User Guide - SnapProtect

GENERAL

OVERVIEW

PRE-DEPLOYMENT

SNAPPROTECT SUPPORT

GETTING STARTED

INSTALL COMMSERVE, MEDIAAGENT AND FILE SYSTEM IDATAAGENT

OPEN COMMCELL CONSOLE

CONFIGURE A STORAGE DEVICE

CONFIGURE A STORAGE POLICY

SETUP CLIENTS

CLIENTS

VIRTUAL SERVER (VMWARE)

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

EXCHANGE DATABASE

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

ORACLE (UNIX)

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

MICROSOFT SQL SERVER

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

NAS

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

VIRTUAL SERVER (MICROSOFT HYPER-V)

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

SAP FOR ORACLE (UNIX)

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

DB2 (UNIX)

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

UNIX FILE SYSTEM

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

WINDOWS FILE SYSTEM

Deployment Configuration Storage Array Configuration Backup Vault/Mirror Copy Movement to Media Restore

ADVANCED

CLIENTS

VIRTUAL SERVER (VMWARE) EXCHANGE DATABASE ORACLE (UNIX) MICROSOFT SQL SERVER NAS VIRTUAL SERVER (MICROSOFT HYPER-V) SAP FOR ORACLE (UNIX) DB2 (UNIX) UNIX FILE SYSTEM WINDOWS FILE SYSTEM

STORAGE ARRAYS
3PAR
DELL COMPELLENT
DELL EQUALLOGIC
EMC CLARIION
EMC SYMMETRIX
HITACHI DATA SYSTEMS
HP EVA
IBM SVC
IBM XIV
LSI
ΝΕΤΑΡΡ
DATA REPLICATOR
NIMBLE
TOOLS
SNAPTEST
BEST PRACTICES
FAQS
TROUBLESHOOTING
SNAP MINING
VIRTUAL SERVER (VMWARE)
ACCESSING EXCHANGE DATA FROM VMWARE SNAPSHOTS
EXCHANGE MAILBOX
ACCESSING EXCHANGE DATA FROM DATABASE SNAPSHOTS
EXCHANGE MAILBOX ARCHIVER
ACCESSING ARCHIVED EXCHANGE DATA FROM DATABASE SNAPSHOTS
SHAREPOINT SERVER
ACCESSING SHAREPOINT DATA FROM SQL DATABASE SNAPSHOTS

SNAP MINING SUPPORT

SnapProtect[™] Backup - Overview

TABLE OF CONTENTS

Introduction

Advantages of using SnapProtect Backup

How Does SnapProtect Work

Teminology

INTRODUCTION

The SnapProtect[™] backup enables you to create a point-in-time snapshot of the data to be used for various data protection operations. SnapProtect backup works in conjunction with software and hardware storage arrays to provide snapshot functionality for data protection operations. An effective way to backup live data is to temporarily quiesce it, take a snapshot, and then resume live operations.

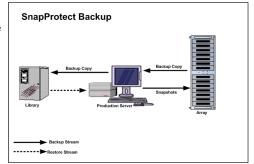
You can use the SnapProtect backup to perform any level of backups (e.g. Full, Incremental, or Differential). The backup types supported for SnapProtect backup varies for different agents. During an incremental or a differential SnapProtect backup even though the snapshot of a complete volume is created, only new or data changed since the last backup is available for recovery operations. When you switch from a snap to a traditional backup or vice versa, the next job is converted to a full backup.

See SnapProtect Backup - Support for the support related information for the SnapProtect backup.

WHERE TO GO NEXT

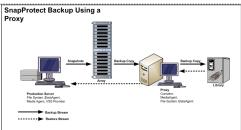
Getting Started - SnapProtect

Walks you through the process of installing and configuring SnapProtect.



PROXY SERVER

While performing a SnapProtect backup or any subsequent operations, you can use a proxy server to reduce the load on the production server. Also, the backup copy operation will use the proxy to move the snap to backup media. The use of a proxy server to perform SnapProtect operations is supported when a hardware storage array is used for performing the SnapProtect backup.



ADVANTAGES OF USING SNAPPROTECT BACKUP

The following table lists some of the advantages of using SnapProtect backup over other available backup solutions.

FEATURE SUPPORT	GENERIC SOFTWARE SOLUTION	CALYPSO SNAPPROTECT BACKUP
Backup to Tape	✓	✓
During incremental or log backup only relevant incremental or log data is moved to media enabling significant reduction in media usage.		~
Hardware Agnostic - No dependency on the hardware array vendor changes		✓
Snapshot copy, backup copy, and tape copy creation and management are seamless. Application aware snapshots creation can be scheduled. The snapshots can be cataloged/indexed for restore and movement to media based on policies.		~
To reduce load on the production server, a proxy server can be used for operations like movement to media, integrity check.		~
Restores can be performed directly from media to the application server.		✓
Ability to mix and match SnapProtect backup with traditional backups. You can perform full SnapProtect backups combined with incremental log backups being moved to media and still perform a seamless restore.		~
All data management operations can be performed from the CommCell Console.		✓

HOW DOES SNAPPROTECT BACKUP WORK

The SnapProtect backup includes the following operations:

Backup job is scheduled using the CommCell Console. When the backup job is started:

- The array is accessed to create a snapshot.
- The snapshot is mounted on the proxy or source computer for post backup operations.
- The snapshot is unmounted.

This snapshot is used for backup copy operations. This can also be used for restore/mount operations.

During the Backup Copy operations:

- The snapshot is mounted to the source or proxy computer.
- The mounted snapshot is treated like file system and the required contents are read.
- The file system backup is performed to Primary Copy of the storage policy.
- When the backup copy job is finished, the snapshot is unmounted.

Data Aging:

- The jobs for the snapshot are pruned based on the retention policy of the snapshot copy.
- The snapshots related to the pruned jobs are deleted from the array periodically.

TERMINOLOGY

The SnapProtect Backup documentation uses the following terminology:

STORAGE DEVICE	A device used for backup or archival purposes.
	A high-end, intelligent disk storage system. The SnapProtect software is designed to work in conjunction with the snapshot ability built into the storage array.
	A computer other than the production server on which you can perform SnapProtect operations. Using a proxy often results in less load on the production server.
SNAPSHOT COPY	An additional copy of the protected data which is used in SnapProtect operations.

Pre-Deployment Test - Unix

Unix Windows

TABLE OF CONTENTS

Installation

5.

Perform test

INSTALLATION

- 1. Mount the Software Install Package to the client computer.
- The product banner and other information is displayed.
 Press Enter to continue.
- 3. Read the license agreement. Type y and press Enter to continue.

Enter 2 to Pre-install software Components [De-couple mode].

4. Enter 2 to select the Advance options.



Click to view a video for performing diagnostic test of your environment for SnapProtect operations.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

- 2) Advance options
- 3) Exit this menu

Your choice: [1]

Please select a setup task you want to perform from the list below:

- [Custom Package Creator]
- 1) Create a custom install package
- [De-coupled Installer]

2) Pre-install software Components (De-coupled Mode)

[Integrated File Archiver]

- 3) File System iDataAgent with Archiving Enabler
- [Customized Cluster Agents]
- 4) Veritas Cluster Agents
- [Third Party Connector]
- 5) Symantec NetBackup Agent
- 6) IBM Tivoli Storage Manager

[Done]

9) Exit this menu

Your choice: [1] 2

We found one network interface available on your machine. We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java GUI.

Please check the interface name below, and make connections if necessary:

Physical Machine Host Name: [angel.company.com]

Please specify the client name for this machine.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe.

Physical Machine Client name: [angel]

Install Calypso on physical machine client.company.com

Select the Calypso module that you would like to install

[]	1)	Media Agent		[1301]	[CVGxMA]
[]	2)	File System	IDA	[1101]	[CVGxIDA]

>) >>>>>> NEXT PAGE >>>>>>>>

[a=all n=none r=reverse q=quit d=done >=next <=previous ?

6. If you have only one network interface, press **Enter** to accept the default network interface name and continue.

If you have multiple network interfaces, enter the interface name that you wish to use as default, and then press **Enter**.

The interface name and IP addresses depend on the computer in which the software is installed and may be different from the example shown.

7. Press Enter.

 Type the appropriate number to install MediaAgent and Unix File System iDataAgent.

Press Enter.

A confirmation screen will mark your choice with an "X".
 Type d for Done, and press Enter.

10. Press Enter.

- 11. Type the appropriate number to install the latest software scripts and press **Enter**.
 - Select **Download from the software provider website** to download the latest software scripts. Make sure you have internet access.
 - Select **Use the one in the installation media** to install the software scripts from the package or share from which the installation is currently being performed.
 - Select **Use the copy I already have by entering its unix path**, to specify the path if you have the software script in an alternate location.

12. Press Enter.

It is recommended to download the latest Service pack(s). Type **Yes** and press **Enter** to automatically install the available updates during installation.

13. Press **Enter** to accept the default path.

- If you want to specify a different path, type the path and then press **Enter**.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press **Enter**.

In order to make sure that the client computer has ${\tt read/write}$ access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&*():/?\

- 14. Press Enter to accept the default location.
 - Enter a path to modify the default location and press Enter.
 - All the modules installed on the computer will store the log files in this directory.

15. Press Enter.

16. Type the Group name and press Enter.

=help]

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:</pre>

Install Calypso on physical machine client.company.com

Select the Calypso module that you would like to install

[] 1) Media Agent [1301] [CVGxMA] [] 2) File System IDA [1101] [CVGxIDA]

>) >>>>>> NEXT PAGE >>>>>>>

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 2

Do you want to use the agents for restore only without consuming licenses? $\left[no \right]$

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media

3) Use the copy I already have by entering its unix path $% \left({{{\boldsymbol{x}}_{i}}} \right)$

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Press <ENTER> to continue ...

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log_Files".

Log Directory: [/var/log]

Most of Calypso processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Calypso processes, all temporary and configuration files will be created with rw-rw-rw permissions.

