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
 - o 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&displayl ang=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&displayl ang=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.

Completion	This wizard helps you create a new storage group.	
Completion	Server Name:	
	Storage group name:	
	Fourth Storage Group	
	Log hies path:	_
	L:\mnt\5G4Log\5G4Log	Browse
	System files path:	
	C:\mnt\SG4DB\SG4DB	Bro <u>w</u> se

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.

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

New Mailbox Database	New Mailbox Database		
	This wizard helps you create a new mailbox database.		
Completion	Storage group name:		
	rx200s3EXCH2007\Fourth Storage Group		
	Mailbox database name:		
	MailboxDatabase		
	Database file path:		
	U:\mnt\SG4DB\SG4DB\MailboxDatabase.edb Browse		

Figure 4 – New Mailbox Database Window

- 5. Click [New] to create the new mailbox database
- 6. 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.

 Introduction Move Options Move Schedule Move Mailbox 	Introduction This wizard helps you move selected mailboxes to a different server or to a different mailbo database on the same server. Specify the destination by selecting the target mailbox database.
	rx200s3EXCH2007\Third Storage Group\SG3MailBox Browse

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.

🙀 ETERNUS ¥55 Hardware Provider - InstallShield Wizard	×
Destination Folder Click Next to install to this folder, or click Change to install to a different folder.	3
Install ETERNUS VSS Hardware Provider to: C:\Program Files\ETERNUS VSS Hardware Provider\	<u>C</u> hange
Install5hield	Cancel

Figure 7 - Destination Folder Window

4. Click [Install] to start the installation.

🖶 ETERNUS VSS Hardware Provider - I	InstallShield Wizard
Ready to Install the Program The wizard is ready to begin installation	n.
Click Install to begin the installation.	
If you want to review or change any of exit the wizard.	f your installation settings, click Back. Click Cancel to
InstallShield	< <u>B</u> ack Install Cancel

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.

VSS Hardware Provider	
Register a provider.	
OK	

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.

VSS Hardware Provider		
Select server type.		
001000 001101 CJP0.		
Backup Server	Production server	steple-back?
Dackup berver	rioddection server	ocand atone
L		

Figure 11 - VSSHP Server Type

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

VSS Hardw	are	Provider		×
Port No.	=	50001		
			OK	

Figure 12 - VSSHP Port Number

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





¥SS Hardware	Provider										
Disk list Disk Disk 1	MBR/GPT	SDV	Size(MB) 20971520	MountPoint/DriveLetter i:¥	-		Target disk Disk	list MBR/GPT	SDV	Size(MB)	MountPoint/DriveLetter
Disk 2 Disk 4 Disk 5 Disk 6 Disk 6 Disk 7 Disk 12 Disk 14 Disk 14 Disk 14 Disk 14 Disk 14 Disk 14 Disk 14 Disk 15 Disk 16 Disk 16 Disk 17 Disk 18 Disk 18Disk 18 Disk 18 Disk 18 Disk 18 Disk 18 Disk	MBR MBR MBR MBR MBR MBR MBR MBR MBR MBR	SDV SDV SDV SDV SDV SDV SDV SDV SDV SDV	20371520 2044900000 102400 20371520 20371520 20371520 20371520 20371520 20371520 20371520 20371520 20371520 20371520 20371520 20371520 20371520 20371520	e:¥ f:t¥	×	> (Used target Disk	disk list MBR/GPT	SDV	Size(MB)	MountPoint/DriveLetter
					ЭK		CANCEL				

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

Figure 14 - Target Pool Selection

11. Click [OK] to register the disks.

/SS Hardware	Provider									
Disk list	unn long		a. (172)			Target disk	list		a. (10)	
Disk Disk 1 Disk 2 Disk 3	MBR/GPT MBR MBR MBR	SDV	Size(MB) 20971520 20971520 204800000	MountPoint/DriveLetter i:¥ e:¥ f:¥	<	Disk Disk 4 Disk 5 Disk 6 Disk 7 Disk 8 Disk 8 Disk 8 Disk 10 Disk 11 Disk 12 Disk 13 Disk 14 Disk 15	MBR/GPT MBR MBR MBR MBR MBR MBR MBR MBR MBR MBR	SDV SDV SDV SDV SDV SDV SDV SDV SDV SDV	Size(MB) 102400 102400 20971520 20971520 20971520 20971520 20971520 20971520 20971520 20971520 20971520 20971520 20971520	MountPoint/DriveLetter
						Used target Disk	disk list MBR/GPT	SDV	Size(MB)	MountPoint/DriveLetter
				OK		CANCEL				

