

1. If a **Service** has not been successfully configured on the **SV Secondary**, none will be available in this window and this process can not be completed.
2. **Relationships** can only be established for individual qtrees, drives or directories. It is not possible to create a **Relationship** for an entire **SV Primary**, an individual volume or an individual file.
3. As schedules and the target for a backup are pre-set in the configuration process, the **Schedule** and **Target** tabs serve no purpose with this Plugin.
4. It is possible to use various options available in the **Advanced Options** tab of the Backup window. Any settings made here (e.g., setting up of a Pre or Post Script or an Event) must be performed **before** a **Relationship** is established. Although, for the sake of ease of use of this Plugin, it is recommended that the options available in this tab be left at their default and not used.

SV.4.4 Step 3: The Initial Synchronization and Updates

Figure SV-23:
With a Relationship set up, it is not necessary to use the Submit button to run a backup

With the steps successfully performed in both adding a **Service** and establishing a **Relationship**, the **Initial Synchronization** (the initial Full Backup) will now automatically occur (i.e., it is not necessary to use NetVault's **Submit** button to begin the backup process). As well, **Updates** (incremental backups) will periodically be performed based on how they were scheduled in the selected **Service** on the **SV Secondary**.



Note: If a time frame was established for the **Initial Synchronization**, either via the **Default Initialization** or **Initialization** windows, it will occur *in that time frame*, otherwise it will begin as soon as the Relationship is generated (due to the **SnapVault Manager Plugin's** default settings).

SV.4.4.a Viewing Initial Synchronization and Update Progress

Even though it is not necessary to use the **Submit** button to launch a SnapVault backup, it is still possible to view the progress of a SnapVault job through conventional NetVault means (e.g., the **Status** and **Job Management** windows).

Figure SV-24:
SnapVault Manager Plugin jobs as viewed in the Status window of NetVault

Job Status			
Time	Job Title	Id	Run Status
14:01 Fri 04 Apr 2003	Create relationship between F740:Filer_qtree and F150:/vol/vol1	35	Backup Completed
14:05 Fri 04 Apr 2003	Transfer Update of Dell6:F:\chrismv on F150:/vol/vol1/SV-Dell6-stuff	36	Backup Completed

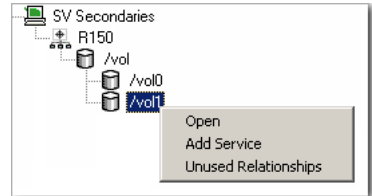
SV.4.5 Additional Pop-Up Menus and their Commands

Once a **Service** has been successfully established on an **SV Secondary** or a **Relationship** on an **SV Primary**, additional pop-up menu commands are made available. The sections below detail the functionality of these new commands.

SV.4.5.a Commands Available from a Volume within a Secondary

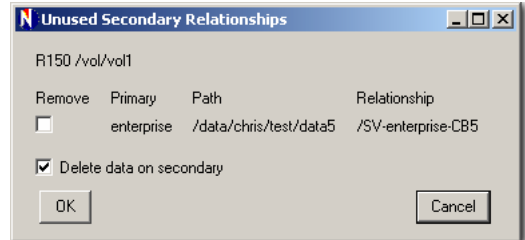
Figure SV-25:
The commands available from the pop-up menu for a volume

If a volume-level item in the **SV Secondaries** tree is right-clicked on, its associated pop-up menu will contain the following commands:



- **Open** - Use this command to open the item and display its contents. This command is replaced by the **Close** command once an item has been opened. It is also possible to open an item by simply double-clicking on it.
- **Add Service** - This command is used to add a Service to a selected volume (i.e., in the same manner illustrated in the section *Step 1: Establishing a Service on the SV Secondary* on page 20).

- **Unused Relationships** - If a Relationship exists on the selected volume that is currently **not** using a Service, this command can be used to remove it. Once selected, the **Unused Secondary Relationships** window will launch, containing a list of eligible Relationships, complete with detailed information on each. This includes the **Primary**, **Path**, and **Relationship** name for each. Select the desired Relationship(s) by clicking in the associated checkbox in the **Remove** column. In addition, set the following option as desired:



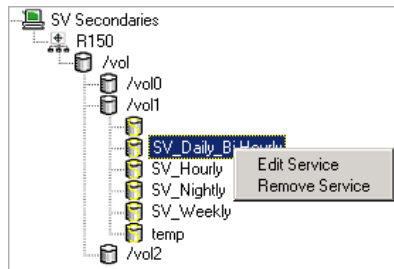
- ❖ **Delete Data on Secondary (Default Selected)** - With this option **selected**, any data contained within the associated **SV Secondary** will be deleted and the Relationship will be removed from both the **SV Secondary** and **SV Primary**. If **de-selected** this data will be preserved, but the Relationship will **still** be removed. With this option set as desired, click on **OK** to have the selected Relationship removed. Clicking on the **Cancel** button will abort the removal process.