If you're planning to backup Oracle DB you should use "dba" group.

Would you like to assign a specific group to Calypso? [yes]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software

	Press Enter again.	processes will run.
		In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here.
		Group name: dba
		REMINDER
		If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "dba".
17.	Type a network TCP port number for the Communications Service (CVD) and press Enter .	Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.
	Type a network TCP port number for the Client Event Manager Service (EvMgrC) and press Enter .	The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.
		Please enter the port numbers.
		Port Number for CVD : [8600]
		Port Number for EvMgrC: [8602]
18.	The installation is now complete.	Done.
		REMINDER - You must register the client before decoupled installation is considered complete.
		Thank you for choosing Bull.

PERFORM TEST

з.

The following procedure provides step-by-step instructions to configure and test your snap environment.

- Create a Lun on the array and map it to the client computer.
 Ensure that the Lun is visible on the client computer as a device node.
- 2. Use the mapped device node to create a Volume Group.

For example, use the following command: On AIX

For example, use the following command:

lvcreate -n lv_name -L 2G vg_name

For example, use the following command:

crfs -v jfs2 -d lv name -a logname=INLINE -

mkvg -y vg_name hdisk12

On Linux:

On AIX:

On Linux:

On AIX:

m /snaptest
On Linux:
mke2fs lv_name

pvcreate /dev/sdd vgcreate vg_name /dev/sdd vgchange -a y vg_name

mklv -y lv name vg name 2G

Create a Logical Volume in the Volume Group.

4. Create a File System on the Logical Volume.

- **5.** Create a directory to mount snapshots.
- **6.** Use the following commands to run the Snaptest tool:
 - Locate /opt/Calypso folder by running the below command. [root@ntr Calypso]# cd /opt/Calypso/Base
 - [root@ntr Calypso]# ./SnapTest

If you have multiple instance installed, run the following command for $\mathsf{SnapTest}$ tool:

[root@ntr Calypso]# ./Base/SnapTest -vm Instance<XXX>

7. Press Enter.

This tool helps to perform operations such as... -> Automatic Snap Tests 8. Press Enter.

9. Type Y and press Enter.

10. Specify the path of mount directory and press Enter.

Enter all the mount points that you want to test.

11. Press **Enter** to add the detected array.

-> Individual Snap Tests

-> Hardware Snapshot Engine Detection

-> SCSI Inquiry

-> Scan HBA/IQN Adapters

NOTE: Please make sure that the mount points used for this test are not being used by any other application. If they are in use, it may cause data corruption or data loss. Please refer to our online documentation for list of supported Operating systems, Hardware Snapshot engines and File systems.

Press <ENTER> to continue...

SnapTest Version Main Menu

Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of Snap related operations on them. In order to perform these snap operations, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen.

1. Automatic Snap Tests

2. Advanced Operations

0. Exit

Choose your option [1]:

SnapTest Automatic Snap Operations

We will perform the following operations on the given mount point[s].

- Create snapshots
- Mount snapshots
- Unmount snapshots
- Revert original volumes to snapshots
- Delete snapshots

WARNING:

Revert is inherently risky and can cause data loss.

Do you want to perform revert operation as part of this test? [Y/N] [N] : Y

Enter source mount paths to snap (separate by commas, if more than one) : /snap1

SnapTest	Automatic Sr	ap Operations
Source Mount Point : /sn	apl	
Detecting underlying dev	ices /dev/	sdh
Detecting snapshot engin	e <array n<="" td=""><td>Jame> SNAP</td></array>	Jame> SNAP
No [<array name=""> SNAP] a Array configuration is r operations.</array>	-	

Do you want to add <Array Name> Array? [Y/N] [Y] :

SnapTest Add Array

Vendor : <Array Name>

Enter array ID :

Enter control host name/ip :

Enter user name :

12. Specify the following information for the detected array:

- Array ID
- Control host name/ip
- User name
- Password
- Reenter password
- Device group

• Use only devices belonging to the above device group [y/n] Enter password : Enter password again : Enter device group : 13. Automatic Snap Operations SnapTest The setup is tested for snapshot operations (create, mount, unmount, revert, and ----delete). _____ The snap test is now complete. You can now use this environment for performing Mount points to be snapped : /snap1 SnapProtect operations. Engine for /snap1 : <Array Name> SNAP Creating snapshot... SUCCESS Snapshot name : SP 805326 805326 -1 Mounting snapshot...SUCCESS Unmounting snapshot... SUCCESS Reverting to snapshot... SUCCESS Deleting snapshot... SUCCESS Congratulations !!! Automatic Snap test completed successfully. Press <ENTER> to continue... 14. Type **0** and press **Enter**. SnapTest Version Main Menu _____ Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of Snap related operations on them. In order to perform these snap operations, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen. 1. Automatic Snap Tests 2. Advanced Operations 0. Exit Choose your option [1]:

Initial deployment and successful run of SnapProtect backup may take around 4 weeks due to the various environment dependencies. The following parameters are known to affect the deployment and initial run and hence need a thorough evaluation:

- Firmware versions on the array
- Device types
- Mode of access
- Security configuration
- Operating Systems interacting with the storage array
- Application layout on the storage array LUNs

SnapProtect[™] Backup - Support

TABLE OF CONTENTS

Initial SnapProtect Setup License Requirements Supported Storage Arrays Backup Types Platforms Supported Volume Managers Multipath I/O Support

INITIAL SNAPPROTECT SETUP

Initial deployment and successful run of SnapProtect backup may take around 4 weeks due to the various environment dependencies. The following parameters are known to affect the deployment and initial run and hence need a thorough evaluation:

- Firmware versions on the array
- Device types
- Mode of access
- Security configuration
- Operating Systems interacting with the storage array
- Application layout on the storage array LUNs

LICENSE REQUIREMENTS

- The SnapProtect feature requires the **Snap Protect Enabler** license.
- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.

SUPPORTED STORAGE ARRAYS

The SnapProtect backup is designed to work in conjunction with the following storage arrays, which provide snapshot functionality for data protection operations:

SUPPORTED HARDWARE ARRAYS								
VENDOR	SNAPSHOT	VERSION/FIRMWARE	REQUIRED LICENSING	REQUIRED SOFTWARE	PROTOCOL	NOTES/CAVEATS		
DELL COMPELLENT	Snapshot	Storage Center 5.5.14 and above for 5.x and 6.2.2 and above for 6.x	Snapshot Replay licensing	None	Fibre Channel FCoE (Fibre Channel over Ethernet)* iSCSI	Supported on Windows, Linux and VMware. No HyperV Compellent Live Volume feature is not supported.		
DELL EQUALLOGIC	Snapshot Clone	4.2.0	Included	None	iSCSI	On Red Hat Linux computers using version 5.0, only 32- bit is supported. No HyperV, or UNIX. Boot from SAN volumes is not supported.		
EMC CLARIION	SnapView Snap SnapView Clone	CX500 / CX700 CX3-10 thru CX3-80 CX4-120 thru CX4-960	SnapView Snapshot/Clone Solutions Enabler Licensing	Solutions Enabler 6.5.1 or higher on Client and Proxy Navisphere CLI on Client and Proxy NaviAgent on Client and Proxy	Fibre Channel FCoE (Fibre Channel over Ethernet)*	No HyperV Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap		

						operations.
						Not supported on HP- UX
EMC VNX	SnapView Snap SnapView Clone	VNX 5100, 5300, 5500, 5700, 7500	SnapView Snapshot/Clone Solutions Enabler Licensing	Solutions Enabler 7.1 or higher on Client and Proxy Unisphere CLI on Client and Proxy	Fibre Channel FCoE (Fibre Channel over Ethernet)*	No HyperV VMware with NFS datastores are not supported.
				Unisphere Host Agent on Client and Proxy	iSCSI	ISCSI PowerPath LUN are not supported. Client Components (SYMCLI) are required
						only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.
						For configuring a VNX array, refer to the step-by-step instructions provided for EMC Clariion. Not supported on HP-
	ChanCura		CoonCurra Coon License	Colutions Enables	NFS	UX Supported on VMware
EMC CELERRA	SnapSure Snap	DART 5.5 or Newer	SnapSure Snap License Solutions Enabler Licensing	Solutions Enabler 6.5.1 or higher on Client and Proxy	NF5	4.x.
				Navisphere CLI on Client and Proxy		No HyperV Not supported on HP- UX
	TimeFinder	DMX3 or Newer	TimeFinder Snap, Mirror, Clone Licenses	Solutions Enabler 6.4 or higher on Client and	Fibre Channel	No HyperV
EMC SYMMETRIX	Snap TimeFinder Mirror		Solutions Enabler Licensing	Proxy	FCoE (Fibre Channel over Ethernet)*	Remote SymApi Server is not supported.
						Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.
ΕΜС VMAX	TimeFinder Snap, Mirror	VMAX	TimeFinder Snap, Mirror, Clone Licenses	Solutions Enabler 7.2 or higher on Client and Proxy	Fibre Channel	No HyperV
	and Clone		Solutions Enabler Licensing		Channel over Ethernet)*	Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.
FUJITSU ETERNUS		Fujitsu ETERNUS DX V10L22-1000 or higher	Local Copy	None	iSCSI	No HyperV
DX	EC Clone	ETERNUS DX S2 series - 80, 90, 410, 440, 8100, 8700	Thin Provisioning		Fibre Channel FCoE (Fibre Channel over Ethernet)*	Revert is not supported.
HITACHI DATA SYSTEMS AMS		AMS 100, 200, & 500 AMS 1000, 2100, 2300, & 2500	Licenses for Copy-on-Write (COW) snapshot and Shadow Image	(or higher) Agent installed on Client and Proxy Device Manager Server 7.1.1 (or higher) installed on	Fibre Channel FCoE (Fibre Channel over Ethernet)*	No HyperV The Virtual Server <i>i</i> DataAgent must be installed on a physical server and not on a virtual machine. The Virtual Machine
				any computer RAID Manager (01-25- 03/05 or higher) installed on Client and		HotAdd feature is not supported. The Virtual Server