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

🛃 ETERNUS	5 VSS Hardware Provider - InstallShield Wizard	×
Destinati Click Nex	ion Folder xt to install to this folder, or click Change to install to a different folder	3
	Install ETERNUS VSS Hardware Provider to: C:\Program Files\ETERNUS VSS Hardware Provider\	<u>C</u> hange
InstallShield -	< <u>B</u> ack <u>N</u> ext >	Cancel

Figure 18 - Destination Folder Window

4. Click [Install] to start the installation.

🙀 ETERNUS ¥SS Hardware Provider - I	nstallShield Wizard 🛛 🗙
Ready to Install the Program The wizard is ready to begin installation	E
Click Install to begin the installation.	
If you want to review or change any of exit the wizard.	your installation settings, click Back. Click Cancel to
InstallShield	< <u>B</u> ack Install Cancel

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

VSS Hardware Provider		
Select server type.		
Backup Server	Production server	Stand-alone

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 VSSHP 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].

Windows Firewall			
Turn Windows Firewall on or off Allow a program through Windows Firewall	Windows Firewall Windows Firewall can help prevent hackers or malicious software from gaining access to your computer through the Internet or network. How does a firewall help protect my computer		
	🔮 Windows Firewall is helping to protect your comp	outer	
	Windows Firewall is on. Inbound connections that do not have an exception are blo	<u>Change settings</u> ocked.	
	Display a notification when a program is blocked:	No	
	Network location: What are network locations?	Domain network	
See also Network Center			

Figure 27 - Windows Firewall Window

2. Click [Change settings].

💣 Windows Firewall Settings 🛛 🛛 🗙				
General Exceptions Advanced				
Windows Firewall is helping to protect your computer				
Windows Firewall can help prevent hackers or malicious software from gaining access to your computer through the Internet or a network.				
文 • Dn				
This setting blocks all outside sources from connecting to this computer, except for those unblocked on the Exceptions tab.				
Block all incoming connections				
Select this option when you connect to less secure networks. All exceptions will be ignored and you will not be notified when Windows Firewall blocks programs.				
😰 O off				
Avoid using this setting. Turning off Windows Firewall will make this computer more vulnerable to hackers or malicious software.				
Tell me more about these settings				
OK Cancel <u>Apply</u>				

Figure 28 - Windows Firewall Window

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

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

Add a Port	×			
Use these settin port number and service you wan	igs to open a port through Windows Firewall. To find the d protocol, consult the documentation for the program or it to use.			
<u>N</u> ame:	VSSHP			
Port number:	50001			
Protocol:	⊙ ICP			
	C UDP			
What are the risks of opening a port?				
Change scope OK Cancel				

Figure 29 - Windows Firewall Add a Port Window

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

👹 Windows Firewall Settings 🛛 🛛 🔀			
General Exceptions Advanced			
Exceptions control how programs communicate through Windows Firewall. Add a program or port exception to allow communications through the firewall. Windows Firewall is currently using settings for the domain network location.			
What are the risks of unblocking a program? To enable an exception, select its check box:			
Program or port Remote Volume Management Routing and Remote Access Secure Socket Tunneling Protocol Secure World Wide Web Services (HTTPS) SNMP Trap SQL Server (BKUPEXEC) SQL Server Browser VSSHP Windows Firewall Remote Management Windows Remote Management Windows Remote Management Windows Security Configuration Wizard World Wide Web Services (HTTP)			
Add program Add port Properties Delete Notify me when Windows Firewall blocks a new program			
OK Cancel <u>Apply</u>			

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:\>ussadmin list providers ussadmin 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].

