



CommVault[®] Galaxy[™] 5.0

Using PS Series Groups and Auto-Snapshot Manager

Abstract

This Technical Report describes how to backup and restore local and remote NTFS volumes and SQL databases using CommVault Galaxy 5.0 with PS Series group storage and the EqualLogic Auto-Snapshot Manager for Windows VSS provider.

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PS Series Firmware Version 2.1 or later.

Table of Contents

Introduction	1
Basic Steps	1
PS Series Group Requirements	2
Server Requirements	3
Logging in to CommCell	4
Creating a Library of Drives	6
Creating Storage Policies	7
Creating a Backup-to-Disk Job for a Local NTFS Volume	8
Creating a Backup-to-Disk Job for a Local SQL Database.....	11
Creating a Backup-to-Disk Job for a Remote NTFS Volume.....	11
Creating a Backup-to-Disk Job for a Remote SQL Database	15
Restoring an NTFS Volume.....	17
Restoring an SQL Database.....	18
More Information and Customer Support.....	19

Introduction

This Technical Report describes how to backup and restore local and remote NTFS volumes and SQL databases using CommVault Galaxy 5.0 with PS Series group storage and the EqualLogic Auto-Snapshot Manager for Windows VSS provider. Using a PS Series group and Auto-Snapshot Manager can simplify and improve the performance of backup and restore operations.

The CommVault® QiNetix™ platform was designed to automate data management by changing from a static approach to a dynamic approach. Built on the proven CommVault Common Technology Engine (CTE) for moving, managing, and cataloguing data, the platform combines data movement products with data management products (including Galaxy, DataMigrator, Quick Recovery, and QNet enterprise) to deliver an integrated, automated solution with a global catalogue and indexing, data movement, and management capabilities. The integration of these products provides many business and operational advantages, such as superior return on investment, more efficient use of storage resources, higher staff productivity, maximum data availability, and reduced total cost of ownership.

Galaxy is certified as the Exchange 2000 and 2003 backup and recovery solution for the Microsoft® System Architecture (MSA). CommVault Galaxy iDataAgent™ for Exchange delivers centralized, unified, and automated backup and recovery. For Exchange 2003, Galaxy protects Exchange data on Windows Storage Server and Windows Server 2003.

In addition, iDataAgent for Microsoft SQL Server offers high performance and online backup and recovery of Microsoft SQL databases. Galaxy is certified as the Microsoft SQL Server backup and recovery solution for the MSA. Galaxy also uses the MSDN VDI interface to provide parallel backup data streams, called "striping," delivering maximum throughput.

A PS Series group provides highly available and scalable storage to backup servers running Galaxy. EqualLogic PS Series storage arrays deliver the benefits of consolidated storage in an intelligent storage area network (SAN) that is affordable and easy to use—regardless of its size. With no single point of failure, automated management, and fast, flexible scalability, PS Series storage arrays greatly reduce storage acquisition and management costs.

To facilitate backup and restore operations, Galaxy leverages the Microsoft Virtual Shadow Copy Service (VSS), enabling a single server to manage Exchange and database data across SANs. Galaxy's VSS support is hardware-independent, providing a single interface for all VSS calls (either hardware or software shadow copies). Galaxy can be used with the Auto-Snapshot Manager for Windows VSS provider, which coordinates the backups created by Galaxy with snapshots stored in a PS Series group. Auto-Snapshot Manager also includes a minimal requestor (only for provider testing purposes).

Basic Steps

Follow these steps to backup and restore local and remote NTFS volumes or SQL databases:

1. Set up the PS Series group and create the volumes that will be backed up, the VSS control volume (required for Auto-Snapshot Manager), and the temporary volume if needed. Be sure to create access control records that allow the appropriate servers access to the volumes. See *PS Series Group Requirements* in this document for more information.
2. Ensure that the backup server (and remote server, if applicable) meets the requirements described in *Server Requirements* in this document.

3. Perform these tasks on the backup server:
 - a. Log in to CommCell, as described in this document in *Logging in to CommCell*.
 - b. Specify the volumes to backup, as described in this document in *Creating a Library of Drives*.
 - c. Create storage policies for each drive, as described in this document in *Creating Storage Policies*.
4. On the backup server, use CommCell to backup and restore NTFS volumes or SQL databases as needed. *Be sure* to configure the drives to be backed up with VSS.

PS Series Group Requirements

PS Series group requirements are as follows:

- PS Series Firmware Version 2.1 or a higher version.
- Application volumes to be backed up. Before creating volumes, be sure to fully understand the individual application requirements (for example, e-mail, database, or file system), so you can allocate a sufficient amount of group storage space to each volume. Size volumes carefully. Although you can increase a volume, you must be sure the operating system and file system support volume expansion. You cannot decrease the size of a volume.

For each application volume, create one or more access control records that will permit volume access by the backup or remote server, as needed. The server that is running Auto-Snapshot Manager must be able to access the volumes.

- VSS control volume. Auto-Snapshot Manager requires you to create a volume named `vss-control`, which must be at least 15 MB.

In addition, for the `vss-control` volume, create one or more access control records that will permit volume access by the backup or remote server, as needed. The server that is running Auto-Snapshot Manager must be able to access the `vss-control` volume.

- Temporary volume. If the backup server will be performing a disk-to-disk backup or a disk-to-disk-to-tape backup, you must create a temporary volume. Also, create one or more access control records that will permit volume access by the backup server.

See the PS Series *QuickStart* or the *Group Administration* manual for information about creating volumes and access control records. See the Auto-Snapshot Manager *Installation and Administration* manual for installation information and additional requirements.

In addition, it is recommended that you consult the *Network Connection and Performance Guidelines* Technical Report on the EqualLogic Customer Support website for information about how to improve network performance when using a PS Series group.

Server Requirements

Throughout this document, the terms local server and remote server will be used. The software and hardware requirements differ for each type of server. A local server refers to the backup server where the CommVault software is installed and any disk volumes, databases, and log files that are connected to it. A remote server refers to an application server, other than the backup server, and any disk volumes, databases, and log files that are connected to it.

Refer to the CommVault documentation for all product-related hardware and software requirements for the backup and remote servers, including documentation for CommVault® QiNetix 5.1 for Windows Server and the individual Client Agents.

