WINCHESTER*SYSTEMS*®
Storage Without Complexity

Microsoft VSS-Consistent Snapshots
for Exchange Servers

Using FlashDisk VX-3400 Series Disk Arrays
and FlashDisk Global Manager

## Snapshot Technology Streamlines Backup Operations

Downtime and loss of data are two of the most intimidating threats to business operation. Besides unpredicted profit loss and restoring efforts, they may even lead to legal issues. To achieve business continuity and data protection, how to do efficient backup and recovery is both a necessary concern and an unavoidable challenge. Before the invention of snapshot technology, traditional backup and recovery operations (full backup/full restore) suffer from some common annoyances, such as the difficulty of backing up running applications, prolonged backup time, lengthy recovery procedures, poor application server performance during backups, and rapidly consumed capacity. Snapshot technology efficiently addresses these problems by enabling the creation of point-in-time copies. These copies keep only data differentials, so they can be created in a few seconds, exert almost no influence on the application server performance, and occupy little disk space. When a snapshot image is taken, host I/O is temporarily held; therefore, these copies are also quite reliable. The impact to the live application is reduced to the few-second suspension of I/O. When a full backup is necessary, the backup server will take over the task of copying the snapshot data to backup media, thus allowing application servers to concentrate on application operations.

Microsoft VSS Solves Compatibility Issues

As illustrated above, snapshots prove to be a great help of streamlining backup operations; however, to make use of its capability requires integrating it with the backup software, the applications, and the storage systems to be backed up. Compatibility issues between vendors are the main problem interfering with the integration. In the past, IT managers solved this problem by using scripts to enable the coordination of the three elements. Finding that scripts are difficult to create and maintain for long-term proper operation, Microsoft built a technology in Windows Server 2003 named Volume Shadow Copy Service (VSS). VSS serves as the architecture on which VSS-compliant backup software, applications and storage hardware can work with one another for efficient backup and restore operations. To make the convenient service available to users, Winchester Systems has made the snapshot functionality of its proprietary storage management software, FlashDisk Global Manager, VSS-compliant. Below we will further illustrate how FlashDisk Global Manager snapshots can be used to do the backup and restore of FlashDisk VX Series arrays by working with Symantec Backup Exec12 through the VSS framework.

VSS Basics

VSS is often represented as a triangle-shaped framework whose three vertices are Requester (backup software), Writer (database application) and Provider (storage hardware).
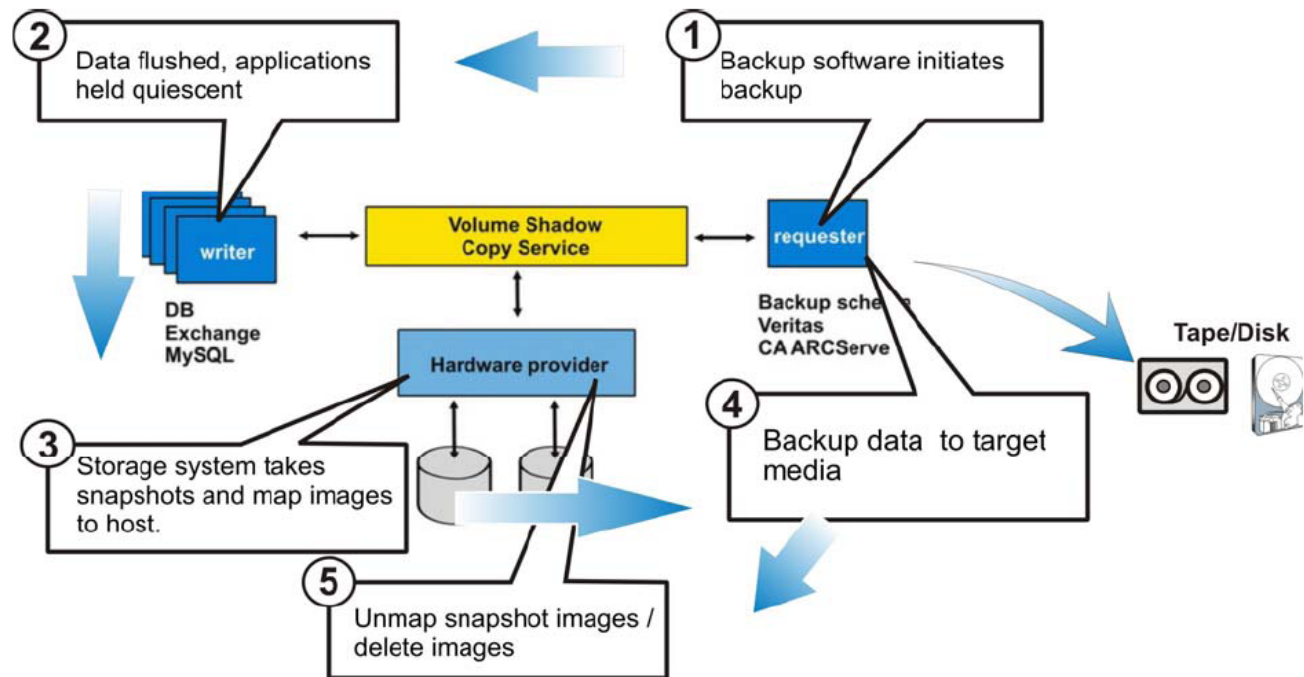
Backup procedure

1. The requester commands the start of the backup job.
2. The writer flushes data and guarantees the consistency of the dataset to be backed-up.
3. The hardware provider creates a snapshot of the data and maps it to the host where the requester is installed.
4. The requester backs up the snapshot image to the target device.
5. The hardware provider unmaps the snapshot image and deletes the snapshot image.

