

WHITE PAPER

VSS BACKUP SOLUTION FOR EXCHANGE SERVER 2007

VSS BACKUP SOLUTION FOR EXCHANGE SERVER 2007 AND SYMANTEC BACKUP EXEC 12.5
USING ETERNUS VSS HARDWARE PROVIDER



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1 Overview

This document describes a messaging environment that combines the benefits of the popular Microsoft® Exchange Server 2007 and Symantec® Backup Exec 12.5 software when paired with the mission-critical advantages of a Fujitsu ETERNUS® disk storage system. This document also shows how to best configure the environment.

Microsoft Exchange Server is the most widely used messaging software in the world. Fujitsu ETERNUS storage systems are designed to meet the requirements of a mission-critical-environment. The combination of Exchange and Fujitsu ETERNUS storage systems brings the reality of extreme high availability to this messaging environment.

As a backup and recovery solution, Exchange supports Volume Shadow Copy Service (VSS) provided by Microsoft. With VSS-supported backup software (a VSS requester) and storage systems, backups can be done quickly without system interruption. Fujitsu provides a VSS Hardware Provider (VSSHP) in order to support this VSS backup solution. Setting up ETERNUS VSSHP makes it possible to use Advanced Copy Functions, (built-in ETERNUS utilities for fast disk replication) from standard backup software.

We have documented a highly efficient backup solution for an Exchange Server messaging environment with Symantec Backup Exec 12.5 as backup software and VSS backup with ETERNUS Advanced Copy Functions. This document also provides a step-by-step procedure for flexible recovery of an Exchange mailbox from a VSS backup.

As examples, this document describes the evaluation environment in the second chapter, the key technologies in the third chapter, and the allocation of mailbox database and logs in the fourth chapter. The software installation procedures are covered in the fifth and sixth chapters. The seventh chapter describes how to perform Exchange VSS backups and restores. The eighth chapter explains the summary of these best practices.

2 Evaluation System Configuration

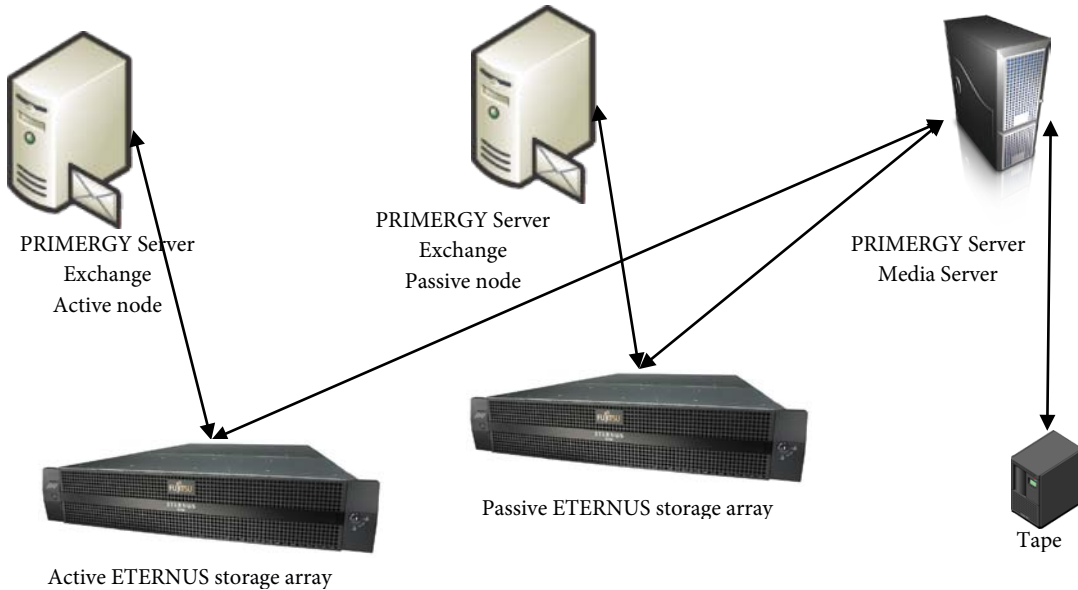


Figure 1 - System Configuration

The evaluation environment was set up as follows:

- The Active Directory Domain Controller is running Windows Server® 2008 x64
- The Exchange and Backup Exec servers are running Windows Server 2008 x64
- Using the LUN mapping functions on the ETERNUS disk storage systems, dedicated LUNs are allocated to each node of the Exchange CCR cluster. Each node has storage assigned from a unique ETERNUS storage array
- Using the LUN mapping functions on the ETERNUS disk storage system, dedicated Snap Volumes are allocated for the Backup Exec server from both storage arrays. Additional LUNs are allocated on the Passive storage array for the Backup Exec's Backup-to-disk storage.
- The Backup Exec job is using the ETERNUS Advanced Copy Functions via VSSHP.
- Backup Exec obtains backup data from the target snap volumes, catalogs and then stores the data to Backup-to-disk folders. Optionally the backup can then be spooled to tape through an additional backup policy.

The servers are defined as follows:

- Exchange Servers: The servers in which the Microsoft Exchange CCR cluster is installed. There are two servers used in a CCR cluster. The Backup Exec Remote Agent is also installed on both of these servers.
- Media Server: The server where Backup Exec Media Server is installed.

Download the following applications on an Internet-connected environment before you start to configure:

- ETERNUS VSS Hardware Provider 1.3.0
 - <http://www.fujitsu.com/global/support/computing/storage/system/vsshp.html>
- Windows® SDK for Windows Server 2008 and NET Framework 3.5

- <http://www.microsoft.com/downloads/details.aspx?familyid=E6E1C3DF-A74F-4207-8586-711EBE331CDC&displaylang=en>
- Microsoft Exchange Server MAPI Client and Collaboration Data Object 1.2.1
 - <http://www.microsoft.com/downloads/details.aspx?FamilyID=E17E7F31-079A-43A9-BFF2-0A110307611E&displaylang=en>

It is assumed that the Active Directory Domain Services and Exchange Server (HUB/CAS/MB) installations have already been completed in this evaluation environment.

2.1 Hardware Configuration

Server Configuration

Exchange Servers and Backup Server

- Model: Fujitsu PRIMERGY® servers
- Type 2 x Intel® Xeon® CPU , 4096 MB RAM
- OS: Microsoft Windows Server 2008 Enterprise Edition (x64)

HBA Configuration

- Dual Port 4Gb HBA x 3 (Exchange servers and backup server)
- 2 FC 4Gbps ports

Storage System Configuration used for prototype purposes. The actual configuration will be dependent on sizing and performance requirements of the Exchange environment. In this prototype we combined the storage into a single array due to lab availability.

- Model: Fujitsu ETERNUS8000 Model 900
- Firmware: V11L71-0000
- Type: 16GB Cache, 4 x FC port
- RAID configuration: RAID1+0(4+4, 146GB/15krpm), RAID5(4+1, 300GB/15krpm), RAID6(4+2, 1TB/7.2krpm)

2.2 Software Configuration

Exchange Servers

- Backup Exec agent
- Microsoft Exchange Server MAPI Client and Collaboration Data Object 1.2.1
- VSSHP provider 1.3.0

Backup Server

- Backup Exec for Windows Server
- VSSHP provider 1.3.0

3 Key Technologies

This section describes the general outline of the key technologies – ETERNUS Advanced Copy Functions and Volume Shadow Copy Service.

3.1 Advanced Copy Function

Fujitsu ETERNUS disk storage systems provide a point-in-time copy feature that creates a copy of the source volume data at a certain point in time within the storage system without stopping the operation of a database or other applications. This is called the Advanced Copy Function.

ETERNUS provides two types of replication features: One Point Copy (OPC) and Equivalent Copy (EC). With OPC, a copy volume can be instantly created on demand. With EC, the source and target volumes are previously synchronized and split when the replicated volume is required.

The One Point Copy offers three different flavors: OPC, QuickOPC, and SnapOPC.

- OPC snapshot replication copies all the data at a certain point in time (logical copy) to the copy destination disk area. After the OPC snapshot completes, the destination volume is a complete and independent replica of the source volume at the point in time that the copy was started.
- QuickOPC initial replication copies all the data at a certain point in time (logical copy) to the copy destination disk area. Subsequent replications copy only the data that has been updated since the previous replication. Like the OPC snapshot, the QuickOPC snapshot is a complete and independent replica of the source volume at the point in time of the copy. However, the QuickOPC continues to track changes between the source and destination volumes so that a subsequent QuickOPC snapshot will only physically copy the differences that have occurred since the last QuickOPC.
- SnapOPC is a function that enables only data that has been updated in the copy source disk area after a certain point in time (a logical copy) to be copied to the destination disk area. The destination volume for a SnapOPC is a virtual volume created on the ETERNUS storage (called a Snap Volume). This destination volume has a virtual size equal to the size of the source volume; however the physical size can be set to a fraction of this size as it is only required to contain changes to the source volume during the life of the SnapOPC.

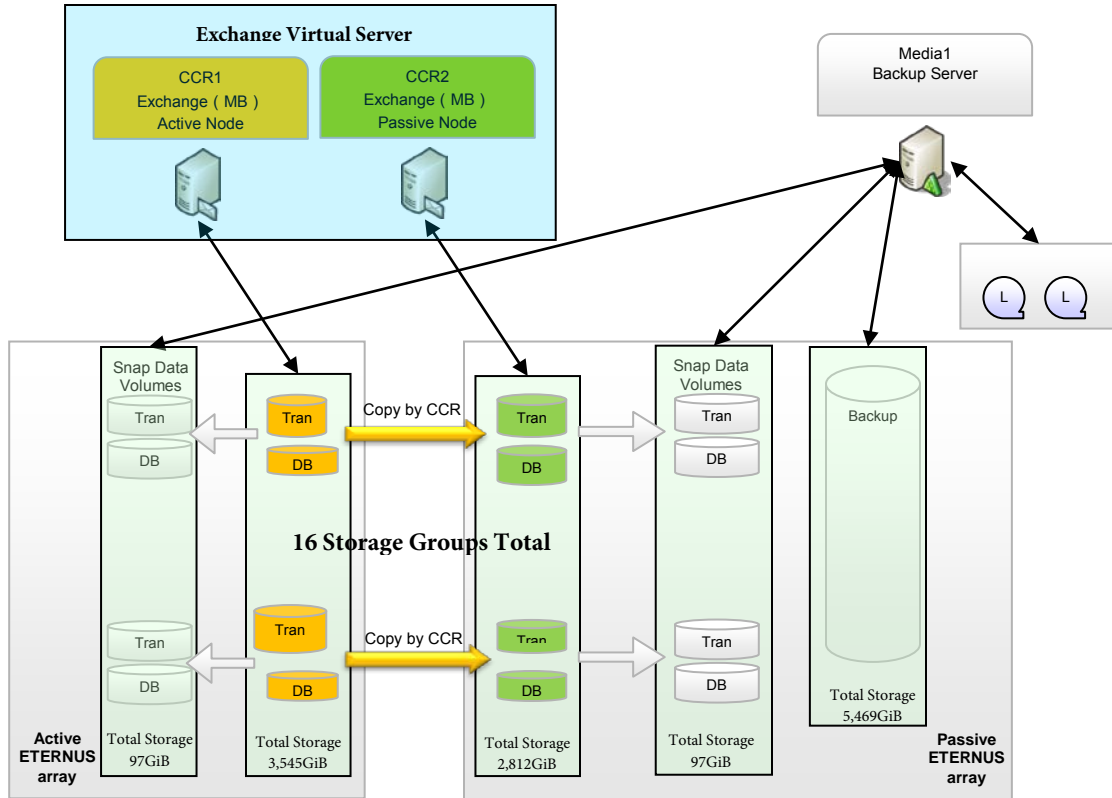


Figure 2 - Sample Configuration

For our purposes, we will employ the SnapOPC feature, which allows a Copy on Write (COW) snapshot of the original volume.

3.2 Volume Shadow Copy Service

Volume Shadow Copy Service (VSS) is a function that creates a snapshot copy of a volume on a Microsoft Windows Server. By using the Advanced Copy Function of the ETERNUS disk storage systems with VSS-compatible business applications and backup software, it is possible to create snapshot copies with zero server loads.

The ETERNUS VSS Hardware Provider (VSSHP) is software that is compatible with the Microsoft Volume Shadow Copy Service interface, offering the services of the ETERNUS disk storage systems. VSSHP makes it possible to back up using the ETERNUS disk storage system's Advanced Copy Function with backup software that is compatible with Windows VSS. VSSHP supports both Windows Server 2003 and 2008.

4 Allocation of Mailbox Database and Logs

The Mailbox database and logs must be located on volumes of the ETERNUS disk storage systems. This makes it possible to use the high reliability and performance of the ETERNUS disk storage systems in the Exchange messaging environment. This section provides the steps to create a new storage group on the ETERNUS disks, to create a new mailbox database in the new storage group, and to move existing mailbox recipients to the new mailbox database.

Symantec Backup Exec 12.5 currently has a limitation such that it will backup dependencies for mount points. If you create a mount point for the ETERNUS LUNs on a non-ETERNUS disk then Backup Exec 12.5 will fail when it tries to issue a VSS snapshot of the non-ETERNUS LUN. For this reason it is a best practice to always create a small ETERNUS LUN (100MB is sufficient) and mount all ETERNUS LUNs under this disk. If you are using drive letters for the ETERNUS LUNs then this is not an issue.

4.1 Creating a New Storage Group

This section includes the steps to create a new storage group for Exchange 2007.

1. Start the Exchange Management Console on the Exchange server.
2. Select [Server Configuration]->[Mailbox] on the left pane.
3. Click [New Storage Group...] on the right pane.

4. Specify the storage group name on the New Storage Group window. Click [Browse] to specify the path on the volume of the ETERNUS disk storage system. The “Log files path:” should point to the LUN allocated for the logs and the “System files path:” should point to the LUN allocated for the database.

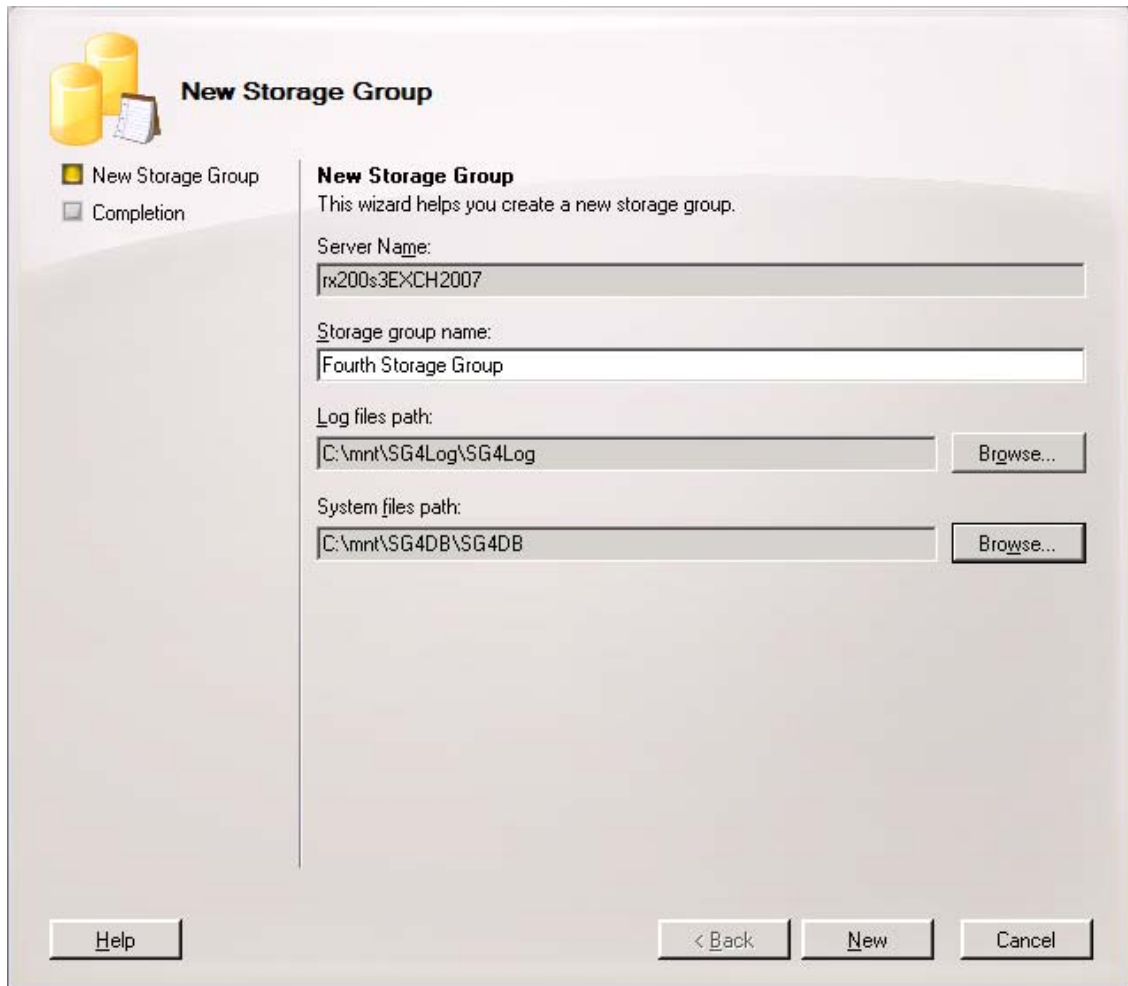


Figure 3 – New Storage Group Window

5. Click [New] to create the new storage group.
6. Read and accept the completion status, and then click [Finish].

4.2 Creating a New Mailbox Database

After the creation of the new storage group, perform the following steps to create a new mailbox database in the new group.

