STORAGE Concentrator™

Setting Up Disk-to-Disk Backup with BakBone NetVault

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Section 1 Preface

Introduction

This guide provides the information needed to set up the BakBone NetVault software to work with Stonefly Network's IP SAN solution, the *Storage Concentrator*™ to provide disk-to-disk backup.

When the *Storage Concentrator* is coupled with the BakBone NetVault backup software, a disk-to-disk backup solution is created that enables the BakBone NetVault software to backup server-attached storage to the *Storage Concentrator's* logical volumes across a standard IP network.

Restoring data from IP SAN logical volumes to the server- attached storage is seamlessly accomplished via the BakBone NetVault software's virtual tape technology.

This guide contains information to help you:

- Create virtual tapes by using the BakBone NetVault software
- Back up from internal disk to the IP SAN volumes
- Restore from the IP SAN volumes to the server's internal disks

After completing the steps in this guide, proceed to the *Storage Concentrator User's Guide.* Refer to "Section 2 – Using the Administrative Interface" for information on how to efficiently and effectively manage data storage, data protection, and data delivery on your network.

Users

This guide is intended to be used by network administrators and assumes a basic understanding of:

- Local area networks (LAN)
- Ethernet and Ethernet-switching concepts
- Storage area networking (SAN)

Other Resources

Find other useful information regarding the set up and use of your *Storage Concentrator* can be found in the following documents and Web site:

- The *Storage Concentrator User's Guide*
- The *Storage Concentrator Setup Guide*
- The StoneFly Networks Web site: www.stonefly.com
- The *Storage Concentrator* Online Help in the administrative interface (following initial setup)

Conventions

The following tables list the conventions used throughout this guide.

Icons

Icon	Type	Description
	Note	Special instructions or information.

Text

Convention	Description
Boldface word	An action is required.
Type or Enter	Input the requested information.

Section 2 Setting Up Disk-to-Disk Backup With BakBone NetVault

This section provides step-by-step instructions for setting up the BakBone NetVault software work with the *Storage Concentrator* device to provide disk-to-disk backup.

Getting Started

Before beginning the setup process, make sure you have gathered the following equipment and information:

- The *Storage Concentrator*.
- The BakBone NetVault software.
- A Windows PC or Linux computer or laptop using Internet Explorer 5.0 or later (Windows PC only) or Netscape 4.7 or later (Windows PC or Linux). The computer must be configured to communicate in the 192.168.0.0 network.
- Network settings specific to your network:
  - IP address
  - Network setting
  - Broadcast IP setting
  - Netmask setting
  - Gateway setting

Assumptions

It is assumed that the following conditions exist before proceeding with the setup procedure:

- Your Windows 2000 (W2K) hosts are switched on and are running Intel SNIC cards.
- The target setup is configured to point to the *Storage Concentrator* IP address via the Intel control panel.
- You have installed the BakBone NetVault software and the virtual disk package on the server and the client, and they are connected by an Ethernet link.
- The Master Backup Server (MBS) and the Smart Client Server (SCS) must be able to communicate via a front-end 10/100 network to allow control traffic to initiate backups and restores.

Volume Management Considerations

When the setup process is completed, a logical volume is configured for each Smart Client Server (SCS). Each SCS can see only its own logical volume, while the Master Backup Server (MBS) can see all of the SCS logical volumes at some point in the workflow tests.

The MBS initiates the backup process on each SCS via the front-end 10/100 Ethernet network. Each SCS then backs up their internal data to the IP SAN virtual volumes provided by the *Storage Concentrator*.

Once the logical backups are completed, the MBS moves the data from all of the virtual volumes to the tape device or to a dedicated IP volume attached to the MBS.

Volume management is critical to ensure data integrity. There are three options available for volume management

- **Manual volume mounting and unmounting between the Master Backup Server and the Smart Client Server**

  This option requires onsite amendments during the workflow tests described in Section 4 – “Manual Volume Management”.

- **Automated volume mounting between the Master Backup Server and the Smart Client Server**:

  The BakBone NetVault software uses scripting to automate logical volume mounting on the MBS. The BakBone software

initiates the appropriate scripting needed; sample scripts are not available in this document.

- **Shared file/volume locking to provide seamless volume management between the Master Backup Server and the Smart Client Server**

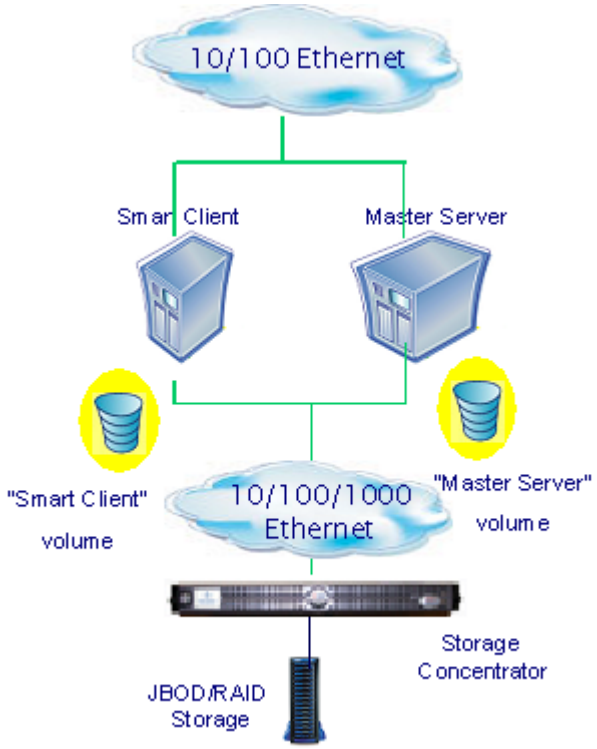
  With this option, a shared volume/file system is installed on each SCS and on the MBS to ensure all changes made to the virtual volumes are seen in real time. Please contact your StoneFly Networks-authorized VAR for suitable shared-file system solutions.

  Once the MBS sees the changes to the virtual volume, it moves the data from the virtual volumes to disk. In most cases, it is much faster to make a restore from the virtual disks than from tape.

  This option uses the StoneFly Networks IP SAN architecture and the BakBone NetVault software to provide faster backups and restores.

Setting Up the *Storage Concentrator*

Two virtual volumes need to be configured on the *Storage Concentrator*: one for the Smart Client Server and one for the Master Backup Server.



To set up a volume for the Smart Client Server:

1 Launch the *Storage Concentrator* software, and click **Volumes** in the left list.

2 Click **Create New Volume.**

3 For the **Volume Name**, enter **Smart Client**.

4 In the **Notes** field enter any descriptive notes regarding this volume.

5 Do one of the following:

- To use automatic volume creation, enter a size in the **Desired Volume Size** field.

  or

- Select **Manual Create**, and assign the virtual volume across different disks, as desired.

For more information, see "Volumes and Access Control Lists" in Section 2 – "Using the Administrative Interface" in the *Storage Concentrator User's Guide*.

6 Click **Submit**.

This opens the Access Control List (ACL) screen.

7 From the volume list, select the **Smart Client Server** volume, and set the Smart Client Server and the Master Backup Server options to **Read/Write**.

8 Click **Submit**.

To set up a volume for the Master Backup Server:

1 Launch the *Storage Concentrator* software, and click **Volumes** in the left list.

2 Click **Create New Volume.**

3 For the **Volume Name**, enter **Master Backup Server**.

4 In the **Notes** field enter any descriptive notes regarding this volume.

5 Do one of the following:

- To use automatic volume creation, enter a size in the **Desired Volume Size** field.

  or

- Select **Manual Create**, and assign the virtual volume across different disks, as desired.

For more information, see "Volumes and Access Control Lists" in Section 2 – "Using the Administrative Interface" in the *Storage Concentrator User's Guide*.

6 Click **Submit**.

This opens the Access Control List (ACL) screen.

7 From the volume list, select the **Master Backup Server** volume, and set the Master Backup Server options to **Read/Write**.

8 Click **Submit**.

This completes the *Storage Concentrator* setup. Proceed to "Setting up the Windows 2000 Backup System."

Setting Up the Windows 2000 Backup System

The *Storage Concentrator* must be set up before proceeding with the following tasks.

There are two tasks associated with the Windows 2000 Backup Server:

- Setting up the Master Backup Server
- Setting up the Smart Client Server

To set up the Windows 2000 Master Backup Server:

1 Open the Intel SNIC control panel, and select the *Storage Concentrator* target IP address.

A new logical unit number (LUN) appears on the right side of the screen.

2 Select the Master Backup Server volume, and click **OK**.

The control panel closes automatically.

3 Right-click **My Computer**, and select **Manage**.

4 Click **Disk Management**, then click **Next**.

5 Select the Master Backup Server volume, then click **Next**.

6 Click **Finish**.

7 Right-click the new logical disk section, then select **Create New Partition**.

8 Click **Next**, then click **Next** again.

9 Do one of the following:

- Enter a value in **Partition Size**

or

- Click **Next**.

10 Do one of the following:

- Select a drive

or

- Click **Next**.

11 Enter the name of the master volume, accept all other defaults, and click **Next**.

12 Click **Finish**.

This process usually takes less than one minute for a 4GB partition.

This completes setting up the Windows 2000 Master Backup System.

To set up the Windows 2000 Smart Client Server:

1 Open the Intel SNIC control panel, and select the *Storage Concentrator* target IP address.

A new logical unit number (LUN) appears on the right side of the screen.

2 Select the Smart Client Server volume.

3 Select the new logical hard drive, and click **OK** to close the control panel.

The Smart Client Server volume must be disabled. For more information, see "Unmounting the Smart Client Server's Virtual Volume" on page 34.