😽 Symantec Backup I	exec (TM) 12.5 for Windows Servers
	Symantec Backup Exec for Windows Servers Install Menu Please select the components you wish to install
✓Welcome ✓License ▶Menu License Keys	Install Backup Exec software and options
Local Options Credentials Settings	Install a Symantec Backup Exec media server and options on this computer.
Install Finish	Install Remote Administration Console only Install the Symantec Backup Exec Administration Console on this computer as a Remote Administrator, which allows you to remotely administer media servers from a Windows server or workstation.
	Bemote Install Push install a Symantec Backup Exec media server, additional agents and options, or Remote Agents to remote computers.
<u>Support Web Site</u> <u>View ReadMe</u>	
Symantec.	<u>B</u> ack <u>N</u> ext <u>C</u> ancel

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.

🔞 LiveUpdate	×
Options	
(P) (B)	Welcome to LiveUpdate symantec The following Symantec products and components are installed on your computer: Image: Computer installed in the symantec installed in the symantec installed in the symantec in the symplec
Privacy statement	Click Next to see available updates. Next > Cancel

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.

🙀 Symantec Backup Exec (TM) 12.5 for Windows Servers				
	Welcome to	the Symantec Backup Exec for Windows Servers install wizard		
• Welcome Remote Install Install Finish	Đ	This install wizard will guide you through installing Symantec Backup Exec (TM) 12. Windows Servers and Backup Exec agents to remote computers. To continue, click Next.	5 for	
Support Web Site				
<u>View ReadMe</u>				
Symantec.	C <u>o</u> pyright		Next	<u>C</u> ancel

Figure 35 - Exec Install Agents Welcome Window

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

G Symantec Backup	Exec (TM) 12.5 for Windows Servers					
	Symantec Backup Exec Remote Installation Install agents to remote computers					
✓Welcome	In the Remote Computers list, select the item that you want to install, and then click Add to enter the name of the remote computer that you want to install to.					
Remote Install	Remote Computers	Installation Summary				
Install Finish	Backup Exec Servers Windows Remote Agents NetWare Remote Agents	You can push-install a Backup Exec media server, a remote agent, or an option to one or more remote computers.				
		computer.				
		Select Windows Remote Agents to install any of the following: - Remote Agent for Windows Systems - Advanced Open File Option - Desktop and Laptop Option				
		Select NetWare Remote Agents to install the Remote Agent for NetWare Systems.				
		If a media server or agent is already installed on a remote computer, in the Remote Computers list, select the remote computer, and then click Modify to change the installation.				
		For more information, see Installing Backup Exec in the Symantec Backup Exec Administrator's Guide.				
Support Web Site						
<u>View ReadMe</u>	Add Modify Bemove					
Symantec.	More <u>I</u> nformation	<u>B</u> ack <u>N</u> ext <u>C</u> ancel				

Figure 36 - Backup Exec Agent Selection Window

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

Remote Installation Se	equence
Manual Entry of Re	mote Computer Name
Enter the computer computer that you w	name/IP address and the domain of the remote want to add.
Name/IP address:	Example: Servername
<u>D</u> omain:	Example: Domainname.com
	<u>B</u> rowse
	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

Remote Installation Sequence					
Remote Compu	ter Logon Credentials				
Enter the user name and password for an account that has administrative rights on the remote computer, and then enter the domain that the remote computer is in. If the computer is in a workgroup, select or enter the computer name in the Domain field.					
<u>S</u> erver Name:	\\129.212.40.19				
11 - N					
<u>U</u> ser Name:					
<u>P</u> assword:					
<u>D</u> omain:	RX300A				
Use this user name and password when attempting to connect to additional computers during the installation					
	<u>D</u> K <u>C</u> ancel				

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.