SV.4.5.b Commands Available from a Generated Service

Figure SV-26:
The commands available from the pop-up menu for a Service

Once a **Service** has been created, it can be right-clicked to access a pop-up menu with the following commands:

- **Edit Service** - Select this command to launch the Edit Secondary Service window with all of the selected **Service's** previously configured settings loaded for editing.
- **Remove Service** - Select this command to remove a previously added **Service**.



SV.4.5.c Commands Available for Generated Relationships

Once a Relationship has been established for an item in an **SV Primary**, it can be right-clicked to access a pop-up menu with the following commands available:

- **Open** - Use this command to open the item and display its contents. This command is replaced by the **Close** command once an item has been opened. It is also possible to open an item by simply double-clicking on it.
- **Edit Relationship** - Selecting this option will launch the **Edit Primary Relationship** window with all of the selected **Relationship's** previously configured settings loaded for editing.
- **Update Relationship** - Select to initiate an **Update** (incremental backup) to occur immediately. This command allows for manual **Updates** to be performed of the selected **SV Primary Relationship's** data outside of what is scheduled to occur in the **Service**. Selecting this command will not affect future scheduled Updates (i.e., as set in a Service).
- **Remove Relationship** - Select this command to remove a selected Relationship that exists between an **SV Primary** and an **SV Secondary**. Once selected, the **Remove Primary Relationship** window will be revealed. This window displays the relative path to the selected Relationship (i.e., beneath the "**Removing Relationship**" header), and the following option is made available:

Figure SV-27:
The pop-up menu commands available from an item with a generated Relationship

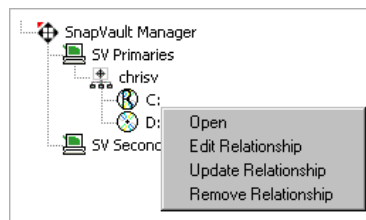
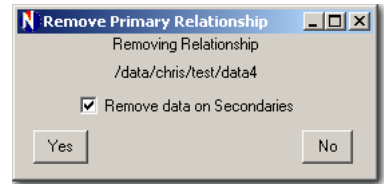


Figure SV-28:
The Remove
Primary
Relationship
window with
the Remove
Data on
Secondaries
option
selected

- ❖ **Remove Data on Secondaries (Default Selected)** - When removing a Relationship between an **SV Primary** and **SV Secondary** via the **Remove Relationship** command (above), use this option to have all data that was backed up between the two removed as well. If this option is **de-selected** this data will be preserved, but the Relationship will **still** be removed from the SnapVault Manager database. With this option set as desired, click on **Yes** to continue (clicking on the **No** button will abort the removal process).

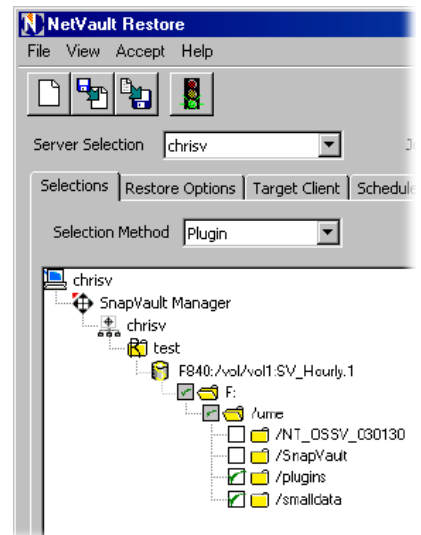


Restoring with the SnapVault Manager Plugin

Unlike the backup procedure, the restore procedure for the **SnapVault Manager Plugin** is similar to all other NetVault Plugins. Restores are invoked from the restore screen by selecting the appropriate nodes. Files, directories or drives can be restored from the various snapshots that have been taken of the **SV Primary Relationships**. Opening the **SnapVault Manager Plugin** in the **Restore** window will reveal all added SV Primaries (regardless if they have completed a successful Snapshot). To restore backed up data, follow the steps detailed below.

1. Open the **Restore** window by clicking the **Restore** button from the main GUI (or by choosing the **Restore** command from the **Operations** pull-down menu). This window will display a list of clients with data that can be selected for a restore.
2. Right-click on the client used to perform the **SnapVault Manager Plugin** backups (e.g., the NetVault Server) and choose **Open** from the pop-up menu (or simply double-click on it) to display a list of the plugins that were used to perform backups from this machine.
3. Open the **SnapVault Manager Plugin** (by double-clicking on it) to display all added **SV Primaries**.
4. Open the desired **SV Primary** (by double-clicking on it, or right-clicking on it and selecting **Open** from the pop-up menu) to display all of the **Relationships** contained within. In turn a **Relationship** is then opened (in the same manner) to reveal all of the individual Snapshots taken of it.