If you are using the automated logical volume mounting option or the shared file/volume locking option, complete the following steps before continuing:

4 Open the Intel SNIC control panel, and select the *Storage Concentrator* target IP address.

5 Select the Smart Client Server volume to manage.

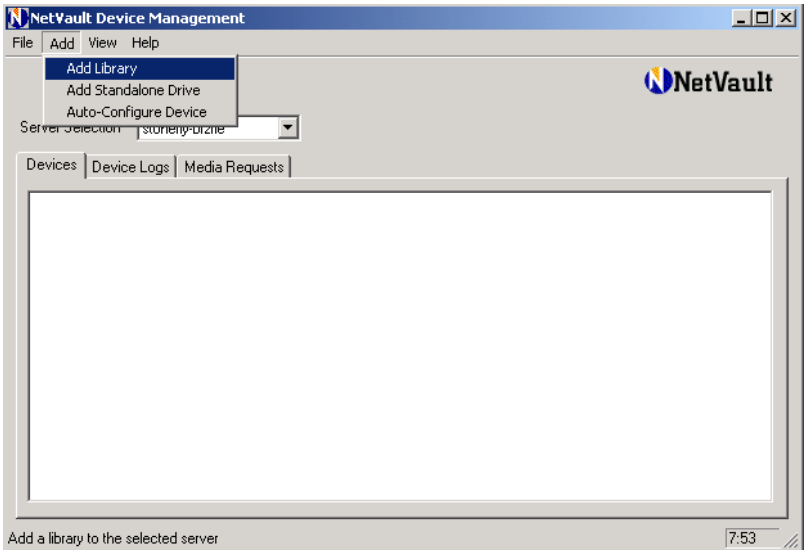
This completes setting up the Windows 2000 Backup System. Proceed to "Setting Up the BakBone NetVault Virtual Library."

Setting Up the BakBone NetVault Virtual Library

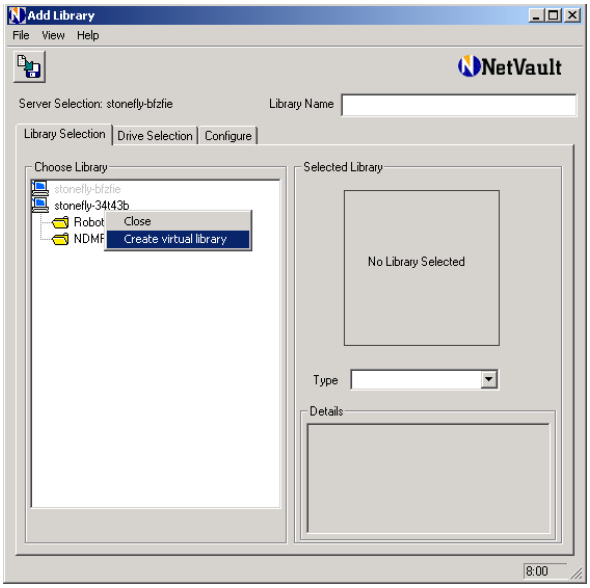
Before proceeding, be sure that the BakBone NetVault software and the virtual disk package are installed on the Master Backup Server and the Smart Client Server, and that they are connected by an Ethernet link.

To set up the Smart Client Server BakBone NetVault Virtual Library:

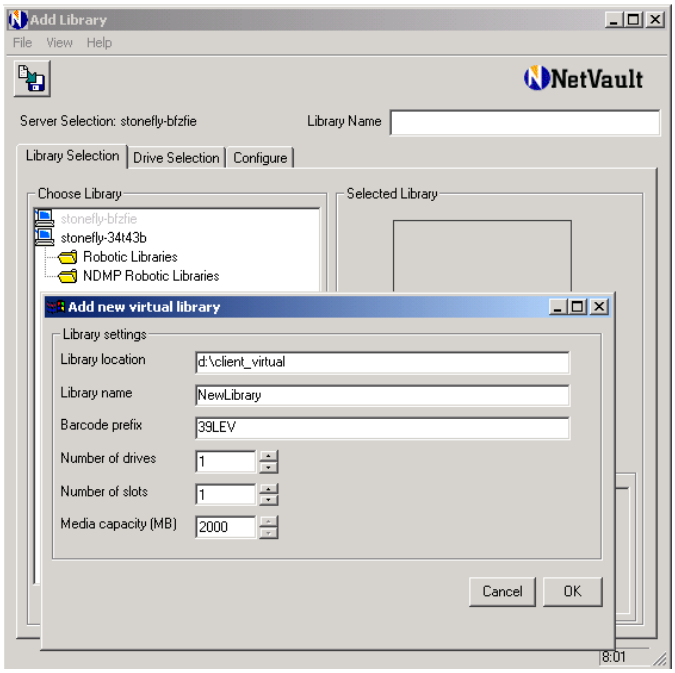
1 In the BakBone NetVault software, navigate to **Device Management**, and select **Add/Add Library**.



2 Right-click the **Smart Client Server** icon, and select **Create Virtual Library**.



The Add New Virtual Library screen opens.



3 Enter the following information:

- **Library Location** - name of the directory where you want the disk library to be created
- **Library Name** - name of the directory that will contain the library
- **Barcode Prefix** - name of the files that will act as the virtual media

NetVault uses file names in the same way it uses barcodes on real tapes.

- **Number of Drives** - number of drives
- **Number of Slots** - number of slots

- **Media Capacity (MB)** - the amount of disk space required

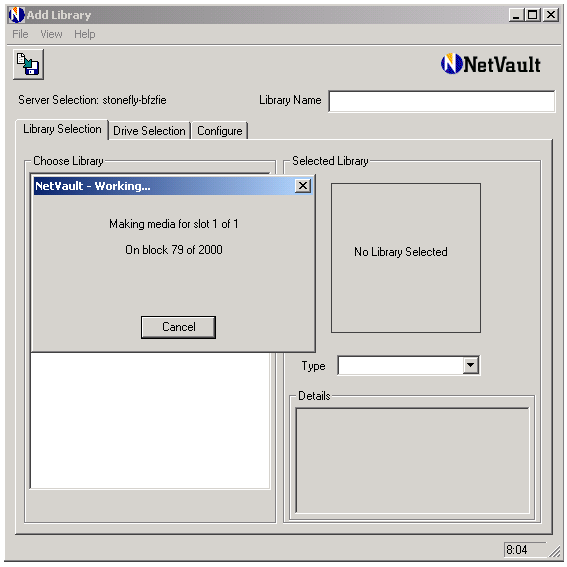
NetVault creates one file of the size specified for each slot, according to the following formula:

- Media capacity X number of slots = required amount of disk space

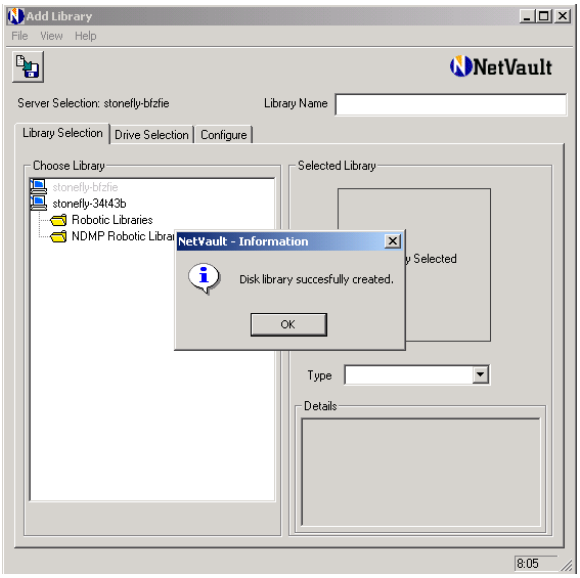
Example: For a single 2GB virtual backup tape, 1 drive X 1 slot = (capacity) 2000

4 Click **Submit**.

Depending on the size of the media and the number of slots, it can take several minutes to build the library.



The following screen appears when the disk library is successfully created.

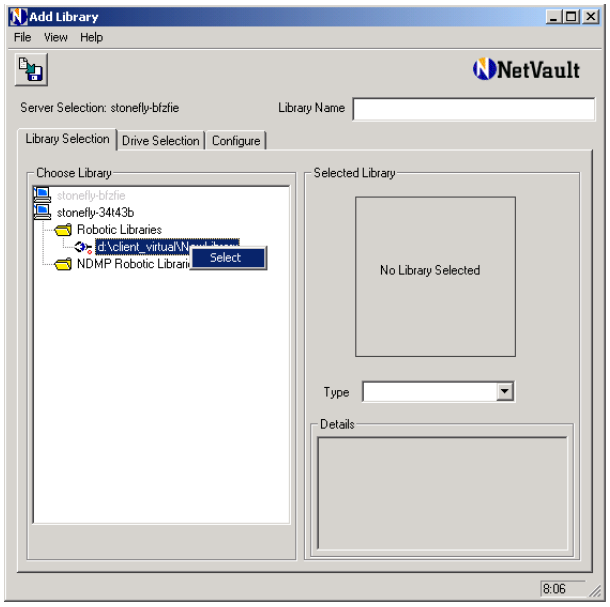


When the library is created, you can add it as a normal tape library.