1. Start the Exchange Management Console on the Exchange server.
2. Select [Server Configuration]->[Mailbox] on the left pane.
3. Select the storage group created in the previous section, and click [New Mailbox Database...] on the right pane.

- Specify the Mailbox database name on the New Mailbox Database window. Click [Browse] to specify the path created on ETERNUS disk storage system volume.

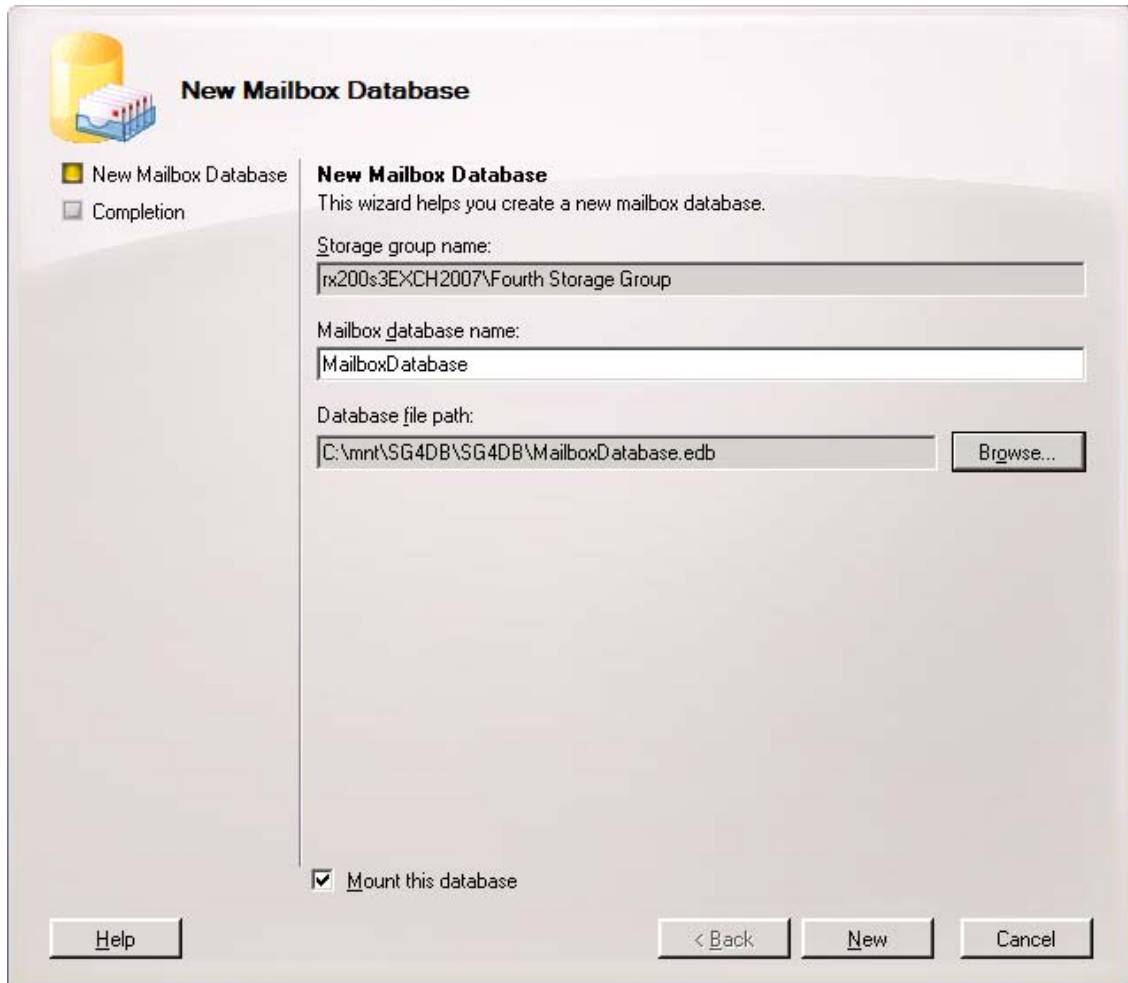


Figure 4 – New Mailbox Database Window

- Click [New] to create the new mailbox database
- Read and accept the completion status, and then click [Finish].

4.3 Moving Mailbox Recipients

After the creation of the new mailbox database, create mailbox recipients to use the new mailbox database. This section provides the steps to move the existing mailbox recipients to the new mailbox database.

1. Start the Exchange Management Console on the Exchange server.
2. Select [Recipient Configuration]->[Mailbox] on the left pane.
3. Select the mailbox recipients to move, and then click [Move Mailbox...].
4. Click [Browse] on Move Mailbox – Introduction window to select the target mailbox database.

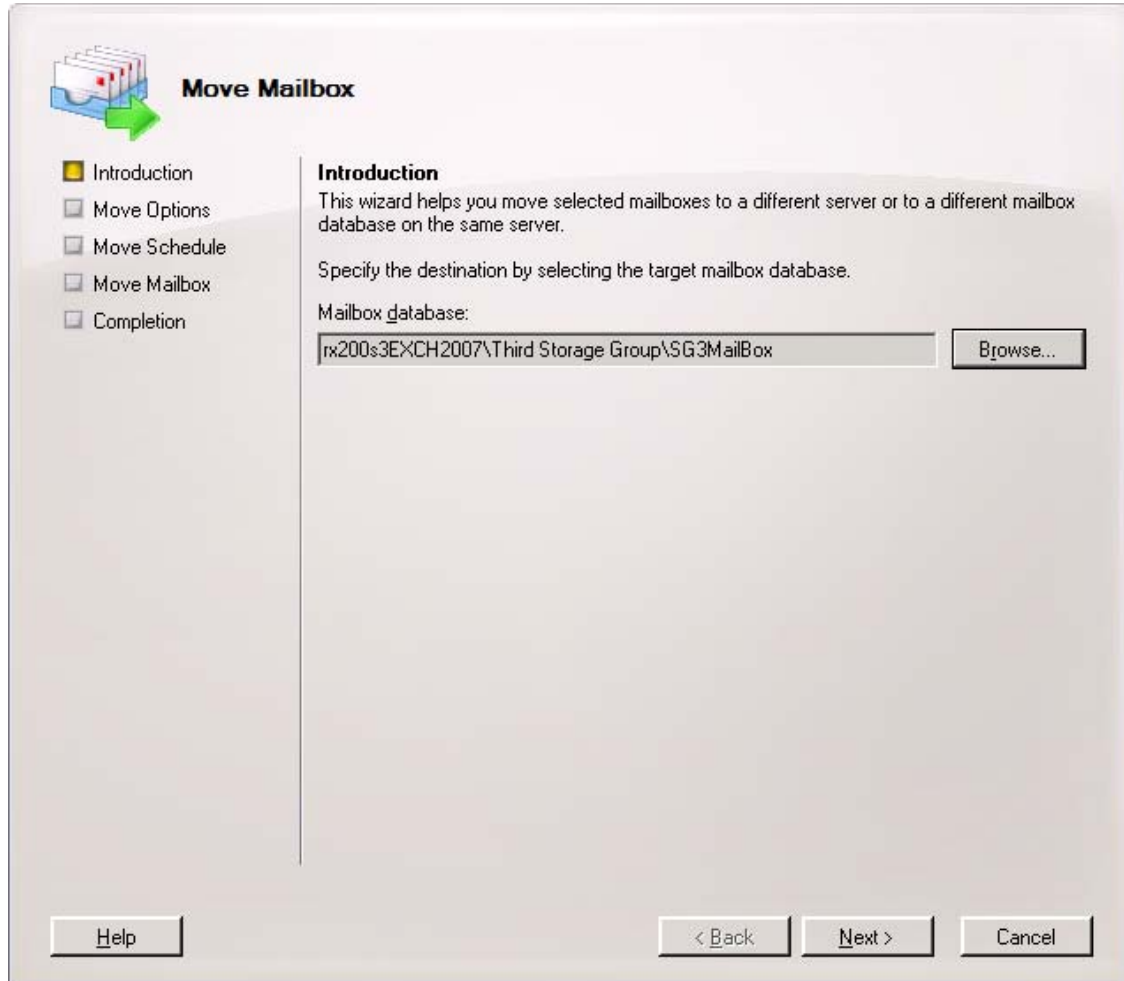


Figure 5 - Move Mailbox Introduction Window

5. Read the Move Mailbox – Move Option windows, and then click [Next].
6. Read the Move Mailbox – Move Schedule windows, and then click [Next].
7. Read the Move Mailbox – Move Mailbox windows, and then click [Move].
8. Read and accept the completion status, and then click [Finish].

9. Verify that a moved mailbox recipient can read existing messages and send a new message by using Outlook® or your preferred messaging client software.

5 Installing ETERNUS VSS Hardware Provider

This section includes the steps to install ETERNUS VSSHP, the post-install processes, and the steps to verify the installation. For more detailed information about the following installation or configuration sections, please see the Software Information ETERNUS VSS Hardware Provider 1.3.0.

The installation and configuration of the ETERNUS VSSHP includes the following tasks:

1. Install the VSSHP package on the Media server.
2. Install the VSSHP package on the Exchange servers.
3. Change the Firewall settings on the Backup server to open the communication port.
4. Restart the Exchange and Backup servers, and then verify the VSSHP installation.
5. Use the vshadow.exe test tools included in the VSS SDK to verify the VSSHP backup environment.

5.1 Installing ETERNUS VSSHP on the Media Server

This section explains how to install the ETERNUS VSSHP on the Media Server

1. Login to the Media Server as an administrator.
2. Double-click the VSSHP package (setup.exe) to start the install wizard. The Welcome window is displayed. Click [Next] to continue.



Figure 6 - Install Shield Wizard Welcome Window

3. Click [Next] to accept the default directory for the installation files.

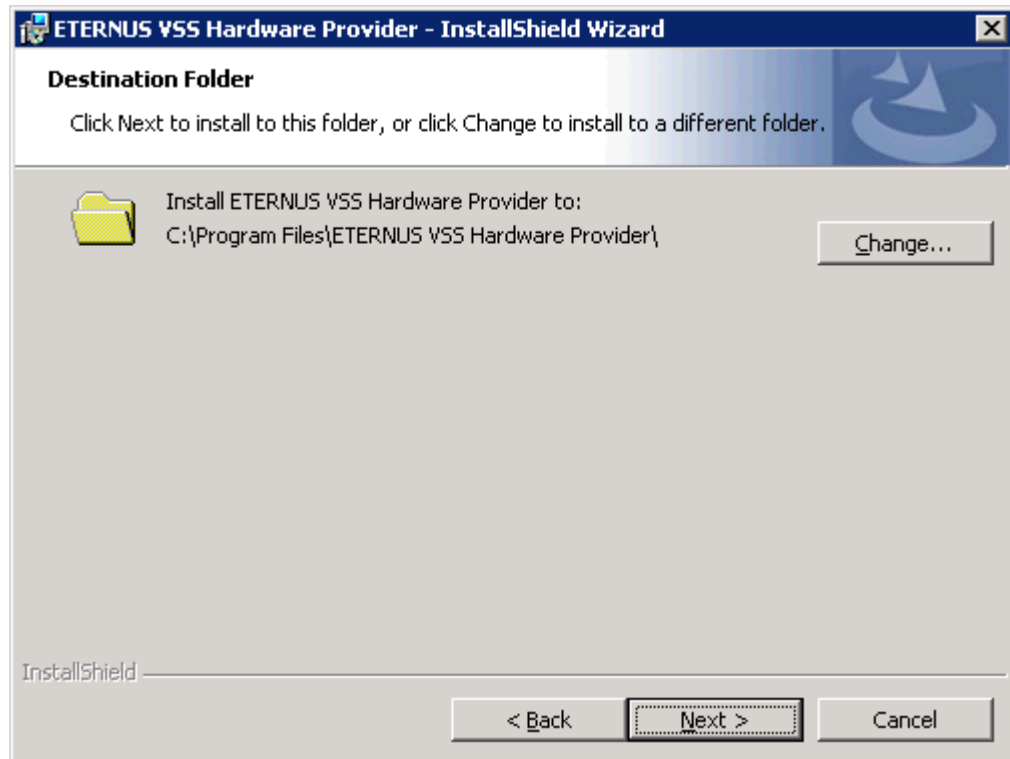


Figure 7 - Destination Folder Window

4. Click [Install] to start the installation.

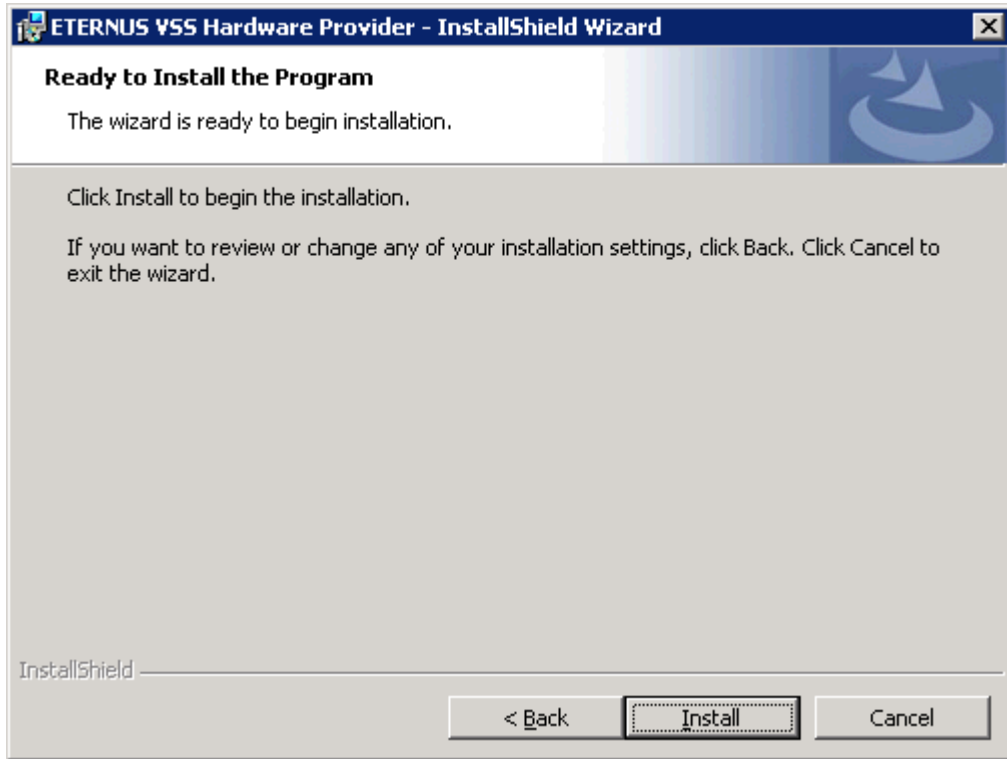


Figure 8 - Ready to Install the Program Window

5. After the installation finishes successfully, the VSSHP registration confirmation window is displayed. Click [OK] to register a provider.