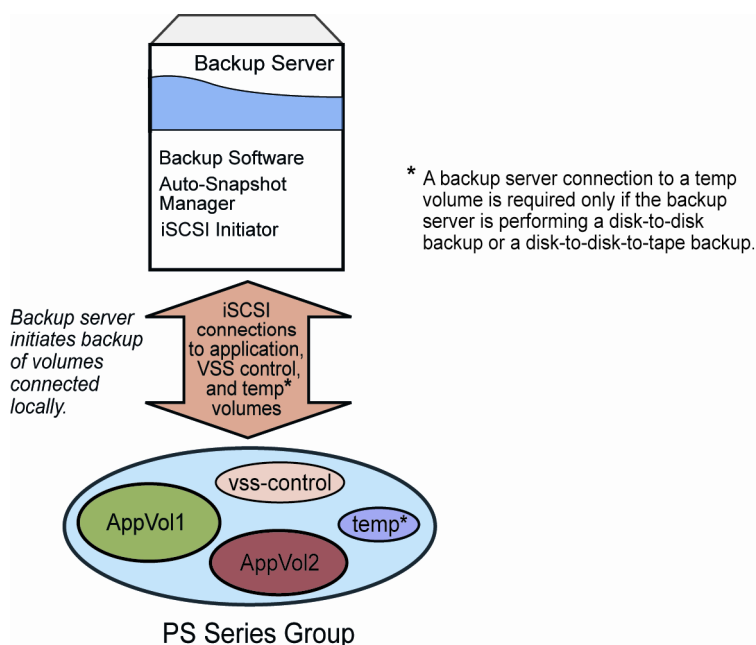
If you are using only a backup server (that is, a remote server is not used), additional requirements for the backup server include:

- Auto-Snapshot Manager for Windows Version 1.0.0. For operating system, iSCSI initiator, and other requirements, see the Auto-Snapshot Manager *Installation and Administration* manual.
- iSCSI initiator.
- Connection to any PS Series group volumes that it is backing up.
- Access to the `vss-control` volume. Do not manually connect to this volume.
- Connection to a temporary volume, if the backup server will be performing a disk-to-disk backup or a disk-to-disk-to-tape backup.

See the PS Series *QuickStart* or the *Group Administration* manual for information about connecting (logging in) to a PS Series group volume.

The following figure shows the requirements for an environment that uses only a backup server.

Backup Server Only Environment



If you are using one or more remote servers and the backup server is performing a disk-to-disk backup or a disk-to-disk-to-tape backup, backup server requirements include:

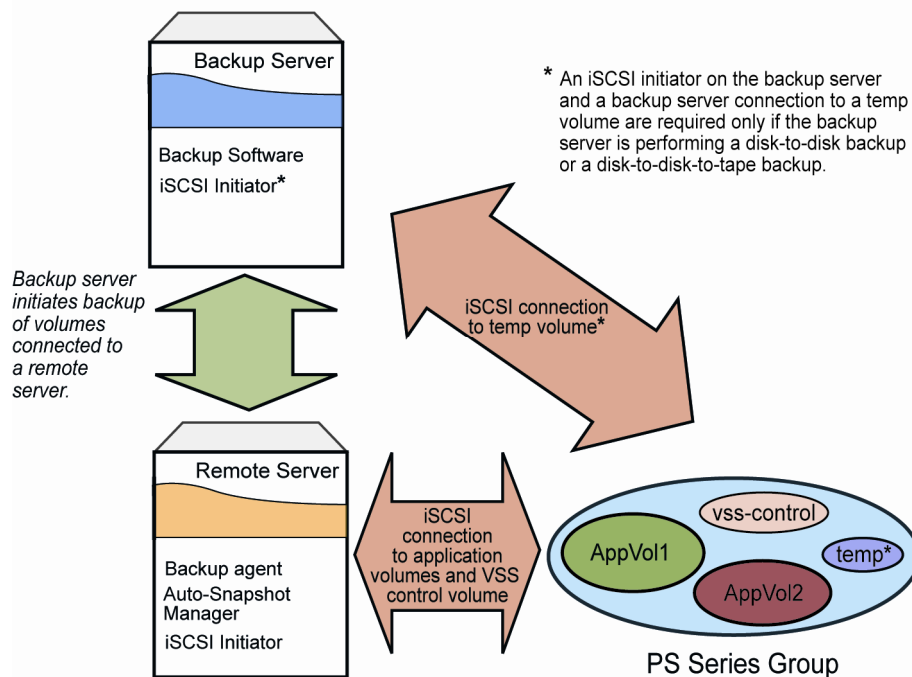
- iSCSI initiator.
- Connection to a temporary volume.

Additional requirements for remote servers include:

- Auto-Snapshot Manager for Windows Version 1.0.0. For operating system, iSCSI initiator, and other requirements, see the Auto-Snapshot Manager *Installation and Administration* manual.
- Connected (logged in) to the PS Series group volumes that will be backed up.
- Access to the `vss-control` volume. Do not manually connect to this volume.

The following figure shows the software requirements for a backup environment that uses a backup (local) server and a remote server.

Backup Server and Remote Server Environment



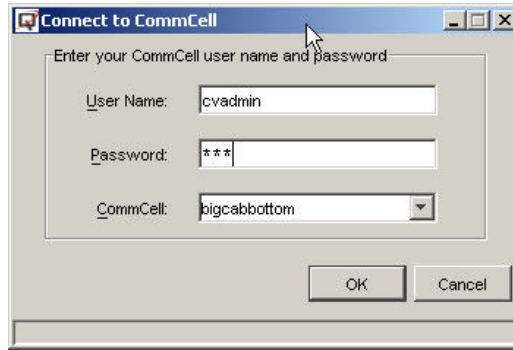
Logging in to CommCell

The CommVault Galaxy CD contains all the software for both the backup server console application and any local and remote iAgents that you may require. The agents that you have purchased are identified by a software key that is located on a diskette. Key upgrades are possible and can be accessed using the CommCell console

The CommCell console is the primary interface for CommVault Galaxy 5.0. The console enables you to identify the backup devices (PS Series group volumes), back up and restore data (including NTFS, Exchange, and SQL database data), and monitor job progress.

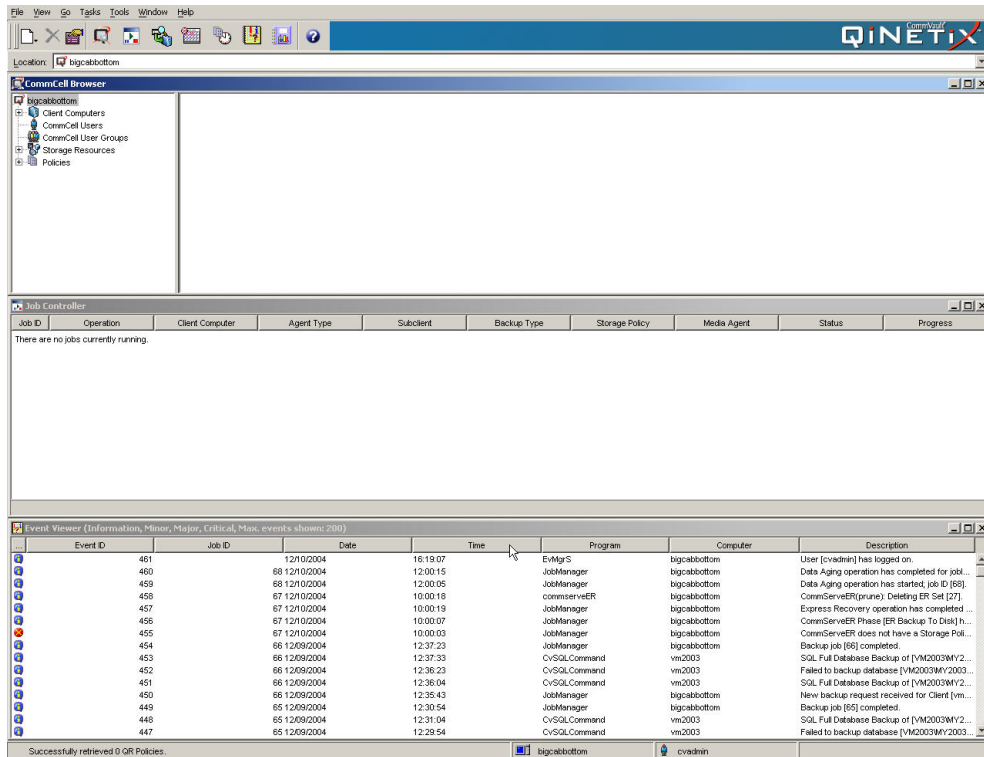
To access the CommCell console, log in with the user name and password that is created during the CommVault installation. Once logged in, the CommCell console appears.