To add the BakBone NetVault Virtual Library to the Master Backup Server:

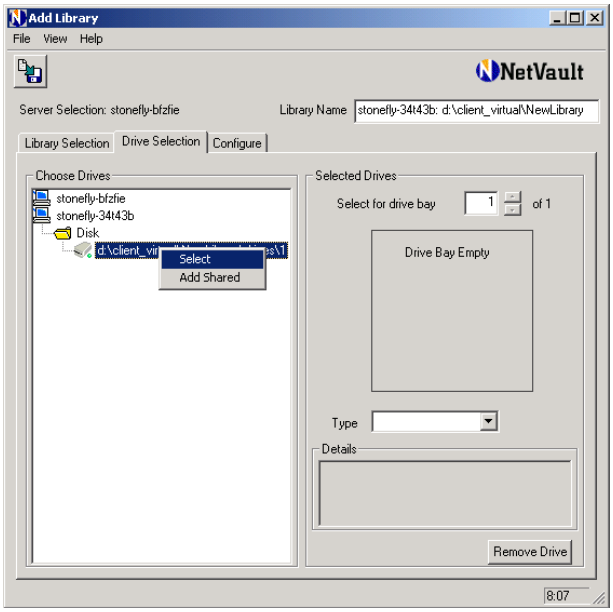
1 Select the **Library Selection** tab.

2 Right-click the new library, and click **Select**.



3 Select the **Drive Selection** tab.

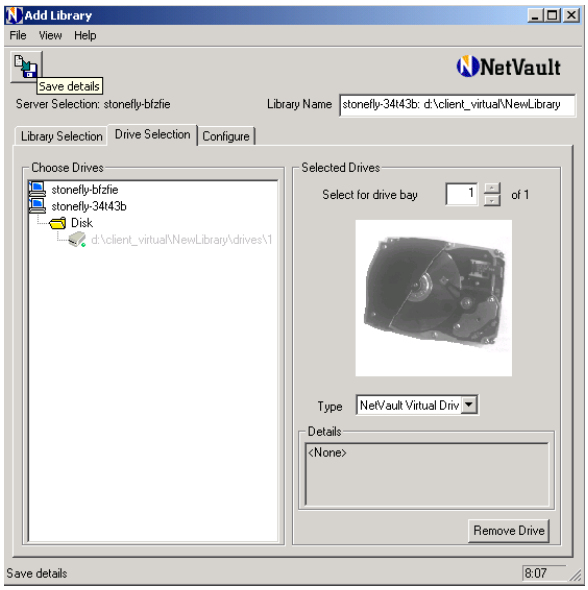
4 Right-click the new library, and click **Select**.



5 Select the Master Backup Server volume.

6 Right-click the new library, and click **Select**

7 Click the **Save Details** icon, and click **OK** to close the screen.



This completes setting up the BakBone NetVault Virtual Library. Proceed to Section 3, “Testing Backup and Restore Systems”

Section 3 Testing Backup and Restore Systems

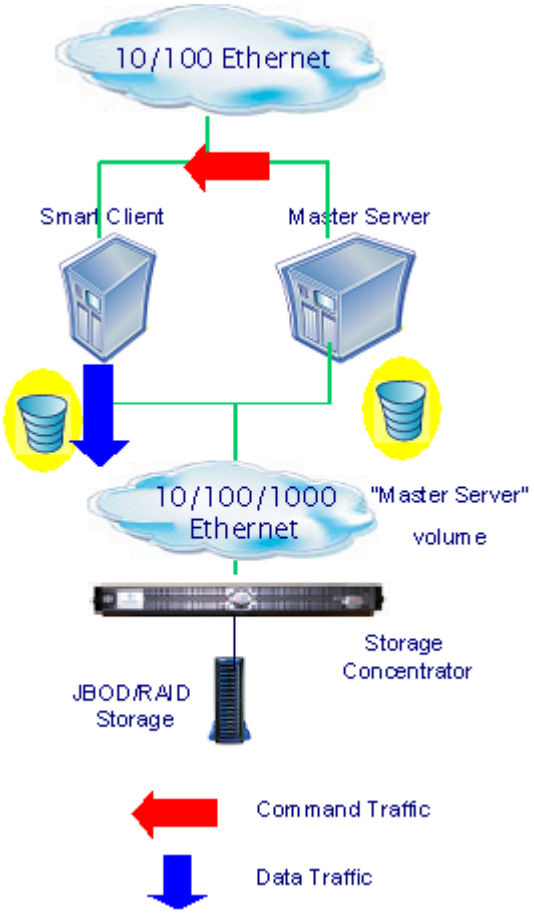
This section provides step-by-step instructions for testing the backup and restore functions of the BakBone NetVault software. It is recommended that all of the tests be performed to assure optimum performance.

There are five recommended workflow tests:

- Backup of the Smart Client Server's local disk to its virtual volume
- Restore from the Smart Client Server's virtual volume to the Smart Client Server Server's local disk
- Backup of the Smart Client Server's virtual volume to the Master Backup Server's virtual volume
- Restore from the Master Backup Server's virtual volume to the Smart Client Server's virtual volume
- Restore from the Smart Client Server's virtual volume to the Smart Client Server's local disk

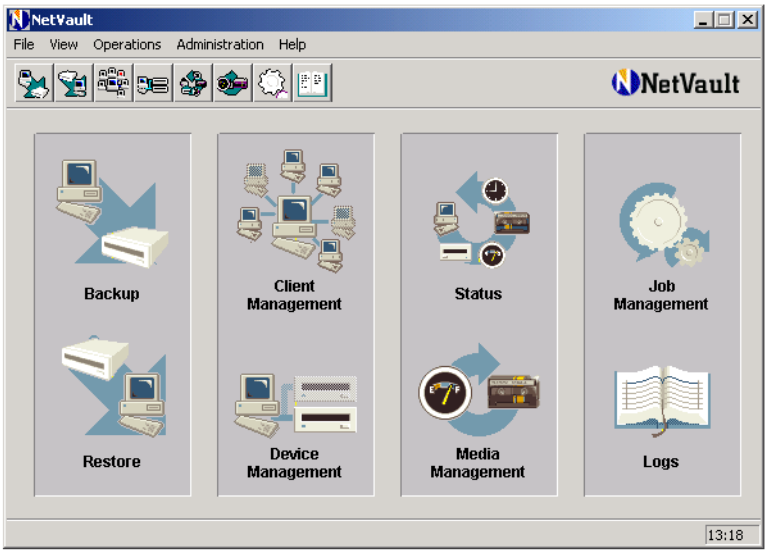
Testing Backup of the Smart Client Server's Local Disk to Its Virtual Volume

This procedure tests the disk-to-disk backup functions that you set up in Section 2, "Setting Up Disk-to-Disk Backup With BakBone NetVault"



To test the back up from the Smart Client Server's local disk to its virtual volume:

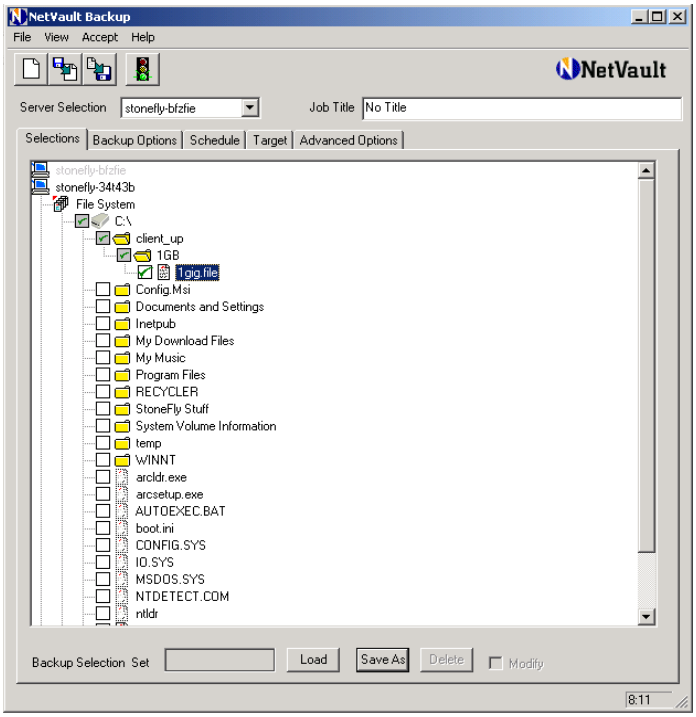
1 In the BakBone NetVault software, click **Backup**.



2 Double-click **Smart Client Server** disk.

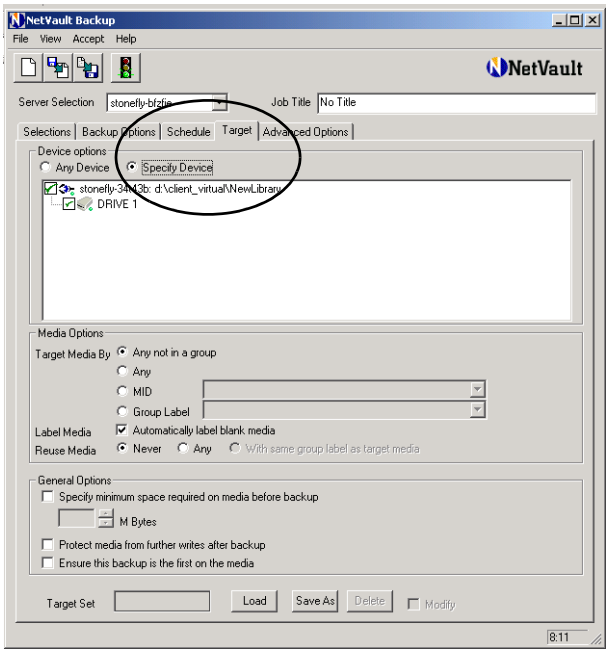
3 Select **FileSystem**.