			Proxy		<i>i</i> DataAgent supports SnapProtect Backups when Hitachi Dynamic Link Manager (HDLM) plugin for VMWare is used for multipathing on the VMWare ESX Server.
Copy-on-Write	HDS USP, USPv, VSP	Licenses for Copy-on-Write		Fibre Channel	No HyperV
Shadow Image		(COW) snapshot and Shadow Image	(or higher) Agent installed on Client and Proxy	FCoE (Fibre Channel over	COW support for USP volumes.
			Device Manager Server 7.1.1 (or higher) installed on any computer	Ethemet)*	COW and SI support for VSP volumes. Dynamic Provisioned volumes (DP-VOL) are also supported.
			RAID Manager (01-25- 03/05 or higher) installed on Client and Proxy		The Virtual Server <i>i</i> DataAgent must be installed on a physical server and not on a virtual machine.
					The Virtual Machine HotAdd feature is not supported.
					The Virtual Server <i>i</i> DataAgent supports SnapProtect Backups when Hitachi Dynamic Link Manager (HDLM) plugin for VMWare is used for multipathing on the VMWare ESX Server.
Conv-on-Write	HUS 100 series	Licenses for Conv-on-Write	Device Manager 7.2.1	Fibre Channel	No HyperV
Shadow Image		(COW) snapshot and Shadow Image	(or higher) Agent installed on Client and Proxy Device Manager Server 7.2.1 (or higher) installed on any computer RAID Manager (01-26- 03/02 or higher) installed on Client	FCoE (Fibre Channel over Ethernet)*	The Virtual Server iDataAgent must be installed on a physical server and not on a virtual machine. The Virtual Machine HotAdd feature is not supported. The Virtual Server <i>i</i> DataAgent supports SnapProtect Backups when Hitachi Dynamic Link Manager (HDLM) plugin for VMWare is used for multipathing on the VMWare ESX Server.
		HP Business Copy EVA feature		Fibre Channel	No HyperV
and Clone			Command View	FCoE (Fibre Channel over Ethernet)* iSCSI	
.,		Licenses for Copy-on-Write (COW) snapshot and Shadow Image	HP StorageWorks Command View Advanced Edition Agent (Device Manager 7.1.1 or higher) installed on client and proxy computers	Fibre Channel FCoE (Fibre Channel over Ethernet)*	No HyperV The Virtual Machine HotAdd feature is not supported.
			HP StorageWorks Command View Advanced Edition Server (Device Manager 7.1.1 or higher) installed on any computer.		
	Shadow Image Copy-on-Write Shadow Image EVA Business Copy Snapshot and Clone	EVA Business Copy Snapshot	Shadow Image (COW) snapshot and Shadow Image Copy-on-Write HUS 100 series Shadow Image Licenses for Copy-on-Write (COW) snapshot and Shadow Image EVA Business EVA Copy Snapshot and Clone HP Business Copy EVA feature (COW) snapshot and Shadow	Copy-on-Write Shadow Image HDS USP, USPv, VSP Licenses for Copy-on-Write (COW) snapshot and Shadow Image Device Manager 7.1.1 (or higher) Agent invage Copy-on-Write Shadow Image HUS 100 series Licenses for Copy-on-Write (COW) snapshot and Shadow Image Device Manager 7.2.1 (or higher) installed on Client and Proxy Copy-on-Write Shadow Image HUS 100 series Licenses for Copy-on-Write (COW) snapshot and Shadow Image Device Manager 7.2.1 (or higher) Agent Image Copy-on-Write Shadow Image HUS 100 series Licenses for Copy-on-Write (COW) snapshot and Shadow Image Device Manager 7.2.1 (or higher) Agent Image EVA Dusiness Copy Snapshot and Clone EVA HP Business Copy EVA feature Wersion 9.1, 9.3, 10.0 HP Sturess for Copy-on-Write (COW) snapshot and Shadow Image HP Sturess for Copy-on-Write (COW) snapshot and Shadow Image HP Sturess for Copy-on-Write (COW) snapshot and Shadow Image HP StorageWorks Command View Version 9.1, 9.3, 10.0 Copy-on-Write Shadow Image XP 12000 - 24000 Licenses for Copy-on-Write (COW) snapshot and Shadow Imager 7.1.1 or higher) installed on client and proxy command View Version 9.1, 1.1 or	Copy-on-Write Shadow Image HDS USP, USPv, VSP Licenses for Copy-on-Write Image Device Manager 7.1.1 prospective Manager Server 7.1.1 (or migher) installed on any computer fibre Channel FCGE (Fibre Channel Ver Ethernet)* Copy-on-Write Shadow Image HUS 100 series Licenses for Copy-on-Write COW) snapshot and Shadow Device Manager 7.2.1 prospective Manager Server 7.1.1 (or migher) installed on any computer Fibre Channel FCGE (Fibre Channel Ver Barbor Hamager (01-25- 03/02 or higher) installed on Client and Proxy Copy-on-Write Shadow Image HUS 100 series Licenses for Copy-on-Write (COW) snapshot and Shadow Device Manager 7.2.1 (or higher) Agent proxy Fibre Channel FCGE (Fibre Channel Ver Ethernet)* Copy-on-Write Shadow Image HUS 100 series Licenses for Copy-on-Write (COW) snapshot and Shadow Device Manager 7.2.1 (or higher) Agent proxy Fibre Channel FCGE (Fibre Channel Ver Channel Ver Channel Ver Channel Ver Comp Snapshot and Clone Fibre Channel FCGE (Fibre Channel Ver Command Ver Manager 7.2.1 (or higher) installed on Client and FCGE (Fibre Channel Ver Command Ver Manager 7.2.1 (or higher) installed on Client and FCGE (Fibre Channel Ver Manager 7.2.1 (or higher) installed on Client and FCGE (Fibre Channel Ver Manager 7.1.1 or higher) installed on client and proxy Fibre Channel FCGE (Fibre Channel Ver Manager 7.1.1 or higher) installed on client and proxy

				RAID Manager installed on client and proxy computers.		
	Snapshot and	InServ F200 3.1.2 or	Thin Provisioning (4096G)	3PAR SMI-S on Server	Fibre Channel	No HyperV
HP 3PAR	Clone	higher	Virtual Copy		FCoE (Fibre Channel over Ethernet)*	Also supports 2.3.1 (MU4) or higher except 3.1.1.342, 3.1.1 MU1 + Patch 10
					iSCSI	and 3.1.1 (MU2)
IBM SVC	Flash Copy	SVC / V7000 6.1.0.7 or	FlashCopy	IBM SMI-S on Server	Fibre Channel	No HyperV
IBM SVC	Space-efficient Flash Copy	higher			FCoE (Fibre Channel over Ethernet)*	
					iSCSI	
IBM XIV	Snap	ANY XIV Array	Included	IBM XCLI 2.3 or higher on Client and proxy	Fibre Channel FCoE (Fibre	No HyperV
					Channel over Ethernet)*	
					iSCSI	
NETAPP E-SERIES	Snapshot	Dell MD Series – 3000(i), 3200(i), 3220(i)	Snapshot	LSI SMI-S on Server and server 10.10.6054		No HyperV
(LSI ARRAYS)	VolumeCopy	IBM DS - 3200, 3300, 3400 - 3512, 3524, 3950, 4100, 4200, 4300, 4400, 4500 - 4700, 4800, 5020, 5100, 5300 SGI IS - 220, 350, 400, 4xxx, 5xxx SGI TP - 9300(s), 9400 (s), 9500(s)		or higher	FCoE (Fibre Channel over Ethernet)* iSCSI	SAN Transport mode with Virtual Server iDataAgent is not supported as snapshots cannot be mapped to two different host groups.
		Sun - 25xx, 61xx, 65xx, 6780, 9176, FLX210, FLX240, FLX280				
NETAPP	Snapshot	ONTAP 7.3.5 or ONTAP	FlexClone	A server running NetApp DataFabric	Fibre Channel	Supported on HP-UX
NETAPP		8.1.x (7-mode only)	SnapRestore SnapVault/Mirror for	Manager server software 4.0.2 or	FCoE (Fibre Channel over	running on Intel Itanium processors using Fibre Channel.
			replication	later, or OnCommand UM 5.x is required.	Ethernet)* iSCSI	
	1			or i six is required.	13031	
					NFS	

VENDOR	SNAPSHOT	VERSION/FIRMWARE	REQUIRED LICENSING	REQUIRED	PROTOCOL	NOTES/CAVEATS
				SOFTWARE		
NETAPP WITH SNAPVAULT SNAPMIRROR	SnapVault SnapMirror	ONTAP 7.3.5 or higher ONTAP 8.0.1, 8.0.2 and 8.1.0 (7-mode supported)	and Secondary FlexClone SnapRestore	ONTAP 8.1.0 Provisioning Manager,	Fibre Channel FCoE (Fibre Channel over Ethernet)* iSCSI NFS	Supported on HP-UX running on Intel Itanium processors using Fibre Channel. vFilers not supported as a destination. For vFiler NAS /DataAgent clients, indexing snapshot data is only supported with ONTAP 8.1.1 or later or if the physica file server containing the vfiler is entered into Array Management.

*Supported through Field Certification. Contact your Software Provider or Professional Services to see if the specific FCoE can be supported.

Ι

SUPPORTED SOFTWARE SNAPSHOT ENGINES

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Т

VENDOR	SNAPSHOT	VERSION/FIRMWARE	REQUIRED LICENSING	REQUIRED	NOTES/CAVEATS
				SOFTWARE	
DATA REPLICATOR	Not applicable		Local native snapshot license (Volume manager snapshot license or QSnap license) Hardware Snap Engine or native snap or QSnap license	ContinuousDataReplicator	

LUNs should be from same storage array. LUNs from different storage arrays of same model/vendor or different models/vendors are not supported.