Application Example of Microsoft Exchange Server Backup

Server and Software Requirements

1. Microsoft Windows Server 2003 x64 (service pack 2)
2. Microsoft Exchange server 2007 (service pack 1)
3. Symantec Backup Exec v11d.7170 or Backup Exec v12.

FlashDisk VX Series Array Configuration

Choose a previously created, snapshot enabled partition of desired capacity to use as the Exchange source volume and map it to the host as a LUN.

Scan all the available disks under Windows 2003 Device Manager. A new "WINSYS SCSI Disk Device" should be displayed in the component list window.
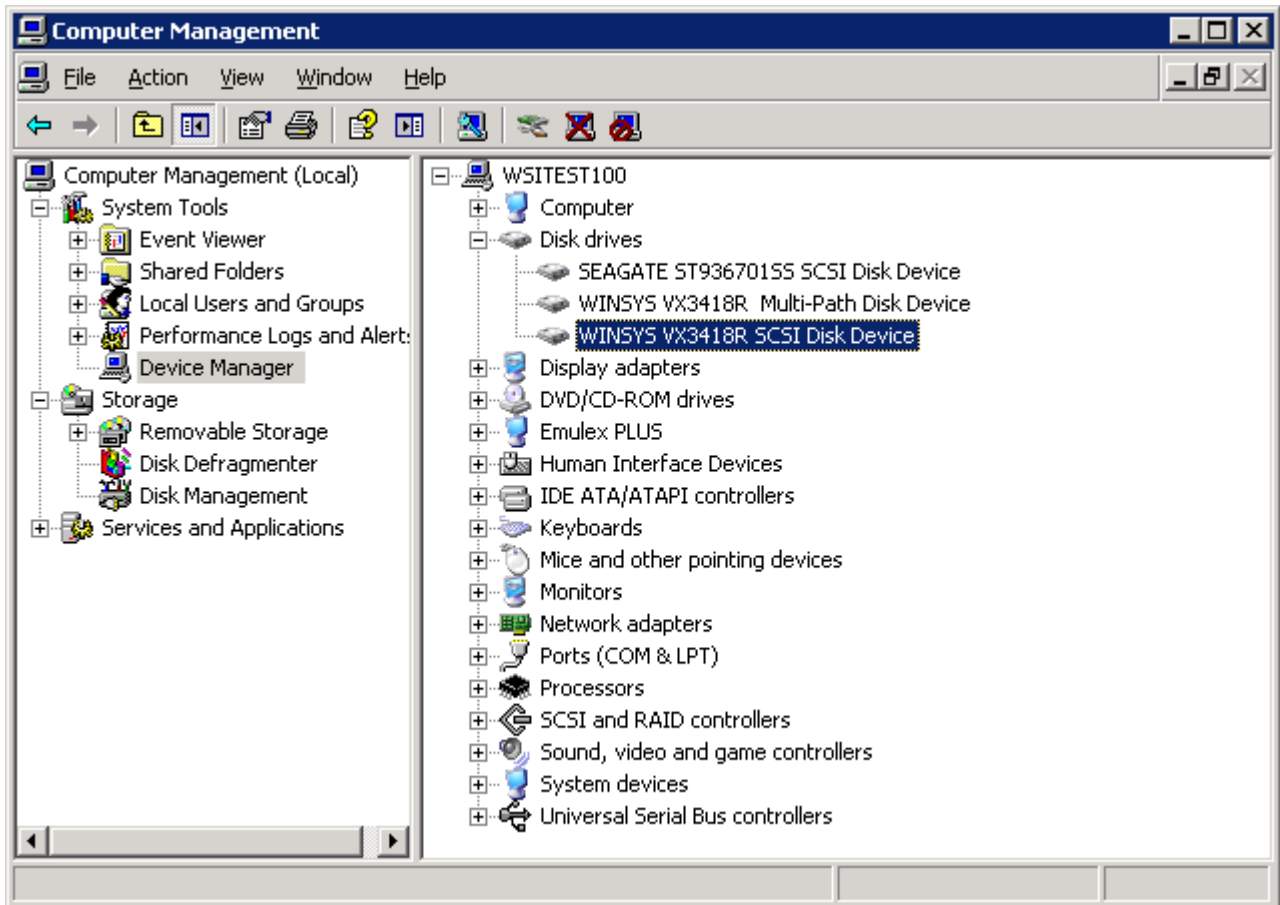
Initialize this new WINSYS SCSI device and assign a drive letter (For example, 'G') to the disk in the Disk Management window. Note that the disk should be formatted using the Basic-MBR mode.

Install the Exchange database in the initialized disk.

Indicate the Backup Device

 Launch Backup Exec.