 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

	Advanced Disk-based Backup
Solootions	I lie
Besource Order	Te on thost packup to move packup processing non-remote computer to media server
Besource Credentials	Snapshot provider: Hardware - Use technology provided by hardware manufacturer
Priority and Availability	
Selection List Notification	□ Job disposition
estination	
Device and Media	If any or the selected resources do not support ormost backup:
ettings	Continue the backup job (offhost backup is not used)
General	Eail the backup ich (further releations are not backed up after failure occure).
Advanced	 Earrie backup (bb (runner selections are not backed up arter failule occurs)
Network and Security	
Pre/Post Commands	Process logical volumes for offbost backup one at a time
Advanced Open File	
Advanced Disk-based Backup	
Microsoft SQL	
Microsoft Exchange	
Microsoft SharePoint	
Microsoft Active Directory	
Lotus Domino	
DB2	
Netware SMS	
Linux Unix and Macintosh	
NDMP	
Enterprise Vault	
VMware Virtual Infrastructure	
Microsoft Virtual Server	
Notification	
requency	
Schedule	

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)".

Source	Microsoft Exchange
Selections	Information Store Backups
Resource Order	Backup method:
Resource Credentials	
Priority and Availability	Full - Database & Logs (rlush committed logs)
Selection List Notification	Continuouslu back up transaction logs with Backup Exec Continuous Protection Server
Destination	
Device and Media	Make a recovery point that creates browsable backup sets and 🛛 🗧 Hours 🔻
Settings	truncates logs every
General	Without recovery points, individual mail messages and folders can only be recovered from the last
Advanced	tuli backup.
Network and Security	Use Backup Exec Granular Recovery Technology (GRT) to enable the restore of individual mailboxes, mail
Pre/Post Commands	messages, and public folders from Information Store backups (Exchange 2000 and later only; incremental backups supported with policy backed into axiv).
Advanced Open File	Buide Me
Advanced Disk-based Backup	
Microsoft SQL	EPerform consistency check before backup when using Microsoft Volume Shadow Copy Service
Microsoft Exchange	(VSS) snapshot provider
Microsoft SharePoint	Continue with backup if consistency check fails
Microsoft Active Directory	IK Euclidean 2007 Facilities courses in LCD as CCD.
Lotus Domino	I Exchange 2007 backup source is ECH of CCH:
Uracle	Back up from the active copy only (job fails if not available)
DB2	
Netware SMS	
Linux, Unix, and Macintosh	
NDMP Externice V (aut)	
Enterprise Vault	
Microsoft Virtual Server	
Notification	
Frequency	
Schedule	
Schodulo	

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.

ymantec Backup Exec - [Job a Edit View Network	Monitor] Tools Window	Help						Search Kr.	Comments? _
Backup Exec 12.5	for Window	vs Servers							Need Assistant
ckup 🔻 Restore 👻	Job Setup	Job Monitor	Alerts Rep	orts D	evices Med	lia			
neral Tasks 🛞	Job List	Calendar	System Summa	ry					
Hold job queue	Current Jobs - 8	ltems					Filter: All job	s	-
Hold schedule	State	Nama	Douico Nomo	Joh Turpa	Elanced Time	Puto Cou	nt Job Date	T Curron	t Op 1 Job Stat
Delete	Schodulad	SC12-All SC Active	CR Folder	Packup	Nope	None	Nope		Cop Job Sta
Properties		SG1-SG1 Active Polic	CR Folder	Backup	None	None	None		On Hold
ive Job Tanka		SG13-All SG Active	CR Folder	Backup	None	None	None		On Hold
ive Job Lasks 🔗		SG13-All SG Active	CR Folder	Backup	None	None	None		On Hold
Cancel		SG1 Full Passive	All Devices (FXB	Backup	None	None	None		On Hold
Cancel all	Scheduled	SG1-SG1 Active Polic	CR Folder	Backup	None	None	None		On Hold
Hold all schedules		SG13-All SG Active	CR Folder	Backup	None	None	None		On Hold
Respond to alert		SG1-SG1 Active Polic	CR Folder	Backup	None	None	None		On Hold
eduled Job Tasks 🛛 🔕	******								
Pup pow	Π								
Test run	4								
Hold all schedules									
Increase priority									
Decrease priority									
stom Filter Tasks 🔹 🛞	•								
Manage custom filters	Job History - 32	2 Items					Filter: All job	\$	•
	Name	Device	Name	Job Type	Job Status Ela	psed Time	Byte Count	Job Rate	Percent Complet
	晃 Test sg3 an	1 Exchan	ge2007	Backup	Successful 0:0	9:17	7,801,693,470	2,076.00 M	100%
	😼 Erase Librar	y 00024 CR Fold	ler	Erase	Successful 0:0	0:02			100%
	😼 Erase Librar	y 00023 CR Fold	ler	Erase	Successful 0:0	0:27			100%
	Brase Librar	y 00022 Exchan	ge2007	Erase	Successful 0:0	0:18			100%
amountain	SG1 Full Act	ive CR Fold	ler	Backup	Successful 0:0	3:36	3,869,936,414	2,069.00 M	100%
symantec.									