4 Locate the directory to be backed up.



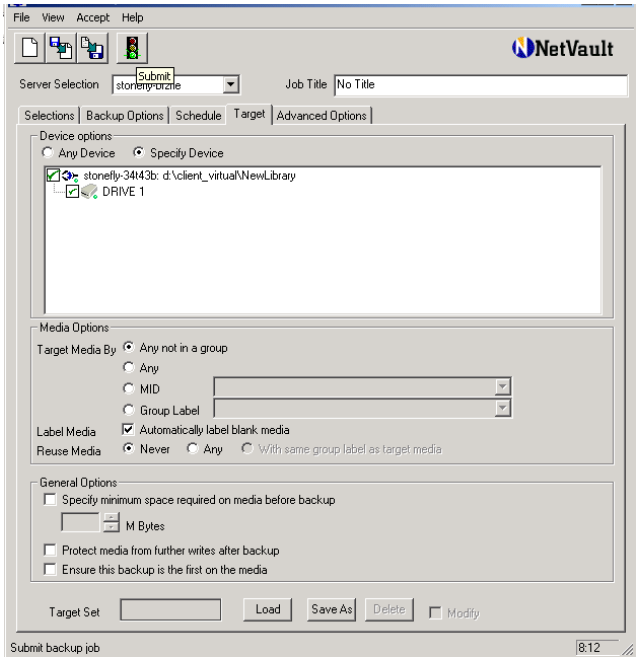
5 Select the **Target** tab.

6 Select the **Specific Device** option.



7 Select the virtual library that was just created for the Smart Client Server, and enter a title for the job in the **Job Title** field.

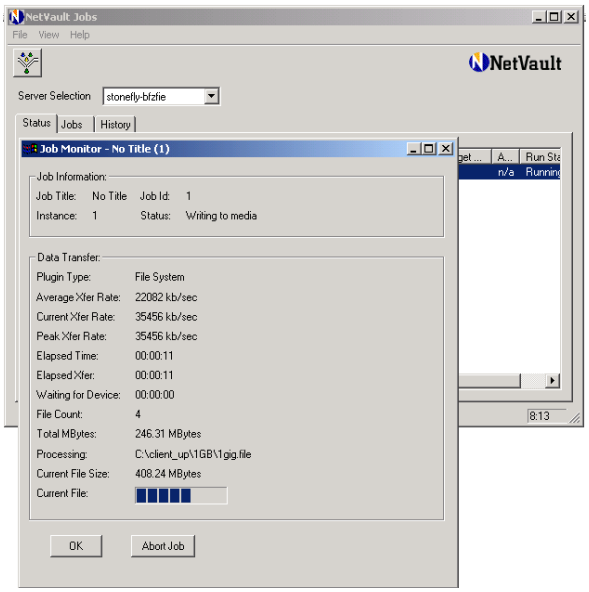
8 Click **Submit**.

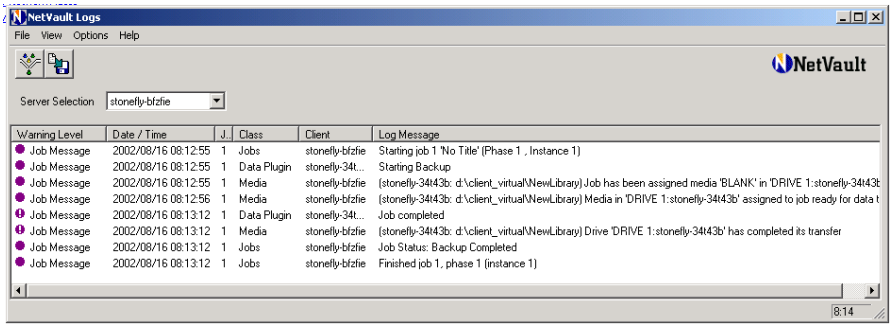


9 Close the screen.

10 Click **OK**.

11 To view the progress of the job, double-click **Job Management**.

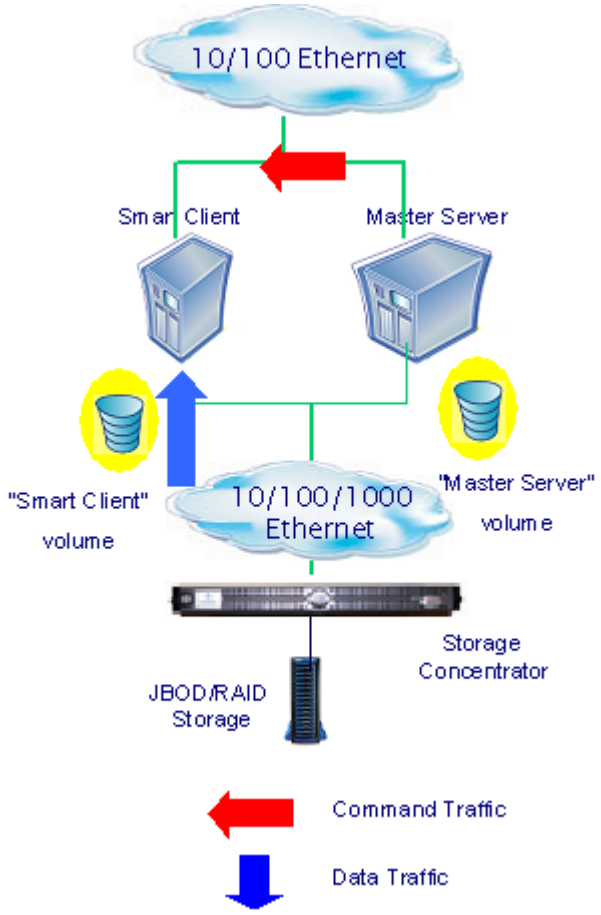




The Master Backup Server and the Smart Client Server see only their own volumes on the Desktops. For more information on volume management options, see “Volume Management Considerations” on page 4.

Testing Restore From the Smart Client Server's Virtual Volume to the Smart Client Server's Local Disk

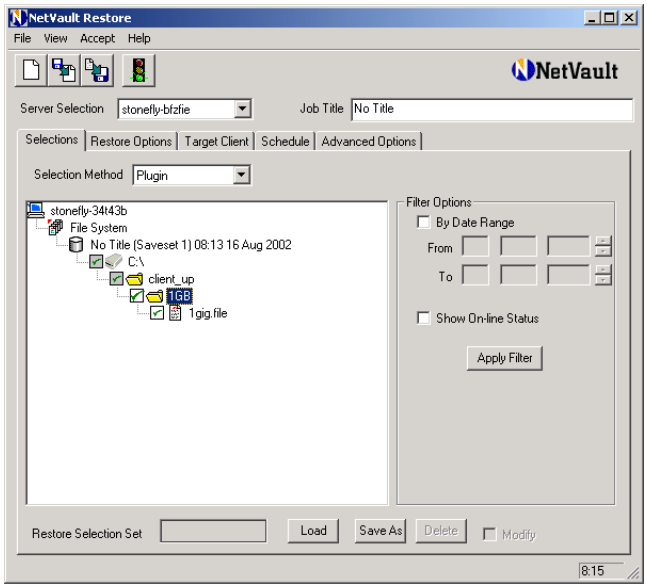
This procedure tests the restore function by setting up a standard restore from the Smart Client Server's virtual volume to the internal Smart Client Server's local disk.



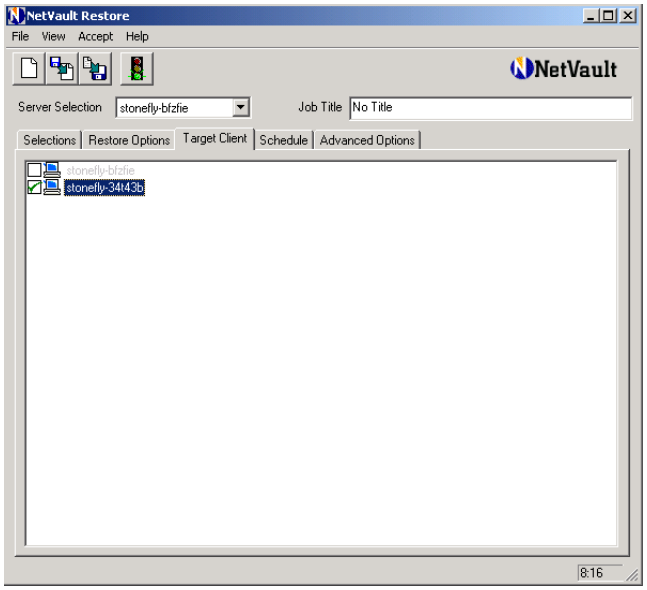
To test the restore function from the Smart Client Server's virtual volume to the Smart Client Server local disk:

1 Click **Restore**.

2 Double-click **Smart Client Server**, and select the backup job and the actual directory below the option.

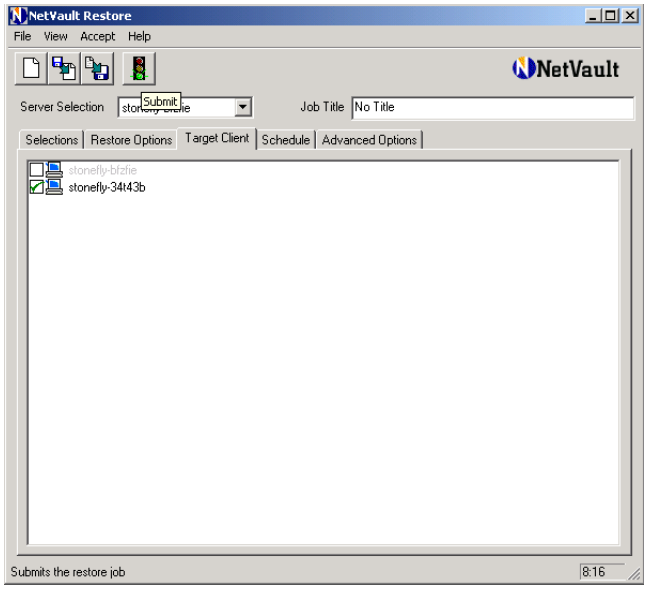


3 In the **Target Client** tab, click **Backup Client**.



4 Enter a title for the job in the **Job Title** field.

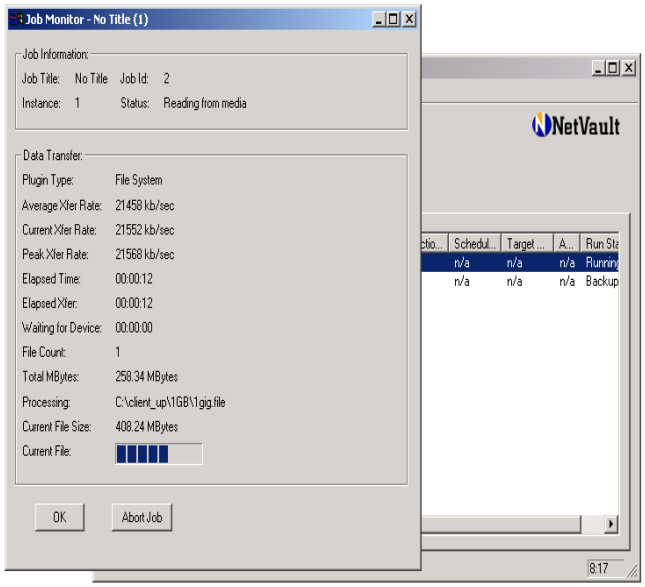
5 Click **Submit**.

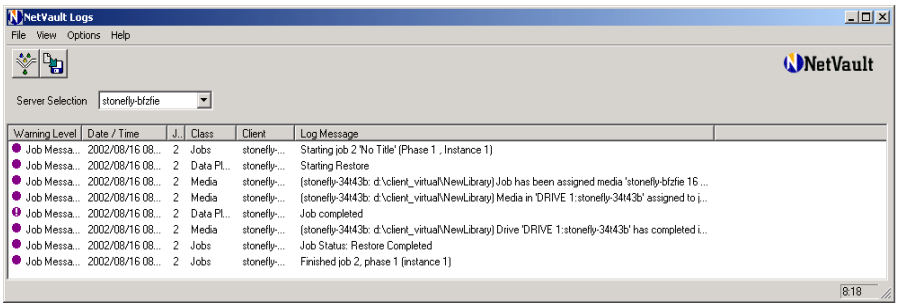


6 Close the screen.

7 Click **OK**.

8 To view the progress of the job, double-click **Job Management**.

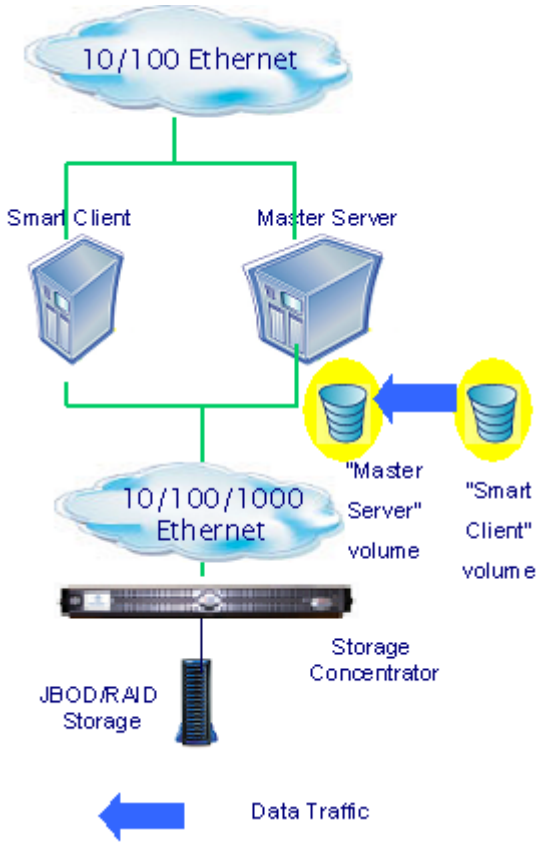




The Master Backup Server and the Smart Client Server see only their own volumes on the Desktops. For more information on volume management options, see “Volume Management Considerations” on page 4

Testing Backup of the Smart Client Server's Virtual Volume to the Master Backup Server's Virtual Volume

This procedure tests the backup function by running a backup from the Smart Client Server's virtual volume to the Master Backup Server's virtual volume.



Before performing this test you must do the following:

1 Unmount the Smart Client Server's virtual volume. For more information, see "Unmounting the Smart Client Server's Virtual Volume" on page 34.

2 Mount the Smart Client Server's virtual volume on the Master Backup Server. For more information, see "Mounting the Smart Client Server's Virtual Volume on the Master Backup Server" on page 36.

To test the backup from the Smart Client Server's virtual volume to the Master Backup Server's virtual volume:

1 In the BakBone NetVault software, click **Backup**.

2 Do one of the following:

- Back up the Smart Client Server's virtual volume using the Disk Copy option

  or

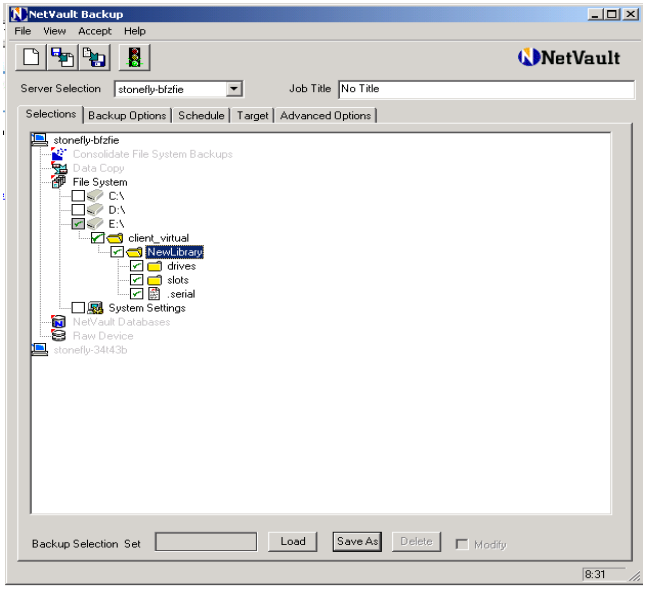
- Back up the Smart Client Server's virtual volume using the File System.

To backup the Smart Client Server's virtual volume using the File System:

1 Double-click the **Master Server**.

2 Select **FileSystem**.

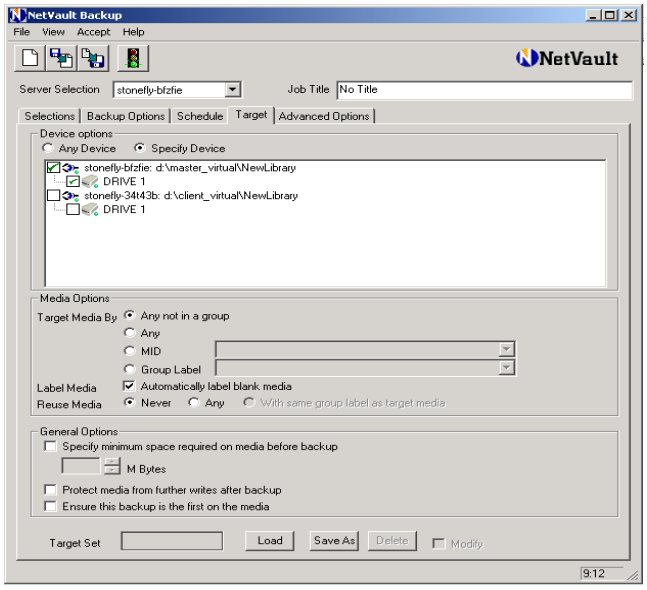
3 On the Smart Client Server's virtual volume, select the library directory to be backed up.



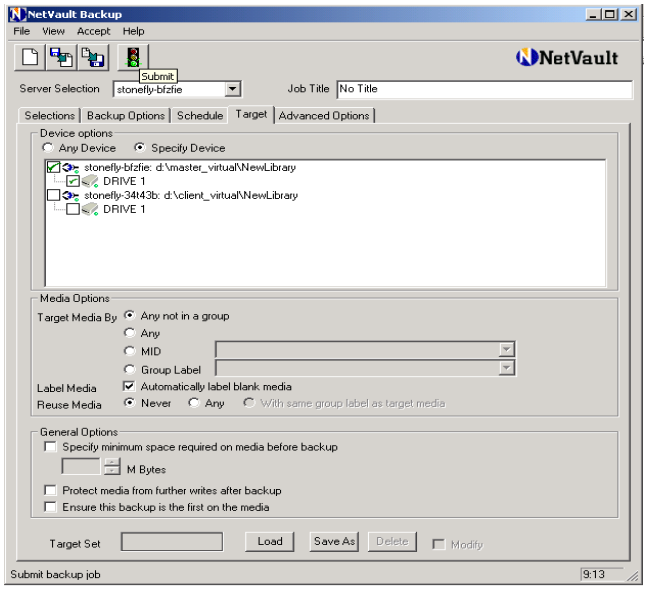
4 Select the **Target** tab.