CommCell Login



CommCell Console

Three separate panels



You can click an item in the menu bar or toolbar to perform backup and restore tasks. Control and management of individual tasks are handled within the window panels that make up the console:

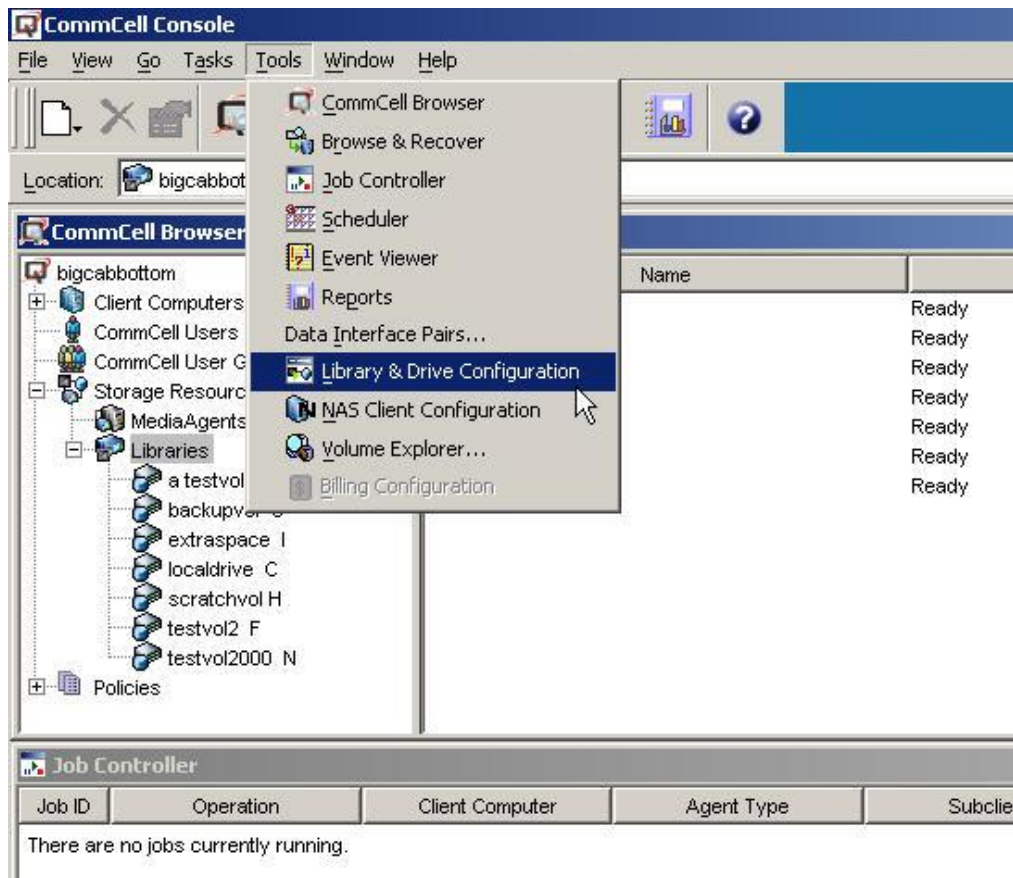
- **CommCell Browser.** Enables you to select and configure backup policies and media devices. Expand **Client Computers** to display the local and remote servers and their associated NTFS volumes, SQL databases, and Exchange data.

- **Job Controller.** Monitors backup and restore job progress, displays job success or failure, and shows the current or recently run backup and restore jobs.
- **Event Viewer.** Displays all logged events.

Creating a Library of Drives

Before you can backup and restore data, you must specify the media devices (PS Series group volumes) that you want to backup. To create a library of drives, in the menu bar, click **Tools** and select **Library and Drive Configuration** from the menu.

Creating a Library of Drives



To create a media device within the **Library of Drives**, you will go through a number of wizard screens. Each device that will be a member of the library can be a PS Series group volume that is connected to the server.

Follow these steps to create a media device:

1. Select the **Media Agents** from which you want to choose a media device. This can be a local server, a remote server, or all servers. The server must be connected to the group volume.

2. Click the **Start** button to create a media device and specify the following information:

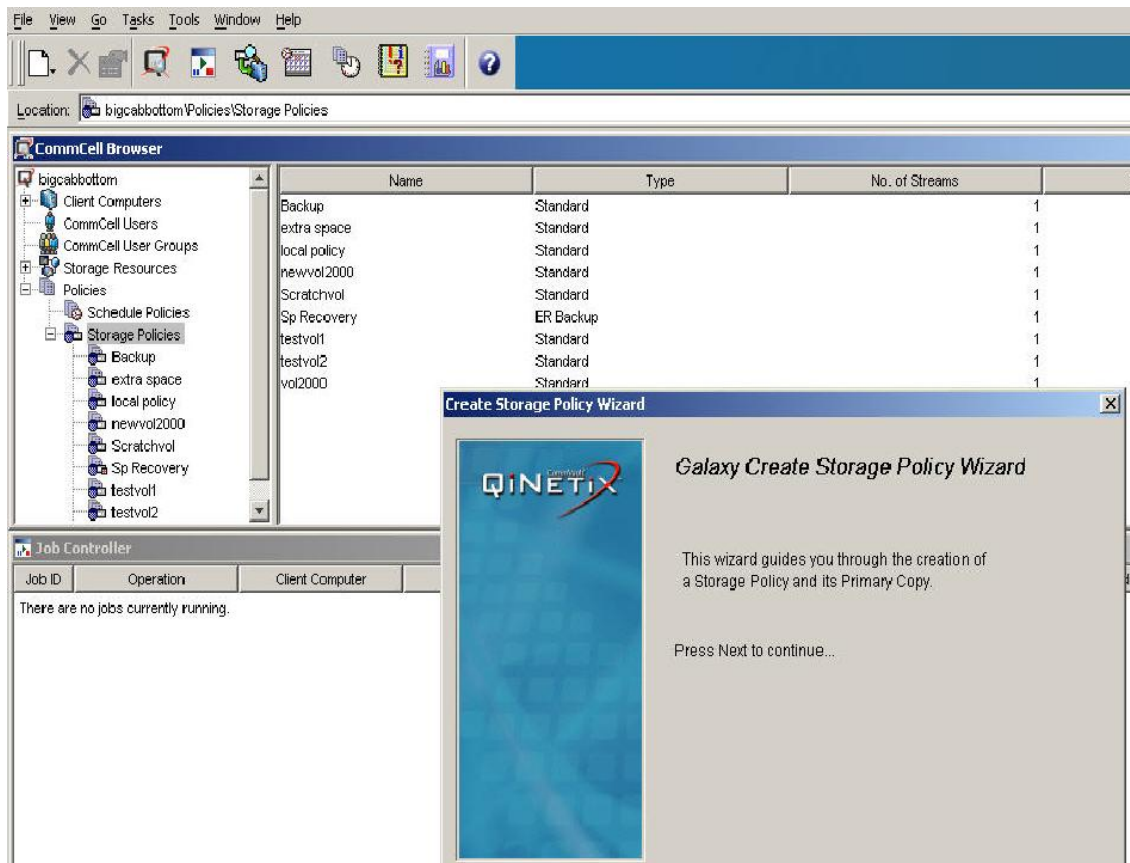
- Which server and Media Agent the device is associated with.
- Alias name for the media device.
- Mount point, drive letter, or folder for the media device in the **Path** field.

