

ETERNUS

Backup/Recovery Solution for Hyper-V CSV using ETERNUS Disk storage system and Microsoft System Center Data Protection Manager 2010

System Configuration Guide

May 2011

Fujitsu Limited

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1. Introduction

Fujitsu carried out verification of data protection and recovery for Hyper-V Cluster Shared Volumes using Microsoft System Center Data Protection Manager 2010, Fujitsu ETERNUS Disk storage system and ETERNUS VSS Hardware Provider. This document describes the steps needed to perform data protection and data recovery.

1-1. Revision Level

Revision	Date	Description
1.0	May 2011	Initial Release

1-2. Audience

This document is intended for IT administrators and system engineers who have an interest in implementing Windows Server 2008 R2 Hyper-V Cluster Shared Volumes using Fujitsu ETERNUS Disk storage systems. It is assumed that the reader has a general knowledge of Microsoft System Center Data Protection Manager 2010, Hyper-V, ETERNUS Disk storage systems and ETERNUS VSS Hardware Provide. Also, this document is not responsible for System integration. We recommend that a user tests a system before being put into operation.

1-3. Glossary

The products and functions are defined as follows:

- SCDPM2010 : System Center Data Protection Manager 2010
- ETERNUS VSSHP : ETERNUS VSS Hardware Provider
- CSV : Cluster Shared Volumes
- SDV : Snap Data Volume of ETERNUS Disk storage system

The servers are defined as follows:

- Hyper-V host : The server where Hyper-V Guest OS is running. DPM Agent is installed.
- DPM server : The server where SCDPM2010 is installed. This server is a backup server.

2. Product Information

2-1. Data Protection Manager 2010

Data Protection Manager (DPM) 2010 is part of the System Center family of management products from Microsoft. It delivers unified data protection for Windows servers such as SQL Server, Exchange, Share Point, Virtualization and file servers -- as well as Windows desktops and laptops. DPM seamlessly uses disk, tape, and cloud-based repositories to deliver an easy-to-use and best-of-breed backup and recovery solution for Windows environments from Microsoft. Windows customers of all sizes can rely on Microsoft to provide a scalable and manageable protection solution that is cost-effective, secure, and reliable.

Please refer to the page below for detail: http://www.microsoft.com/systemcenter/en/us/data-protection-manager.aspx

2-2. ETERNUS Disk storage system

ETERNUS Disk Storage Systems are designed to meet all the requirements of mission-critical environments. ETERNUS DX8000 series provides the largest capacity disk storage systems and features high scalability in both server connectivity and storage capacity. ETERNUS DX400 series delivers a midrange disk storage system with the flexibility to support a wide range of configurations. The ETERNUS disk storage systems lineup is completed by the compact, highly reliable, and scalable, entry disk storage systems - ETERNUS DX60/DX80/DX90. Their small profile and power-saving design is a great match to any environmental concerns. Business continuity is supported by the high availability of every ETERNUS disk storage system. All provide redundant configurations and hot swappable main components (fans, power supplies, etc.).

 ETERNUS Disk Storage System <u>http://www.fujitsu.com/global/services/computing/storage/eternus/products/diskstorage/</u>

2-3. ETERNUS VSS Hardware Provider

This software is designed to provide support for Microsoft Volume Shadow Copy service (VSS) with Fujitsu Disk Storage Systems. Use of this software with backup software and writer software supporting VSS delivers online backup using the one point copy (snapshot) capability of Advanced Copy function available with ETERNUS Disk storage System.

 Product information and download page <u>http://www.fujitsu.com/global/services/computing/storage/eternus/tools/vsshp.html</u> <u>http://www.fujitsu.com/global/services/computing/storage/eternus/products/diskstorage/feature/strsys-c</u> <u>14.html</u>

2-4. ETERNUS SF Storage Cruiser and ETERNUS SF AdvancedCopy Manager

ETERNUS SF Storage Cruiser provides the advanced storage infrastructure management capability based on the SAN (Storage Area Network) management features. ETERNUS SF Storage Cruiser can unify management of ETERNUS Disk Storage Systems as well as the SAN environment including servers and FC switch. This supports the stable operation of the storage systems. In addition, the complex storage environment can easily and surely be managed by using GUI. This leads to a significant cost reduction.