5 Select the **Backup Server** virtual library.

6 Enter a title for the job in the **Job Title** field.



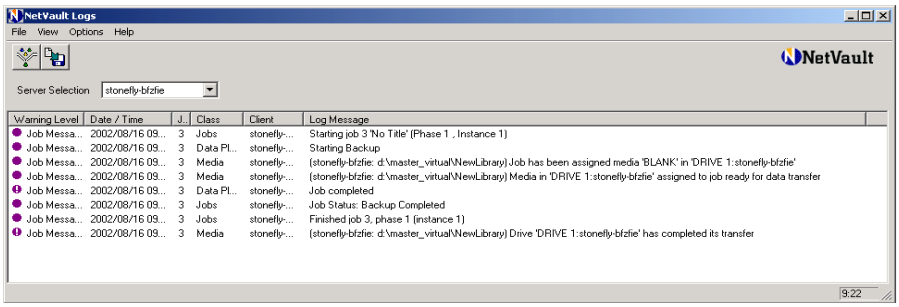
7 Click **Submit**.



8 Close the screen.

9 Click **OK**.

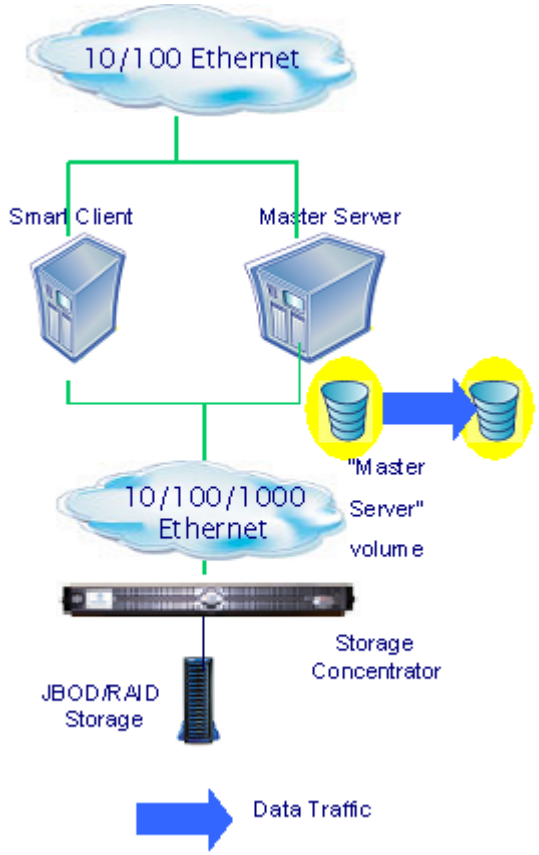
10 To view the progress of the job, double-click **Job Management**.



Before applying the steps listed above, the Smart Client Server must unmount its virtual volume and the Master Backup Server must mount the Smart Client Server's virtual volume. For more information on manually mounting and unmounting volumes, see "Manual Volume Management" on page 34.

Testing Restore From the Master Backup Server's Virtual Volume to the Smart Client Server's Virtual Volume

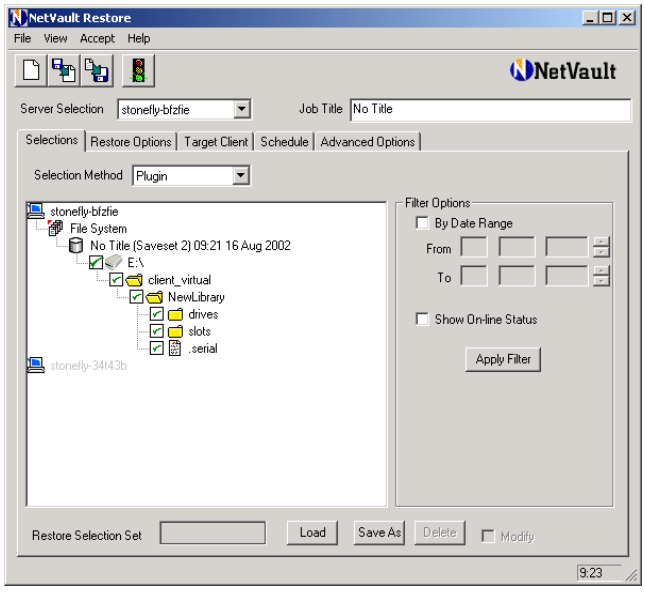
This procedure tests the restore function from the Master Backup Server's virtual volume to the Smart Client Server's virtual volume.



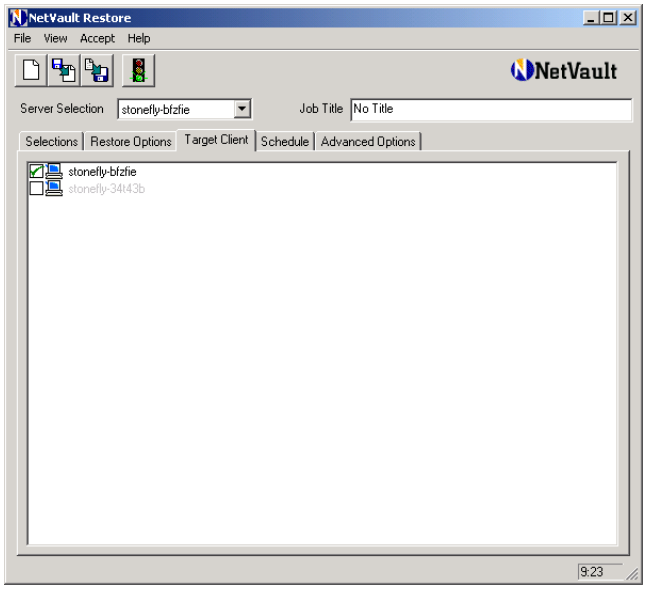
To test the restore function from the Master Backup Server virtual disk to the Smart Client Server's virtual volume:

1 Click **Restore**.

2 Double-click **Master Server**, and select the backup job and the actual directory below the option.

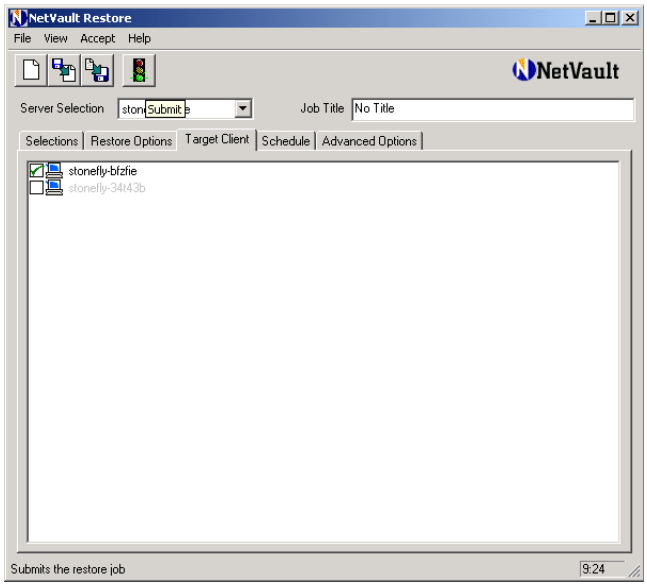


3 In the Target Client tab, click **Smart Client Server**.



4 Enter a title for the job in the **Job Title** field.

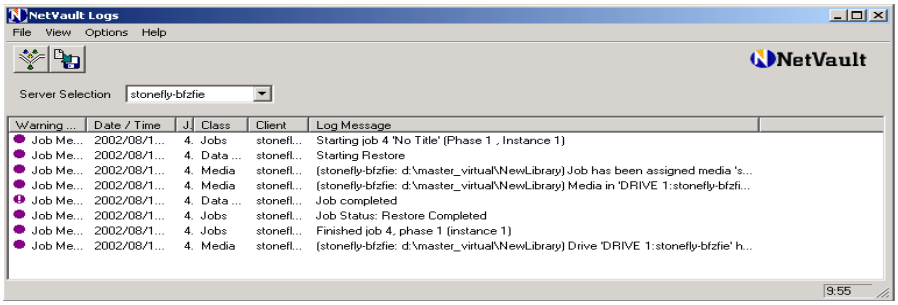
5 Click **Submit**.



6 Close the screen.

7 Click **OK**.

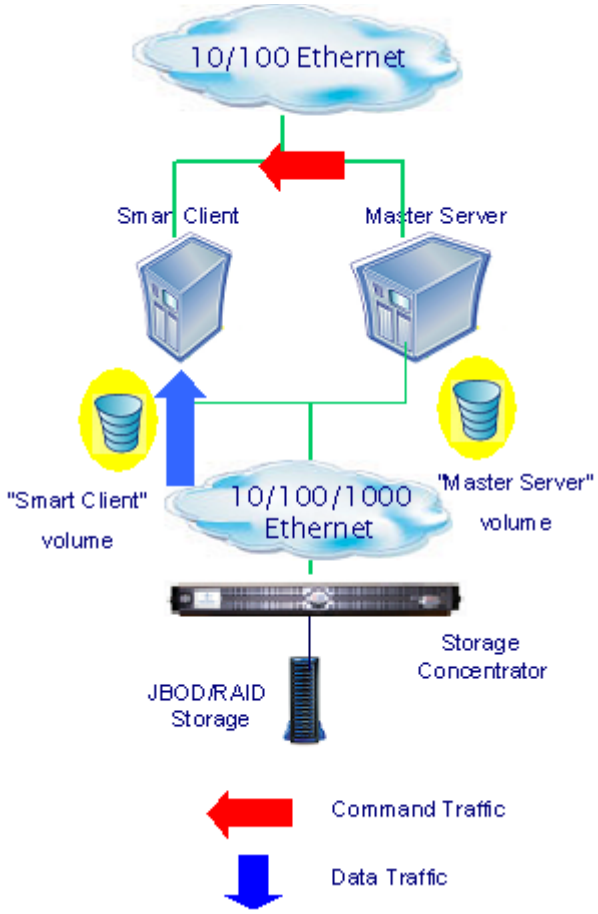
8 To view the progress of the job, double-click **Job Management**.