Dynamic Disks on Window Operating Systems are not supported.

When performing SnapProtect backup for a Windows MSCS Cluster, a separate proxy server (external to the cluster nodes) must be used for mount, backup and restore operations as disk signature conflicts may occur if these operations are performed from one of the servers in the cluster.

The use of iSCSI is not supported when performing SnapProtect operations on computers running Solaris.

Boot from SAN volumes is not supported.

When the client is running on a virtual machine, you can perform the SnapProtect backup of the Fibre channel RDM devices if they are located on the NetApp storage array. However, you cannot use Virtual Server *i*DataAgent to perform the SnapProtect backup in such scenario. You can use any other *i*DataAgent, such as File System *i*DataAgent or Exchange Database *i*DataAgent etc.

For information on the supported snapshot engines, see Hardware Snapshot Engine Compatibility Matrix.

BACKUP TYPES

The following table lists the Agents supporting the SnapProtect backup and provides information about the various options supported by each of these Agents.

AGENTS	FULL BACKUP	INCREMENTAL BACKUP	DIFFERENTIAL BACKUP	NOTES
VIRTUAL SERVER				Backup of VM Templates is not supported.
(VMWARE)	V	\checkmark		Virtual Server instances configured with ESX server are not supported. Instances should be configured using Virtual Center.
				SRM is not supported.
EXCHANGE DATABASE				SnapProtect backups are not supported on Exchange 2007 CCR Passive nodes.
	V	√	V	DDR snapshots are not supported on Exchange 2010 DAG clients.
				SRM is not supported.
ORACLE	V	V		Incremental backups are applicable for Backup copies.
	v	v		See Backup Copy Operations for more information.
MICROSOFT SQL SERVER	V		V	Transactional Log backups always use the traditional backup method. Log backups are stored in the Primary (classic) copy.
NAS	√	√	√	
VIRTUAL SERVER (HYPER- V)				SnapProtect backups support online virtual machines with NetApp file servers.
	V			Other storage array vendors use the traditional backup method. To perform a SnapProtect backup, the virtual machine must be offline.
				SRM is not supported.
SAP FOR ORACLE	√			
DB2	V			Backup of partial databases is not supported.
	-			Log files always use the

				traditional backup method.
UNIX FILE SYSTEM				On Demand Backup Set is not supported for SnapProtect Backup.
	√	√	\checkmark	Raw partitions in Unix are supported.
				Mirrored Volume Manager/ZFS/ASM configuration is not supported.
WINDOWS FILE SYSTEM	\checkmark	\checkmark	\checkmark	On Demand Backup Set is not supported for SnapProtect Backup.

PLATFORMS

The following table lists the platforms supported for SnapProtect backup. The latest updates should be installed on all the platforms.

For AIX and Solaris, SnapProtect backups are supported for clients using the 32-bit packages of Calypso.

IntelliSnap with Veritas Volume Manager requires ALUA compliant LUNs (primary and secondary). For non-compliant ALUA LUNs, a workaround is explained in this Symantec KB article.

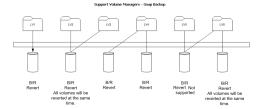
OPERATING SYSTEM	CLUSTER SUPPORT	FILE SYSTEMS	DATABASES	APPLICATIONS
			SQL version 2005, 2008, 2012	
WINDOWS 2003 AND HIGHER	MSCS	NTFS	Exchange 2003, 2007, 2010 - including DAG	
VMWARE ESX		iSCSI/FC/NFS datastores	ESX vSphere 4.x & vSphere 5.0	
AIX 5.3, 6.1, 7.1 (LPARS SUPPORTED, VIRTUAL SCSI DEVICES NOT SUPPORTED)	Veritas Cluster, HACMP	JFS, JFS2, VxFS	Oracle 10g R2, Oracle 11g R1 & R2, DB2 version 9 or higher	SAP Brtools 7.0 & 7.1 on Oracle 10g R2, Oracle 11g R1 & R2
HP-UX 11 V2/V3 (PA-RISC AND ITANIUM)	Veritas Cluster, Service Guard	HFS, VxFS, VxCFS	Oracle 10g R2, Oracle 11g R1 & R2 DB2 version 9 or higher	SAP Brtools 7.0 & 7.1 on Oracle 10g R2, Oracle 11g R1 & R2
ORACLE ENTERPRISE LINUX 5.X AND 6.X		ext2, ext3, reiserfs, VxFS	Oracle 10g R2, Oracle 11g R1 & R2, DB2 version 9 or higher	SAP Brtools 7.0, 7.1 & 7.2 on Oracle 10g R2, Oracle 11g R1 & R2
RED HAT/CENTOS LINUX 4.X AND 5.X	Linux Cluster Veritas Cluster	ext2, ext3, reiserfs, VxFS	Oracle 10g R2, Oracle 11g R1 & R2, DB2 version 9 or higher	SAP Brtools 7.0 & 7.1 on Oracle 10g R2, Oracle 11g R1 & R2
RED HAT/CENTOS LINUX 6.X	Linux Cluster Veritas Cluster	ext2, ext3, ext4, reiserfs, VxFS	Oracle 10g R2, Oracle 11g R1 & R2, DB2 version 9 or higher	SAP Brtools 7.0, 7.1 & 7.2 on Oracle 10g R2, Oracle 11g R1 & R2
SOLARIS 10 SPARC (SOLARIS ZONES SUPPORTED)	Sun Cluster Veritas Cluster	UFS, VxFS, ZFS	Oracle 10g R2, Oracle 11g R1 & R2, DB2 version 9 or higher	SAP Brtools 7.0, 7.1 & 7.2 on Oracle 10g R2, Oracle 11g R1 & R2
SOLARIS 11 EXPRESS		UFS, VxFS, ZFS		
SUSE LINUX ENTERPRISE SERVER 10.2 AND 11	Veritas Cluster	ext2, ext3, ext4, reiserfs, VxFS	Oracle 10g R2, Oracle 11g R1 & R2, DB2 version 9 or higher	SAP Brtools 7.0 & 7.1 on Oracle 10g R2, Oracle 11g R1 & R2

The above list *does not* provide a comprehensive list of supported platforms for each agent. See System Requirements for information on the platforms supported by the individual Agents.

SUPPORTED VOLUME MANAGERS

- Logical Volume Manager
 - $\,\circ\,$ All versions supported on AIX and Linux
 - $\circ~$ Versions 1.0 and 2.x supported on HP-UX
- VERITAS Volume Manager (VxVM) 5.0 for AIX, Linux and Solaris
- Solaris ZFS Mirror
- Solaris Volume Manager

When using the Solaris Volume Manager, ensure that a



complete disk is used for a metaset. Also, ensure that the metaset is owned by single host and the ownership of the metaset is attained before performing the SnapProtect backup operations.

Supported Configurations:

- One Physical Volume containing one Logical Volume
- One Physical Volume containing one or more Logical Volumes
- Multiple Physical Volumes containing one Logical Volume
- Multiple Physical Volumes containing one or more Logical Volume

The adjacent diagram summarizes the Volume Manager support for SnapProtect backup.

MULTIPATH I/O SUPPORT

• For EMC CLARiiON, the SnapProtect backup is supported on the following Multipath I/O software. This support is provided using the SNAP_WITH_MULTIPATH_SOFTWARE registry key.

o EMC Powerpath on AIX, Linux and Solaris.

- For Dell EqualLogic, install Dell EqualLogic Host Integration Tools package to support Multipath I/O.
- HP PVlinks, Solaris MPxIO, Linux Device Mapper and AIX MPIO are supported in HPUX, Solaris, Linux and AIX respectively.
- VXVM DMP is supported in AIX, Solaris and HPUX.
- HDLM is not a supported MPIO solution with SnapProtect.

Getting Started

Initial deployment and successful run of SnapProtect backup may take around 4 weeks due to the various environment dependencies. The following parameters are known to affect the deployment and initial run and hence need a thorough evaluation:

- Firmware versions on the array
- Device types
- Mode of access
- Security configuration
- Operating Systems interacting with the storage array
- Application layout on the storage array LUNs

INSTALL COMMSERVE[™] MEDIAAGENT AND FILE SYSTEM IDATAAGENT

The first step in setting up a CommCellTM is to install the CommServe, MediaAgent and File System *i*DataAgent.

- CommServe™ communicates with all clients and MediaAgents and coordinates all operations such as backups, restores, copies, media management, etc. within a CommCell.
- MediaAgent manages the transmission of data between clients and backup media.
- File System iDataAgent performs the backup and restore of the clients data

The following sections describe how to install all the above components in a computer.

- 1. Verify that the computer in which you wish to install satisfies the following System Requirements:
 - System Requirements CommServe
 - System Requirements MediaAgent
 - System Requirements Microsoft Windows File System iDataAgent
 - Run Setup.exe from the Software Installation Disc.
- 3. Select the required language.

Click Next.

2.

4.	Select the o	ption to	install	software	on thi	s computer.

NOTES

• The options that appear on this screen depend on the computer in which the software is being installed.



View Install Quick Start Guide (Requires Adobe Acrobat Reader)

🖨 Install Adobe Acrobat Reade

Select the language you will use during installation

5. Click Next.

RELATED TOPICS

License Requirements Review the licenses required for the SnapProtect feature.

< Previous

Next >

🕀 Exit

- 6. Click OK.
- 7. Select I accept the terms in the license agreement. Click Next.

- 8. Select the following component(s) to install:
 - Expand **CommServe Modules** and click **CommServe**.
 - Expand CommNet and clear CommNet Server.
 - Expand CommCell Console and clear CommNet Browser.
 - Expand MediaAgent Modules and click MediaAgent.

9. Click **YES** to install Microsoft .NET Framework package.

NOTES

- This prompt is displayed only when Microsoft .NET Framework is not installed.
- Once the Microsoft .NET Framework is installed, the software automatically installs the Microsoft Visual J# 2.0 and Visual C++ redistributable package.
- **10.** Specify the SQL Server System Administrator password.