ETERNUS SF AdvancedCopy Manager provides high-speed backup, restore and replication features using ETERNUS Disk Storage Systems. The Advanced Copy functions of ETERNUS Disk Storage Systems ensure that high-speed backups are performed every time, regardless of the size of the data, keeping down backup times to a minimum even for large volumes of data. ETERNUS SF AdvancedCopy Manager supports online backups, where business operations are not interrupted. This feature operates with major database systems such as SQL Server, Exchange Server, Oracle and DB2. ETERNUS SF AdvancedCopy Manager can be used as part of your disaster recovery solution to minimize the risk of data loss and to restore normal operations quickly, thus reducing the overall down time of business operations.

Please refer to the page below for detail:

http://www.fujitsu.com/global/services/computing/storage/eternus/products/eternus-sf/

*) In this verification, we don't use ETERNUS SF Storage Cruiser and ETERNUS SF AdvancedCopy Manager.

3. System Configuration



The evaluation environment was set up as follows:

- One Hyper-V host serves as Active Directory Domain Controller.
- Two Hyper-V hosts are member of Windows Server Failover Clustering.
- Three open volumes and three SDVs are created on the ETERNUS DX8400.
- Assign two "open" volumes of ETERNUS DX8400 to the Hyper-V host and create two virtual machines on the volumes. Volumes are used as CSV.
- Assign two "SDVs" of ETERNUS DX8400 to the Hyper-V host. The logical capacity of SDV must be the same as that of the CSV. This volume is used as a snapshot volume.
- Assign one "open" volume of ETERNUS DX8400 to the DPM server. This volume is used as DPM Storage Pool volume.
- Assign one "SDV" of ETERNUS DX8400 to the DPM server. The logical capacity of this SDV must be the same as that of the DPM Storage Pool volume. This volume is used for SAN recovery and needs to be set to offline on the Disk Management tool.
- Install ETERNUS VSSHP to all servers and set "Local Copy Configuration". Target disk pool management setting is only needed on the Hyper-V host. For more details, please refer to the ETERNUS VSSHP User's guide.
- ETERNUS Disk storage systems perform the Advanced Copy at the request of SCDPM2010 via ETERNUS VSSHP and snapshot volumes of CSV are created. DPM2010 obtains the backup data from the snapshot volumes and stores the data to the DPM Storage Pool.

It is assumed that the installations and setting of Active Directory Domain Service, SCDPM2010, ETERNUS VSSHP and ETERNUS Disk storage system are already completed in this evaluation environment.

3-1. Hardware Configuration

Server Configuration (Hyper-V host and DPM server)

- Model: Fujitsu PRIMERGY BX620 S3
- System: Intel Xeon 2.33GHz , 4096MB RAM

Storage System Configuration

- Model : Fujitsu ETERNUS DX8400
- RAID : RAID5 (Disk 146GB/15krpm)

3-2. Software Configuration

Hyper-V host

- Microsoft® Windows Server® 2008 R2 Enterprise Edition (Host OS)
- Microsoft® Windows Server® 2008 Enterprise Edition Service Pack 2 (Guest OS)
- Hyper-V Integration Services (Guest OS)
- Microsoft System Center DPM Protection Agent
- ETERNUS VSS Hardware Provider 1.5.0
- ETERNUS Multipath Driver V2.0L16

DPM server

- Microsoft® Windows Server® 2008 R2 Enterprise Edition
- Microsoft System Center Data Protection Manager 2010
- ETERNUS VSS Hardware Provider 1.5.0
- ETERNUS Multipath Driver V2.0L16

4. Protecting and Recovering Hyper-V CSV

This section provides the steps to backup Hyper-V CSV with ETERNUS VSSHP, and to recover the data from DPM storage pool.

In this backup scenario, ETERNUS Disk storage systems perform the high-speed Advanced Copy at the request of SCDPM2010 via ETERNUS VSSHP and create snapshot volumes. No SCDPM2010 settings for using ETERNUS VSSHP should be necessary. SCDPM2010 obtains the backup data from the snapshot volumes across a LAN. Usually, the redirected I/O access occurs when data backup for the CSV VM begins, and I/O performance might be going down. The big advantage of this scenario compared with using Software Provider is the time of redirected I/O access is minimized because ETERNUS disk storage systems and ETERNUS VSSHP instantly create snapshot volumes.