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.

Restore Job Properties	Comments?	
Source Selections	Celections	
Resource Credentials	Restore 00058 🗾 Load selections from existing list 🗹 Include subdirectories	
Device	Search Catalogo	
Destination	Include/Exclude	
File Redirection	Beginning 6/23/2009 Ending 7/23/2009	
Microsoft SQL Redirection		
Microsoft Exchange Redirection	View by Resource View by Media View Selection Details	
Microsoft SharePoint Redirection		Туре
Oracle Redirection	🗄 🖉 🗐 RX20053EXCH2007.RX300A.LOCAL 🛛 🔽 付 Logs	Micro:
DB2 Redirection	🗄 🖉 🤗 Microsoft Information Store	File Fi
Enterprise Vault Redirection	📄 🖉 🍿 First Storage Group	
VMware Redirection	🗄 🐨 🗹 🙀 7/21/2009 9:06:24 AM (Offhost Fu	
Microsoft Virtual Server Redirection	🗄 🔄 👘 Third Storage Group	_
Settings		
General		_
Advanced		
Network and Security		_
Pre/Post Commands		
Microsoft SQL		_
Microsoft Exchange		
Microsoft SharePoint		
Microsoft Active Directory		
Lotus Domino		
Oracle	7/21/2009 9:06:24 AM (Offhost Full)	_
DB2		_
Enterprise Vault	General	
NetWare SMS	Resource Name: px200s3EXCH2007.px300a.local - First Storage Group	
Linux, Unix, and Macintosh	Backup Date: 7/21/2009 9:06:24 AM	
NDMP	Method: Offnost Full	
VMware Virtual Infractructure	Mendu. Onnostrun	-
	<u>R</u> un Now Cancel	<u>H</u> elp

Figure 44 - Restore Job Selections Window

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

Figure 45 - Restore Job Microsoft Exchange Window

- 5. Click [Run Now] to start the restore job.
- 6. Confirm the successful completion of the restore job, and mount the target mailbox database.
- 7. 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:

- 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.

estore Job Properties	<u>Comments?</u>	
Source Selections Resource Credentials Device Destination File Redirection Microsoft SQL Redirection Microsoft Exchange Redirection	Selections Selection list: Restore 00058 Include subdirectories Search Catalogs Include/Exclude Beginning 6/23/2009 Backup date: 7/23/2009 View by Resource View by Media	
Microsoft SharePoint Redirection	I Resources I Name Size	Ту▲
Uracle Redirection	E-Z Z KX20053EXCH2007.RX300A.LOCAL	Me
Enterprise Vault Redirection	🖃 🖉 🤔 Microsoft Information Store	Me
VMware Bedirection	E I I I I I I I I I I I I I I I I I I I	Me
Microsoft Virtual Server Bedirection	E V W SC1MailBox	Me
Settings		Me
General	The second leader (leader)	Me
Advanced	Trice	Me
Network and Security	🗄 🗌 🦳 rx200s3EXCH2007 B61	Me
Pre/Post Commands	🗄 🗖 🚔 rx200s3EXCH2007 B61 🛄 💆 🧐 To-Do Search	Me
Microsoft SQL	🗄 🗖 🐴 rx200s3EXCH2007 B61 🛛 🗹 🗐 Top of Informati	Me
Microsoft Exchange	🗄 🖂 🖓 rx200s3EXCH2007 B61 🛛 🗹 🎾 Views	Me
Microsoft SharePoint	🕀 – 🗋 🚔 rx200s3EXCH2007 B61 🔤 🗹 🖾 <no subject=""> 🛛 1KB</no>	Me_1
Microsoft Active Directory	The Transfer of the second sec	M
Lotus Domino		<u> </u>
Oracle	rx200s3EXCH2007 B611FE5C-LGU000000 [b611fe5c-lgu000000]	-
Enterprise Vault	General	
NetWare SMS	Date:	
Linux, Unix, and Macintosh	Tuna: Mailhay	-
NDMP	1996. Wallbux	_
VMixiare Virtual Infrastructure	Name: nzzuusiexcHzuu7 B611FE5C-LGOUUUUUU (6611fe5C-IguUUUUUU)	
	<u>B</u> un Now Cancel <u>E</u>	<u>l</u> elp