Creating Storage Policies

After creating a library of drives, you must create the storage policies that are used to associate predefined and configured media devices with specific tasks. Each storage policy is identified by a policy name in the CommCell browser panel.

To create a storage policy, in the CommCell browser panel, under **Policies**, right-click **Storage Policies** and select **New Storage Policy** to start the Create Storage Policy wizard.

Creating a Storage Policy



A series of dialog boxes will appear, prompting you for information about the new storage policy. Follow these steps:

1. Select **DataAgent Backup (standard)** as the **Storage policy type**.
2. Specify a name for the policy.
3. Associate this policy with the Default Media Library by selecting from one of the previously configured media/drive libraries.
4. Specify which Media Agent and server to associate with the policy.

Creating a Backup-to-Disk Job for a Local NTFS Volume

To backup a client's NTFS volumes, in this case the local backup server's NTFS volumes, each volume must first be configured to use VSS, as described in the following steps:

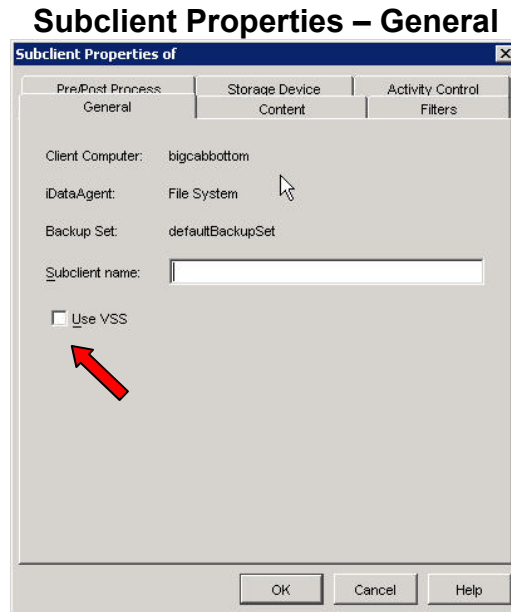
1. In the CommCell browser, under **Client Computers**, locate the local backup server by name.
2. Under the backup server name, select **File System**, and then select **DefaultBackupSet**.
3. Right-click **DefaultBackupSet** and choose **New Subclient**. A subclient is a volume or folder to be backed up.

Creating a New Sub Client

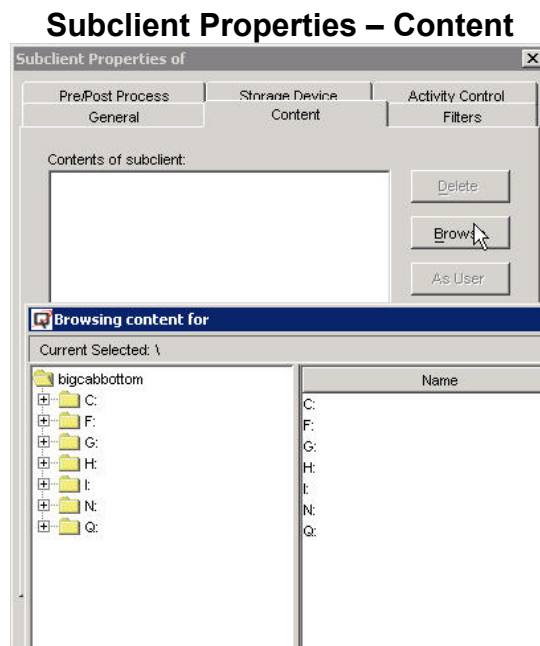
Job ID	Operation	Client Computer	Agent Type	Subclient
78	Backup	bigcabbottom	Windows 2003 32-bit File...	testvol1
77	Express Recovery Backup		CommServe Management	
76	Backup	bigcabbottom	Windows 2003 32-bit File...	testvol1

4. Using the New Subclient Properties dialog boxes:

- a. Click the **General** tab and then select the **Use VSS** check box. Also, provide the Subclient with a name that represents the volume or folder with which it is associated.

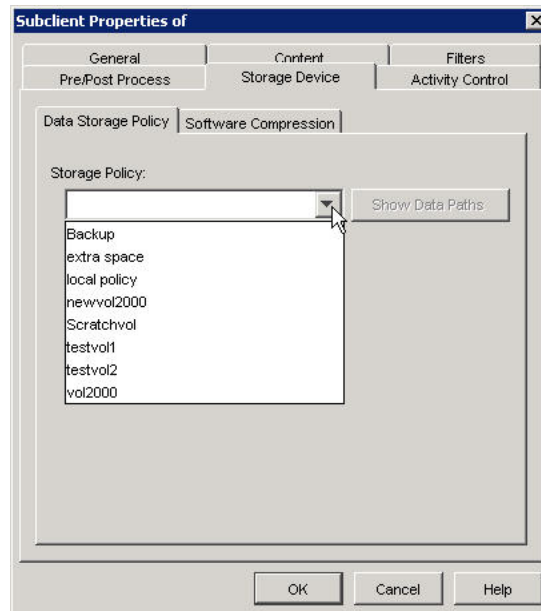


- b. Click the **Content** tab and then select **Browse**. Select the volume or folder.



- c. Click the **Storage Device** tab and then click **Storage Policy**. Select the policy to be used for backing up the volume or folder. Then, click **OK**.