Recovery of the CSV is performed by using SCDPM2010 functions. We confirmed two kinds of recoveries in this evaluation program.

- 1. Recovery across a LAN by using SCDPM2010 functions.
- 2. Recovery in a SAN environment by using SCDPM2010 SAN Recovery function and ETERNUS VSSHP commands.

4-1. Data Backup

To execute backup with ETERNUS VSSHP, perform the following steps to create new protection group on the DPM server.

1. In the DPM2010 Administrator Console, click [Protection] on the navigation bar, and then [Create protection group].

🔯 DPM 2010 Administrator Console				
File Action View Help				
Monitoring Protect	stion Recovery Repo	rting 💦 Management	Ú	Actions Microsoft System Center Data Prot 🔺
Group by: Protection group	3		arch details also (Slow)	View 🕨
Protection Group Member 🕗	Туре	Protection Status		Selected Item
	No protection group has be Before you start protecting data. DPM recomm 1. Add dick to the DPM storage pool, unless y 2. Install a protection spart on each compu 3. Install a tape library if you want to us <u>Need help oetling str</u>	en created. nends that you do the following: ou want to use custom volumes: Let that you want to protect. e tapebased protection. atted?		Create protection group Modify protection group Stop protection of group Add clients to protection group Manage online protection Configure self service recovery for Were taken lich

2. Click [Next] on the Welcome to New Protection Group page.



3. In the "Select Protection Group Type" page, confirm that "Servers" is selected, and then click [Next].



4. In the "Select Group Members" page, select the data source to be protected. This time, select the "Backup Using Child Partition Snapshot" of VM1, and then click [Next].

Welcome	I o choose the data to protect, select the check bo directory structure, and clear the check box of the I	ixes in the Available members section. To ex folder:	clude a folder, expand the
Select protection group type	Available members	Selected members	
Select group members	ETLCSV2.fujitsu.com	Selected Members	Computer
 Select data protection method 	ETL_Cluster (Cluster)	\Backup Using Child Pa.	VM1.ETL_Cluster.ETLCS
Select short-term goals Choose consistency check options Summary	E Die HyperV E Die Backup Using Child F B E WIN-350TBKN8C53 E ₩ WIN-4711040FMC1	Partition Srr	
			Remov
		Excluded folders: 0	View View

5. In the "Select Data Protection Method" page, name the protection group. This time, enter "PG1". Confirm that "I want short-term protecting using" is selected and then click [Next].

🔯 Create New Protection Gro	up 🛛 🗙
Select Data Pr DPM can provide dist	otection Method . and tape based data protection.
Steps:	Protection group partice PG1
Welcome Select protection group type Select group members Select data protection	Protection method Select your protection method.
 Select data protection Select elect term coole 	P i want shortenin protection using.
Choose consistency check options Summary	I want long-term protection using tape Protection using tape options are disabled as no tape libraries were detected.

6. In the "Specify Short-Term Goals" page, accept the default setting for Retention Range and then click [Next].



7. In the "Review Disk Allocation" page, accept the default and then click [Next].

teps:	Review the disk space allocated for new members of this protection group. □ Disk space allocation for new members
Welcome Select protection group type Select group members Select data protection method Select short-term goals Review disk allocation Choose replica creation method Choose consistency check options	Total data size: 9.74 GB Disk space allocated in DPM: 21.05 GB Modify Co-locate data in DPM Storage Pool Co-locating data enables DPM to protect more number of data sources per replica volume. Only certain type of data can be co-located. Click Help to learn more. ✓ Automatically grow the volumes Automatically grow the volumes. Automatically grow the volumes. Storage pool datais Details of all disk space currently allocated and free disk space that remains in the DPM storage pool.
Summary Status	Total disk space allocated: 3.03 MB

8. In the "Choose Replica Creation Method" page, confirm that [Automatically over the network]-[Now] is selected, and then click [Next].