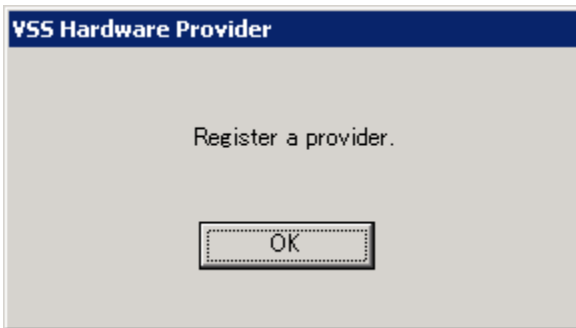


Figure 9 - VSSHP Registration Confirmation Window

6. Click [OK] to confirm the successful registration.

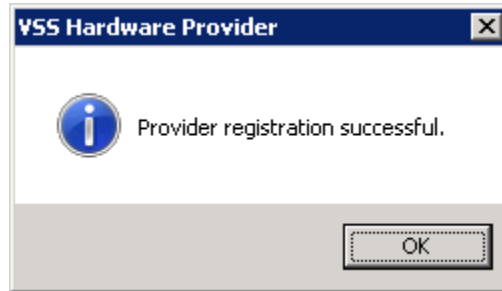


Figure 10 - VSSHP Registration Successful Window

7. Click [Backup Server] to register this server as the Media Server.

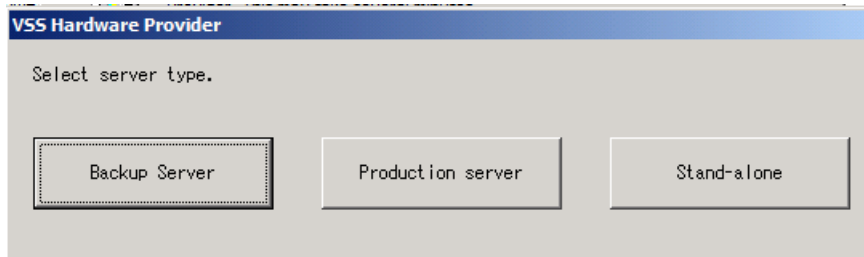


Figure 11 - VSSHP Server Type

8. Click [OK] to confirm port number assigned for the VSSHP provider.

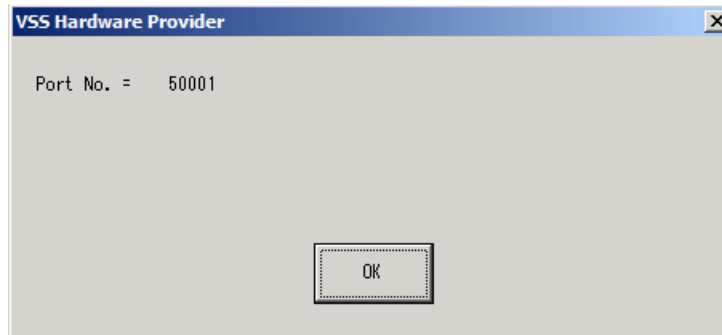


Figure 12 - VSSHP Port Number

9. Click [OK] to register disks (See the ETERNUS VSSHP Readme guide for using disk registration).

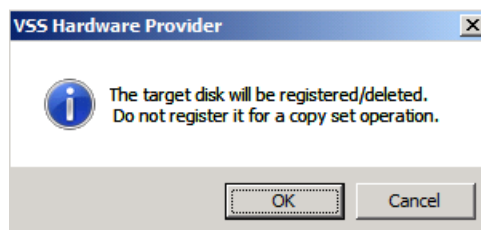


Figure 13 - VSSHP Register Disks

10. Select all of the target disks assigned to the media server and click the move arrow [--->].

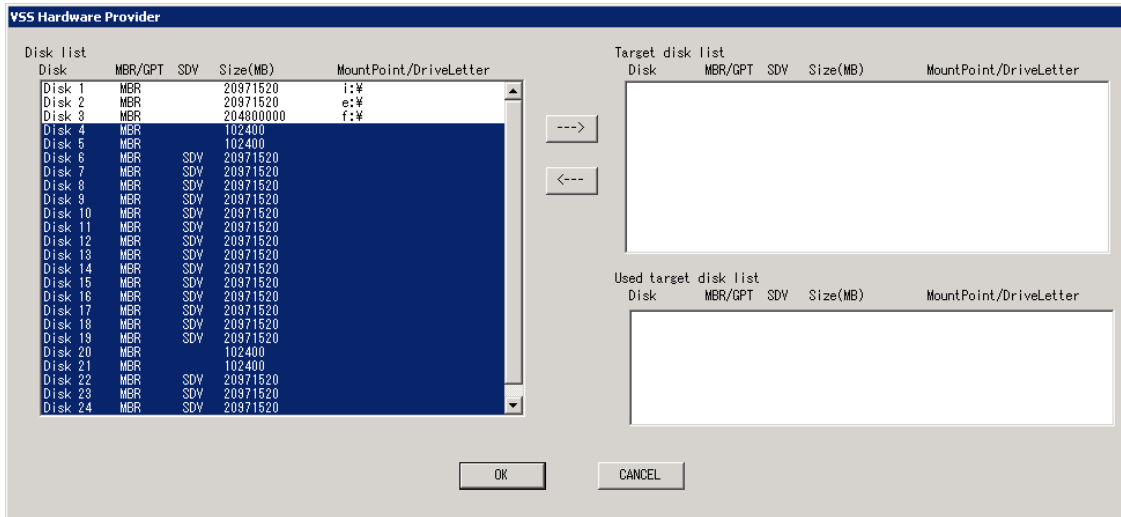


Figure 14 - Target Pool Selection

11. Click [OK] to register the disks.

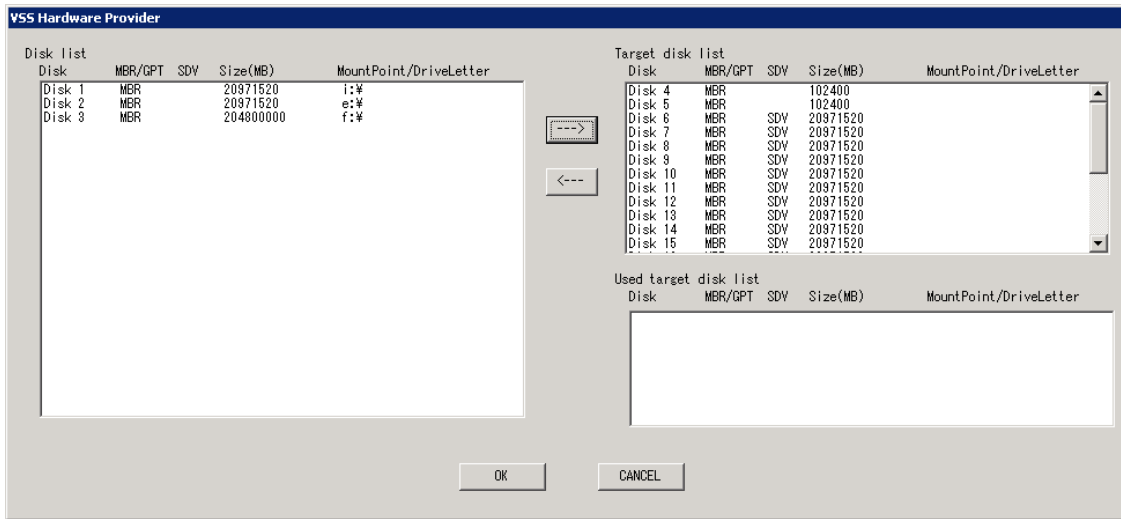


Figure 15 - Target Pool Registration

12. Confirm the completion of the installation, then click [Finish] to exit the wizard.

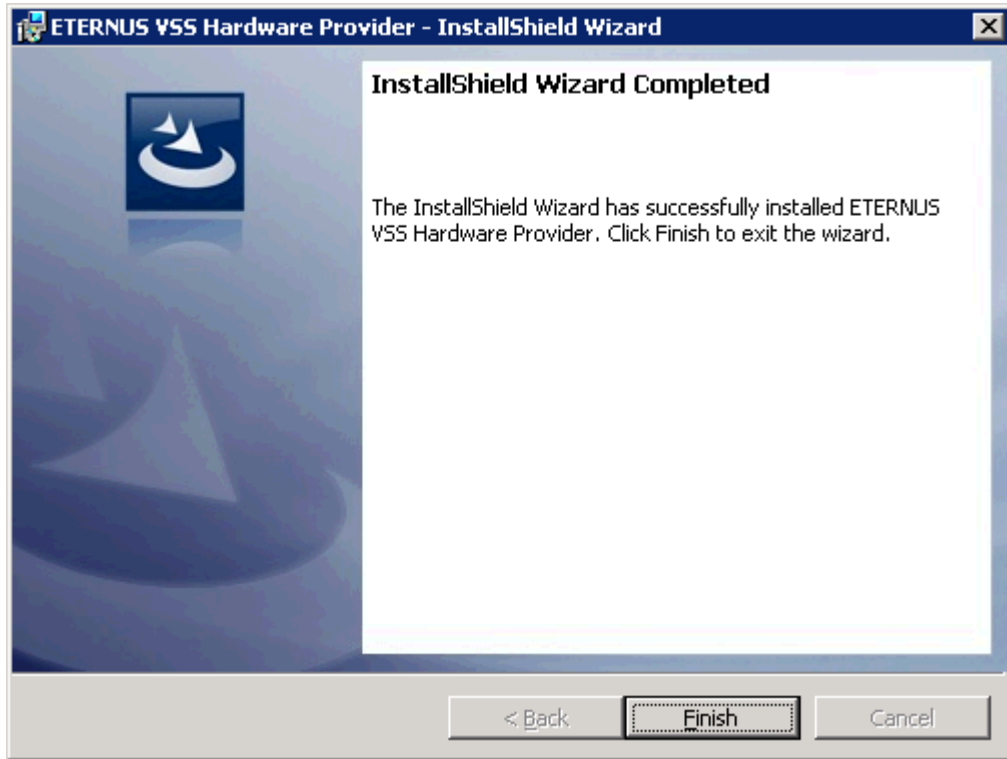


Figure 16 - Install Shield Wizard Completed Window

5.2 Installing ETERNUS VSSHP on the Exchange Servers

This section explains how to install the ETERNUS VSSHP on the Exchange Servers

1. Login to the first node of the Exchange CCR Cluster as an administrator.

2. Double-click the VSSHP package (setup.exe) to start the install wizard. The Welcome window is displayed. Click [Next] to continue.



Figure 17 - Install Shield Wizard Welcome Window

3. Click [Next] to accept the default directory for the installation files

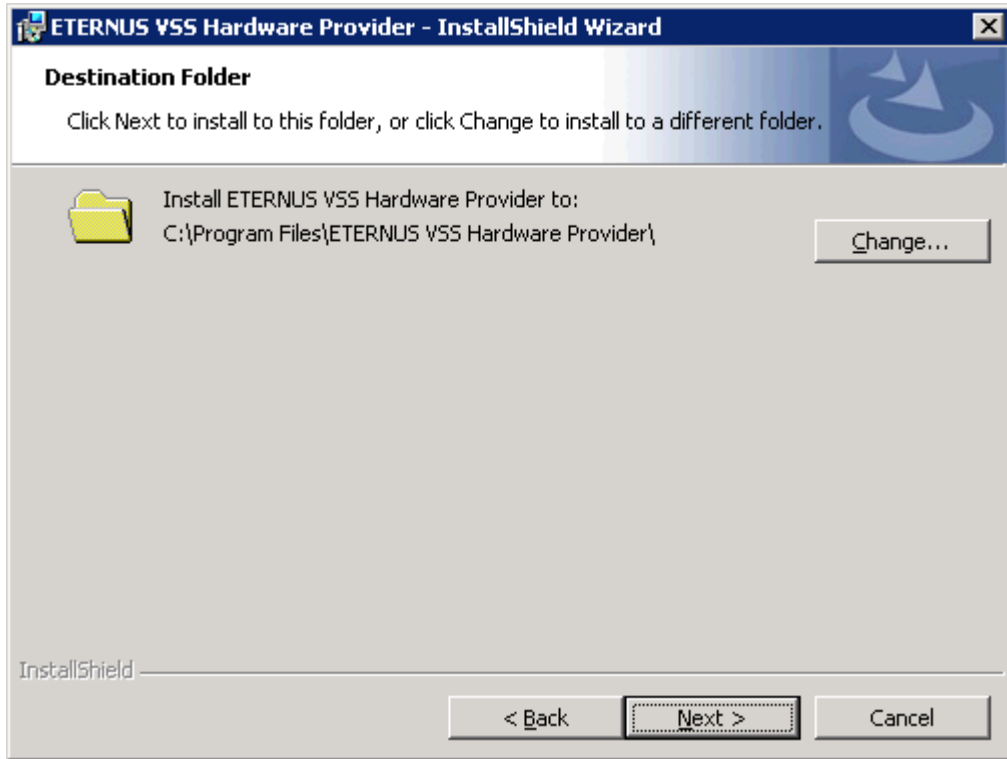


Figure 18 - Destination Folder Window

4. Click [Install] to start the installation.

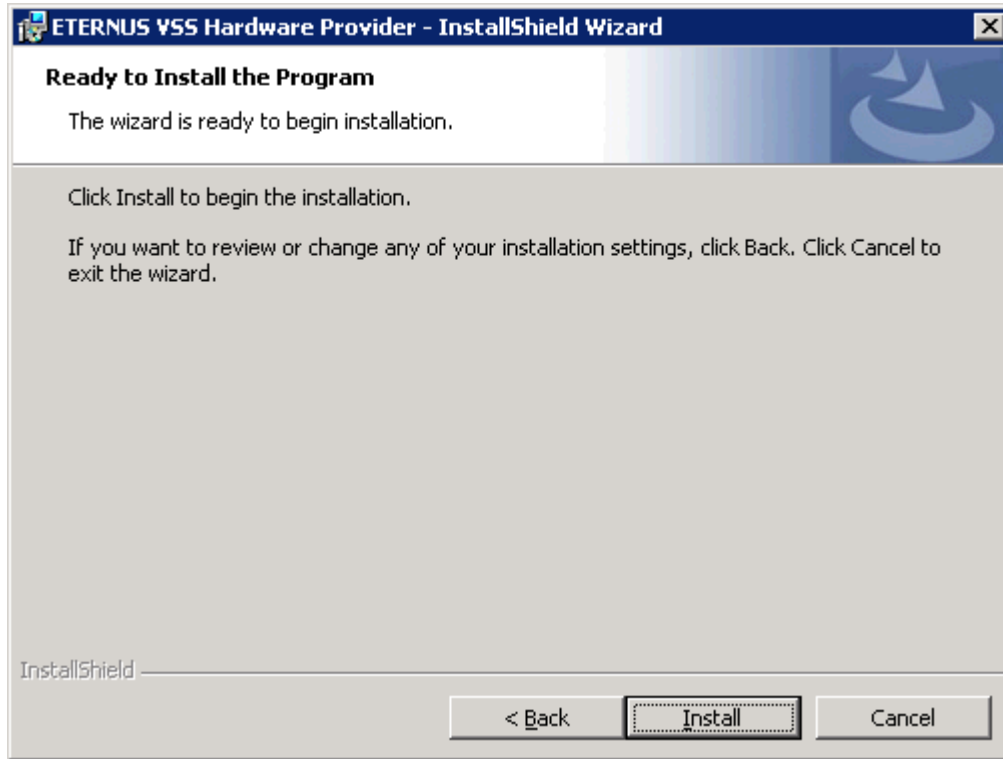


Figure 19 - Ready to Install the Program Window

5. After the installation finishes successfully, the VSSHP registration confirmation window is displayed. Click [OK] to register a provider.