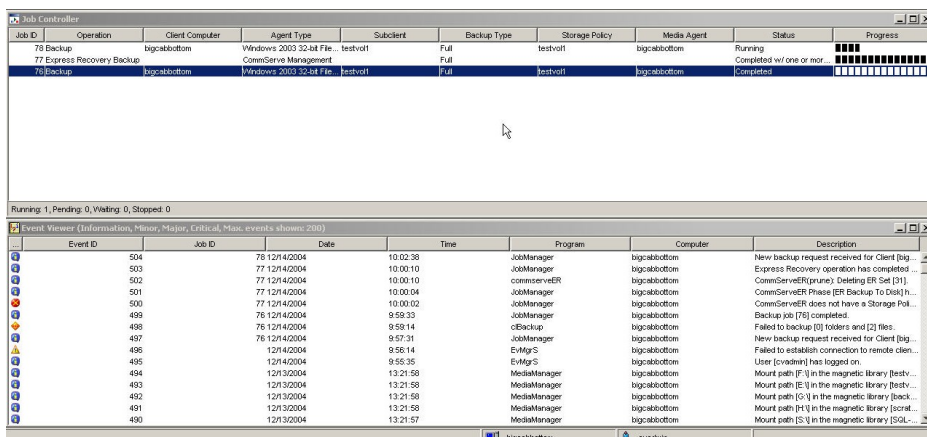
Subclient Properties – Storage Device



Once the client's NTFS volume is configured to use VSS, follow these steps to backup the local NTFS volume:

1. In the CommCell browser, select **Client Computers** and then select the local backup server name.
2. Under the server name, select **File System** and then select **DefaultBackupSet**.
3. Right-click **DefaultBackupSet** and select **Subclient**. Choose **Backup** from the option menu.
4. In the dialog box that appears, select if you want the backup to start immediately or if you want to schedule it. Also, select the **Backup Type** and then click **OK**.
5. Examine the Job Controller panel for the progress of each job. Also, examine the Event Viewer panel to determine the job outcome.

Job Controller and Event Viewer Panels



Creating a Backup-to-Disk Job for a Local SQL Database

To backup a local server's SQL database volume, the volume must first be configured to use VSS.

The following steps outline how to configure a local SQL database volume to use VSS and then backup the volume:

1. In the CommCell browser, expand **Client Computers** and then click the local server name.
2. Under the server name, right-click an SQL Server 2000 database instance and select **Properties**.
3. In the Properties dialog box that appears, click the **General** tab and select the **Use VSS** check box. Set the rest of the parameters as desired and then click **OK**. All databases under the selected SQL instance now support VSS.
4. To backup a database, right-click the database under **SQL Server 2000** and select **Backup Database** from the menu.
5. Examine the Job Controller and Event Viewer panels to check the progress of the backup.

Creating a Backup-to-Disk Job for a Remote NTFS Volume

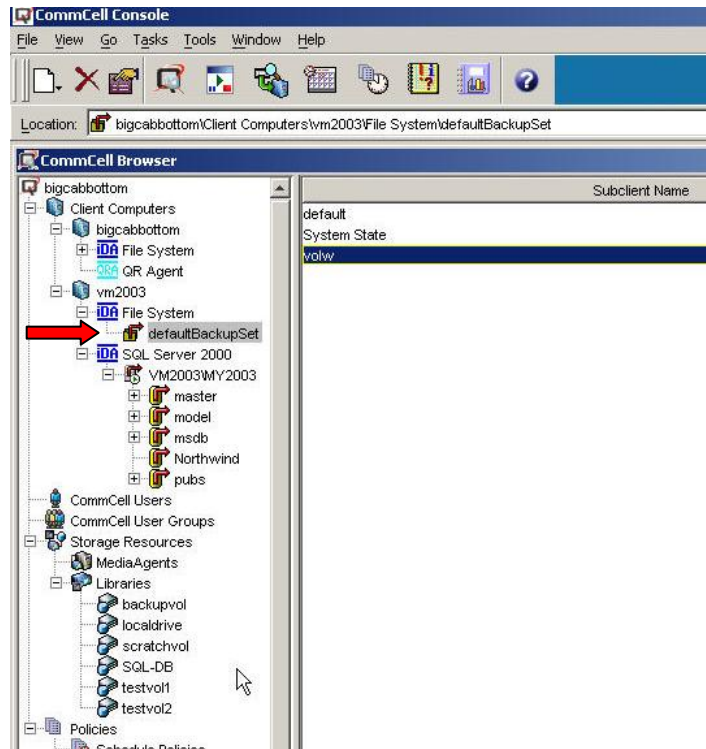
To backup a client's NTFS volumes, in this case, the remote server's NTFS volumes, each volume must first be configured to use VSS.

The following steps describe how to configure a remote NTFS volume to use VSS and then backup the volume:

1. In the CommCell browser, expand **Client Computers** and then select the name of the remote server whose NTFS volumes you want to backup.
2. Under the server name, select **File System**.

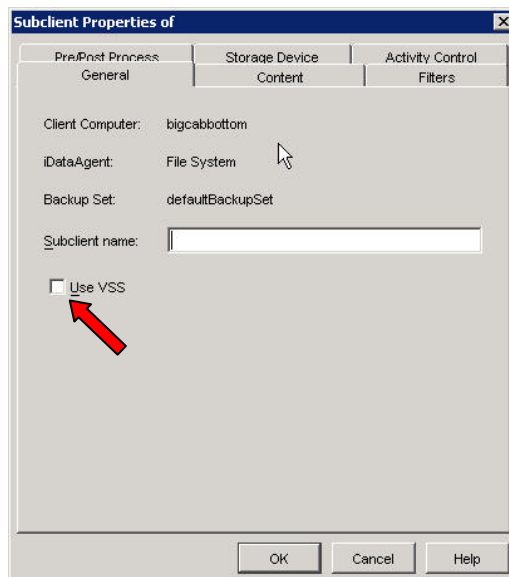
3. Right-click **defaultBackupSet** and select **New Subclient**, which is a volume or folder to be backed up, from the menu.

Creating a New Sub Client



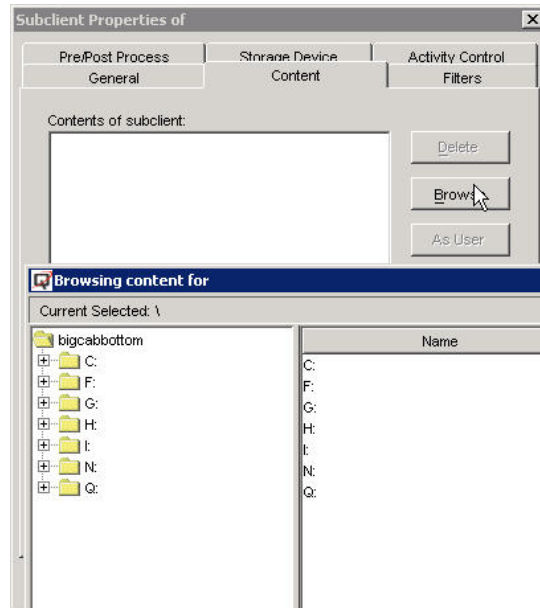
4. Use the Properties dialog boxes that appear to configure the new subclient. Follow these steps:
 - a. Click the **General** tab and select **Use VSS**. In addition, provide the subclient with a name that represents the volume or folder with which it is associated.