Create New Protection Gr Choose Repli To protect the data y	ca Creation Method cou have selected, you must initially copy the selected data to the Data Protection Manager computer.
Steps: Velcome Select protection group type Select group members Select data protection method Select short-term goals Review disk allocation	DPM must create a replica to copy the selected data to the DPM server. How do you want to create the replica? Replica in DPM Server Automatically over the network Now Later 4/22/2010 9:57:53 AM C Manually You must transfer the data using removable media.
 Choose replica creation method Choose consistency check 	For large amounts of data, this operation may be faster than replica creation across the network.

9. In the "Consistency check options" page, accept the default and then click [next].



10. In the "Summary" page, confirm the setting summary and then click [Create Group].



11. In the "Status" page, confirm that all Task show "success" and then click [Close].

뒣 Create New Protection Gro	Create New Protection Group					
Status						
Steps:	Tasks					
Welcome	Task 🗸	Results				
Select protection group type	Create protection group: PG1	Success				
 Select group members 	Allocate Replica For \Backup Using Child Partition Snapshot\VM1	Success				

12. Data backup for the CSV VM begins.

🤯 DPM 2010 Administrator	Console						_ 🗆 ×
File Action View Help							
Monitoring	Protection	Recovery	Reporting	Management	i	Actions Microsoft System Center	Data Prot 🔺
Alerts Jobs Group by: Severity	T	Show inactive alert	\$			View View Help Selected Item	,
Search list below Occurred Since	Affected Area	Computer	Protection Group	P Search deta Alert	ails also (Slow)	Subscribe to notifications	kur.
(Total ale 4/22/2010 9:28:08 AM	erts: 1) \Backup Using Child Pa	rtitio vm1.etl_cluster	.et PG1	Replica creation in progress		Inactivate alert Options Phelp	

After the backup job is complete, the Protection status turns "OK".

DPM 2010 Administrator Console File Action View Help			
Monitoring Protection	Recovery	Reporting Management	1 Actions Microsoft System Center Data Prot
Group by: Protection group			View
Search list below		🔎 🔽 🔽 Search details also (Sli	w) Help
Protection Group Member	Туре	Protection Status	Selected Item
Protection Group: PG1 (Total members: 1)	Create protection group		
Gluster Network Name: VM1.ETL Cluster.ETI	Modify protection group		
Backup Using Child Partition Snapshot\VM1	Stop protection of group		
			Add clients to protection group

Open the Event Viewer on the Hyper-V host and confirm ETERNUS VSSHP worked for the data protection.

🔡 Event Viewer						_ 🗆 ×
File Action View Help						
🗢 🔿 🞽 🖬 🚺 🖬						
Event Viewer (Local)	Application Numb	per of events: 4,684 (!) New (events available		Actions	
Custom Views	Level	Date and Time	Source		Application	-
Application	1 Information	4/22/2010 9:29:04 AM	VSS		open Saved Log	
Security	Information	4/22/2010 9:28:58 AM	654_ETL_VSS Provider	<u> </u>	💜 Create Custom View	
Secup	1				Import Custom View	
Forwarded Events	Event 560, 654_ETL	_VSS Provider		×	Clear Log	
Applications and Services Lo Saund Logs	General Details]			Filter Current Log	
Subscriptions						
	STXV0560 INFC	SnapOPC + has started. So	urce-BoxID =		Properties	
	00E8000MC###	###E8C0S20A####LOPEM0	108########, Source-OL 108#########, Target-OLI	U = 0x0022, Target-Box1D = J = 0x0024	Find	
					Save All Events As	
					Attach a Task To this Log	
					View	•
					🖪 Refresh	
					👔 Help	Þ
					Event 560, 654_ETL_VSS Provide	er 🔺
					Event Properties	
					💿 Attach Task To This Event	
	Log Name:	Application			Сору	•
	Source:	654 ETL VSS Provider	Logged:	4/22/2010 9:28:58 AM	Save Selected Events	
	Event ID:	560	Task Category:	None	Refresh	
	Level:	Information	Keywords:	Classic	V Help	
	User:	N/A	Computer:	BLADE5-W2K8R2-E.ETLCSV	Top 100	
	OpCode:					
	More Informatio	on: Event Log Online Help	2			
	4					

4-2. Data Recovery

To recover data across a LAN, perform the following steps on the DPM server.