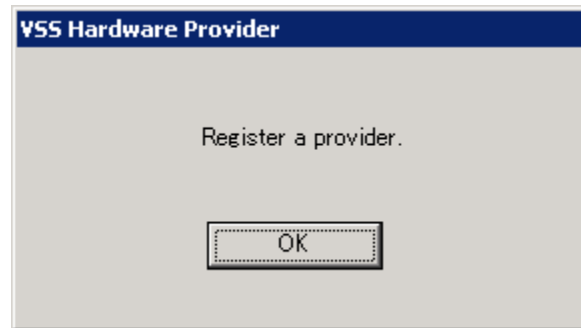


Figure 20 - VSSHP Registration Confirmation Window

6. Click [OK] to confirm the registration

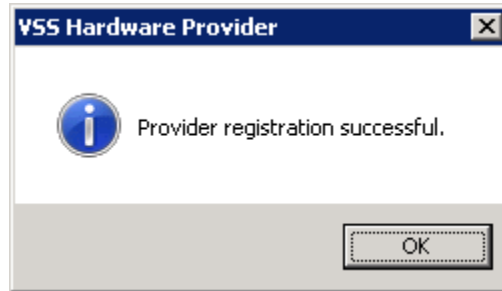


Figure 21 - VSSHP Registration Successful Window

7. Click [Production Server] to register this server as the Production Server

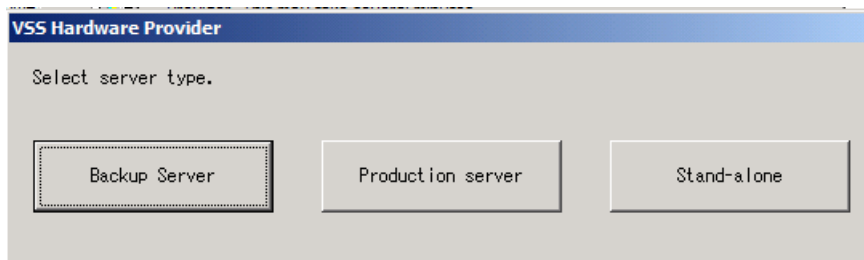


Figure 22 - VSSHP Server Type

8. Enter IP Address for the Media Server and click [OK]

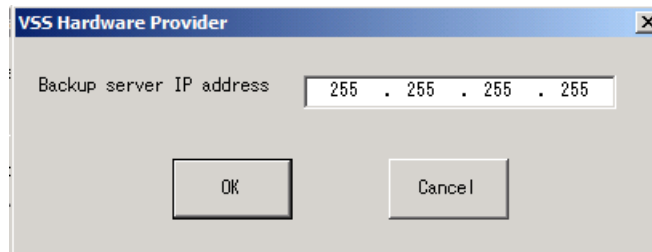


Figure 23 - VSSHP IP address

9. Confirm name of Media Server and click [OK]

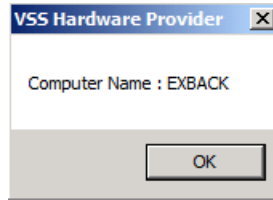


Figure 24 - VSSHP Computer Name

10. Click [Cancel] for register disks. (Disks are only registered on the Media Server.)

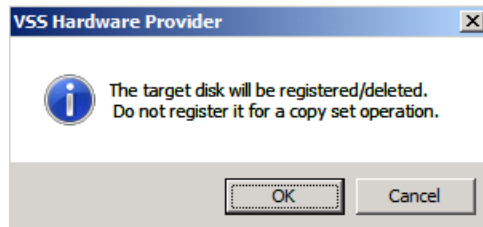


Figure 25 - VSSHP Register Disks

11. Confirm the completion of the installation, and then click [Finish] to exit the wizard.

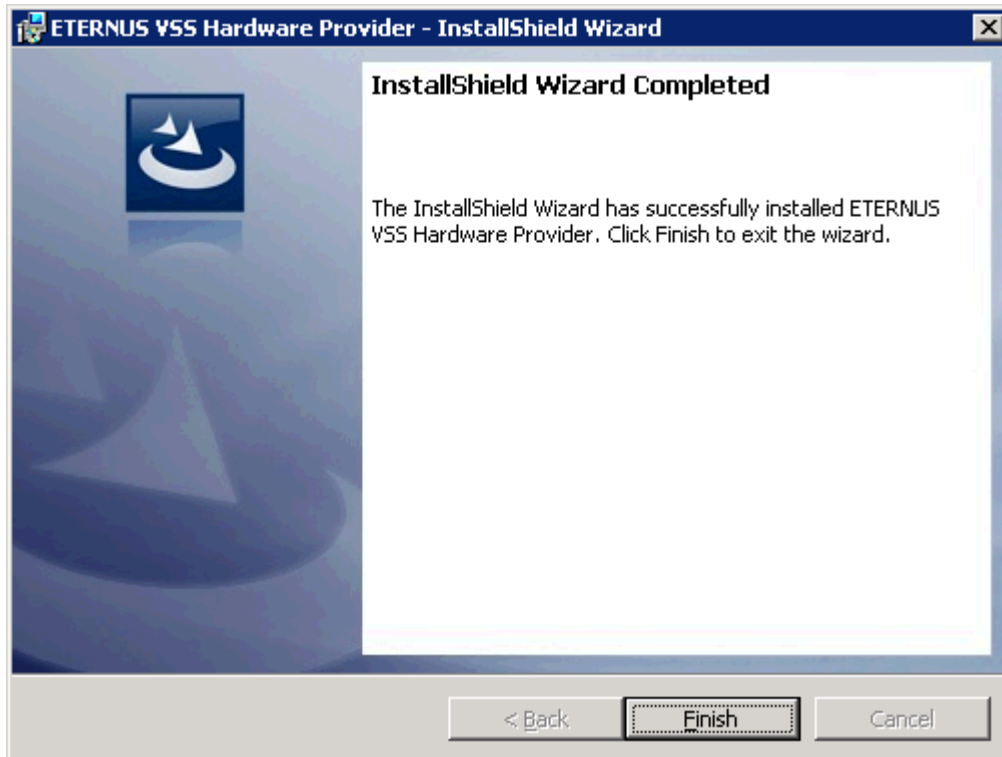


Figure 26 - Install Shield Wizard Completed Window

12. Repeat Steps 1-11 for the second node of the CCR cluster.

5.3 Open VSSH Communication Port

Since the Windows Server 2008 Firewall is enabled by default, open the port for the communication service to be able to connect to the Exchange servers.

1. Login to the Backup server as a local administrator. Click [Start]->[Control Panel] ->[Windows Firewall].

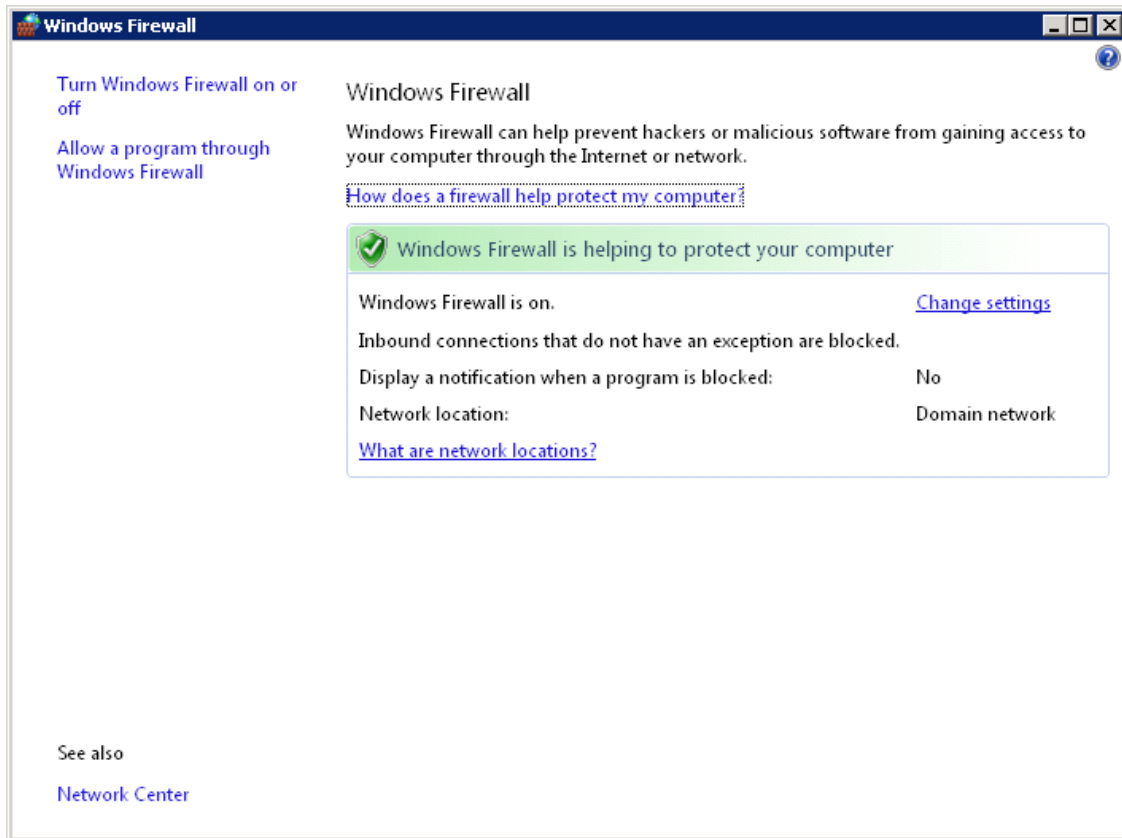


Figure 27 - Windows Firewall Window

2. Click [Change settings].

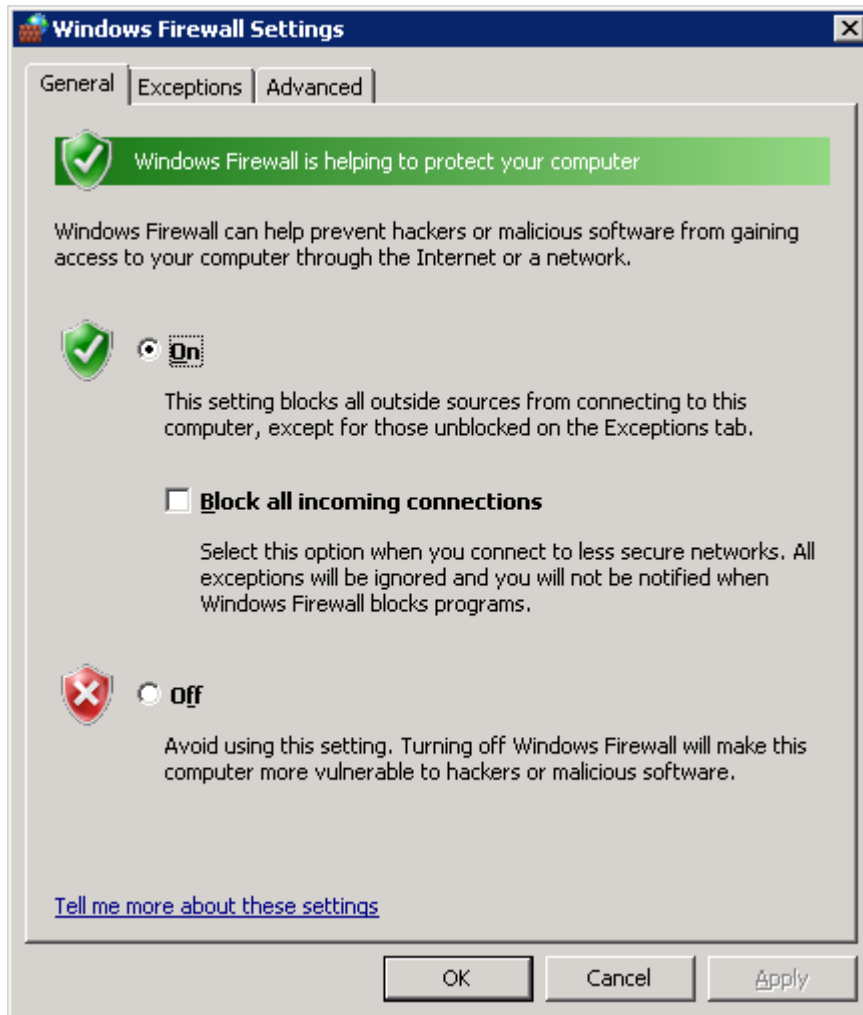


Figure 28 - Windows Firewall Window

3. Click [Exceptions] tab and then click [Add port...].

- Specify Name and Port number (port number should be the same value as was displayed during the VSSHP installation), and then click [OK].

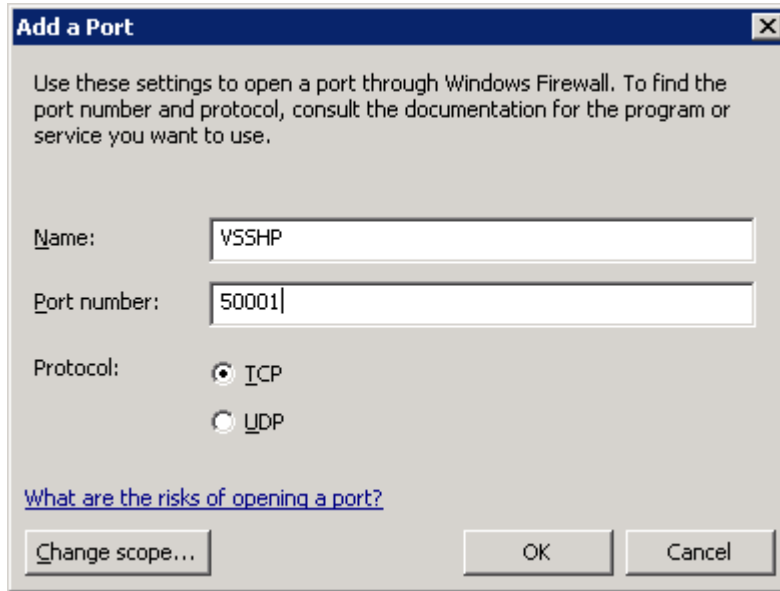


Figure 29 - Windows Firewall Add a Port Window

5. Click [OK] to confirm and close Windows Firewall Settings.

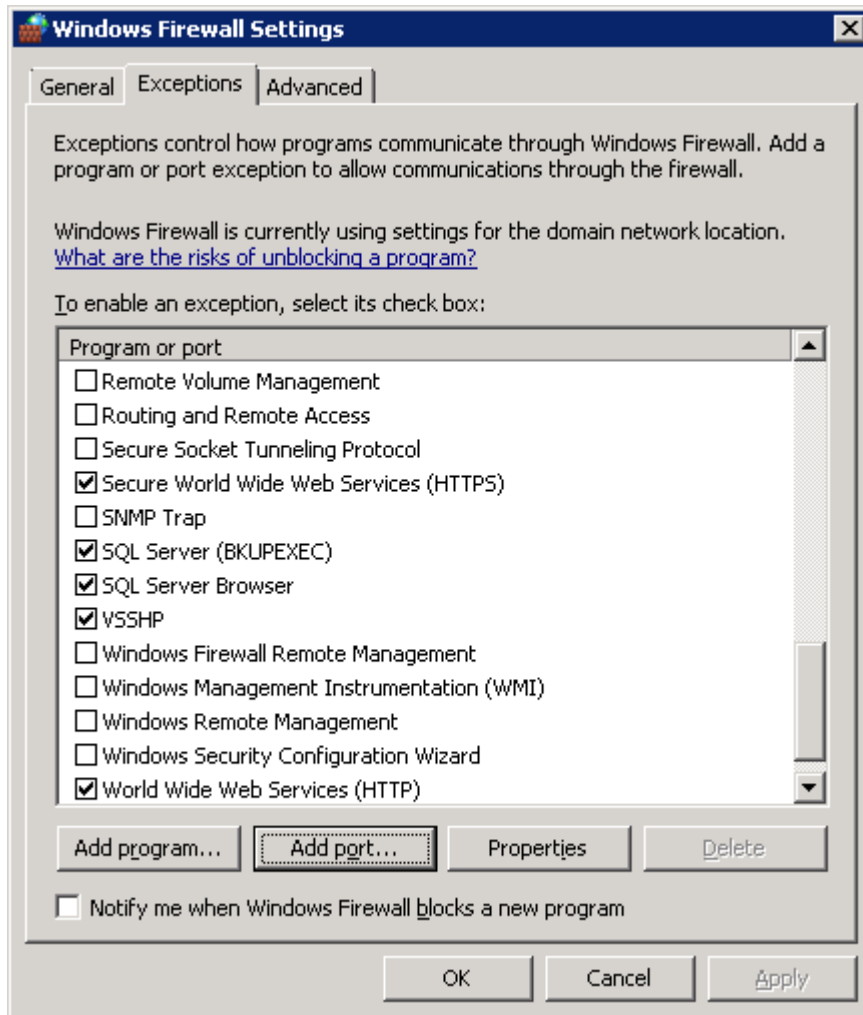


Figure 30 - Windows Firewall Settings Window

5.4 Verifying the VSSHP Installation

1. Login to each of the Exchange servers as a local administrator.
2. Click [Start]->[Command Prompt].
3. Type the following command to confirm that the VSSHP is registered successfully:

```
C:\>vssadmin list providers
```