Click Next.

NOTES

• This is the password for the administrator's account created by SQL during the installation.

- **11.** Click **Yes** to set up a dedicated instance of Microsoft SQL Server for the CommServe Server.
- **12.** Verify the Installation Path for the Database Engine.

Click **Browse** to change the default location.

Click Next.

NOTES

- This is the location where you want to setup the Microsoft SQL Server System databases.
- If you plan to perform VSS enabled backups on the CommServe computer, it is recommended that the CommServe database is not installed on the system drive. VSS restores could cause system state restore issues.
- The install program installs the database instance.

13. Verify MSSQL Database Installation Path.

Click Browse to change the default location.

Click Next.

NOTES

- This is the location where you want to install Microsoft SQL Server.
- This step may take several minutes to complete.
- **14.** If this message is displayed, click **Reboot Now** to continue. The install program will automatically resume from the point of failure after the reboot.
 - If the install program does not automatically resume after the reboot:
 - Click the Start button on the Windows task bar, and then click Run.
 - Browse to the installation disc drive, select **Setup.exe**, click **Open**, then click **OK**.

NOTES

• Click the **Skip Reboot** option if it is displayed and continue with the installation. You can reboot at a later time if the option is displayed.

Please provide a password for SQL user 'sa' SQL user 'sa' Enter Password Enter Password Next > Lancel
V take some time. Click Yes' to continue. This is an essential step for the successful installation of the software. Choosing 'No' will exit the Setup. In such a case, you may resume Setup later at any time. Yes No
installer 🛛 🔀
Database Engine Installation Path Please provide the location to install the database engine.
Click Next to accept the default location, or click Browse to choose an alternate location.
Database Engine Installation Path
CAProgram Files/MSSQL2008 Browse
Drive List Space Required / Recommended C: 11953 MB 200 MB / 200 MB
<pre>staller</pre> < Back
MSSQL Database Installation Path Choose the folder to install the MSSQL Database.
Click Next to accept the default location, or click Browse to choose an alternate location.
MSSQL Database Installation Path
Drive List Space Required / Recommended C: 11953 MB 200 MB / 200 MB Space Required / Recommended 200 MB / 200 MB
Installer Setup detected that a reboot is required before continuing this installation. Would you like Setup to reboot your computer now?
Reboot Now Egit Setup

SQL User Password Provide a password for SQL user 'sa'

15. Click Next.

NOTES

• The CommServe Client Name and CommServe Host Name are automatically

16.

17.

18.

populated.

Click Next.

Click Next.

Firewall Exclusion List.

Communication.

Note down the CommServe Client Name.

and must be enabled to proceed with the installation.

This is needed later to launch the CommCell Console.

• If Windows Firewall is enabled on the computer, this option is selected by default

• If you wish to configure other firewalls, select Add programs to the Windows

After the installation, make sure to Configure Windows Firewall to Allow CommCell

Installer			
CommServe Name Specify the CommServe computer nam	e and host		
name			
CommServe Client Nam	e		
mycomputer	•	Ĩ	
CommServe Host Name			
(Enter a valid, fully-quali mycomputer.mycompan	fied, IP host name; I	or example:	
mycomputer.mycompa	ny.com 💌	Ĩ	
,	_	1	
	< <u>B</u> ack	<u>N</u> ext >	Cancel
nstaller			
Windows Firewall Exclusion Li Allow programs to communicate through			
Firewall			
Windows Firewall is ON			
Add programs to the Windows	Circumell Constructions 11		
Add programs to the windows i	Filewali Exclusion Li	21	
If you plan on using Windows Firew exclusion list.	vall, it is recommend	ed to add the softwar	e programs to the
Installer	< Back	Next>	Cancel
	(Dduk	Next 2	Cancel
installer Download and Install Latest Up	data Daako		
Download and Install the latest service pack from the software provider website	pack and post		
Download latest update p	ack(s)		
Make sure you have internet connectiv depending on download speed.	rity at this time. This	process may take so	me time
Installer			
	< Back	Next>	Cancel
Installer			
Destination Folder Select the destination folder to install the	a		
succone description rolder to install th	s program mes.		
Click Next to accept the default locati	on or click Browse	to choose an alterna	te location
		an anothe	
Destination Folder			
C:\Program Files\		Brow	se
Drive List		ired / Recommended	j
C: 928 MB	13	34 MB / 1670 MB	
Installer			
	< Back	Next>	Cancel

19. Verify the location of the database.

/:*?"<>|#

Click **Browse** to change the default location.

Verify the default location for software installation.

Do not install the software to a mapped network drive.

• Do not use the following characters when specifying the destination path:

It is recommended that you use alphanumeric characters only.

Click **Browse** to change the default location.

Click Next.

Click Next. NOTES

NOTES

- Do not specify a mapped network drive.
- Ensure that the drive has at least 1GB of free space.
- The directory file path selected should not be located on a FAT drive. A FAT drive

User Guide - SnapProtect

cannot be supported as the location for this database because it does not allow a temporary sparse file to be generated when creating the database snapshot, which is required for data verification.

20. Select the Create a New Database option and click Next to continue. NOTES

• This screen may look different from the example shown.

21. Enter the network or local path where Disaster Recovery Backup files should be stored.

Click Next.

NOTES

- If you selected Use Network Path, you must enter the Network share username and the Network share password.
 - $\circ~$ The Network share username is the domain\username of the user that has administrative rights to the Disaster Recovery Backup destination path.
 - $\circ\;$ The Network share password is the password of the network share username.

22. Enter the CommCell Username and CommCell Password. Click Next.

Make note of the **CommServe Username** and **CommCell Password**.

This is needed later to launch the CommCell Console.

Database Path Location for database files
⊂Database Path
ENProgram Files MISSOL2008 MISSOL1 Browse
Drive List C 10016 MB Space Required / Recommended 200 MB / 1024 MB
Installer Cancel Cancel
Installer CommServe Database Pleare select a database to install
CommServe Database Option Create a New Database Use an Exiting Database (if present from an earlier install) Apply a new license [Choose this option if you are restoring to a different CommServe.] Name and Location of Database Dump File Select the dump file of the same version as that of the current installation. Perform the license update procedure after the installation. E:Ubgraded_commserv_intTouch_FULL.dmp Browse Documentation Webste
Installer X Server Disaster Recovery Path Path for disaster recovery backup files
Select Use Local Path or Use Network Path and click Browse to choose a location. The Network path should be a UNC path C Use Local Path Server Disaster Recovery Path Drive List Drive List Space Required / Recommended
<u>⟨₿ack</u> Next> <u>Cancel</u>
Instatler Administrator Account The Administrator Account information can be used to log in to the CommCell Console.
Username:

< <u>B</u>ack

<u>N</u>ext >

Cancel

Installer

23. Click Next.

24. Verify the location where the update files from the FTP site should be stored.Click Browse to change the default location.Click Next.

25. Click Next.

NOTES

• Schedule Install of Automatic Updates allows automatic installation of the necessary software updates on the computer on a single or weekly basis. If you do not select this option, you can schedule these updates later from the CommCell Console.

26. Click **Yes** to configure the CommCell Console for web administration.

NOTES

- The Internet Information Server (IIS) must be installed on this computer in order to configure for web administration.
- Configuring this computer for web administration allows you to:
 - $\circ\;$ Access the CommCell Console and Books Online from a remote computer using a Web browser.
 - $\circ\;$ View CommCell reports via a Web browser.
 - Access Books Online by clicking the Help button (the icon with a ?) in the CommCell Console.
- 27. Select **Yes** to stop Removable Storage Services on the MediaAgent.

NOTES

• This prompt will not appear if Removable Storage Services are already disabled on the computer.

Click Next.

staller	
Options require Software	
Please select 'Setup So software to remote mac	ftware Cache' to make CommServe capable of pushing hines.
🔽 Setup Software Ca	che
🔲 Schedule FTP Dov	inload of Automatic Updates
	< Back Next> Cancel
staller	
Software Cache Pa Path to store software p	th ackages and updates from
FTP site	
	packages and updates from FTP site
C:\Program Files\Soft	wareCache Browse
User Name:	Password:
Drive List	Space Required / Recommended
C: 8527 MB	Space Required / Recommended 5000 MB / 5000 MB
	5000 MB / 5000 MB
C: 8527 MB	5000 MB / 5000 MB (Back Next >
C: 8527 MB	5000 MB / 5000 MB < Back
C: 8527 MB	5000 MB / 5000 MB < Back
C: 8527 MB	S000 MB / 5000 MB
C: 8527 MB	S000 MB / 5000 MB
C: 8527 MB	Sooo MB / Sooo MB
C: 8527 MB	Sooo MB / Sooo MB
C: 8527 MB staller chedule Install of A choose when you want to downloaded updates. ✓ Schedule Install of ← Once	Sooo MB / 5000 MB
C: 8527 MB	Submatic Updates Automatic Updates
C: 8527 MB staller chedule Install of A choose when you want to downloaded updates. ✓ Schedule Install of ← Once	S000 MB / 5000 MB Sono MB So
C: 8527 MB staller chedule Install of A choose when you want to downloaded updates. ✓ Schedule Install of ← Once	S000 MB / 5000 MB < Rack
C: 8527 MB staller chedule Install of A choose when you want to downloaded updates. ✓ Schedule Install of ← Once	S000 MB / 5000 MB Sono MB Sono MB Sono MB Sono MB Sono MB Cancel Ca
C: 6527 MB staller chedule Install of A Choose when you want t downloaded updates. S Schedule Install o C Once C Weekly	S000 MB / 5000 MB < Rack
C: 8527 MB staller chedule Install of A choose when you want to downloaded updates. ✓ Schedule Install of ← Once	Image: Source with the second seco
C: 6527 MB staller chedule Install of A Choose when you want t downloaded updates. S Schedule Install o C Once C Weekly	Image: Source with the second seco
C: 8527 MB challer chedule Install of <i>B</i> Choose when you want t downloaded updates. C C Once C Once Veekly Installer Installer	Image: Source with the second seco
C: 6527 MB staller chedule Install of A Choose when you want t downloaded updates. S Schedule Install o C Once C Weekly	Image: Source with the second seco
C: 8527 MB staller Chedule Install of A Choose when you want to downloaded updates. Image: Choose when you want to downloaded updates. Image: Conce Image: Conce Image: C	▼ 5000 MB / 5000 MB <
C: 8527 MB staller Chedule Install of A Choose when you want to downloaded updates. Image: Choose when you want to downloaded updates. Image: Conce Image: Conce Image: C	▼ 5000 MB / 5000 MB ≤ Back Next> ∠ Back N
C: 8527 MB staller Chedule Install of A Choose when you want to downloaded updates. Image: Choose when you want to downloaded updates. Image: Conce Image: Conce Image: C	▼ 5000 MB / 5000 MB ✓ Back Next> ✓ Back Next> ✓ Cancel
C: 8527 MB staller Chedule Install of A Choose when you want to downloaded updates. Image: Choose when you want to downloaded updates. Image: Conce Image: Conce Image: C	▼ 5000 MB / 5000 MB ✓ Back Next> ✓ Back Next> ✓ Cancel

28. Click **OK**.

29. Click Next.

NOTES

• The install program now starts copying the software to the computer. This step may take several minutes to complete.