Subclient Properties – General



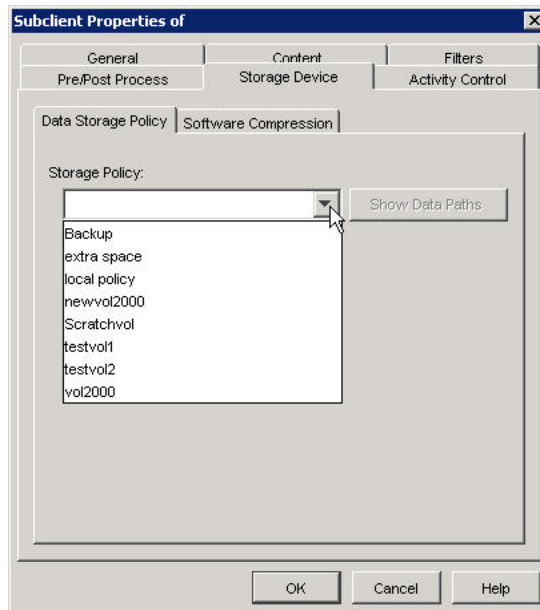
- b. Click the **Content** tab, select **Browse**, and then select the subclient volume or folder to be backed up.

Subclient Properties – Content



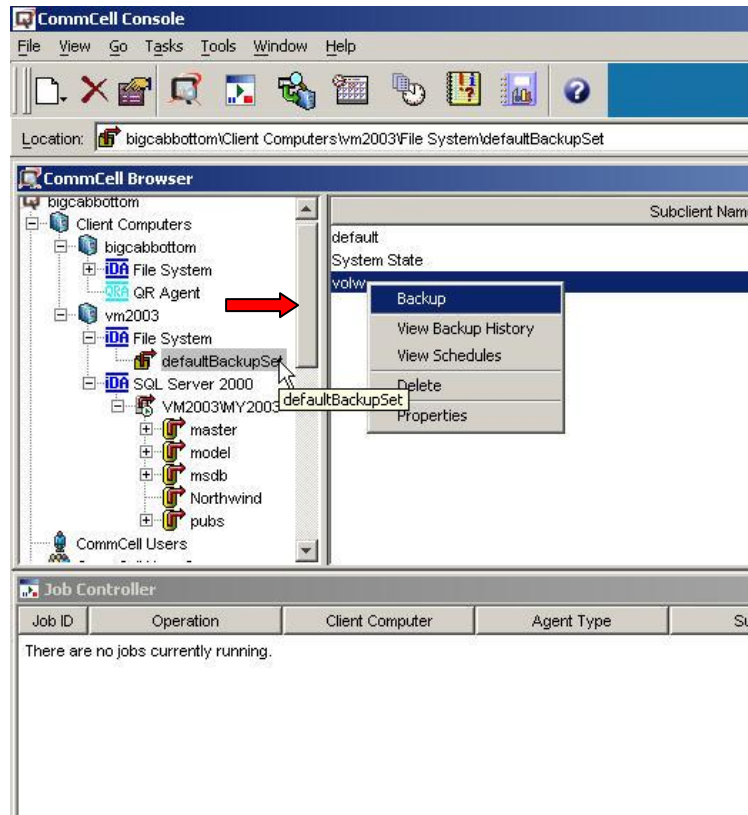
- c. Click the **Storage Device** tab, click **Storage Policy**, and then select the policy to be used for backing up the volume or folder.

Subclient Properties – Devices



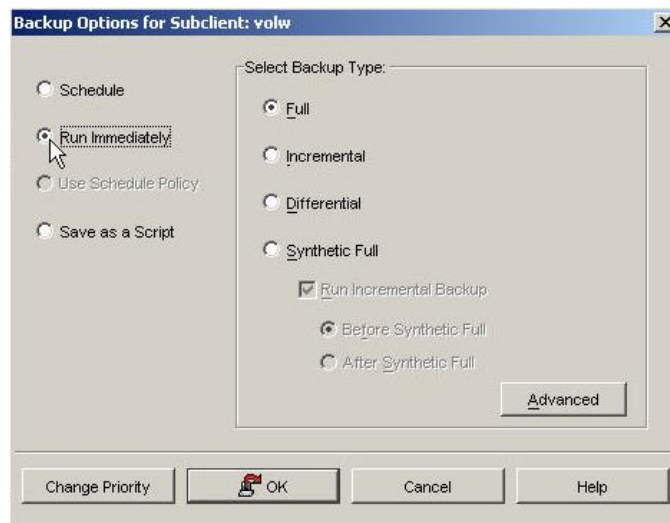
- From the Commcell Browser, right-click the newly created subclient name and select **Backup**.

Selecting the Subclient



- In the Backup Options dialog box, select whether you want the backup to start immediately or schedule the backup. Then, select the backup type. Click **OK** to start the backup.

Backup Options



- Examine the Job Controllers panel and the Event viewer panel to check the backup progress.

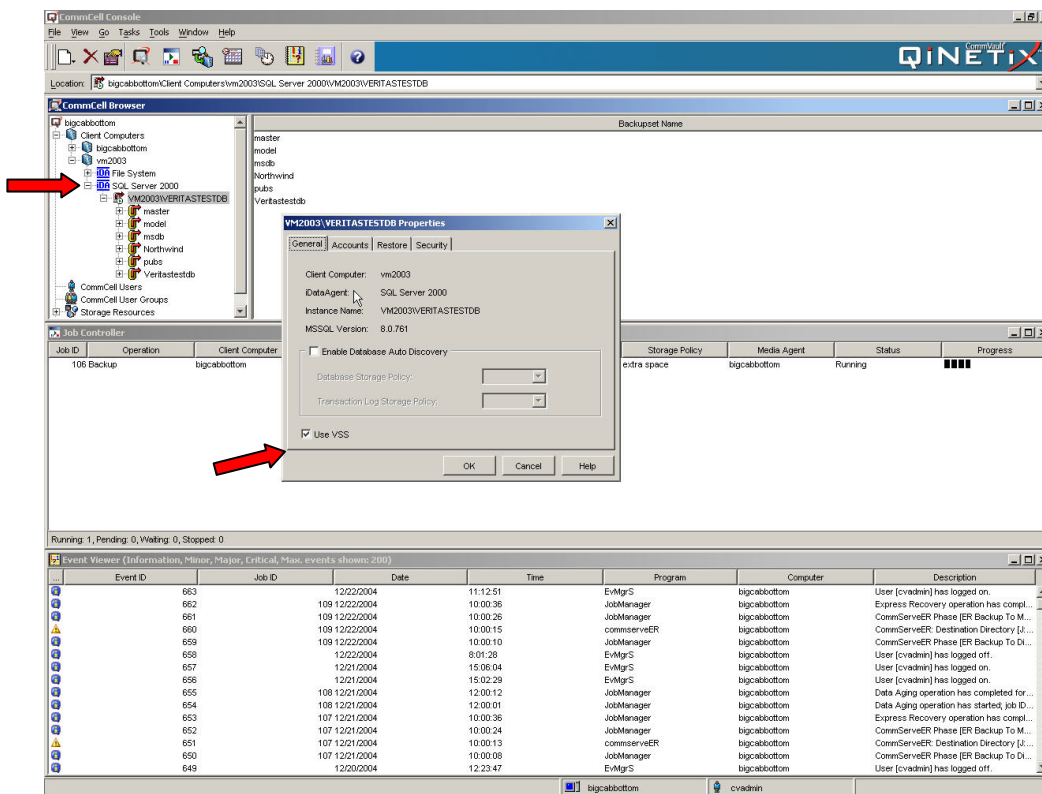
Creating a Backup-to-Disk Job for a Remote SQL Database