Example:

```
Administrator: Command Prompt
C:\>vssadmin list providers
vssadmin 1.1 - Volume Shadow Copy Service administrative command-line tool
(C) Copyright 2001-2005 Microsoft Corp.

Provider name: 'ETERNUS USS Hardware Provider'
Provider type: Hardware
Provider Id: {38a7d4b1-9b95-45ab-82e1-edfc591307ef}
Version: 1.2.0

Provider name: 'Microsoft Software Shadow Copy provider 1.0'
Provider type: System
Provider Id: {b5946137-7b9f-4925-af80-51abd60b20d5}
Version: 1.0.0.7

C:\>
```

Figure 31 - Output of vssadmin command

4. Close the Command Prompt window.
5. Complete the above steps for the Backup server.

5.5 Verifying VSSHP Operations with VSHADOW

To verify that the VSS functionality works correctly, use the VSHADOW tools. VSHADOW is a lightweight VSS requestor provided by Microsoft as a test tool. This section shows the steps for verifying VSS operations with the VSHADOW tools.

1. Prepare the Windows Server 2008 SDK (see Section 2).
2. Double-click setup.exe to extract VSHADOW tools. The files are stored in the following location by default:

```
C:\Program Files\Microsoft SDKs\Windows\V6.1\Bin\x64\vsstools
```

3. Install the Windows Server 2008 SDK on both Exchange servers and the Backup server.
4. Execute the following command on one of the Exchange servers.
5. If VSHADOW finishes successfully, file1.xml is created.

```
C:\>vshadow -p -y=file1.xml E:
```

6. Copy file1.xml to the Backup server manually.
7. Execute the following command on the Backup server:

```
C:\>vshadow -i=file1.xml
```

8. Verify the Windows Event log contains no errors on the Backup server.

6 Installing Symantec Backup Exec for Windows Servers

After verifying the VSSHP installation, you can start installing Backup Exec for Windows Servers.

The following section describes the Backup Exec installation overview.

1. Install Backup Exec for Windows Servers on the Backup server.
2. Run Live Update to install any updates for Backup Exec.
3. From the Backup server, install Backup Exec Remote Agent on each node of the Exchange CCR cluster.
4. Install the Exchange MAPI Client on each node of the Exchange CCR cluster.

For more detailed information about the following installation, please refer to the Symantec Backup Exec for Windows Servers Administrator's Guide.

6.1 Installing Backup Exec

To install Backup Exec, perform the following steps.

1. Login to the Backup server as a domain administrator.
2. Start the Backup Exec CD Browser from the CD media.
3. Click [Start the Backup Exec Installation].
4. On the Welcome panel, click [Next].
5. Select [I accept the terms of the license agreement] on the License Agreement window, then click [Next].

6. Check [Local Install] and [Install Backup Exec software and options], and then click [Next].

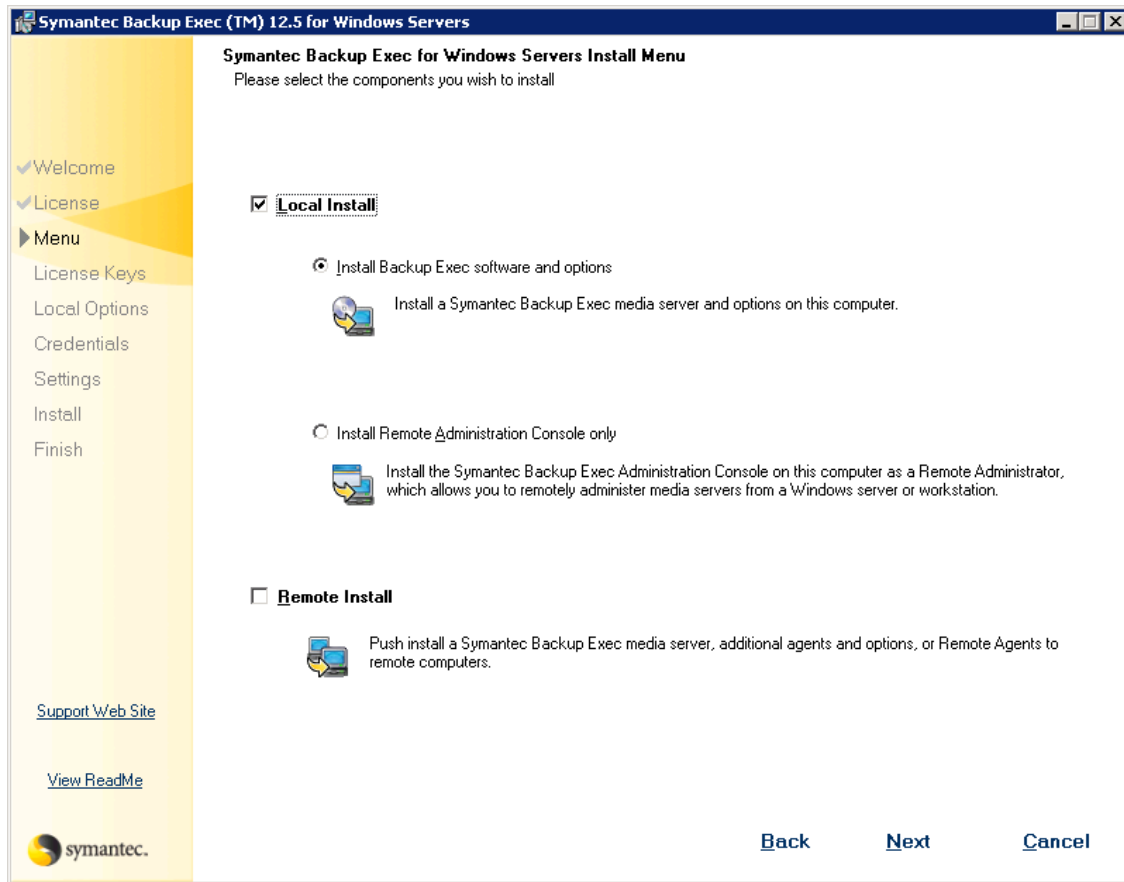


Figure 32 - Backup Exec Install Menu Window (Local Install)

7. Review the Environment Check results, and then click [Next].
8. Since we will be using the evaluation version this time, specify no License keys and click [Next].
 - a. Note, if installing a licensed version of Backup Exec, then you should enter the license key that came with the software.

9. Select the following optional components on the Symantec Backup Exec Options windows, then click [Next]:
 - Agent for Microsoft Exchange Server
 - Advanced Disk-based Backup Option

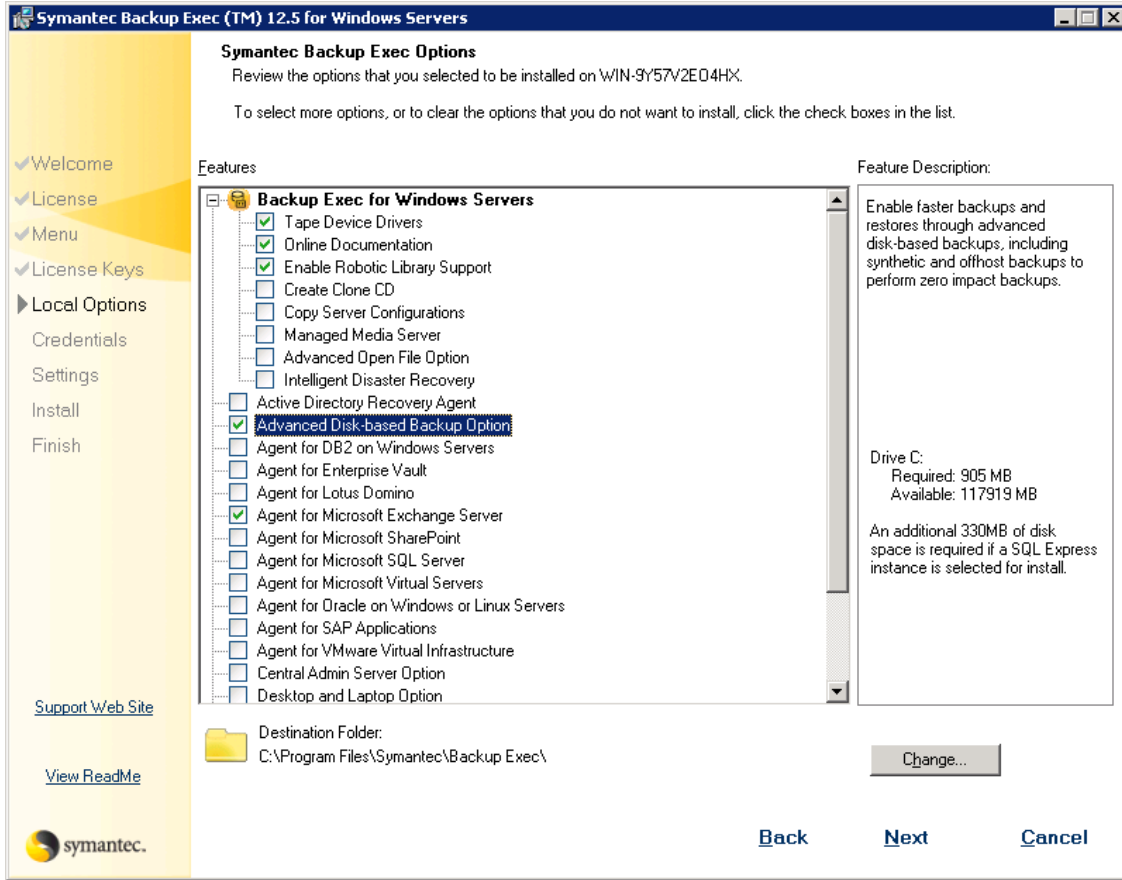


Figure 33 - Backup Exec Options Window (Local Install)

10. Provide the Backup Exec system account user name, password, and domain. This must be a domain Administrator account. Click [Next].
11. Check [Create a local Backup Exec SQL Express instance on which to store the database. This instance will be installed in C:\Program Files\Microsoft SQL Server\MSSQL\$BACKUPEXEC]. Click [Next].
12. Check [Use Symantec device drivers for all tape devices (recommended)] on the Symantec Tape Device window, and then click [Next].
13. Review the Ready to Install Program windows, and then click [Install].
14. Click [Finish] on the Install Wizard Completed window to exit.

6.2 Updating Backup Exec

1. Login to the Backup server as a domain administrator.
2. Select [Tools]->[Live Updates] on the Symantec Backup Exec Console.

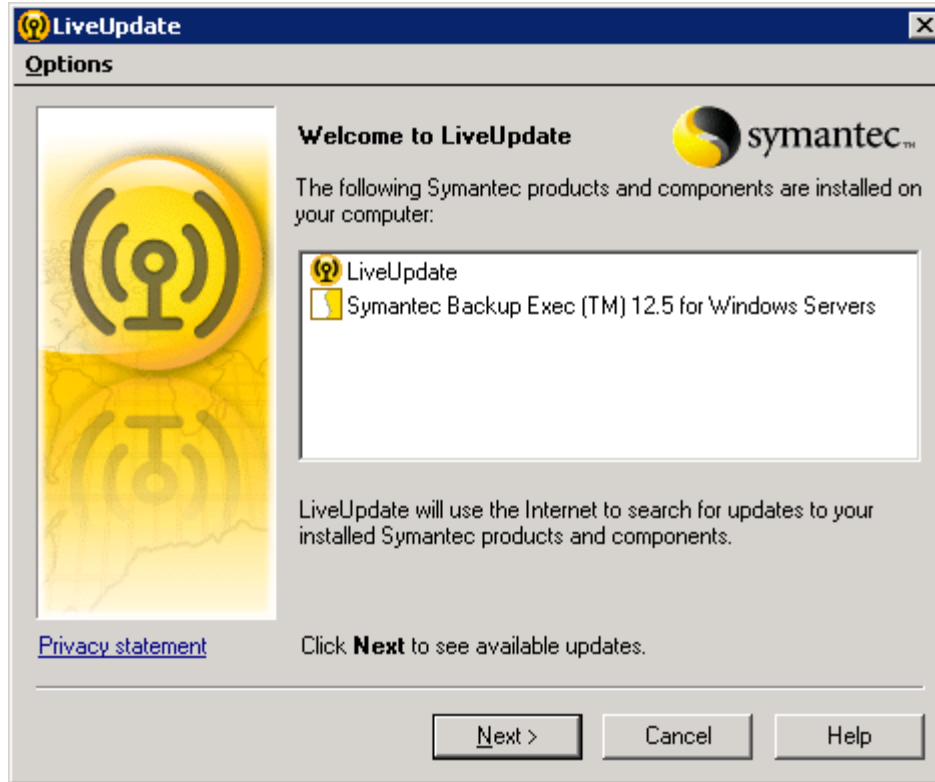


Figure 34 - Live Updates Window

3. Select [Next] to display updates.
4. Install any updates that are available.

6.3 Installing Backup Exec Remote Agent

The Backup Exec Remote Agent can be installed remotely on the Exchange servers from the Backup server. This section provides the steps to install the Remote Agent.

1. Login to the Backup server as a domain administrator.
2. Select [Tools]->[Install Agents and Media Servers on other servers...] on the Symantec Backup Exec Console.