You will know that the preceding tests are successful when the Smart Client Server is able to locate the job and restore data from it. The database remembers the job by its disk label and attributes.

Testing Restore From the Smart Client Server's Virtual Volume to the Smart Client Server's Local Disk

This procedure tests the restore function from the Smart Client Server's virtual volume to the Smart Client Server's local disk.



Before performing this test you must do the following:

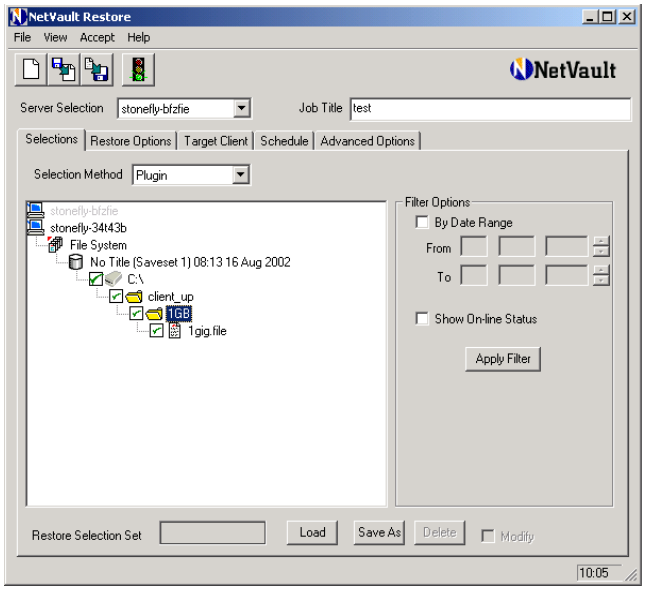
1 Unmount the Smart Client Server's virtual volume on the Master Backup Server. For more information, see "Unmounting the Smart Client Server Virtual Volume on the Master Backup Server" on page 37.

2 Mount the Smart Client Server's virtual volume on the Smart Client. For more information, see "Mounting the Smart Client Server's Virtual Volume on the Smart Client Server" on page 39.

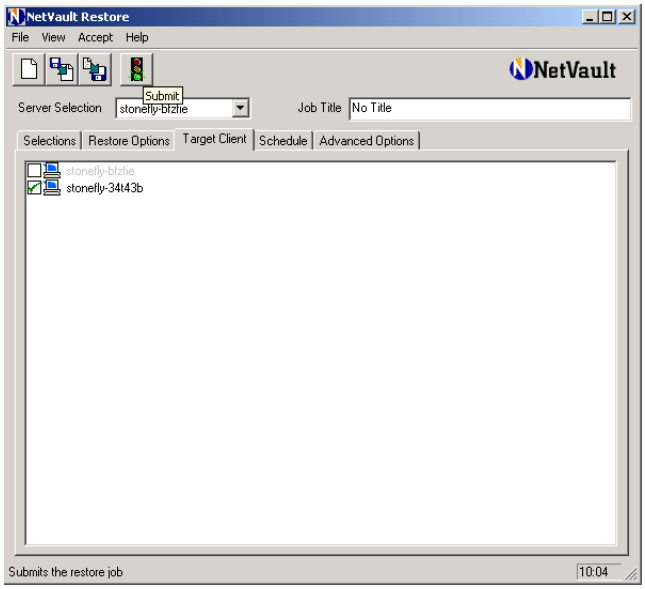
To test the restore function from the Smart Client Server virtual disk to the Smart Client Server's virtual disk:

1 Click **Restore**.

2 Double-click **Smart Client Server**, and select the backup job and the actual directory below the option.



3 In the Target Client tab, click **Smart Client Server**.



4 Enter a title for the job in the **Job Title** field.

5 Click **Submit**.

6 Close the screen.

7 Click **OK**.

8 To view the progress of the job, double-click **Job Management**.

If the manual logical volume mounting or automated volume mounting options are being used, the Master Backup Server will see only the Master Backup Server virtual volume and the Smart Client Server will see only the Smart Client Server's virtual volume at this time. For more information on volume management options, see "Volume Management Considerations" on page 4.

Section 4 Manual Volume Management

If no shared file or volume exits when testing the backup of the Smart Client Server's virtual volume to the Master Backup Server's virtual volume, manual mounting and unmounting of the volumes must be performed.

If automated volume management is being used, the workflow tests do not require that any tasks be performed in the Intel SNIC control panel.

Unmounting the Smart Client Server's Virtual Volume

Perform this task when testing the backup of the Smart Client Server's virtual volume to the Master Backup Server's virtual volume.

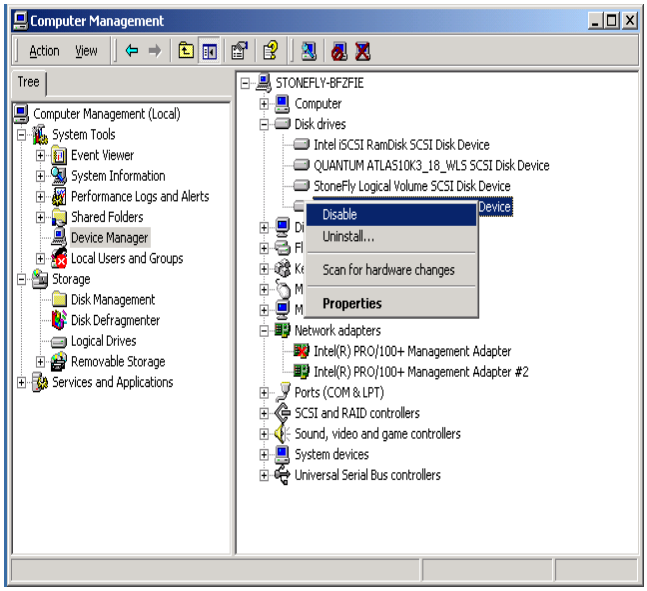
To unmount the Smart Client Server's virtual volume:

1 Right-click **My Computer**, and select **Manage**.

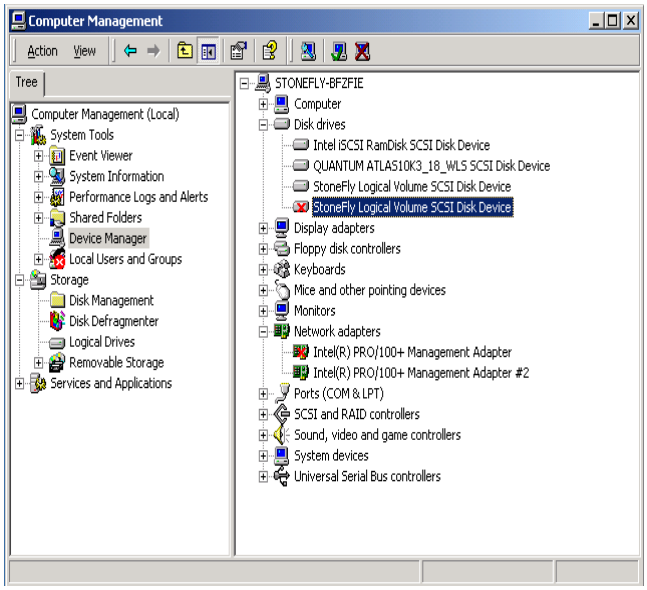
2 Select **Devices**.

3 Select the **StoneFly** volume

4 Choose **Disable**.

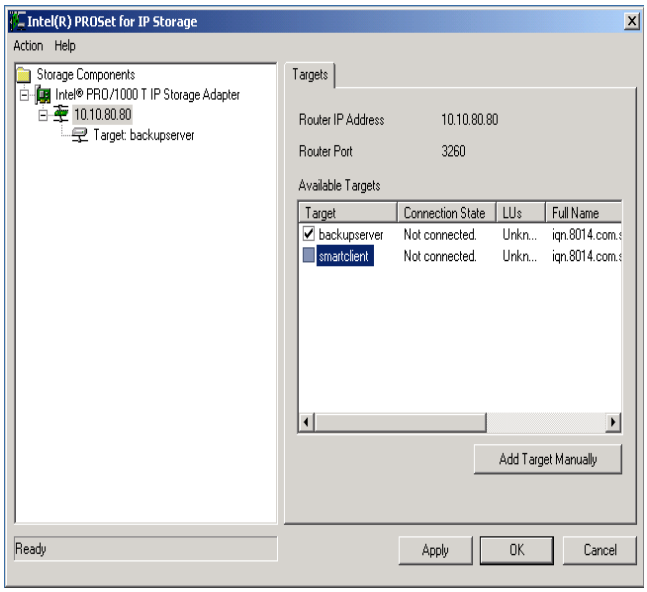


5 Close the screen.



6 Open the Intel SNIC control panel, and select the *Storage Concentrator* target IP address.

7 Deselect the Smart Client Server's virtual volume and click **Apply**.



8 Close the window.

Steps 6 – 8 can be ignored if you are using manual volume mounting and unmounting or automated volume mounting.For more information, see "Volume Management Considerations" on page 4.