Create a backup device to which the backup data can be saved.
Click Devices tab. Expand the Devices tree in the lower pane and right-click on Backup-to-Disk Folders. Select New Backup-to-Disk Folder.

In the pop-up window, indicate the path of the backup device, and then click OK. Now the backup device is ready.

Exchange Server Backup Procedure

Open a New Backup Job in Backup Exec.

From the left-side tree, click Selections under Source, and then select the source you want to backup in the right-side pane by ticking the checkbox. Note: Select the disk folder where the mail box resides (e.g., the "EXCH2007" folder in disk G), and also the "EXCH" database in Microsoft Information Storage.
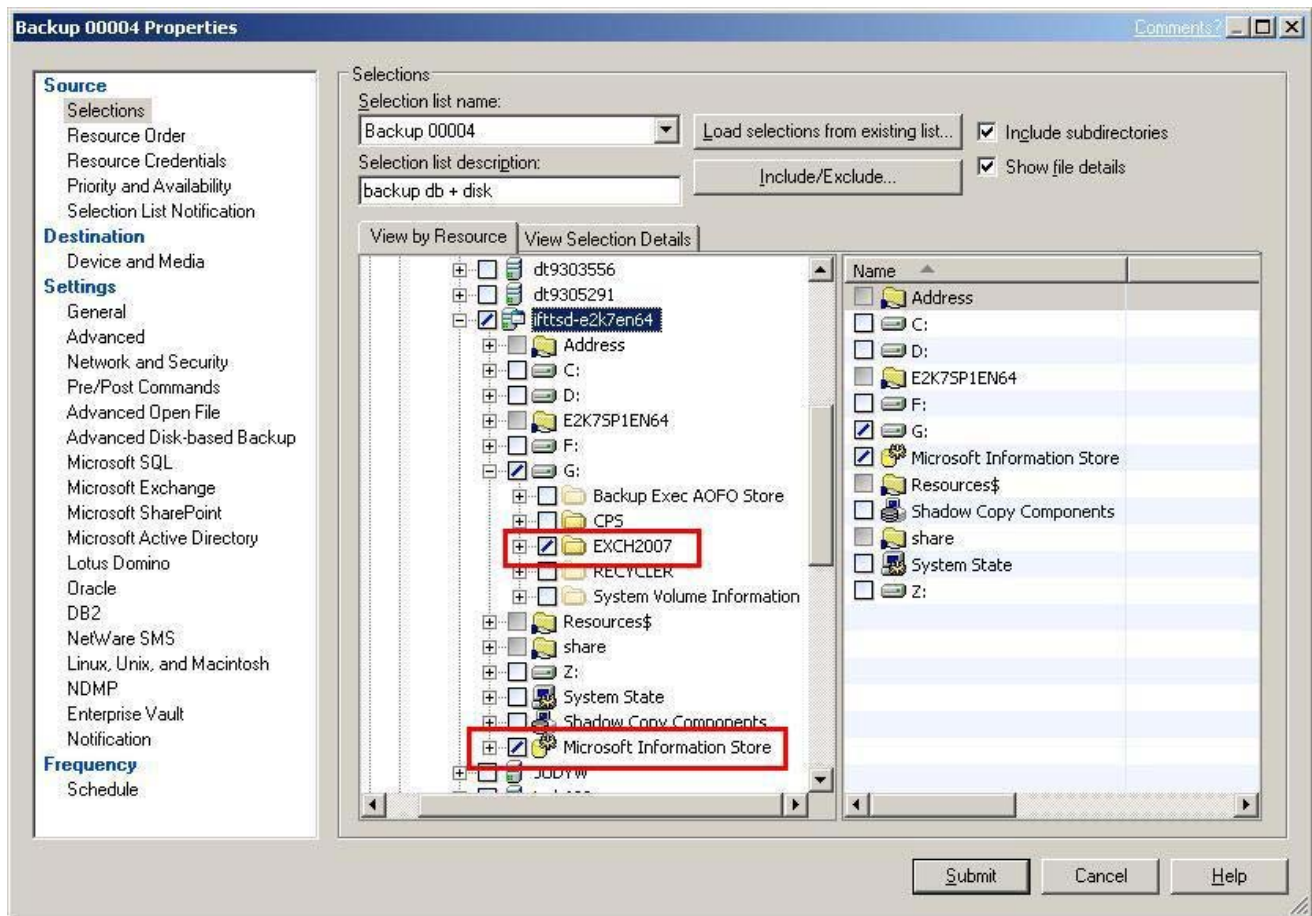
Note: Please make sure the backup server has the right to access the Exchange server.
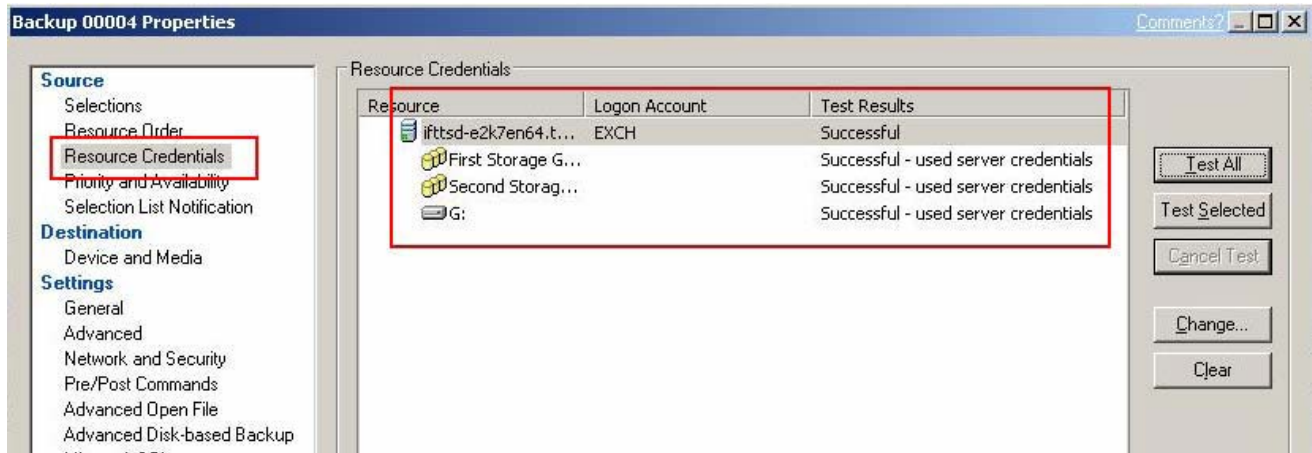
To do this, add an account from Resource Credentials under Source.
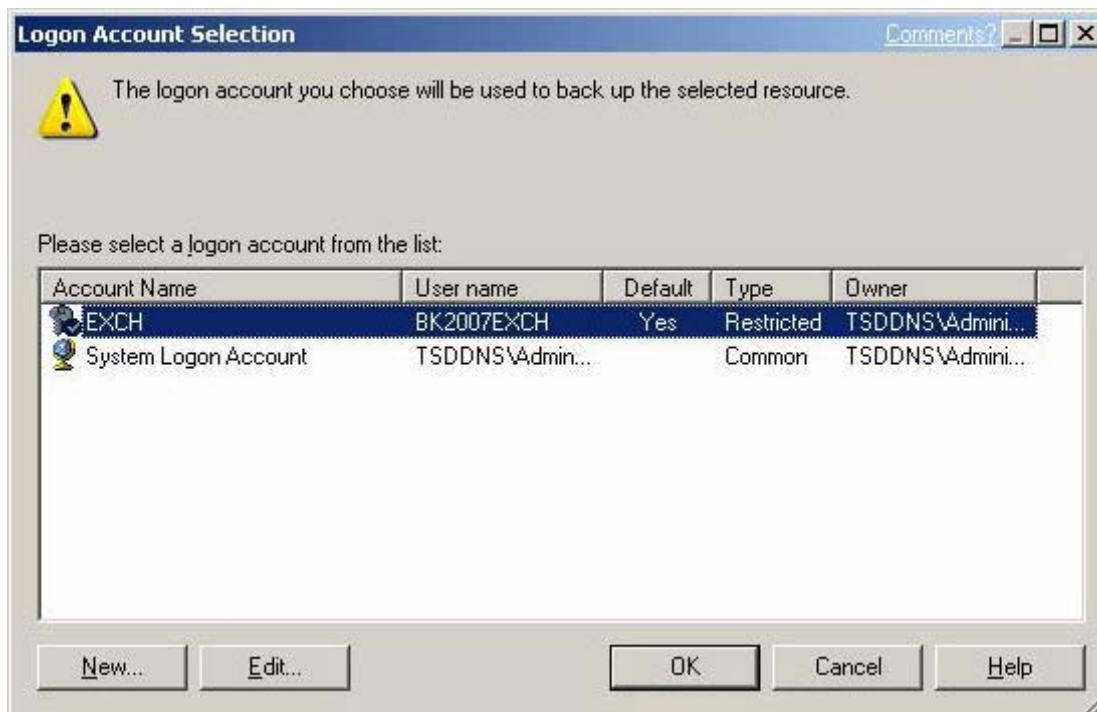
Select a backup device.