Figure 35 - Exec Install Agents Welcome Window

3. Click [Next] to see the agent selection window.

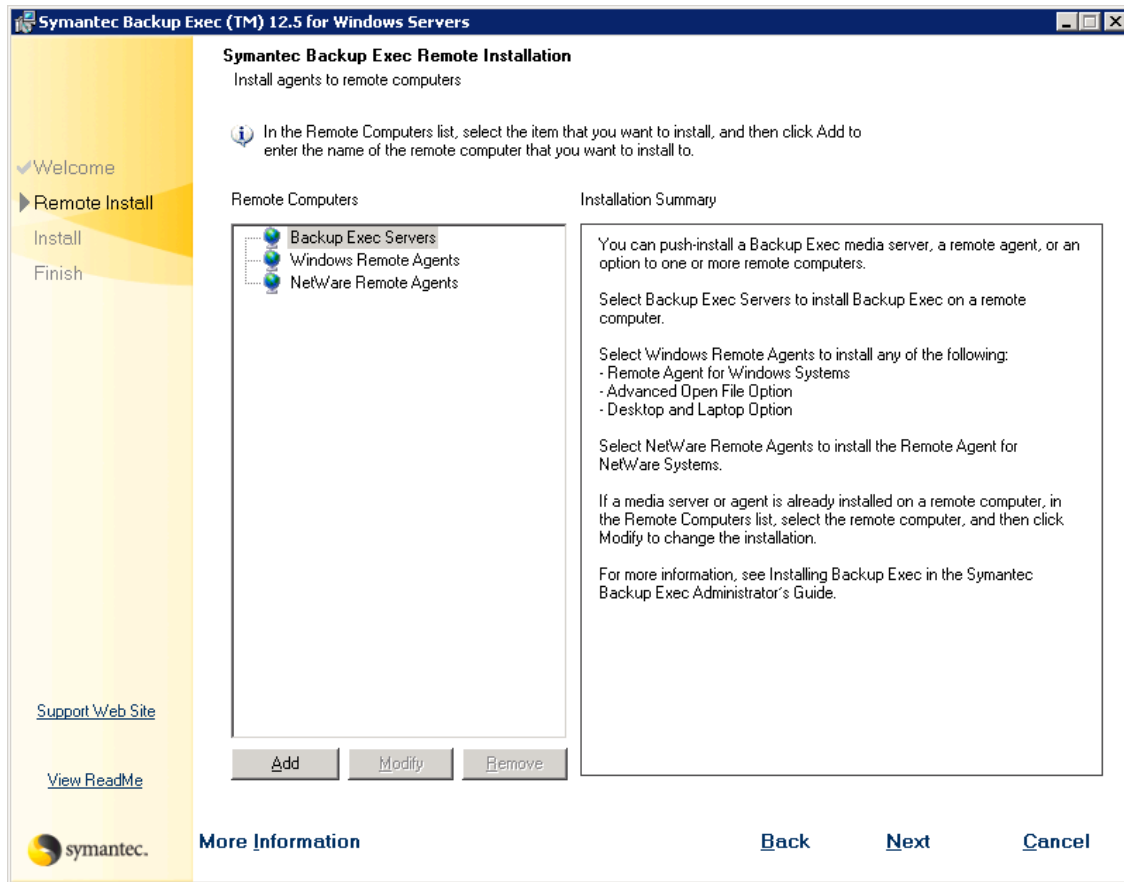


Figure 36 - Backup Exec Agent Selection Window

4. Select [Windows Remote Agent], then click [Add]

Remote Installation Sequence

Manual Entry of Remote Computer Name

Enter the computer name/IP address and the domain of the remote computer that you want to add.

Name/IP address: Example: Servername

Domain: Example: Domainname.com

Browse...

OK Cancel

Figure 37 - Backup Exec Agent Install Computer Name Window

5. Enter the Computer Name and Domain Name for one of the Exchange servers

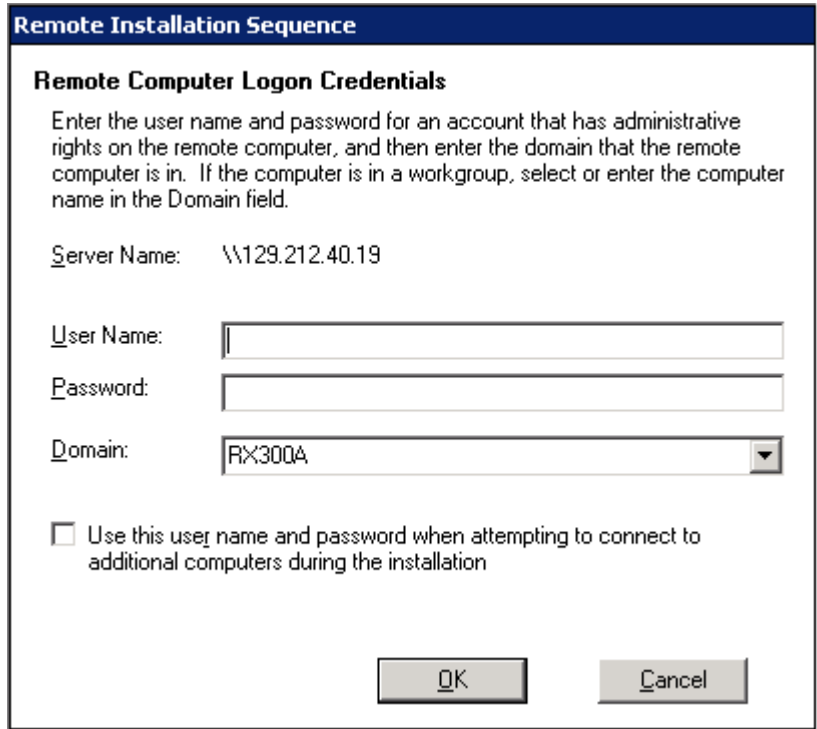


Figure 38 - Backup Exec Agent Install Credentials Window

6. Enter the User Name and Password, then click [OK]
7. Select [Windows Remote Agent], then click [Add] to repeat the process for the second Exchange Server.
8. Click [Next], then click [Install] to complete the agent installation.

6.4 Installing Exchange MAPI Client

This section includes the steps to install the Microsoft Exchange MAPI client on the Exchange server. The MAPI client needs to be installed on each node of the Exchange CCR cluster, so perform these steps on both Exchange servers. This installation enables you to use the combination of Exchange and Backup Exec GRT (Granular Recovery Technology) functions (to be described later).

1. Prepare the Microsoft Messaging API and Collaboration Data Object 1.2.1 (see section 2).
2. Login to the Exchange server as a local administrator.
3. Double-click ExchangeMapiCdo.exe.
4. Double-click the extracted file (ExchangeMapiCdo.msi) to start the installation.
5. Confirm that the following window is displayed, and then click [Finish] to complete the installation.

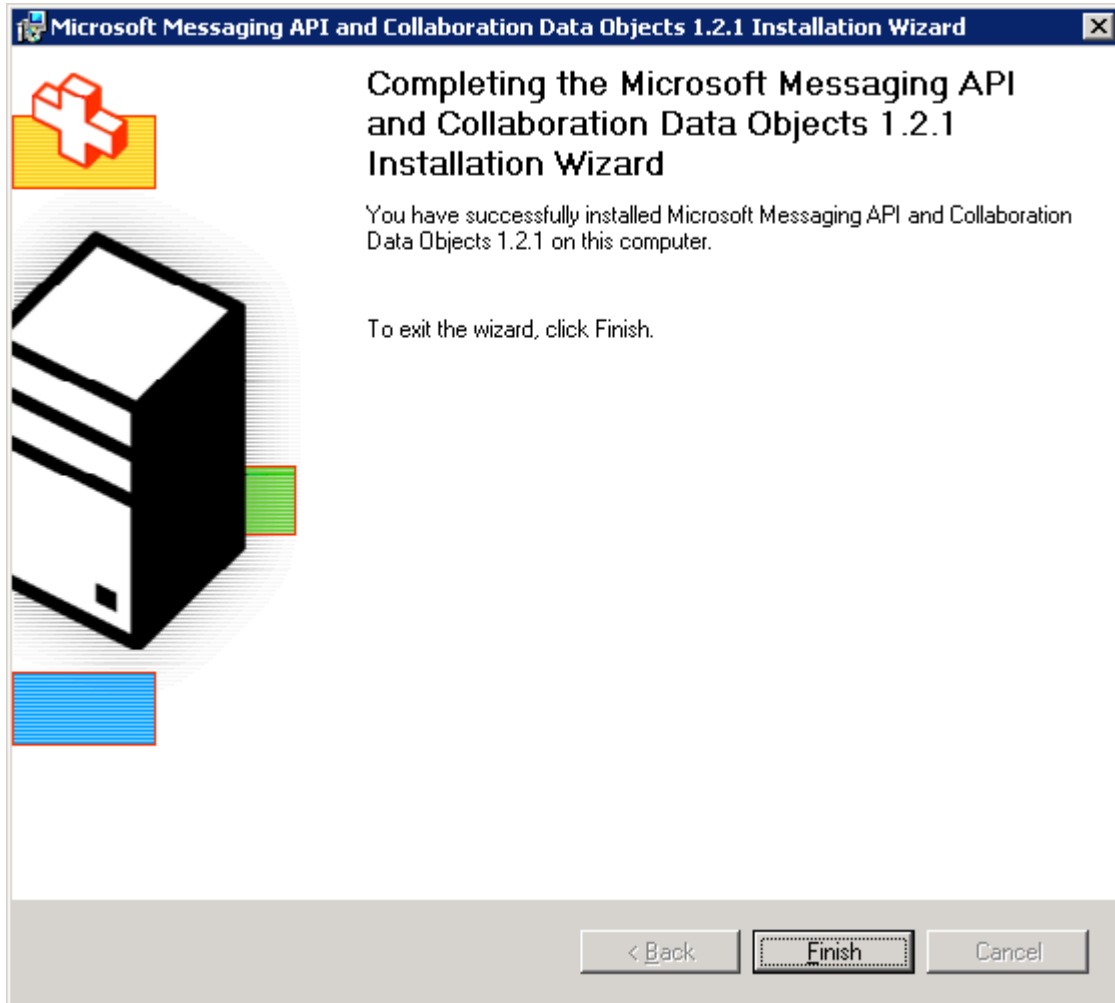


Figure 39 - Installation Complete Window

7 Exchange Backup and Restore

This section provides the steps to backup the Exchange mailbox database with VSSHP, and to restore the mailbox database from the VSS backup.

VSSHP supports a two-server configuration, such as an Exchange server and a Backup server. In this environment, the backup is performed as a Symantec Backup Exec Off-Host backup. Off-Host backup enables Backup Exec to move backup processing from the Exchange server to the Backup server. This process includes executing the Exchange utility to check the consistency of the backup data.

ETERNUS disk storage systems perform the high-speed Advanced Copy at the request of Backup Exec via VSSHP. Backup Exec obtains the backup data from the target volumes of the Advanced Copy of the ETERNUS disk storage systems.

Restoration of the Exchange mailbox database is performed using Backup Exec functions. We confirmed three kinds of restores in this evaluation program.

1. Full restore of Mailbox database: It is assumed that the database is corrupt or damaged.
2. Restoring the individual mailbox data with GRT (Granular Recovery Technology): It is assumed that a particular mailbox user deleted messages by mistake.
3. Restoring the messages from the Recovery Storage Group: It is assumed that no system interruption is permitted when the restoring operation is performed.

7.1 Performing Off-Host VSS Backup

To execute a backup with VSSHP, perform the following steps to create the job.

1. On the Backup server, click [Backup Task]->[New Job] on the Backup Exec Job Setup window.

2. Select the Exchange Information Store as the backup resource. Select [Source]-> [Selections], and then expand [Domains]->[Active Directory Domains]->[domain name]-> [mailbox server name]->[Microsoft Information Store] on the View by Resource pane.

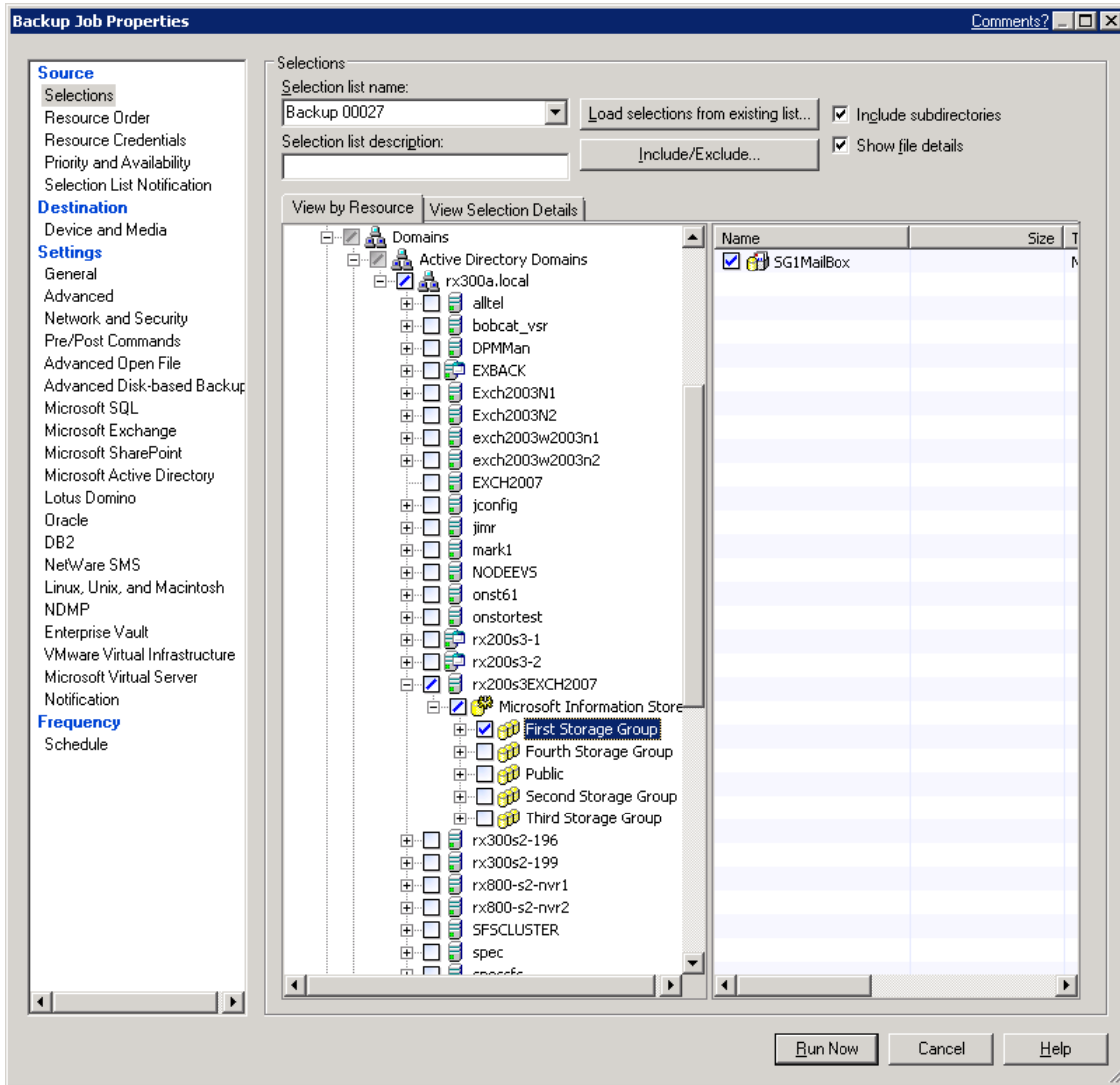


Figure 40 - Backup Job Selection Window

Verify that storage group name and mailbox name are displayed correctly, and then check the storage group name.

If the Microsoft Information Store is not displayed on the View by Resource pane, confirm the Microsoft Information Store service is started normally on the Exchange server. If the service is not started, start the service manually and restart creation of the backup job.