Figure SV-29:
The Restore
window with a
Snapshot
opened to
reveal
individual
items selected
for a
SnapVault
Manager
Plugin restore



5. With the Snapshots visible, locate the desired one and double-click on it to open it and reveal its contents (e.g., drives, mount points, directories, files, etc.). Drill down in the tree structure until the desired items are located and select them by clicking in the checkbox to the left of each item.
6. There are no **Restore Options** available for use with this Plugin.
7. Supply the required parameters for the **Schedule** and **Advanced Options** tabs as appropriate. These parameters are not unique to the **SnapVault Manager Plugin**. See the *NetVault Administrators Guide* for details on the options available in these tabs.
8. Enter a suitable name for the job in the **Job Title** field and submit the restore job by clicking the **Submit** button on the command toolbar.

Important Notes:

1. If restoring an entire **Relationship**, it is important that the details outlined in the section *Restoring a Complete Relationship* on page 28 be followed **before** initiating the restore.
2. Item omissions are not supported with this plugin (e.g., the selection of a root item and then the individual marking for omission (with a red cross) of its children is not supported). As well, if a root item is opened to display its children and is then selected, all of these children will be selected and the root item will close, dis-allowing access to its individual children, unless the root item is de-selected.
3. The **Target Client** tab, although accessible from the **Restore** window has no usable options available with this plugin.

SV.4.6 Restoring a Complete Relationship

In the event that an entire **Relationship** is to be restored (i.e., not the individual items included within), the **Relationship** itself must be set to “restart” in order to maintain any future **Updates** of the data it describes **before** the restore job is initiated. To accomplish this, follow the steps outlined below:

1. With the root node of the desired **Relationship** revealed, click the box to its left to select it (mark it with a green check).
2. Right-click on the node and select the **Options** command from the pop-up menu that is revealed.
3. in the **Target Restore** window that appears, ensure that the desired **SV Primary** is revealed in the pull-down field (default is the original backup target) and select the **Restart Relationship** option.

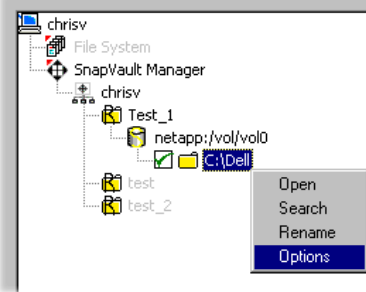
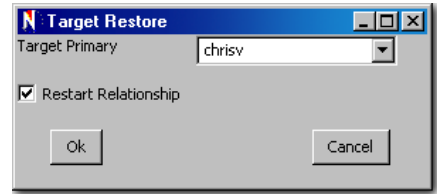


Figure SV-30:
The root node
of a
Relationship
selected and
the Options
command
selected from
the pop-up
menu

Figure SV-31:
The Target Restore window with the Restart Relationship option selected

4. Click on **OK** to confirm the settings and close the window.
5. Continue with the restore as described in Steps 7 - 8 of the section *Restoring with the SnapVault Manager Plugin* on page 273.
6. Upon completion of the restore, the **Relationship** will be re started and future Updates of it will occur as originally set up.



Important Notes:

1. The root node (and only the root node) of a **Relationship** *must* first be selected (i.e., marked with a green check in its accompanying box) before the **Options** command accessed. Otherwise, the **Restart Relationship** option will not be available.
2. Failure to successfully restart a **Relationship** prior to initiating a full restore of it will result in its loss and the need to completely re-create it (as described in the section *Step 2: Establishing a Relationship on an SV Primary* on page 22).

SV.4.7 Renaming/Relocating a Restore

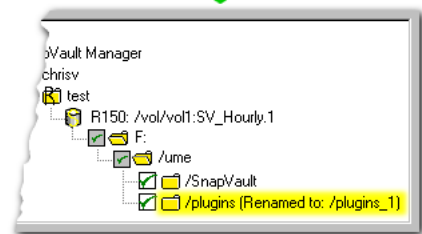
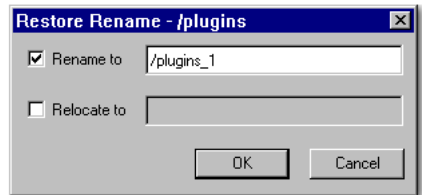
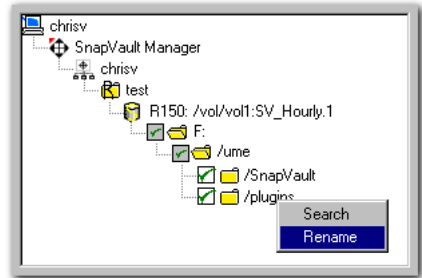
The **SnapVault Manager Plugin** allows for the Renaming and/or Relocation of a restore item. Follow the procedures below to accomplish these tasks.