Go to Device and Media under Destination; select a backup device as the destination from the pull-down list in the right-side pane. The backup data will be stored in the chosen device. (See the previous section for how to create a backup device.)
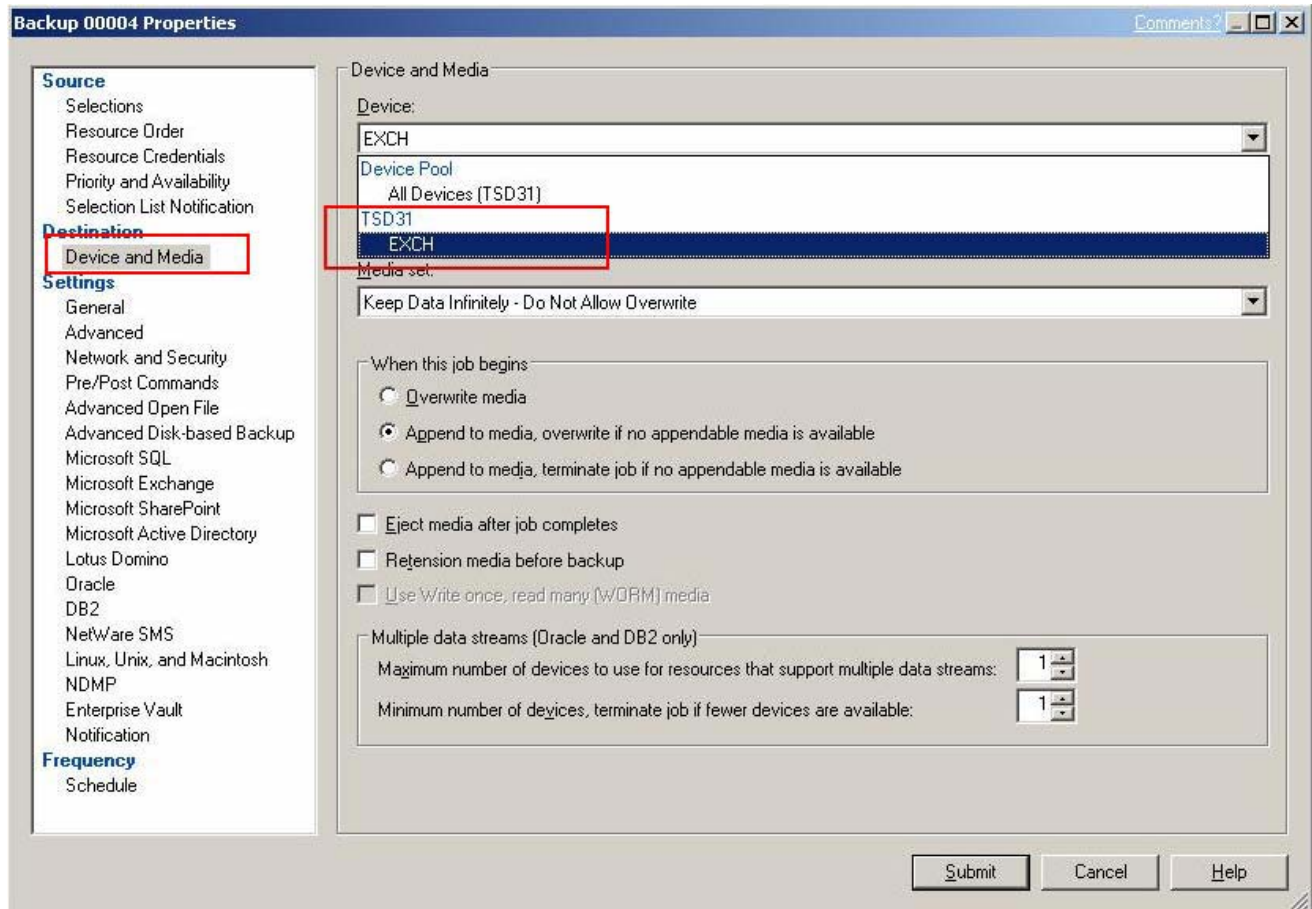
Enable VSS Snapshot Support.