3. Select [Settings]->[Advanced Disk-based Backup Option]’ and then specify as follows:
 - Use offhost backup to move backup processing from remote computer to media server
 - > Check
 - Snapshot provider
 - > Select “Hardware – Use technology provided by hardware manufacturer”.
 - Job disposition
 - > Select “Fail backup job [further selections are not backed up after failure occurs]”.
 - Process logical volumes for offhost backup one at a time
 - > Check

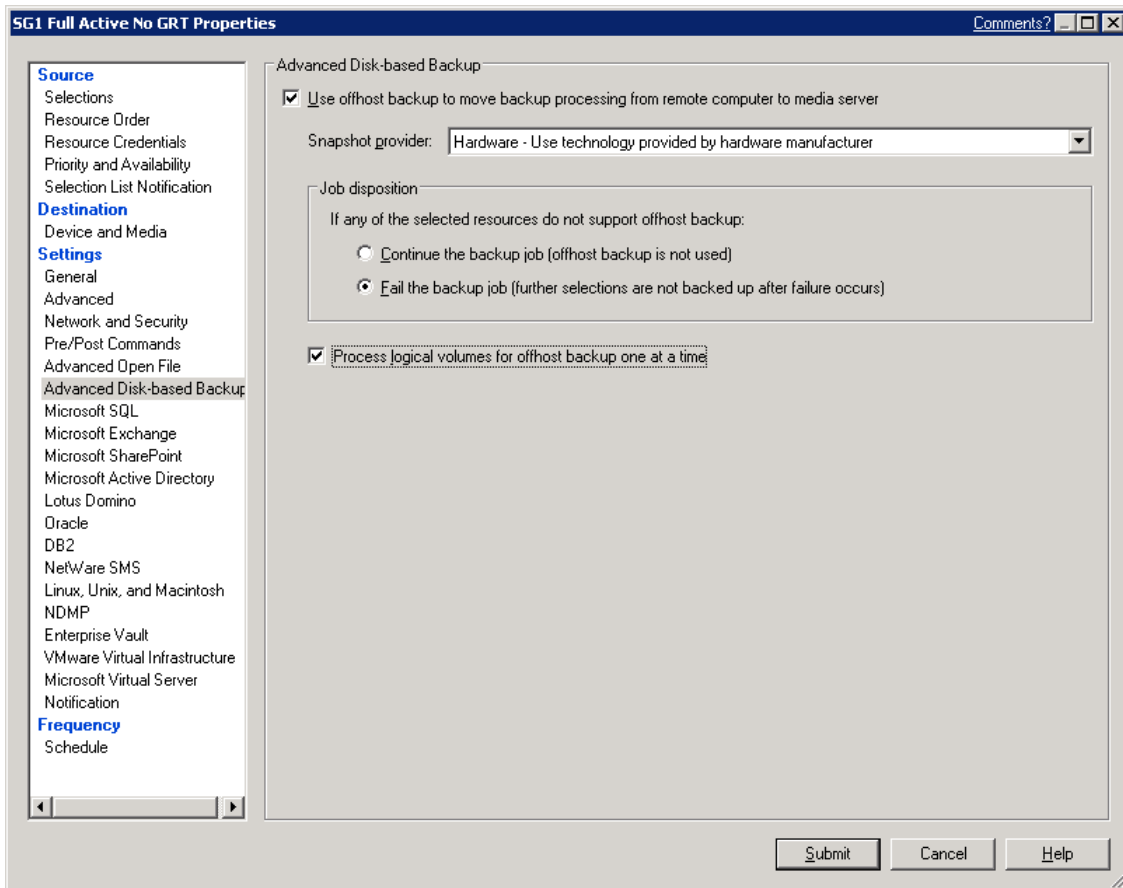


Figure 41 - Backup Job Advanced Disk-based Backup Window

4. Select [Settings]->[Microsoft Exchange], and then specify as follows:
 - Backup Method
 - > Select “Full – Database & Logs [flush committed logs]”.
 - Continuously backup transaction logs with Backup Exec Continuous Backup Server

- > Uncheck
- Use Backup Exec Granular Recovery Technology to enable the restore of individual mailboxes, mail messages, and public folders from Information Store backups [Exchange 2000 and later only; incremental backups supported with policy-based jobs only]
- > Check
- Perform consistency check before backup when using Microsoft Volume Shadow Copy Service [VSS] snapshot provider
- > Uncheck
- If Exchange 2007 backup source is LCR or CCR
 - > Select “Backup from the active copy only (job fails if not available)”.

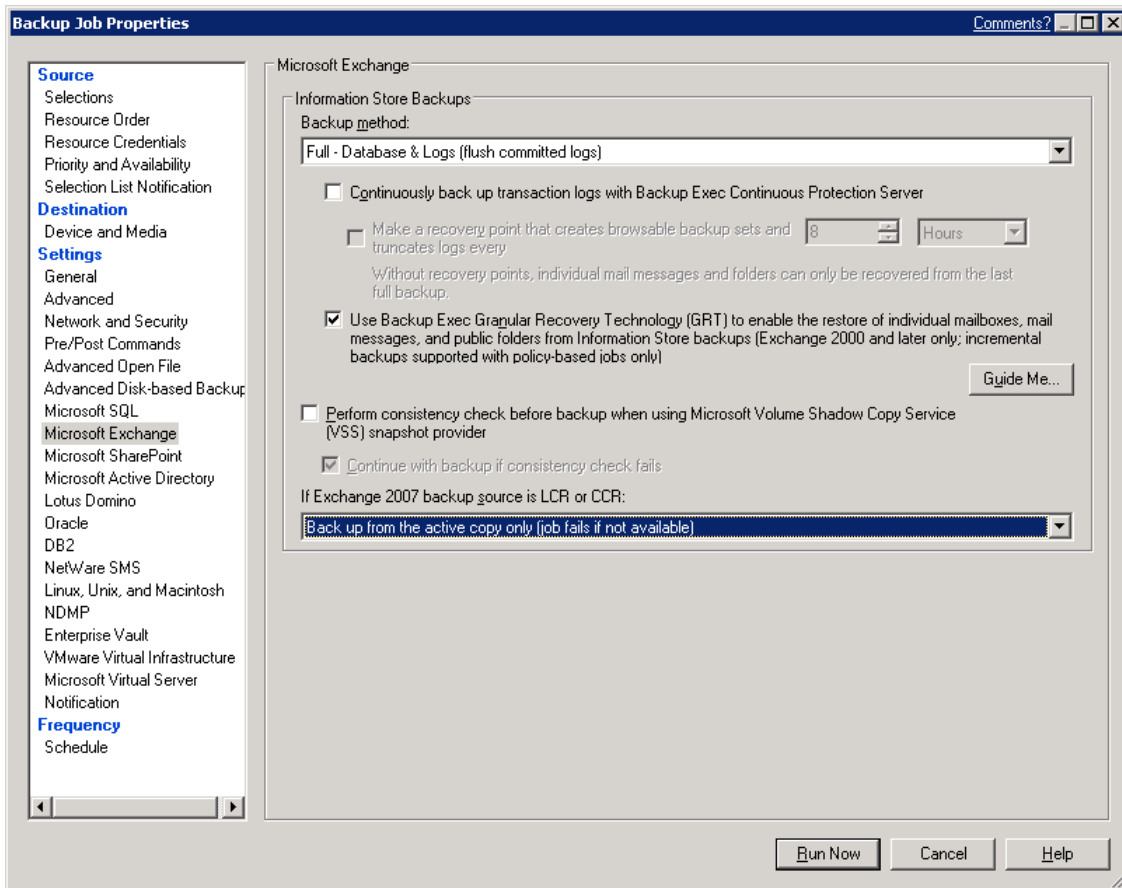


Figure 42 - Backup Job Microsoft Exchange Window

5. Verify the above specifications and then click [Run Now].

6. Refer to the job history and verify the successful completion in the Job Monitor Window.

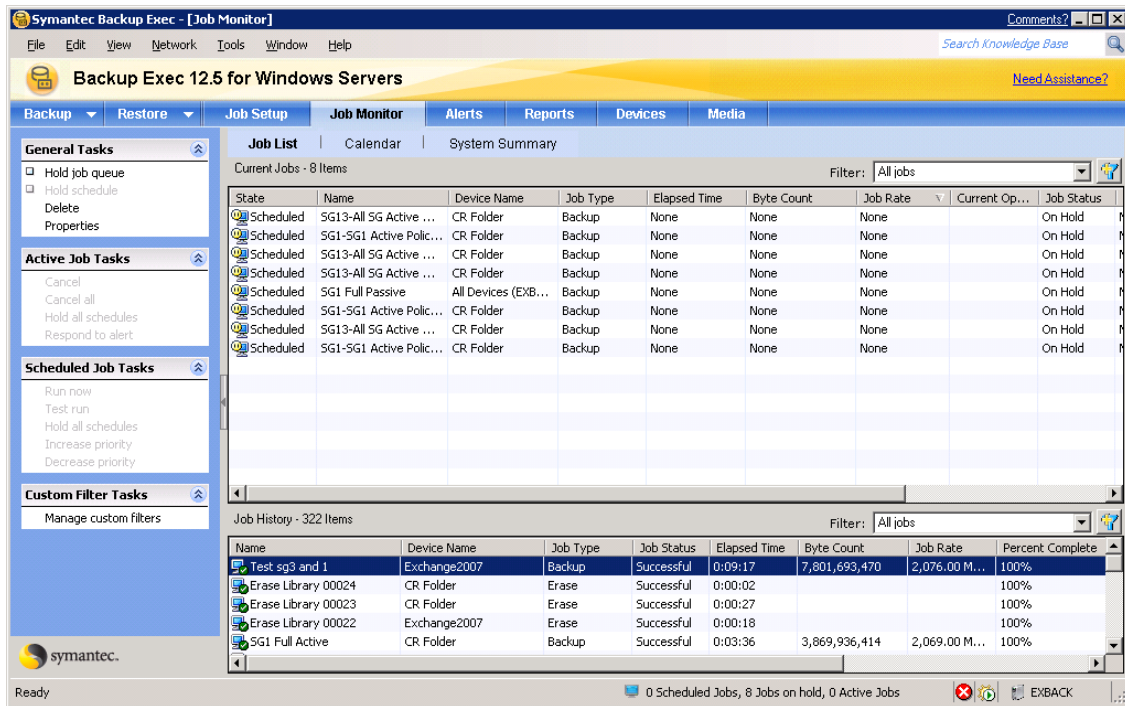


Figure 43 - Backup Exec Job Monitor Window

7.2 Restoring from Exchange Backup

To restore the mailbox database from an Off-Host backup, perform the following steps to create and execute the restore job in the Backup Exec Job Setup window.

1. Before you start restoring the mailbox database, you should dismount the mailbox database from the Exchange Management Console.
2. On the Backup server, click [Restore Task]->[New job] on the Backup Exec Job setup windows.
3. Select [Source]->[Selection], and then expand [All Resources]->[mailbox server name]-> [Microsoft Information Store]->[storage group name]->[backup date]->[mailbox name], and then select mailbox name.

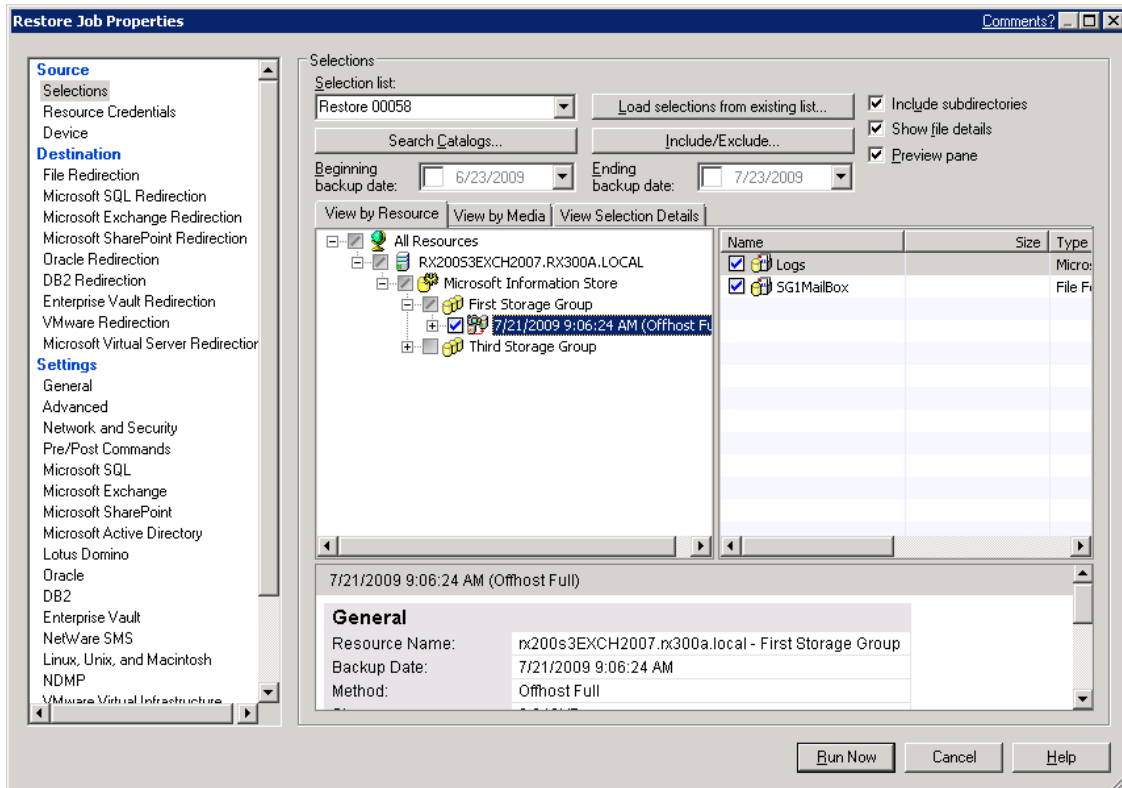


Figure 44 - Restore Job Selections Window

- Do not change the settings of [Settings]->[Microsoft Exchange].

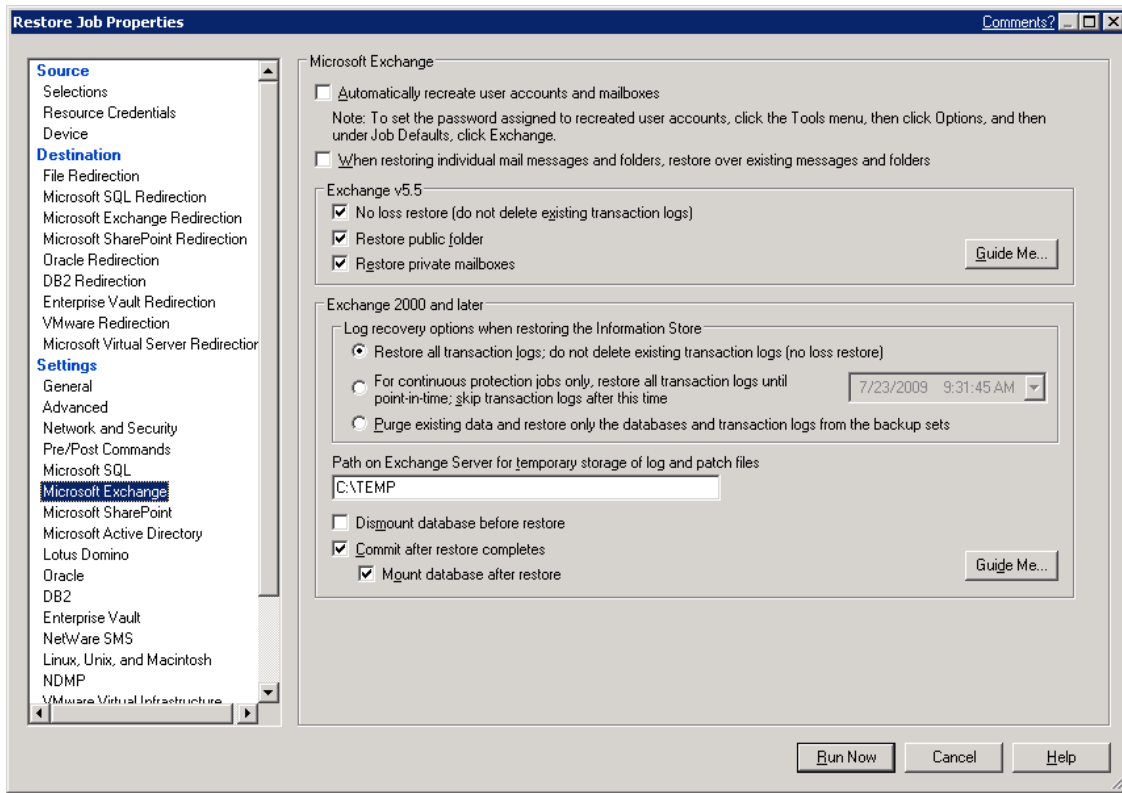


Figure 45 - Restore Job Microsoft Exchange Window

- Click [Run Now] to start the restore job.
- Confirm the successful completion of the restore job, and mount the target mailbox database.
- Confirm that the messages that were sent and received before backup was taken are restored successfully from the mail client software.

7.3 Recovering Mailbox Data with GRT

With the Granular Recovery Technology (hereinafter called GRT), it is possible to recover the individual mailbox data with an easy operation.

To recover the mailbox data with GRT, perform the following steps:

1. On the Backup server, create the restore job. Select [Source]->[Selections] on the Job Setup window, and expand [All Resources]->[mailbox server name]->[Microsoft Information Store]->[storage group name]->[backup date]->[mailbox name]->[target account name], and then select the mailbox recipient(s).
2. Do not change the settings of [Settings]->[Microsoft Exchange].
3. Click [Run Now] to start the restore job.
4. Confirm the successful completion of the restore job.