30. Click Next.

31. Click Finish.

Installer	
Removable Storage Service The Removable Storage service must be stopped and disabled	
The Removable Storage service must be stopped and disabled. This	is required for correct
functioning of the MediaAgent.	
Do you want to stop and disable the Removable Storage service?	
 Yes, stop and disable the Removable Storage Service No, I am using Removable Storage Manager (RSM) 	
 To, Fair away from valid storage manager (from) 	
Installer	
< Back Next:	Cancel
stallar	×
Torrage Policy Selection Select a storage policy for the default subclient to be backed up.	
Configure for Laptop or Desktop Backup	
Installer c Back Next :	Cancel
staller	
ummary	
Summary of install selections	
Setup has enough information to start copying the program files. If yo	u are satisfied with the
install settings, click Next to begin copying files.	
	^
Destination Path = C:\Program Files\ CommServe Host = mycomputer.mycompany.com Interface Name = audi.mycompany.com	
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	ss been installed on omated backup Console

Getting Started

< Previous) Next >

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Cancel

OK

OPEN COMMCELL CONSOLE

CommCell Console is the graphical user interface that helps you to run backups and restores. In addition the CommCell Console also provides a number of other features to help you control and manage the data.

- Click the Start button on the Windows task bar and then click All Programs. Select bull from the Programs menu and then select Calypso. Click CommCell Console GUI.
- 2. Enter the **User Name** and **Password** that you entered in step 22 during the installation.

Enter the $\mbox{CommCell}$ name that you entered in step 15 during the installation. Click \mbox{OK} to continue.

3.	If you have not activated the license yet, you will receive a reminder prompt.
	Click OK to continue.

4. The CommCell Console will be displayed.

 To activ 	er: License must be activat ate license, send an e-mail uclude the following IP add	to Customer Support.	19.98.183	
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Connect to CommCell

User Name:

Password:

CommCell:

Enter your CommCell user name and password

If the **EZ Operations Wizard** is not displayed double-click the icon in the toolbar to display **EZ Operations Wizard**.

Getting Started

CONFIGURE A STORAGE DEVICE

You may have one or more storage devices available for protecting data. The following sections describe how to configure the following:

- **Option 1**: Configuring a Disc Device
- Option 2: Configuring a Tape Device

Depending on the type of storage device attached to your MediaAgent, you can configure one or both of these devices.

Refer to the Configuration section in the Media Management web if you have other types of devices.

OPTION 1: CONFIGURING A DISC DEVICE

1. Click the Backup Target button on EZ Operations Wizard.

	Backus Tarcet
If the EZ Operations Wizard is not displayed double-click the icon in the toolbar.	۰ 🕥 🐏 - دۆ 🔝 📠 🗞 🖳
Click Disc Library (For backup to disc) and click Next .	Exclusy Target Control Stract Device Configuration Colors 1. Selece Configuration Type O Bill Configuration Colors 2. Device Configuration O Bill Configuration Colors 2. Device Configuration O Bill Configuration Colors Control Configuration O Bill Configuration Colors Control Configuration O Bill Configuration Colors Control Configuration O Bill Configuration Control Configuration O Bill Configuration
 Click Use Local Disk. Type the name of the folder in which the disc library must be located in the Enter backup destination folder box or click the Browse button to select the folder. Click Next. If you click the Use Network Share option you will be prompted for the credentials (user name and password) to access the share. 	Unickup Target Control Stem
 Click and select the Enable Deduplication option - this will save disc space for storage. Type the name of the folder in which the deduplication database must be located in the Deduplication Store location box or click the Browse button to select the folder. Click Next 	Bitskep Target C Step

Select an operation to perform

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- Click Use Local Disk.
 - Type the name of the folder in which the disc library must be loo backup destination folder box or click the Browse button to
 - Click Next.

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- Click and select the Enable Deduplication option this will sav storage.
- Type the name of the folder in which the deduplication database the Deduplication Store location box or click the Browse but folder.
- Click Next.

<Back Next > Finish Cancel Help

Steps	✓ Automatically manage disk
1. Select Configuration Type 2. Disk Library Configuration 3. Deduplication Policy Creation 4. Enter Retention Parameters	Retain backups until capacity is reached
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6. Click Finish.

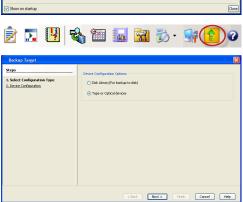
OPTION 2: CONFIGURING A TAPE DEVICE

1. Click the Backup Target button on EZ Operations Wizard.

	Select an operation to perform	
		a la
Backup	Restore	Reports
		6
Backup Target	Device Status	Install Software
Launchs		
Expert View	Job Controller	Event Newer

If the **EZ Operations Wizard** is not displayed double-click the icon in the toolbar.

2. Select Tape or Optical devices. Click Next.



Steps	Select the library that you would like to configure.
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Click and select the library you wish to configure.
 Click Next.

4. Click Next.

5. Click Finish.

6. Click OK.

Getting Started

< Previous) Next >

CREATE THE STORAGE POLICY

A Storage Policy is automatically created when you configure a device.

A storage policy acts as a channel through which data is transferred to the storage device. As the name indicates, a storage policy allows you to establish a comprehensive set of storage parameters - such as data retention, streams, deduplication, etc., for the data channeled through the storage policy.

If needed, you can create a new storage policy. During the creation of a Storage Policy, a new disk library is created to store metadata backup for SnapProtect operations. If there are existing disk libraries, you may select one.

USING DISK LIBRARY

1.

Use the following steps to create a storage policy using disk library:

- From the CommCell Browser, navigate to Policies.
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

3. Specify the name of the **Storage Policy** in the **Storage Policy Name** box and then click **Next**.

4. In the **Library** list, select the disk library to which the primary copy should be associated and then click **Next**.

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	Data Protection and Archiving
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5. In the MediaAgent list, select a MediaAgent and then click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

Create Storage Policy Wizard	
	Please select a MediaAgent for this copy
	MediaAgent: happy01
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wizard	
	Please enter the streams and retention criteria for this policy
	citeria for this policy
	Number of Device Streams:
	Choose the Primary Copy's Aging Rules: iDataAgent Backup data
	Infinite/ 15 $\frac{1}{2}$ Days 2 $\frac{1}{2}$ Cycles
	Data Archive/Compliance Archiver
	Infinite/ 365 → Days
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9. Review the details and click **Finish** to create the Storage Policy.

The new Storage Policy creates the $\mbox{Primary Classic Copy},$ which will be used for data movement to tape, disk or cloud.

Create Storage Policy Wizard	
	Please review your selections.
	No. of Streams: 10 IDataAgent Backup Aging Rules: infinite DataCompliance Archiver Aging Rules: infinite Dedupication Store Name: SIDB_Laptop_SP_Primary Dedupication Store Location: CVappy_SIDB Client Side Dedupilcation: Yes
	Cancel < Back Next > Prish

USING TAPE LIBRARY

Use the following steps to create a storage policy using tape library:

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

3. Specify the name of the **Storage Policy** in the **Storage Policy Name** box and then click **Next**.

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Press Next to continue				
Cancel < gad Bext > Finds				
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4. In the **Library** list, select the tape library to which the primary copy should be associated and then click **Next**.

5.

6.

7.

8.

	Create Storage Policy Wizard
	Please select a library to be the default library for this primary copy
	Cancel < Back Next > Finish
	Create Storage Policy Wizard
 In the MediaAgent list, select a MediaAgent. From the Drive Pool list, select a default drive pool and then click Next. 	What are the default MediaAgent and drive poc primary copy?
	MediaAgent: testpilotdocs
	Press Next to continue
	Cancel <gat. next=""> Findh</gat.>
From the Scratch Pool list, select the default scratch pool and then click Next.	Create Storage Policy Wizard
	Which scratch pool will you use for the primary
	Scratch Pool: Default Scratch
	Press Next to continue
	Cancel <bext> Finah</bext>
Click Next.	Create Storage Policy Wizard
	Please enter the streams and retention criteria for this policy
	Number of Device Streams:
	Choose the Primary Copy's Aging Rules: DataAgent Backup data
	Infinite/ 15 - Days 2 - Cydes
	Data Archive/Compliance Archiver
	Cancel <back next=""> Finish</back>
By default Hardware Compression is enabled, click Next to continue.	Create Storage Policy Wizard
	Would you like to enable hardware compressic storage policy copy?
	(☑) <u>Eardware Compression</u>
	Press Next to continue
	Cancel < Back Next > Finish

9. Review the details and click **Finish** to create the Storage Policy.

User Guide - SnapProtect

Please review your redections.	
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Getting Started

CHOOSE THE CLIENT TYPE

SUPPORTED AGENTS - CHOOSE THE AGENT TO CONFIGURE

VMWARE

EXCHANGE DATABASE

ORACLE

MICROSOFT SQL SERVER

NAS

HYPER-V

SAP FOR ORACLE

DB2

UNIX FILE SYSTEM

WINDOWS FILE SYSTEM

Previous Next >

Previous)

Next >

Getting Started - VMware Deployment

WHERE TO INSTALL

Install the software directly on the proxy computer that can communicate with the ESX Server. It is not recommended to install the software in a clustered environment.