To backup a remote server SQL database volume, each volume must first be configured to use VSS.

The following steps describe how to configure a remote server SQL database volume and then backup the volume:

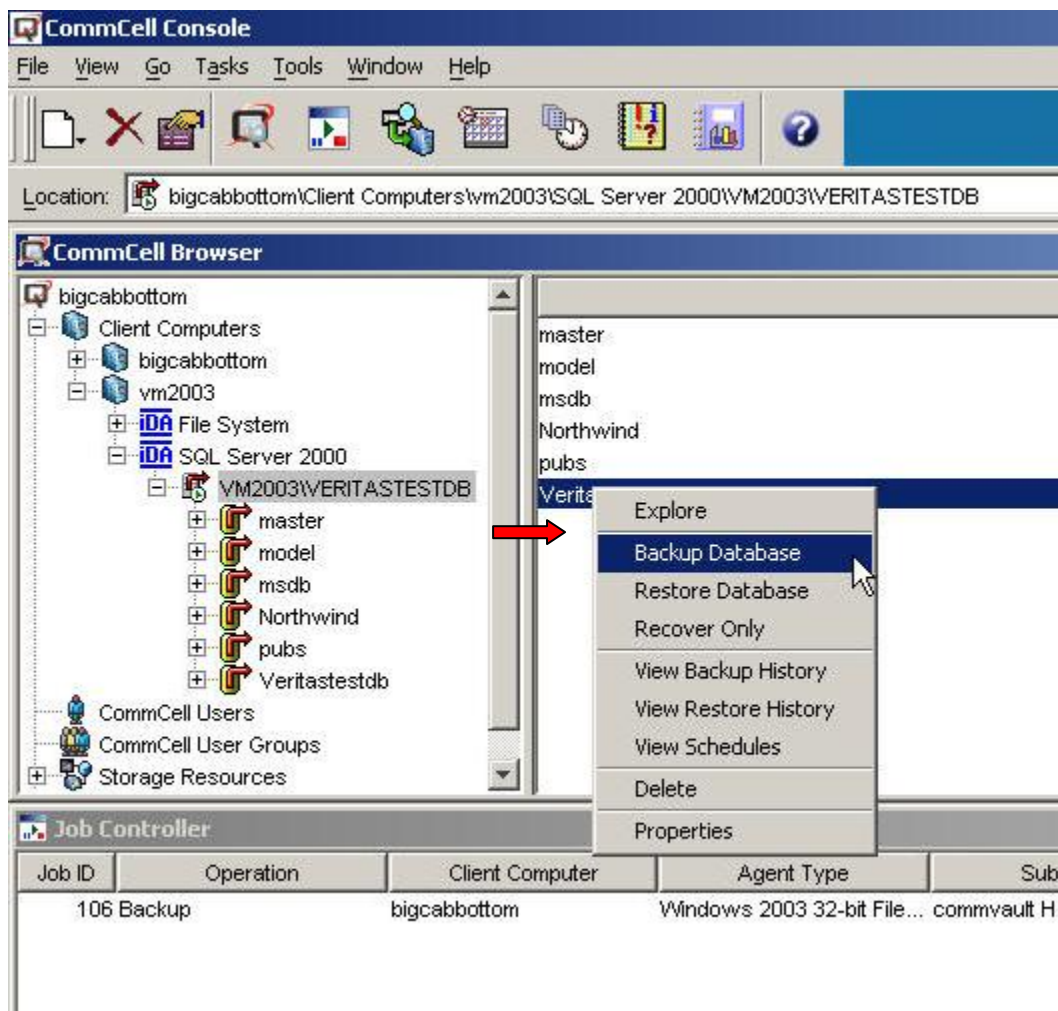
1. In the CommCell browser, expand **Client Computers** and then click the remote server name.
2. Under the server name, right-click an SQL Server 2000 database and select **Properties**.
3. In the Properties dialog box that appears, click the **General** tab and check the box **Use VSS**. Set the rest of the parameters as desired. All databases under the selected SQL instance now support VSS.

Remote SQL Database Properties



- To backup an SQL database, right-click the desired database from the Backupset Name panel and select **Backup Database**.

Database Backup



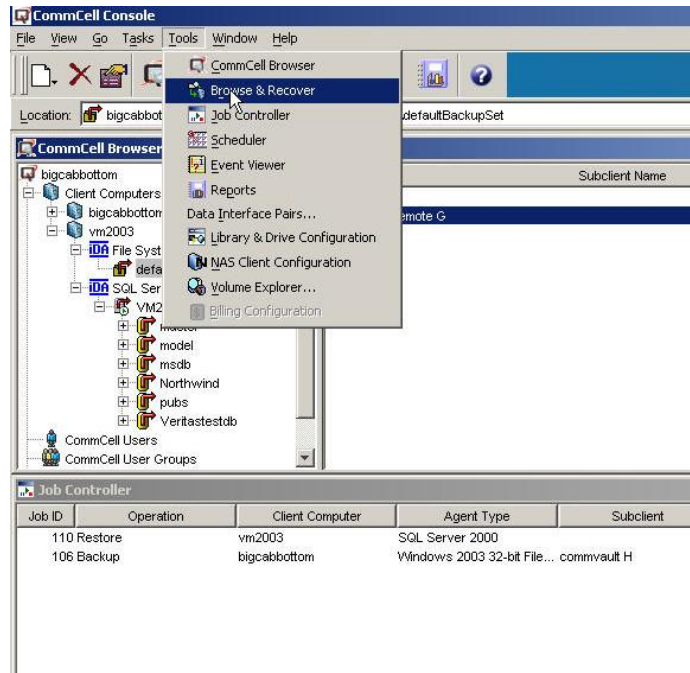
- Examine the Job Controller and the Event Viewer panels to check the progress of the backup.