Go to Advanced Open File under Settings. Click Microsoft Volume Shadow Copy and make sure to select Automatic-Allow VSS to select the snapshot provider from the Snapshot provider pull-down list. When finished, click Run Now.
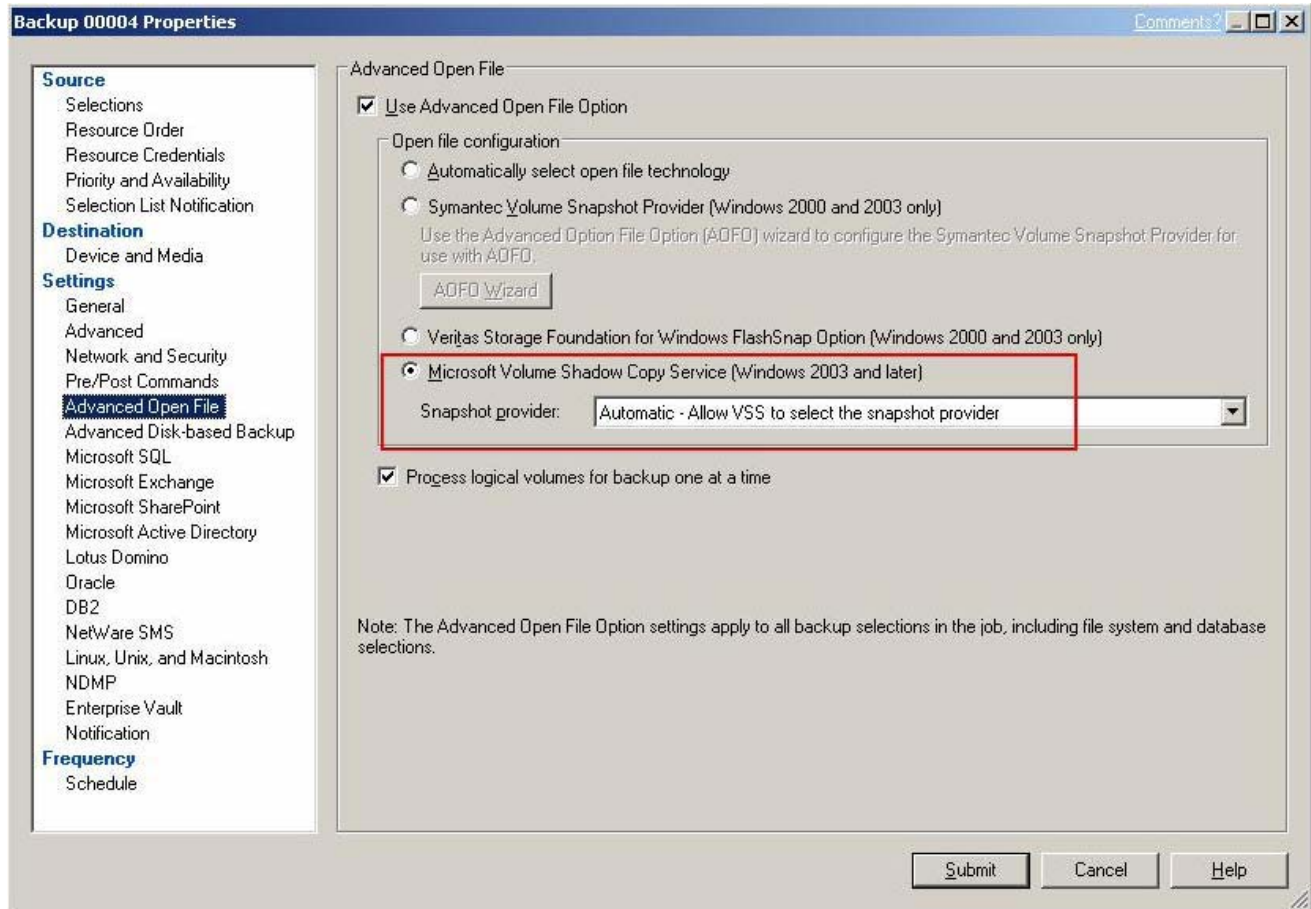
Go to Microsoft Exchange under Settings, and select the check box Use Backup Exec Granular Recovery Technology (GRT) to enable the restore of individual mailboxes, mail messages, and public folders from Information Store backups.
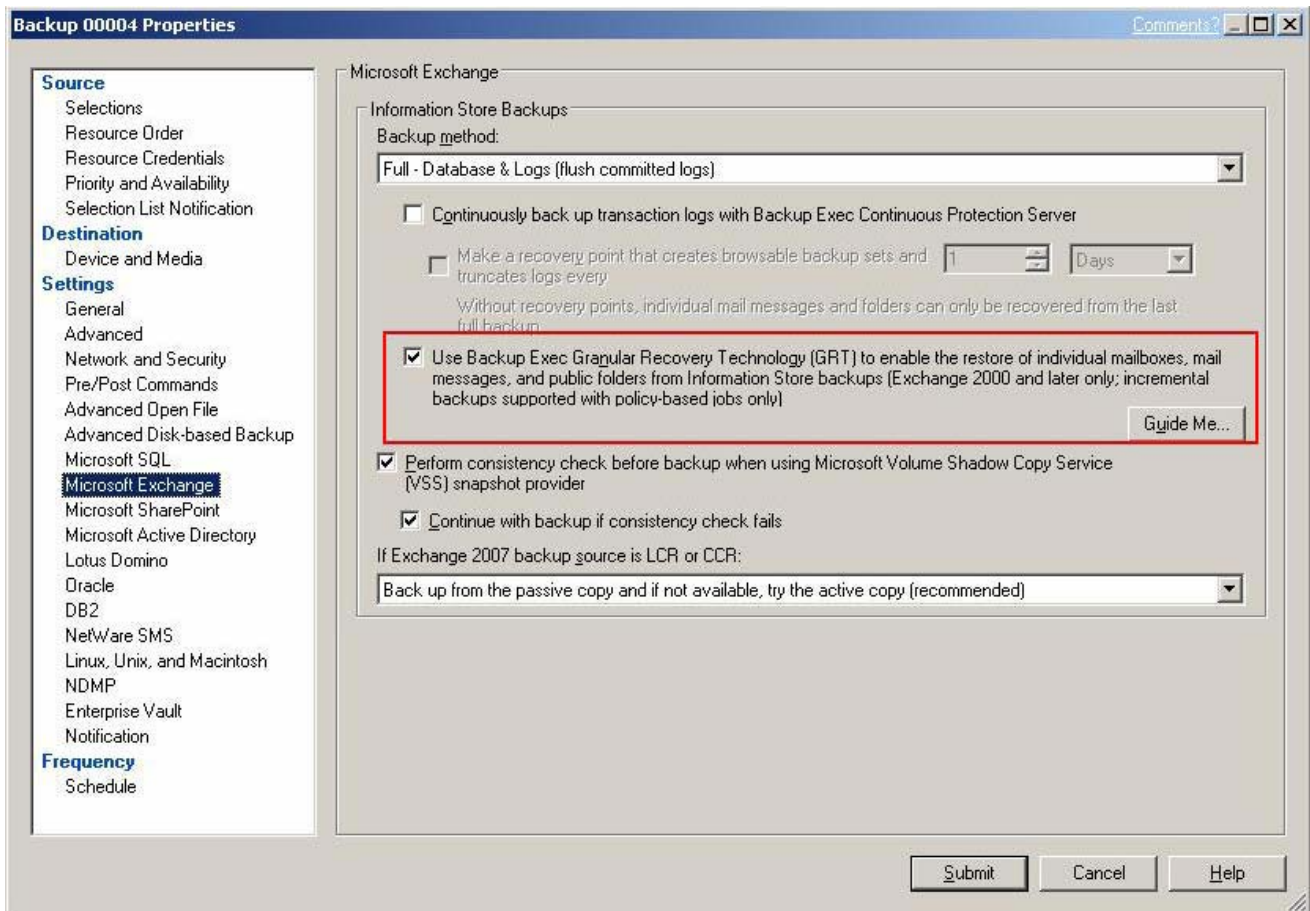
Verify the settings in the job summary window and click OK. A backup job should then initiate immediately.