BEFORE YOU BEGIN

Download Software Packages Download the latest software package to perform the install.

Previous

Next 🕨

SnapProtect Support - Platforms

Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE VIRTUAL SERVER IDATAAGENT (VMWARE)

Use the following procedure to directly install the software from the installation package or a network drive.

- 1. Run **Setup.exe** from the Software Installation Package.
- 2. Select the required language. Click **Next**.

3.	Select the option to	Install Calvoso	on this 64-bit computer

Your screen may look different from the example shown.

4. Select I accept the terms in the license agreement. Click Next.

Select the language you will use during installation.			
English (United States)			
Next > Cancel			
Advanced options			
♥ View documentation website			
 For decomparation recome View Install Quick Start Guide (Requires Adobe Acrobat Reader) 			
⇔ Exit			
Installer			
License Agreement			
Please read the following License Agreement. Press the PAGE DOWN key to view the entire agreement.			
End User License and Limited Warranty Agreement			
Software Release 9.0.0			
(including Microsoft® SQL Server TM 2008 Enterprise Edition, SQL Server TM 2008 Express Edition and Windows Pre-Installation Environment)			
Eval Tionur License Agreement I accept the terms in the license agreement.			
 I accept the terms in the license agreement. I do not accept the terms in the license agreement. 			
Installer			
Coduk Wext 2 Cancel			

- Expand Client Modules | Backup & Recovery | File System, and select Virtual Server Agent.
 - Expand Common Technology Engine | MediaAgent Modules, and select MediaAgent.
 - Click Next.

5.

	Installer
	Select Platforms
	Select the platforms you want to configure.
	Common Technology Engine CommServe Modules CommServe Modules CommCell Conside Mediadgerit Modules Content Indiversity and Search Content Indiversity Search Search & Browse Content Indiversity Search Search & Browse Content Indiversity Search Search Content Indiversity Content Indiversity
	Installer Cancel
	Installer
t	Setup will now install Microsoft .NET Framework for the selected platforms. Click Yes' to continue. Choosing No' will exit the Setup. In such a case, you may resume Setup later at any time. <u>Yes</u> <u>No</u>
Gauna	
nfigure	Installer 🛛 🔀
nd	Configure firewall services
	If there is a firewall between this machine and the CommServe, configure firewall services below.
	Please specify how Windows Firewall is limiting network traffic. Whether it is possible to open
	connection from here to a CommServe's tunnel port, whether all connections toward CommServe are blocked, and setup should instead expect CommServe to connect back to this machine, or whether there is a Provin between.
	This machine can open connection to CommServe on tunnel port
	CommServe can open connection toward this machine CommServe is reachable only through a proxy
	Installer
	Next > Cancel
	Installer X
	CommServe Name
	Specify the CommServe computer name and host name
	CommServe Client Name
	CommServe Host Name [Enter a valid, fully-qualified, IP host name; for example: mycomputer.mycompany.com)
	mycomputer.mycompany.com
	Installer
	< Back Next> Cancel
	Installer
	Installer Communication Interface Name Setup will configure the communication paths.
	Select a client name
	sudi en 💌
	Select an interface name that this computer will use to communicate with the CommServe
	audi.mycompany.com
	audi.mycompany.com IP Address(es) for the selected host.

< Back Next >

- 6. Click **YES** to install Microsoft .NET Framework package.
 - This prompt is displayed only when Microsoft .NET Framework is not installed.
 - Once the Microsoft .NET Framework is installed, the software automatically installs the Microsoft Visual J# 2.0 and Visual C++ redistributable packages.
- 7. If this computer and the CommServe is separated by a firewall, select the **Configure** firewall services option and then click Next.

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

If firewall configuration is not required, click **Next**.

8.	Enter the fully qualified domain name of the CommServe Host Name.
	Click Next.

Do not use space and the following characters when specifying a new name for the CommServe Host Name:

\|`~!@#\$%^&*()+=<>/?,[]{}:;'"

9. Click Next.

10. Select Add programs to the Windows Firewall Exclusion List, to add CommCell programs and services to the Windows Firewall Exclusion List.

Cancel

User Guide - SnapProtect

Click Next.

This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion list.

It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.

11. Click Next.

 $\label{eq:click} Click \; \textbf{Browse} \; \text{to change the default location}.$

Click Next.

- Do not install the software to a mapped network drive.
- Do not install the software on a system drive or mount point that will be used as content for SnapProtect backup operations.
- Do not use the following characters when specifying the destination path:

/:*?"<>|#

It is recommended that you use alphanumeric characters only.

13. Select a Client Group from the list.

Click Next.

This screen will be displayed if Client Groups are configured in the CommCell Console.

Installer					×
Windows Firewa Allow programs to co Firewall					
	-1:- ON				
Windows Firew					
Add program	ns to the Windows F	irewall Exclusio	n List		
If you plan on u exclusion list.	sing Windows Firew	all, it is recomm	ended to	add the software	e programs to the
Installer		< Back		Next >	Cancel
Installer Download and Ir Download and Insta pack from the softw.	II the latest service p	back and post			X
	oad latest update pa e internet connectiv Noad speed.		This proce	iss may take sor	ne time
Installer		< Back		Next >	Cancel
Installer Destination Fold Select the destinatio		e program files.	ġ.		X
Destination Fold Select the destination			vse to che	oose an alternat	
Destination Fold Select the destination	on folder to install the opt the default location		vse to cho	pose an alternat	e location.
Destination Fold Select the destination Click Next to acce	on folder to install the opt the default location	on, or click Bro	equired /		e location. se
Destination Fold Select the destination Click Next to acce Destination Fold CMPProgram File	n folder to install the	on, or click Bro	equired /	Brown	e location. se
Destination Fold Select the destination Click Next to accord Destination Fold CAPlogram File Drive List C 928 MB Installer	n folder to install the	on, or click Bror	equired /	Brown Recommended / 1670 MB	e location. se
Destination Fold Select the destination Click Next to accord Destination Fold NProgram Tele Drive List C 928 MB	ection	on, or click Bror	equired /	Brown Recommended / 1670 MB	e location. se
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Destination Fold Select the destination Click Next to acce Destination Fold Drive List C 328 MB Installer C 328 MB Installer C 1000 Select a client group Select a client group The white	ection for the default location of the default location of the client.	on, or click Bron	i client ma arious leve	Brow Recommended /1670 MB	e location. se
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14. Click Next.

15. Select Yes to stop Removable Storage Services on the MediaAgent. Click Next.

This prompt will not appear if Removable Storage Services are already disabled on the computer. $% \left({{{\left({{{{\bf{n}}}} \right)}_{i}}}_{i}} \right)$

16. Click Next.

17. Select a Storage Policy. Click Next.

18. Click Next.

Installer	×
Schedule Install of Aut Choose when you want to s downloaded updates.	
C Schedule Install of A	utomatic Updates
C Once	
Weekly	Time: 08:31:12 PM +
·• weekly	Monday C Tuesday
	C Wednesday C Thursday
	C Friday C Saturday
	Sunday
Installer	<back next=""> Cancel</back>
Installer	X
Removable Storage S The Removable Storage se disabled	
The Removable Storage functioning of the Media/	service must be stopped and disabled. This is required for correct sgent.
	disable the Removable Storage service?
Yes, stop and disable	the Removable Storage Service
	vable Storage Manager (RSM)
Installer	
	< Back Next > Cancel
Installer	
Installer Select Global Filter Op Select the Global Filter Optic	
Select Global Filter Op Select the Global Filter Optic	ns for the Agent. billity to set exclusions within a CommCell to filter out data from data
Select Global Filter Op Select the Global Filter Optic Global Filters provides the a protection operations on all	ns for the Agent. billy to set exclusions within a CommCell to filter out data from data agents of a certain type.
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19. Click Next.

20. Click Finish.

Installer		
Summary Summary of install selections		
Setup has enough information to start copying the program files. If ye install settings, click Next to begin copying files.	ou are satisfied with the	
The following software will be installed : + MediaAgent + Windows File Swstem (DataAgent + Virtual Server Agent	·····	
Destination Path = C-VProgram Files\ CommServe Host = mycomputer.mycompany.com Interface Name = audi.mycompany.com Client = audi Job Results Path = C-VProgram Files\JobResults Global Filmes = Use Cell level policy	E	
	×	
Installer Kack Next	> Cancel	
nstaller Seksalale Deminder	×	
Schedule Reminder Job schedule creation reminder		
Please note: You still need to create a Job Schedule for each iDataAgent that h	nas been installed on	
this client computer. Job Schedules are required to allow the iDataAgents to perform au	itomated backup	
and restore operations. Job Schedule creation can be accomplished through the CommCe	Il Consolo	
administration interface.		
Installer	Next >	
	A	
ostaller Completion Report		
Setup complete		
	*	
Software installation completed successfully. Visit the website below to download latest Updates and Service Packs.	1	
Click Finish to complete Setup.		
	-	
Installer Technical Support Website	Enish	
	Previous N	lex

Getting Started - VMware Configuration

< Previous) Next >

CONFIGURATION

1.

Once the Virtual Server iDataAgent has been installed, configure an Instance, a Backup Set and a Subclient to facilitate backups. The following sections provide the necessary steps required to create and configure these components for a first SnapProtect backup of a Virtual Center.