- 1. Open the Hyper-V Manager on the Hyper-V host. Shut down the target virtual machine if it's running.
- 2. In the DPM 2010 Administrator Console, click [Recovery].

🐻 DPM 2010 Administrator Co	isole		1	
File Action View Help				
Monitoring	Protection Recovery	Reporting Management	Actions Microsoft System Center Data Prot.	
🞑 Browse 🔍 Search			View	•
Protected data:	Help			

3. From the left panel, select "All Protected Data" of the target virtual machine. Next, select "Backup Using Child Partition Snapshot\VM1" from Recoverable Item panel, and then click [Recovery] from Selected Item panel.

File Action View Help Monitoring Protection Recovery Reporting Management Actions Image: Browse Search Search Wew Image: Browse Search Wew Image: Browse Search Wew Protected data Recovery points for: Backup Using Child Partition Snapshot/V/M1 Wew Image: Browse Search View Image: Browse Search Filter Image: Browse Search Available recovery points are indicated in bold on the calendar. Select the date from the calendar. Selec	and the second se
Monitoring Protection Recovery Reporting Management Actions	
11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	ta Prot A
Path: All Protected HyperV Data Search list below Image: Comparison of the search list below Recrywerbler trem / Last Modified Size Image: Comparison of the search list below	

4. In the "Review Recovery Selection" page, confirm the content and then click [Next].

Review Recov Review the informati	very Selection on for the items that you chose to recover.
Steps:	Review your recovery selections.
Review recovery selection	Recovery point: 4/22/2010 10:12:23 AM
Select recovery type	Recover from: Disk
Specify recovery options	Them details
Summary	Recovery item: Backup Using Child Partition Snapshot/VM1
Becoveru status	Size 9.83 GB
Theorem of the status	Becoveru source: VBackup Using Child Partition Spanshof/VM1 on VM1 ETL. Cluster ETLCSV2 fui

5. In the "Select Recovery Type" page, confirm "Recover to original instance" is selected and then click [Next].



6. In the "Specify Recovery Options", accept the default and then click [Next].

Steps:	- Natural bandwidth usage thrattling	
Review recovery selection	Status: Disabled	Modify
Select recovery type Specify recovery options Summary	SAN Recovery Enable SAN based recovery using hardware snapshots Click on Help to learn about the prerequisite steps	
 Recovery status 	Notification Send an e-mail when this recovery completes Recipients: Example: Kim@Conto	esses with comma. sso.com, Terry@Adventure-works.com

7. In the "Summary" page, confirm the setting summary and then click [Recover].

Steps:	Recovery point:	4/22/2010 10:12:23 AM	
Review recovery selection	Recovery media:	Disk	
Select recovery type	Source:	\Backup Using Child Partition Snapshot\VM1 on VN	11.ETL_Cluster.ETLCSV2.fujitsu.com
Specify recovery options	Destination:	\Backup Using Child Partition Snapshot\VM1 on VN	11.ETL_Cluster.ETLCSV2.fujitsu.com
Summary	Notification:	No	
Recovery status	Recovery items Recovery item: Details:	Backup Using Child Partition Snapshot\VM1	
	Files	Destination	Size /
	VM1-1.vhd	C:\ClusterStorage\Volume1\V	-
	1226A19D-	B8C2-4933-ACE C:\ClusterStorage\Volume1\V	
	*	C:\ClusterStorage\Volume1\V	
	Total size:	9.83 GB	
~ ~	Any synchron	ization job for the selected recovery server will be can	celled while the recovery is in

8. In the "Recovery Status" page, the progress is shown.

With Recovery Wizard	tus	X
Steps:	Recovery status:	In progress
Review recovery selection	Start time:	4/22/2010 10:56:26 AM
Select recovery type	End time:	•
Specify recovery options	Data transferred:	
Summary	Recovering	
 Recovery status 		
	You can now clos	e the Recovery Wizard and view the recovery status in the Monitoring task area.