SV.4.7.a Renaming a Restore

Simply renaming a restore allows the user to restore an item to its original location, but with a new name.

Figure SV-32:
The Renaming process for an item in the SnapVault Manager Plugin

1. From the **Restore Selections** window, navigate to the desired item.
2. Select the desired item by clicking the box to the left of it (selected items will contain a green check).
3. Once selected, right-click on the item and select **Rename** from the pop-up menu.
4. The **Restore Rename** dialog box will appear. Click the checkbox to the left of the **Rename to** field in order to activate it. Input the desired new name for the item.
5. Click on **OK** to enact the change (or **Cancel** to abort) and return to the **Restore** window. The rename will be displayed with the selected data. Selected in this manner, the item will be restored to its original location, with the new name.
6. Continue with normal restore selections and options (as described in the section *Restoring with the SnapVault Manager Plugin* on page 27) and then submit the job.



Note: When renaming a restore, ensure that the new name value input in the **Rename to** field is prefaced with a forward slash ("/").

SV.4.7.b Relocating a Restore

In relocating a restore, a user can restore a data item with its original name, but to a new location (e.g., to the original **SV Primary**, but to a different directory/ qtree).

1. Repeat steps 1-3 in the section *Renaming a Restore* on page 30.

Figure SV-33:
The Restore Rename dialog box with a Relocate to entry input

2. With the **Restore Rename** dialog box active, click the checkbox to the left of the **Relocate to** field in order to activate it. Based on the Operating System in use, input the exact path to the new location that the item is to be restored, with each directory in the path separated with back slash (e.g., **“/ume/files_2”**, in the example image above).

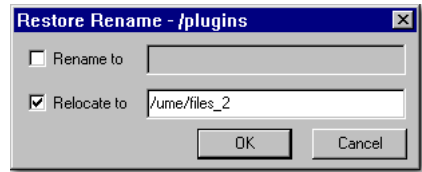
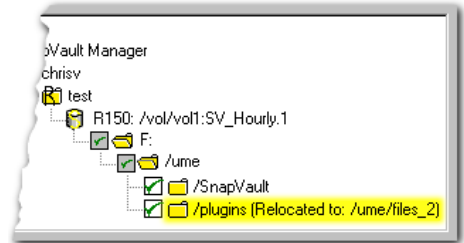


Figure SV-34:
With a value properly input, the item is displayed with Relocate information in parenthesis.

3. Click on **OK** to commit the change (or **Cancel** to abort) and return to the Restore window. The relocation will be displayed with the selected data (as shown in the figure at right). Utilizing these steps, the selected file will be relocated to a different directory, but keep the original file name when the restore is performed.



4. Continue with normal restore selections and options (as described in the section *Restoring with the SnapVault Manager Plugin* on page 27) and then submit the job.

Note: The directory that the path entered in the **Relocate to** field of the **Restore Rename** dialog box must exist at job run-time for the restore to succeed.

SV.4.7.c Renaming and Relocating a Restore

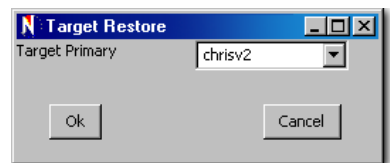
In order to Rename and Relocate a restore simultaneously, simply combine the procedures detailed in the sections *Renaming a Restore* on page 30, and *Relocating a Restore* on page 30, inputting the desired new values in each field.

SV.4.8 Retargeting a Restore

Retargeting a restore makes it possible to relocate restore data to an entirely different **SV Primary** than it was originally backed up from. To accomplish this, perform the following steps:

Figure SV-35:
The Target Restore window with a new SV Primary destination selected for retargeting

1. With a specific **Relationship** open in the **Selections** tab of the **Restore** window, right-click on the root node and select **Options** from the pop-up menu.
2. In the **Target Restore** window that appears, use the **Target Primary** pull-down field to select the desired **SV Primary** to which the restore is to be retargeted.



3. Click on **OK** to confirm the setting and close the window.
4. Open the root node (by double-clicking on it) and select the desired items to be retargeted for the restore, or simply select the entire root node.

Note: If retargeting the **entire root node** for a restore, its **Relationship** must be restarted on the new target machine if future Updates are to occur there. To accomplish this, follow the instructions detailed in the section *Restoring a Complete Relationship* on page 28, but when instructed to ensure that the original target machine is selected in the **Target Primary** pull-down field, ignore this and select the desired **SV Primary** for retargeting. With this, also ensure that the **Restart Relationship** option is selected.

5. Continue with the restore as described in Steps 7 - 8 of the section *Restoring with the SnapVault Manager Plugin* on page 27 to submit the restore.