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.

۶۰ Microsoft Exchange Troubleshooting Assistant 📃 🗖
Microsoft Exchange Troubleshooting Assistant
Welcone Welcone Select atask Restart current task. Select a result file to view View a report See also Tobbleshooting Assistant Help Obout the Exchange Tobbleshooting Seed 1 Task Checking if unning on Edge Trape Read Registy Information Select 1 Task Checking if unning on Edge Trape Read Registy Information Select 1 Task Checking if unning on Edge Trape Read Registy Information Select 1 Task Checking if unning on Edge Trape Read Registy Information Select Task One of the Exchange Next

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]

Restore Job Properties			Comments? 💶 🗖 🗙
	- Microsoft Euclopean Redirection		
Source	Microsoft Exchange Redirection		
Selections	I✓ Redirect <u>E</u> xchange sets		
Resource Credentials	Restore to server:		
Device			
Destination	Server logon account:	System Logon Account	Lhange
File Redirection	Redirect using Volume Shadow C	opy Service (VSS) snapshot provider	
Microsoft SUL Redirection	© Bedirect to Storage Group an	nd Database (Exchange 2007 only)	
Microsoft Exchange Redirection	Postoro to Storogo Group		
Microsoft SharePoint Redirection	nestore to storage group.	J	
DP2 Redirection	Restore to Database:		
Enterprise Vault Bedirection			
VMware Bedirection	Redirect to Recovery Storage	e Group (RSG) (Exchange 2007 only)	
Microsoft Virtual Server Bedirection	Redirect to drive and path (E)	xchange 2003 and 2007)	
Settings	Bestore to drive:		
General	Treaters to dive.	1	27
Advanced	Restore to path:		
Network and Security			
Pre/Post Commands	Redirect mailboxes or public folde	18	
Microsoft SQL	Redirect mailbox sets		
Microsoft Exchange	Bestore to mailbox:		
Microsoft SharePoint	1100000	1	
Microsoft Active Directory	Mailbox logon account:	System Logon Account	Cha <u>ng</u> e Clear
Lotus Domino			
Oracle	C Redirect public folder sets -		
DB2	Bestore to public folder:		
Enterprise Vault		1	
NetWare SMS	Public folder logon account:	System Logon Account	Cha <u>ng</u> e Clear
Linux, Unix, and Macintosh			
NDMP VMusee Vistual Infrastructure			
		<u>R</u> un Now	Cancel <u>H</u> elp

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/vsshp.html

Symantec Backup Exec

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

Microsoft Exchange Server 2007

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

Appendix B: Glossary

ADBO		LUN	
	Advanced Disk-based Backup Option		Logical Unit Number
CAS		MAP	Ι
	Client Access Server		Messaging Application Program Interface
CCR		MB	
	Cluster Continuous Replication		Mailbox Server
COW	7	OPC	
	Copy On Write		One Point Copy
GRT		RAID)
	Granular Recovery Technology		Redundant Array of Inexpensive Disks
HBA		RSG	
	Host Bus Adapter		Recovery Storage Group
HUB		VSS	
	Hub Transport Server		Volume Shadow Copy Service
LCR		VSSH	IP
	Local Continuous Replication		VSS Hardware Provider

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