After completing the recovery job, the Recovery status turns "Successful".

or Recovery Wizard			×
Recovery Stat	tus		
Steps:	Recovery status:	Successful	
Review recovery selection	Start time:	4/22/2010 10:56:26 AM	
Select recovery type	End time:	4/22/2010 10:59:38 AM	
Specify recovery options	Data transferred:	9,978.31 MB	
Summary			
 Recovery status 			

9. Open the Hyper-V Manager on the Hyper-V host. Start the recovered virtual machine and confirm it works properly.

4-3. SAN based recovery

One of the benefits of deploying SCDPM2010 is SAN recovery. SAN recovery can recover the data under SAN environment, bypassing the LAN. You can expect to reduce the amount of network traffic and raise the recovery performance. To recover the data using SAN Recovery, follow these steps:

- 1. Open the Hyper-V Manager on the Hyper-V host and Shut down the target virtual machine if it is running.
- 2. Create a power shell script named CreateShadowCopy.ps1 and save it in "C:\Program Files\Microsoft DPM\DPM\bin" on the DPM server. Script content is shown in the Appendix.
- Run the "CreateShadowCopy.ps1" script on the DPM Management Shell, and provide the data source name and the protection group name as follows: DatasourceName : Backup Using Child Partition Snapshot\VM1 ProtectionGroupName : PG1



4. Open the Disk Management tool on the DPM server and confirm the disk number of DPM Storage Pool and SAN Recovery volume. In this case, DPM Storage Pool is Disk 1 and SAN Recovery volume is Disk 2.

💭 Computer Management									_ 0
File Action View Help									
🔶 🔿 🙋 📅 🚺 🔂	X 督 🖻 🔍 📓								
🛃 Computer Management (Local)	Volume		Layout	Туре	File System	Status			Actions
Yg System Tools Task Scheduler Jask Scheduler Jask Scheduler Jask Scheduler Jask Scheduler Jose Scheduler Sch	C(:) DPM-vol_ab6802 DPM-vol_ab6802 System Reserved	76-b421-4132- 76-b421-4132- I	Simple Simple Simple Simple Simple	Basic Basic Dynamic Dynamic Basic	NTFS NTFS NTFS NTFS NTFS	Healthy (B Healthy (P Healthy Healthy Healthy (S	oot, Page File, Crash Dump, rimary Partition) ystem, Active, Primary Partit	Logical Drive) ion)	Disk Management More Actions
Services and Applications									
	↓		(
	Basic 68.37 GB Online	System Re: 100 MB NTFS Healthy (Sysi	(D:) 34.08 Gl Healthy	iB NTFS (Primary F	Partition)	(C:) 34.17 Health	GB NTFS hy (Boot, Page File, Crash	12 MB Unallo	
(Dynamic 50,00 GB Online	DPM-vol_ab 14.62 GB NTF: Healthy	680276-I 5	6421 D	PM-vol_ab6 .44 GB NTF5 ealthy	BO276-b 4	28.94 GB Unallocated		
	Basic 50:00 GB Offline (1 Help	50.00 GB Unallocated							
	Unallocated	Primary par	tition 📕	Extende	d partition	Free spa	ace 📕 Logical drive 📕 S	imple volun	

5. Create the snapshot session of the DPM storage Pool on the SAN Recovery volume, using ETERNUS VSSHP vsshpsnap command on the DPM server. Specify SOPCP_START for option, and specify the source disk number and target disk number for operand. In this case, the DPM storage Pool's disk number is disk 1 and the SAN Recovery volume's disk number is disk 2, we need to input "vsshpsnap SOPCP_START 1 2".



- 6. By using ETERNUSmgr, unassign the SAN Recovery volume on the DPM server and assign the SAN Recovery volume to the Hyper-V host.
- 7. Open the Disk Management tool on the Hyper-V host and mount the SAN Recovery volume.