Check Whether the Snapshot Is Taking Place

After running the backup job using the Backup Exec software, check for the following events in the FlashDisk Global Manager:

A snapshot image should have been taken.
At first, a notification event (Snapshot NOTICE – SI ID:xxxxxx Creation Complete in SS ID:xxxx) will prompt you, indicating that a *Snapshot Image (SI)* has been taken. Meanwhile, a snapshot image will be activated with another notice event (Snapshot NOTICE –SI ID:xxxx).

The snapshot image will then be mapped to an available host LUN, and data will be copied to the device location you previously set on the backup server running Backup Exec.

After the backup process is completed, the snapshot image will be deleted automatically. The backup job is completed

Restore Exchange Data from Backup Target

Follow the procedures below to restore an accidentally crashed mailbox or the entire mailbox.

Open a New Restore Job in Backup Exec.

Enter Source -> Selections and select a restore resource. In this case, a crashed mailbox needs to be recovered. You can select individual mailbox restore or the entire mail box for restoring a database. Below is an example of restoring an individual mailbox named "new."
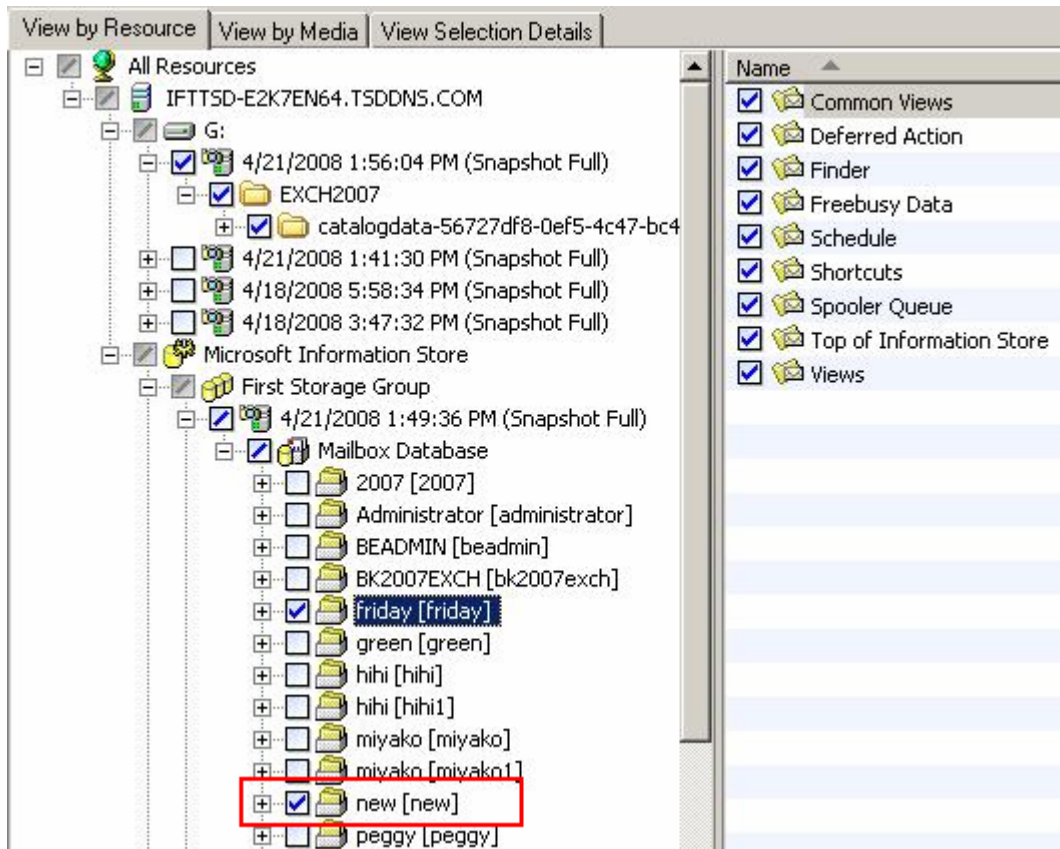
In Device and Media under Source, select the backup data of the source you want to restore.
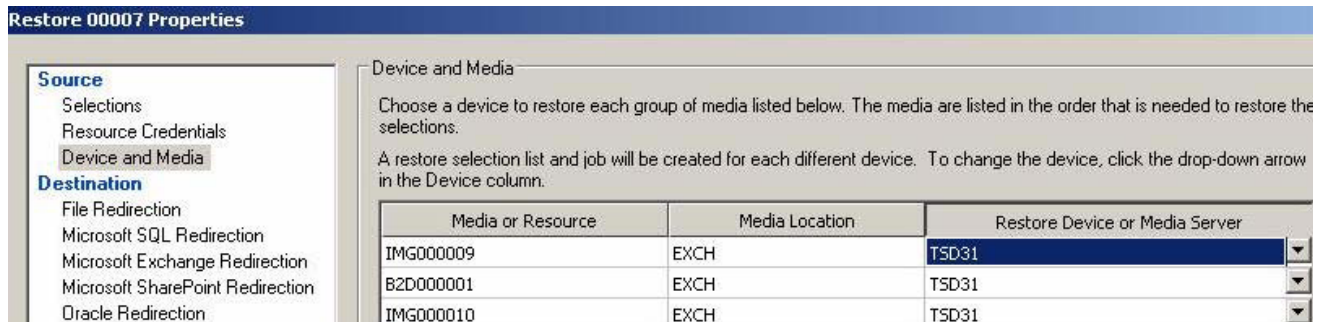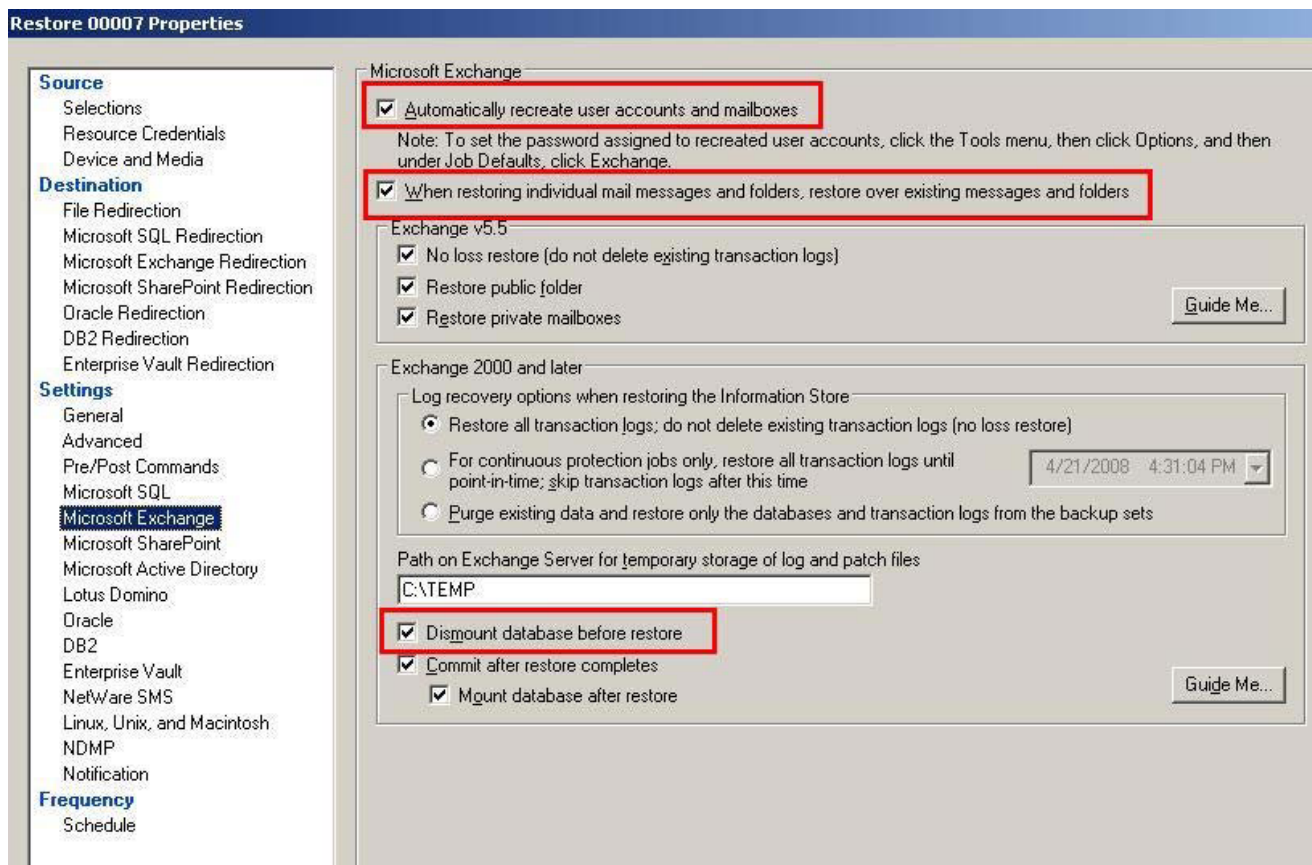

Make sure the following items are selected in Microsoft Exchange under Setting.

-Automatically recreate user accounts and mailboxes.

-When restoring individual mail messages and folders, restore over existing messages and folders.

-Dismount database before restore.

Verify the settings in the job summary and click OK. The mailbox will then be successfully restored. When logging in Exchange server after a successful restore, users will receive a mailbox restore message as shown below.