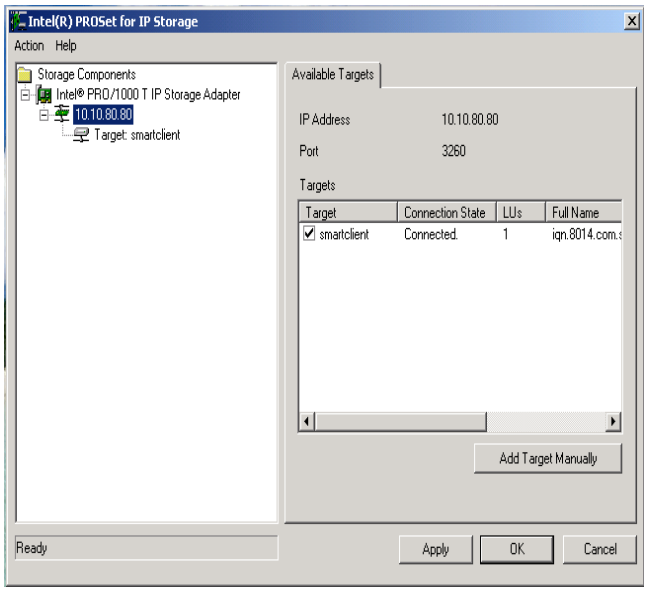
Mounting the Smart Client Server's Virtual Volume on the Master Backup Server

Perform this task when testing backup of the Smart Client Server's virtual volume to the Master Backup Server's virtual volume

To mount the Smart Client Server's virtual volume on the Master Backup Server:

1 Open the Intel SNIC control panel, and select the *Storage Concentrator* target IP address.

2 Select the Master Backup Server's virtual volume and click **Apply**.



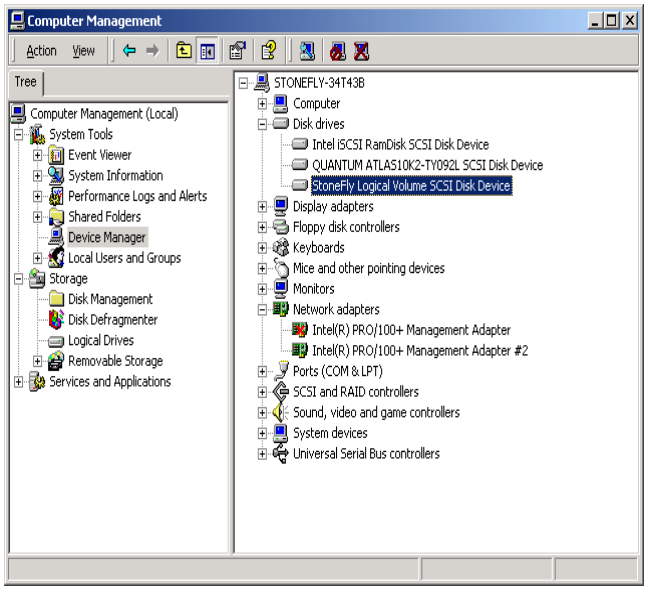
3 Right-click **My Computer**, and select **Manage**.

4 Select **Devices**, and then select **Hard disks**.

5 Select the **StoneFly** volume.

6 Select **Enable**.

7 Close the window.



Unmounting the Smart Client Server Virtual Volume on the Master Backup Server

Perform this task when testing a restore from the Smart Client Server's virtual volume to the Smart Client Server's local disk.

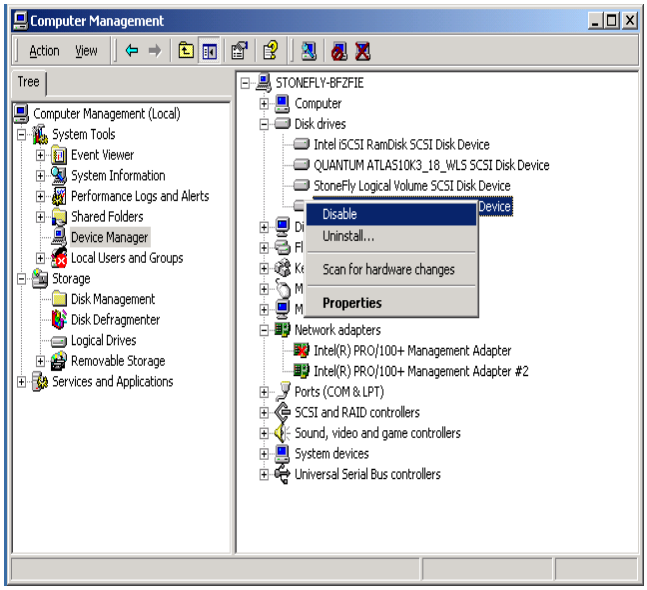
To unmount the Smart Client Server's virtual volume on the Master Backup Server:

1 Right-click **My Computer**, and select **Manage**.

2 Select **Devices**.

3 Select the **StoneFly** volume.

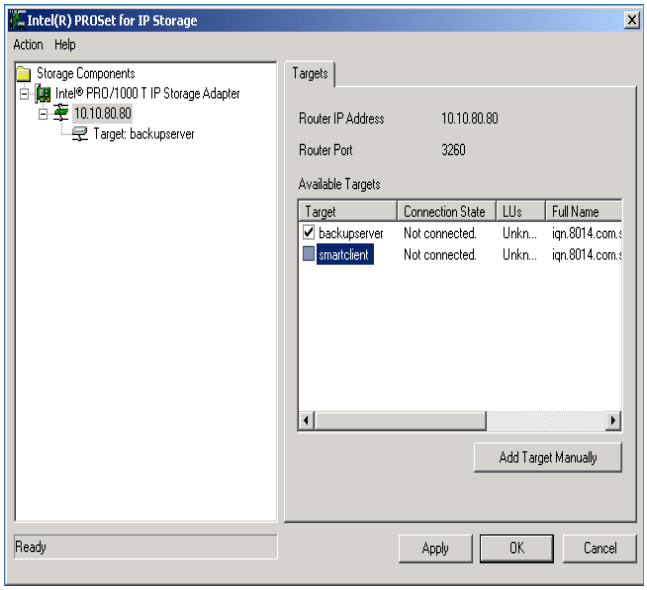
4 Choose **Disable**.



5 Close the screen.

6 Open the Intel SNIC control panel, and select the *Storage Concentrator* target IP address.

7 Deselect the Smart Client Server's virtual volume on the Master Backup Server's virtual volume and click **Apply**.



8 Close the window.

Steps 6 – 8 can be ignored if you are using manual volume mounting and unmounting or automated volume mounting.For more information, see “Volume Management Considerations” on page 4.

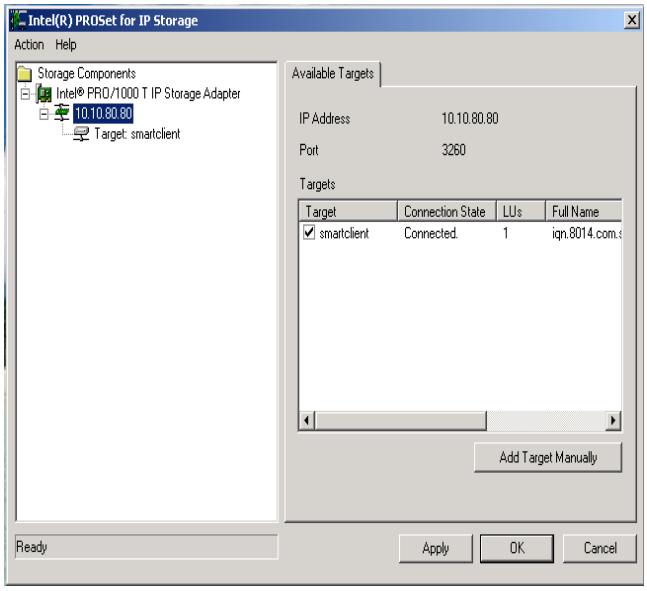
Mounting the Smart Client Server’s Virtual Volume on the Smart Client Server

Perform this task when testing a restore from the Smart Client Server’s virtual volume to the Smart Client Server’s local disk.

To mount the Smart Client Server’s virtual volume on the Smart Client Server:

1 Open the Intel SNIC control panel, and select the *Storage Concentrator* target IP address.

2 Select the Smart Client Server’s virtual volume and click **Apply**.



3 Right-click **My Computer**, and select **Manage**.

4 Select **Enable**.

5 Close the window.

After mounting or unmounting virtual volumes, the service on the NetVault BakBone software may need to be restarted.

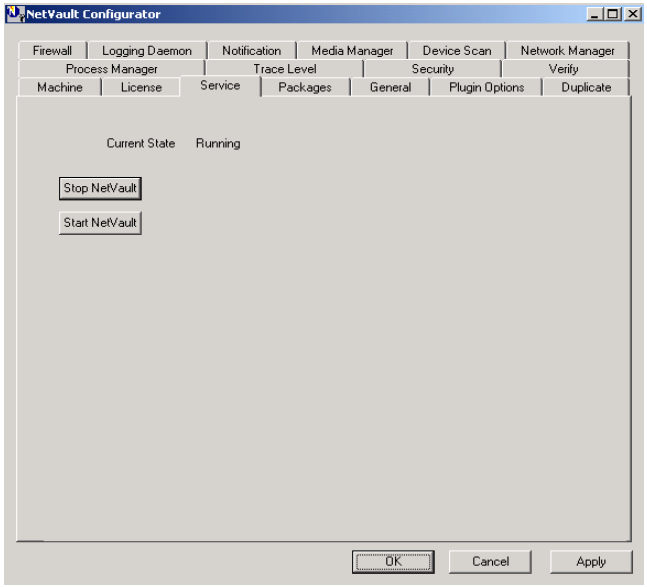
Restarting the Service on the BakBone NetVault Software

To restart the NetVault BakBone software:

1 Open the NetVault Configurator.

2 Select the **Service** tab.

3 Click **Start NetVault**.



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