🛃 Computer Management								_ 🗆 X
File Action View Help								
🗢 🔿 🖄 🖬 🚺 🔂	r 15							
Computer Management (Local) System Tools Computer Management (Local) System Tools Computer Management Computer Management Storage Storage Storage Storage	Volume C (C:) CPM2010backup (1:) CPM4-vol_ab68027 CPM4-vol_ab68027 New Volume System Reserved	Layout Type Simple Basic Simple D Simple D Simple Basic Simple Basic	File System NTFS NTFS NTFS NTFS NTFS NTFS NTFS	Status Healthy (Bot, Page Fi Healthy (Primary Partit Healthy Healthy Healthy (Logical Drive) Healthy (System, Activ	le, Crash Dump, Primary Partition) ion) e, Primary Partition)	Capacity 38.96 GB 48.83 GB 14.62 GB 6.44 GB 48.84 GB 100 MB	Actions Disk Management More Actions	+
	Oisk 2 Basic So.00 GB Reserved () Help	0.00 GB				×		
	GeDisk 3 Basic 50.00 GB Reserved 1 Help).00 GB						
	Dynamic 50.00 GB Online	PM-vol_ab6802 4.62 GB NTFS ealthy	: 76-b4: DI 6. He	PM-vol_ab680276-t 44 GB NTFS salthy	28.94 GB Unallocated			
	Unallocated P	rimary partition	Extend	ed partition 📘 Free :	space 📕 Logical drive 📕 Sim	ple volum		

8. Run the recovery job in reference to "4-2. Data Recovery". At that time, check "Enable SAN based recovery using hardware snapshot" in the "Specify Recovery Options" page.

🤯 Recovery Wizard	
Specify Recover Specify the options to	rery Options o apply to the recovery.
Steps: Review recovery selection	Network bandwidth usage throttling Status: Disabled <u>Modify</u>
 Select recovery type Specify recovery options 	SAN Recovery SAN Recovery Imable SAN based recovery using hardware snapshots
 Summary Recovery status 	Click on Help to learn about the prerequisite steps Notification Send an e-mail when this recovery completes Recipients:
	Separate e-mail addresses with comma. Example: Kim@Contoso.com, Terry@Adventure-works.com

9. After completing recovery job, cancel the snapshot session by using ETERNUS VSSHP vsshpsnap command on the DPM server. Specify SOPCP_CANCEL for option, and specify the source disk number and target disk number for operand.



- 10. Open the Hyper-V Manager on the Hyper-V host. Start the recovered virtual machine and confirm it works properly.
- 11. Unassign the SAN recovery volume on the Hyper-V host and then assign it back to the DPM server.

Appendix : Script

```
param([string] $DSName, [string] $PGName)
if(!$args[0])
   if(!$DSName)
          $DSName = read-host "DatasourceName:"
  }
élse
    if(("-?","-help") -contains $args[0])
         write-host Usage::
write-host GreateShadowCopy.ps1 DatasourceName ProtectionGroupName
write-host Help::
write-host Greates a shadow copy for the given Datasource
write-host
exit 0
    élse
         write-host "Usage -? for Help"
exit 1
   }
}
if(!$PGName)
    $PGName = read-host "ProtectionGroupName:"
}
$dpmname = & hostname"
connect-dpmserver $dpmname
$pg = get
if (!$pg)
       get-protectiongroup -dpmservername $dpmname
    write-error "Cannot get the protectionGroup"
disconnect-dpmserver $dpmname
    exit 1
}
$mypg = $pg | where {$_.FriendlyName -eq $PGName}
if (!$mypg)
    write-error "Cannot get the requested protectionGroup"
disconnect-dpmserver $dpmname
exit 1
}
$ds = get-datasource -protectiongroup $mypg
if (!$ds)
    write-error "Cannot get the datasources for the PG"
disconnect-dpmserver $dpmname
exit 1
}
$myds = $ds | where {$_.Name -eq $DSName}
if (!$myds)
   write-error "Cannot get the required Datasource"
disconnect-dpmserver $dpmname
exit 1
}
$j = new-recoverypoint -datasource $myds _Disk _BackupType expressfull
įf (!$j)
    write-error "Cannot get the required Datasource"
disconnect-dpmserver $dpmname
    exit 1
}
$jobtype = $j.jobtype
while (! $j.hascompleted)
   write-host "Waiting for $jobtype job to complete..."; start-sleep 5
}
if($j.Status -ne "Succeeded")
    write-error "Job $jobtype failed..."
}
Write-host "$jobtype job completed..."
disconnect-dpmserver $dpmname
exit
```

About This White Paper

This white paper is devoted to providing technical information and an overview of the basic facilities of ETERNUS Disk storage systems. The contents of this document may be modified without any prior notice. Please contact FUJITSU LIMITED if you find any error in descriptions.

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