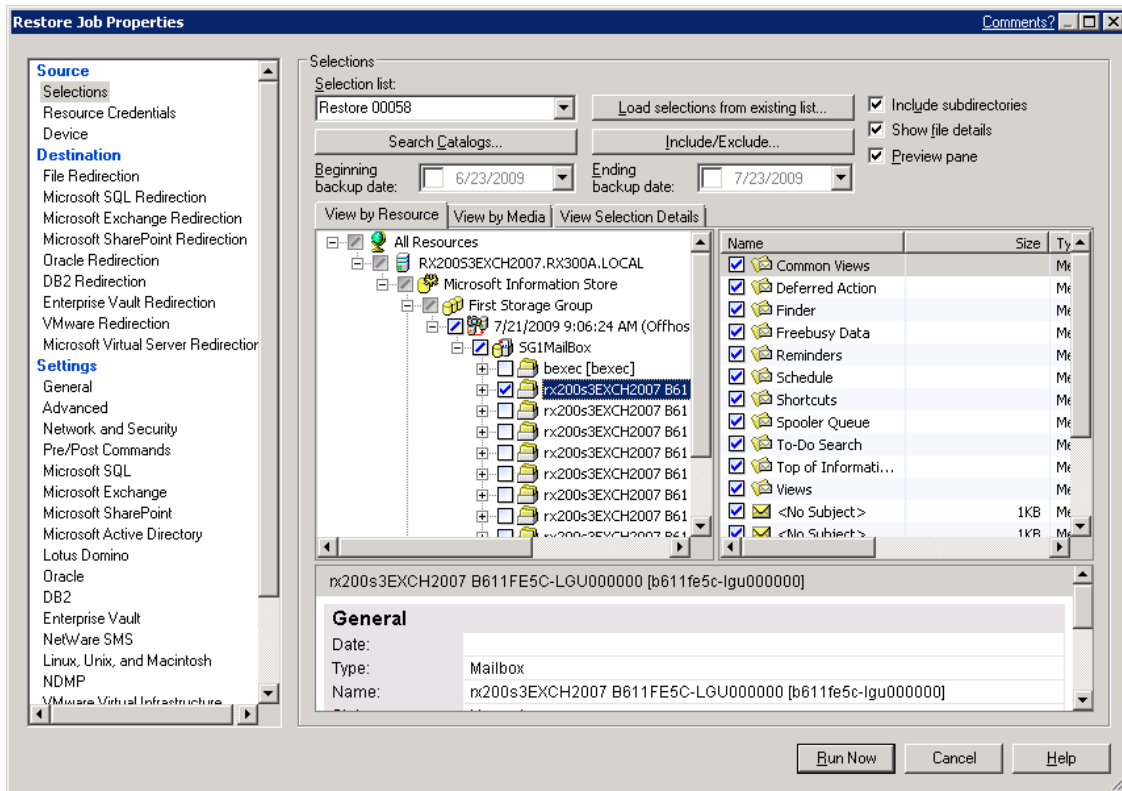


Figure 46 - Backup Selections Window (Individual Mailbox selection)

5. Start mail client software and confirm the messages are successfully restored.

7.4 Recovering Mailbox Data from RSG

Backup Exec supports recovery from the Recovery Storage Group (RSG) provided by Microsoft.

To use the Recovery Storage Group, perform the following steps:

1. On the Exchange server, double-click [Disaster recovery tools]->[Database Recovery Management] on the Exchange Management Console to start the Troubleshooting Assistant.

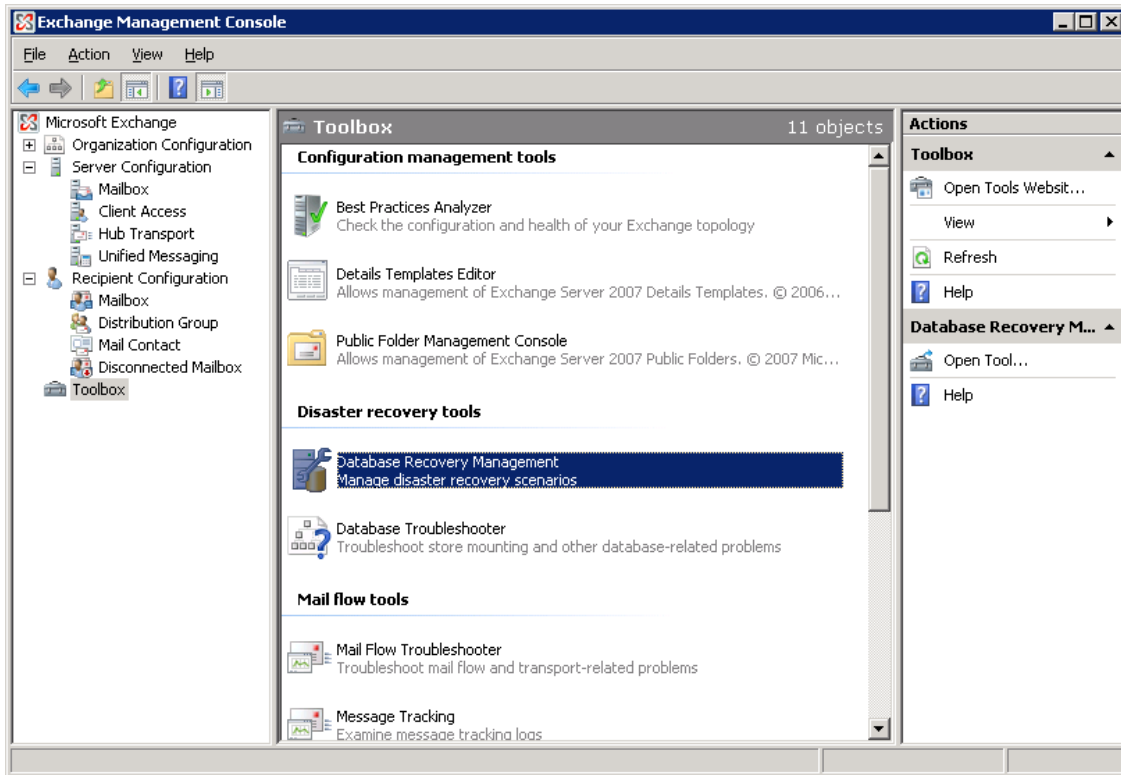


Figure 47 - Exchange Management Console Toolbox Window

2. Click [Manage Recovery Storage Group]->[Create recovery storage group] to create the Recovery Storage Group.

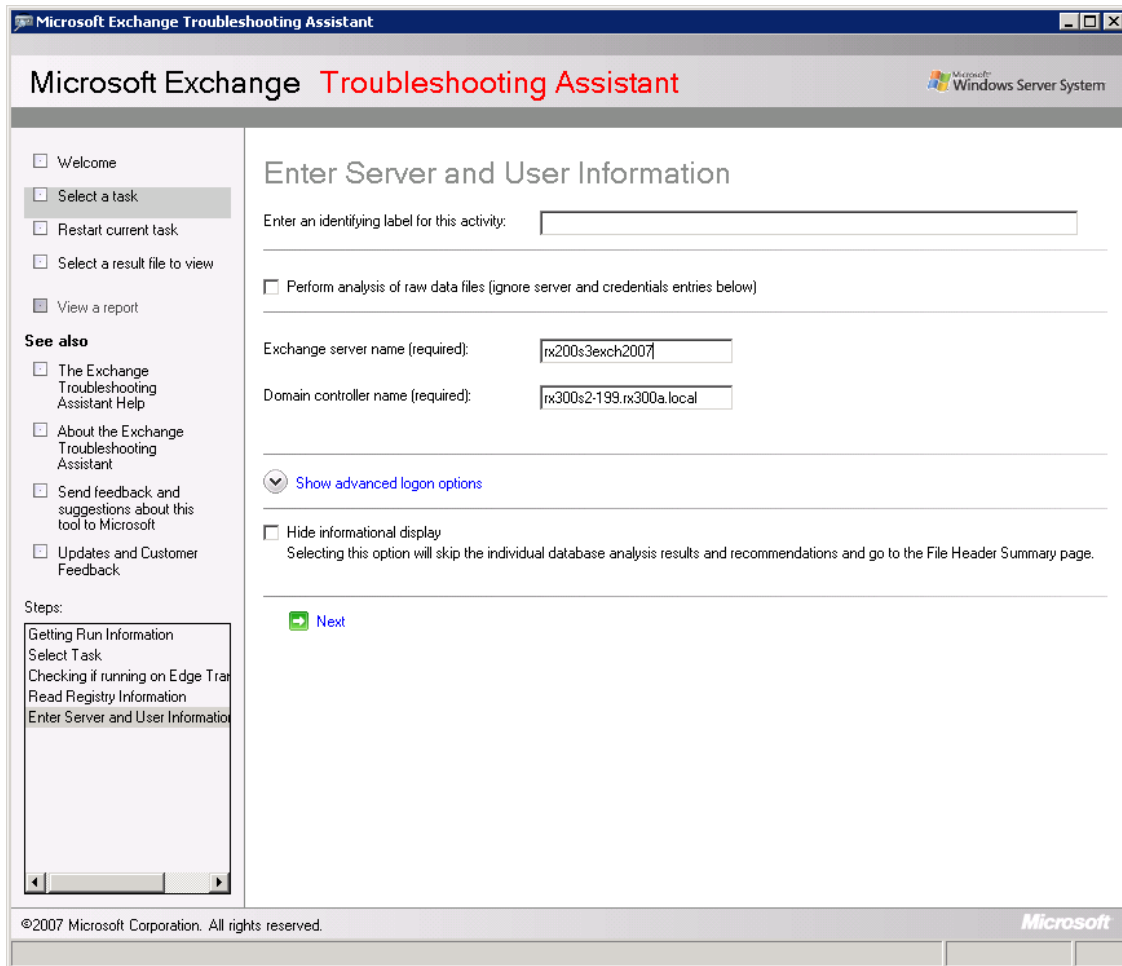


Figure 48 - Troubleshooting Assistant Server and User Information Window

3. Create the restore job on the Backup Exec Job Setup Window. Select the same items [Resource]->[Selections] as a normal database restore job.

4. Select [Destination]->[Microsoft Exchange Redirection], and check the following boxes:
 - Redirect Exchange sets
 - Redirect using Volume Shadow Copy Service (VSS) snapshot provider
 - Redirect to Recovery Storage Group (RSG) [Exchange 2007 only]

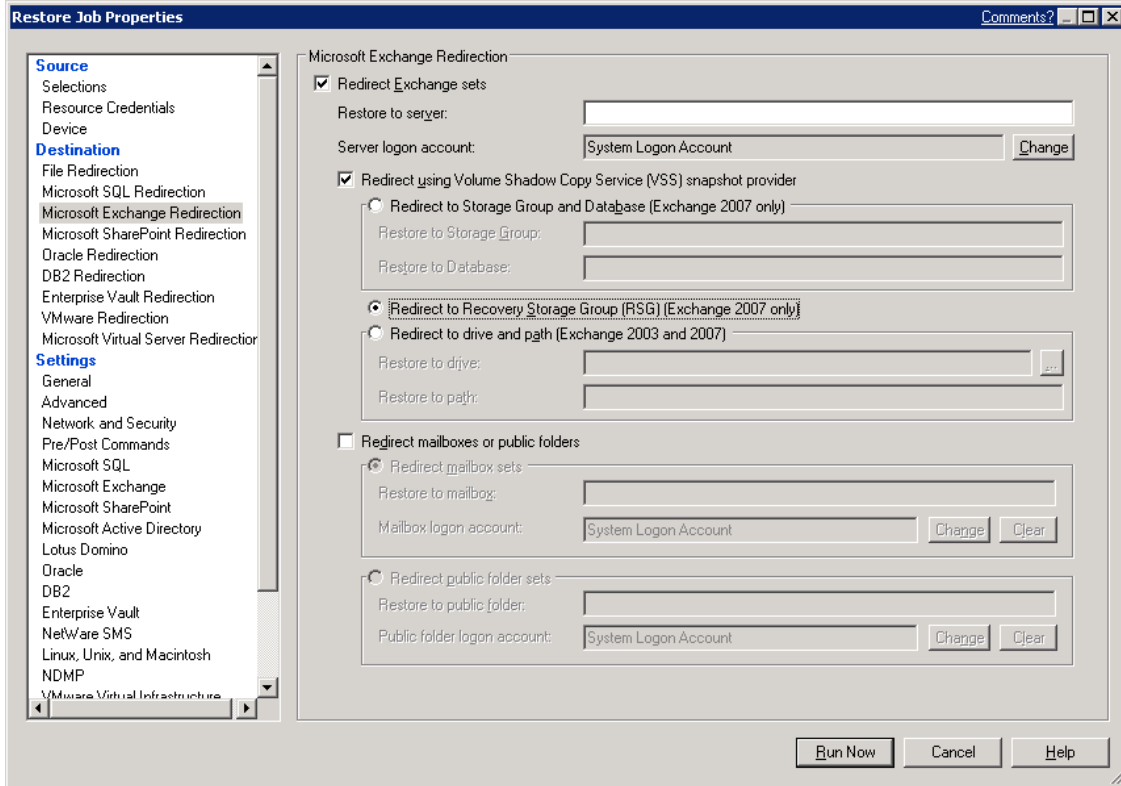


Figure 49 - Restore Job Microsoft Exchange Redirection Window

5. Do not change the settings of [Settings]->[Microsoft Exchange].
6. Click [Run Now] to start the restore job.
7. Confirm the successful completion of the restore job, and then mount the mailbox database of the Recovery Storage Group.
8. Start the Troubleshooting Assistant from the Exchange Management Console.
9. Select [Manage Recovery Storage Group]->[Merge or copy mailbox contents], and then merge the mailbox database.
10. Confirm that the messages are restored successfully using the mail client software.

8 Conclusion

With the combination of Exchange Server 2007, Backup Exec 12.5, and ETERNUS VSSHP, a highly protected messaging environment is created on the Fujitsu ETERNUS disk storage system. This combination provides the solution for high-speed backup without any system interruption, and the flexible recovery of both full mailbox restores and individual mailbox recovery.

8.1 Summary of Configuration Tasks

1. Allocate the Exchange mailbox database and log on the ETERNUS disk storage systems.
2. Install the ETERNUS VSSHP on the Exchange and Backup servers.
3. Configure VSSHP to take a SnapOPC backup of the mailbox database and log on the Exchange servers.
4. Configure the Backup server to recognize SnapOPC target volumes
5. Install Backup Exec 12.5 on the Backup server and Backup Exec 12.5 Remote Agent on the Exchange servers.
6. Create and execute an Off-Host backup job on the Backup server.
7. Restore and recovery with Backup Exec functions:
 - a. Restoring from an Exchange backup
 - b. Recovering mailbox data with GRT
 - c. Recovering mailbox data from Recovery Storage Group

Appendix A: References

VSSHP

- Software Information ETERNUS VSS Hardware Provider 1.3.0
- <http://www.fujitsu.com/global/support/computing/storage/system/vssh.html>

Symantec Backup Exec

- Symantec Backup Exec 12.5 for Windows Servers Administrator's Guide
- <http://www.symantec.com/business/products/family.jsp?familyid=backupexec>

Microsoft Exchange Server 2007

- <http://www.microsoft.com/exchange/default.mspx>

Appendix B: Glossary

ADBO

Advanced Disk-based Backup Option

CAS

Client Access Server

CCR

Cluster Continuous Replication

COW

Copy On Write

GRT

Granular Recovery Technology

HBA

Host Bus Adapter

HUB

Hub Transport Server

LCR

Local Continuous Replication

LUN

Logical Unit Number

MAPI

Messaging Application Program Interface

MB

Mailbox Server

OPC

One Point Copy

RAID

Redundant Array of Inexpensive Disks

RSG

Recovery Storage Group

VSS

Volume Shadow Copy Service

VSSHP

VSS Hardware Provider

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