Restoring an NTFS Volume

To restore an NTFS volume, follow these steps:

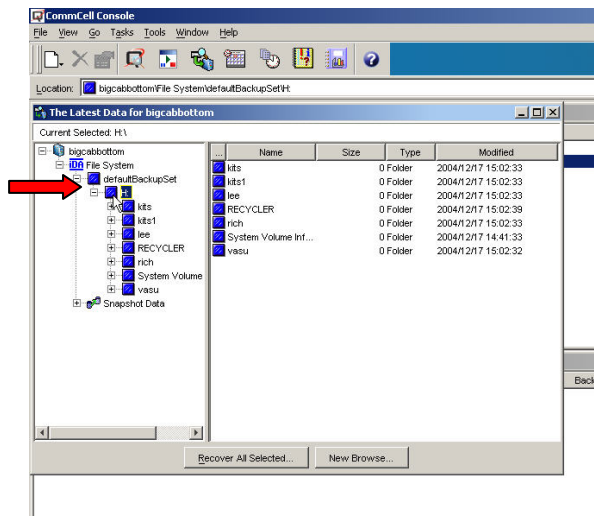
1. Pull down the **Tools** menu and select **Browse and Recover**.

Recovering NTFS Volume Data



2. In the first dialog box that appears, select **Browse the Latest Data** and click **OK**.
3. In the next dialog box that appears, select the box next to the drive letter and then select the specific folders or files within a folder that you want to restore.

Selecting Files to Restore



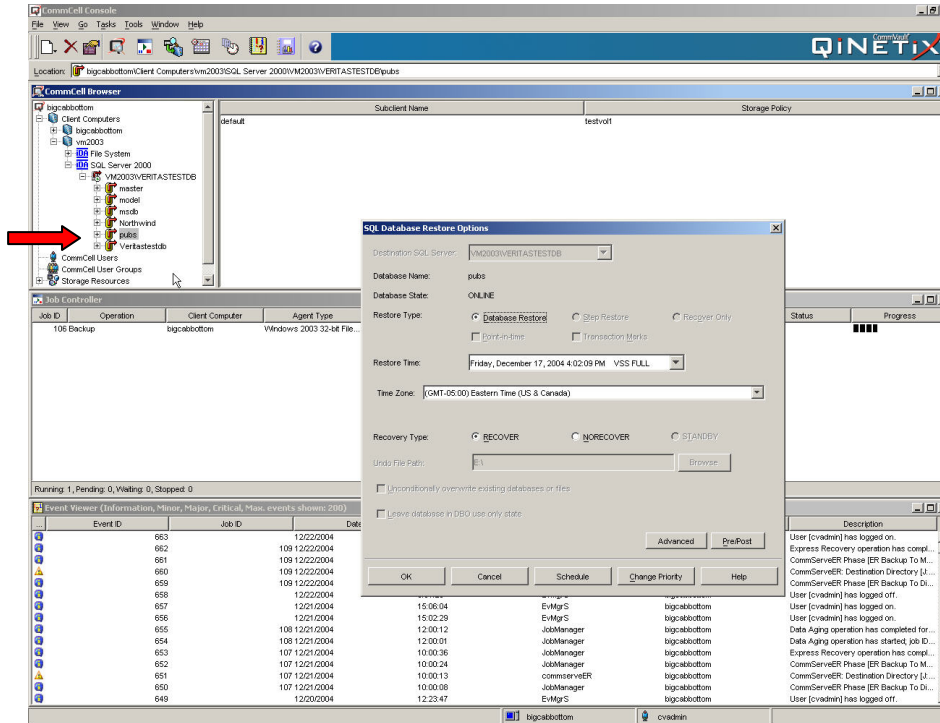
4. Examine the Job Controller and Event Viewer panels to check the restore operation progress.

Restoring an SQL Database

To restore an SQL database, follow these steps:

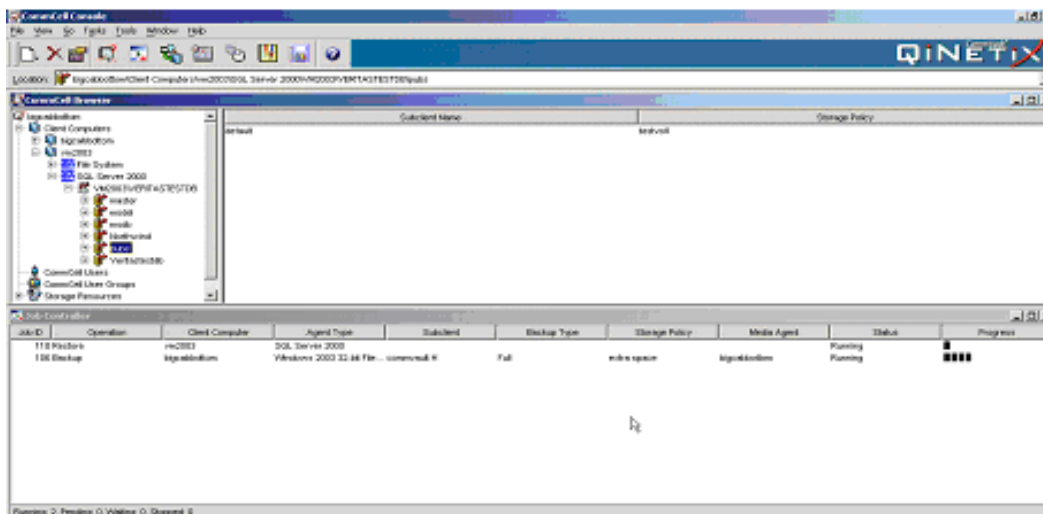
1. Within the CommCell Browser, right-click the database you want to restore and select the type of restore you want to perform.
2. In the SQL Database Restore Options dialog box, define parameters as needed and click **OK**.

Recovering SQL Database Data



3. Examine the Job Controller and Event Viewer panels to check the progress of the restore job.

Job Controller and Event Viewer Panels



More Information and Customer Support

Visit the EqualLogic Customer Support website, where you can download the latest documentation and firmware. You can also view FAQs, the Knowledge Base, and Technical Reports and submit a service request.

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EqualLogic PS Series storage array documentation includes the following:

- *Release Notes*. Provides the latest information about PS Series storage arrays and groups.
- *QuickStart*. Describes how to set up the hardware and start using a PS Series storage array.
- *Group Administration*. Describes how to use the Group Manager GUI to manage a PS Series group. This manual provides comprehensive information about product concepts and procedures.
- *CLI Reference*. Describes how to use the Group Manager command line interface to manage a group and individual arrays.
- *Hardware Maintenance*. Provides information on maintaining the PS Series storage array hardware.

To access the Customer Support website, from the EqualLogic website (www.equallogic.com), click `SUPPORT` and log in to a support account. If you do not have an account, create one by clicking the link under the login prompt.

To contact customer support, send e-mail to supportnp@equallogic.com. If the issue is urgent, call 1-877-887-7337 to speak with a member of the customer support team.