- From the CommCell Browser, navigate to Client Computers | < Client>.
 - Right-click the client and select Properties.

Image: Secure interface of the secure interface	CommVet	
Image: Section	Clent Computer Groups Clent Computer 3	
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Indext Backgroup	3 (00) Pit 10/2 P	Laptop Backup Agent to protect data on laptops and desktops used in remote offices and outside of a domain
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- Click on the **Advanced** tab.
 - Select the **Enable SnapProtect** option to enable SnapProtect backup for the
 - client.
 - Click OK.

- From the CommCell Browser, navigate to *Client* | **Virtual Server**.
 - Right-click the Virtual Server agent and click All Tasks | Create New Instance.

4. • Enter the **Instance Name**.

• Select VMware from Vendor Type menu.

• Click Virtual Center.

 $\ensuremath{\mathsf{ESX}}$ Server instances are not supported for SnapProtect operations.

- Click Configure Password.
- Enter the username and password associated with the Virtual Center.

6. Click **OK** to save the instance.

- 7. From the CommCell Browser, right-click the **Default Backup Set.**
 - Click Properties.

		Select Automatically add new VMs that do not qualify for membership in any of the subclients.
--	--	---

Virtual Serve	r Instance Property		
General			
Client Name:	xen-vm2_cn		
iDataAgent:	Virtual Server		
Instance Name:	Virtual Sciver		
Instance manor			
Vendor Type:			~
		ОК	Cancel Help
Virtual Serve	r Instance Properties		×
General			
Client Name:	newyork64_2		
iDataAgent:	Virtual Server		
Instance Nam	e: sogo24		
Vendor Type:	VMWare		
VMWare			
vCent	er		
	st name		
	go24.domain.company.	com	
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C ESX S	ervers		
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		1.6	
		ок	Cancel Help
			_
	s Instance Dreperty		
Virtual Serve	r instance Property		×
	r instance Property		×
Virtual Serve General Client Name:	xen-vm2_cn		×
General			×
General Client Name:	xen-vm2_cn		×
General Client Name: iDataAgent: Instance Name:	xen-vm2_cn		
General Client Name: iDataAgent:	xen-vm2_cn		×
General Client Name: iDataAgent: Instance Name:	xen-vm2_cn		
General Client Name: iDataAgent: Instance Name:	xen-vm2_cn		
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General Client Name: iDataAgent: Instance Name:	xen-vm2_cn		
General Client Name: iDataAgent: Instance Name:	xen-vm2_cn		
General Client Name: iDataAgent: Instance Name:	xen-vm2_cn		
General Client Name: iDataAgent: Instance Name:	xen-vm2_cn	OK	
General Client Name: iDataAgent: Instance Name: Vendor Type:	xen-vm2_cn Virtual Server		Cancel Help
General Client Name: iDataAgent: Instance Name: Vendor Type:	xen-vm2_cn Virtual Server		Cancel Help
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CommCell Brow apple Client Name: DataAgent: Instance Name: Vendor Type: Vendor Type: Client Comp Client Comp Client Comp Client Comp Client Comp Client Comp Client Comp Client Comp Client Comp	xen-vm2_cn Virtual Server seer uker Groups uker Groups uker Server au Server test au Server test au Server test sources	All Task	Cancel Help Cancel Help Cancel Help Cancel Help Client Computed Client Name Serauk Client Name Serauk Sammary mtroller × bob Controller
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User Guide - SnapProtect

- Click OK.
 - Selecting this option is not recommended. If selected, ensure that all the virtual machines are residing on the same storage device.

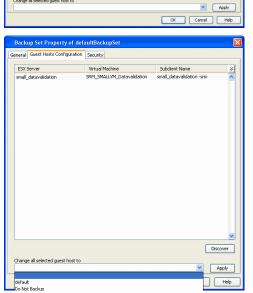
Click Discover on the Guest Hosts Configuration tab. 9.

The discovery process might take several minutes to complete.

10. • Select a virtual machine to back up from the Virtual Machine column.

> Ensure the virtual machine selected is not a VM template. Virtual machine templates are not supported for backup.

- Select the default subclient from the Subclient column for the virtual machine you want to back up.
- Click Apply.
- Click OK.



Backup Set Property of defaultBackupSet

Guest Hosts Configuration Security

snap-vm-90_2

Virtual Server

O vcbmounter VMware Consolidated Backup method. VMware vStorage API method for Backup

Backup Set Property of defaultBackupSe neral Guest Hosts Configuration Security

Virtual Machin

Votomatically add new VMs that do not qualify for membership in any of the subclients to default subclient

Automatic Switch between VCBMounter and vStorage method depending on the Virtual machine and ESX version

OK Cancel Help

Subclient Name

×

Discover

Instance Name: Instance0001

Backup Set Name defaultBackupSet

Make this the Default backup set Rule based discovery

Client Name:

iDataAgent:

○ vStorage

ESX Server

Change all selected guest host to

- 11. • From the CommCell Browser, navigate to the default subclient.
 - Click Properties.

12. Ensure **Disk-Level** from Backup Types is selected.

CommCell Browser	¢	defaultBac	kupSet ×	What's new? ×
spie ComNet Clent Computer Groups Clent Computer Computer Community Communit	1 t	Subclent Name Codefault Content Subclen	Backup Browse Backup Da List Media Find Backup History Schedules Delete Operation Window Properties Erobon CIDRC C	
Subclient Properties of	default			
Security Storage Dev	ice	Activity Control	Encrypti	on Content
General	Filters	ricarity control	Pre/Post Pro	
Client Name:	mustang			
Billing Department:	Not Define	ed/Not Defined		
iDataAgent:	Virtual Ser	ver		
Backup Set:	defaultBa	rkunSet		
		chap soc		
Subclient name:	default			
Number of Data Readers:	1 ÷			
Note: This is a default subclien	.t.			
Backup Type				
O Disk Level				
Volume Level				
O File Level				
Use Proxy				~
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Transport Mode for VMWar	e Auto			~
Description				
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Subclient Properties of	uerault			

Subclient Properties of default		
General Filters	Pre/Post Process	
Security Storage Device Activity Control	Encryption	Content
Data Storage Policy Data Transfer Option Deduplication		
Storage Policy:		
DL1(apple)_(1)	Data	Paths
Incremental Storage Policy: N/A		
	Data	Paths
Create Storage Policy		
0	K Cancel	Help

- **13.** Click the **Storage Device** tab.
 - In the **Storage Policy** box, select the storage policy name.

- **14.** Click the **SnapProtect Operations** tab.
 - Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
 - Select the storage array from the Available Snap Engine drop-down list.
 - Click **Use Separate Proxy for Snap to Tape** if you want to perform SnapProtect operations in a different Virtual Server client computer.

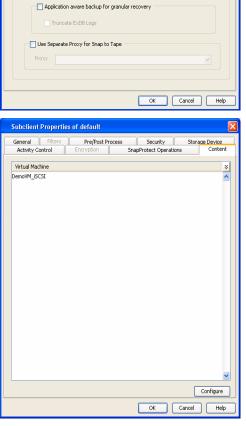
Select the client computer from the $\ensuremath{\text{Proxy}}$ list.

• Selecting a proxy from the **Use Proxy** option in the

General tab is not applicable for SnapProtect operations.

- When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.
- Ensure that the selected proxy ESX Server is not part of any Clustered Storage Group/Initiator group.

- **15.** Click the **Content** tab.
 - Click Configure if you need to configure an additional virtual machine for the
 - subclient.Click **OK**.



Subclient Properties of default

Activity Control

SnapProtect

Available Snap Engines

Proxy ESX Server

Host

General Filters Pre/Post Process

Security

Select ESX server for snap mount

SnapProtect Operations

Please select a Snap Engine

Virtual Center / ESX Server kdvcenter.testlab.commvault.com

172.19.100.60

Storage Device

Enter Array Credentials

Conten

¥

SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

CREATE A SNAPSHOT COPY

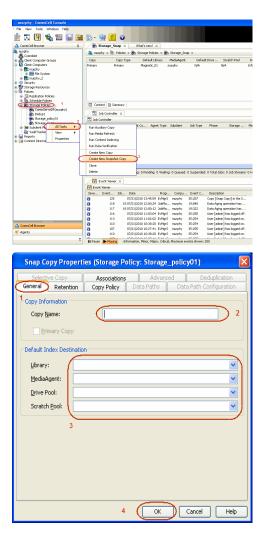
Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- 1. From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Create New Snapshot Copy.**

2.

1.

- Enter the copy name in the Copy Name field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.



CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

murphy - CommCell Console									
i File View Tools Windows Help									
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🛆 CommCell Browser 🛛 🗛	/ 🚡 झ	orage_Snap ×	What's new?	×					
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Bt nurphy B 00 File System	Snap	Primary S	hap Magnetic_(ti mu	rphy	N/A	N/A		Infin
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Storage Resources Polyies									
Replication Policies									
Schedule Policies	The sure	nt 👔 Summary							
CommServeDR(murphy)									
💑 Dedup1		b Controller ×							
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- Click the **Snapshot** tab.
 - Select Enable Backup Copy option to enable movement of snapshots to media.
 - Click OK.

User Guide - SnapProtect

neral Copy Precedence Associated Subclients Snapshot Security Advanced	
Enable Backup Copy 2 1	
Snapshots Created On and After Mon 07/19/2010	
Defer Backup Copy for 0 day(s)	
All Backups	
Choose the Backup Selection Rule: Advanced	
3 (OK) Cancel H	elp

Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS
3PAR
DELL COMPELLENT
DELL EQUALLOGIC
EMC CELERRA
EMC CLARIION, VNX
EMC SYMMETRIX
FUJITSU ETERNUS DX
HITACHI DATA SYSTEMS
HP EVA
IBM SVC
IBM XIV
LSI
ΝΕΤΑΡΡ
NETAPP WITH SNAPVAULT/SNAPMIRROR
NIMBLE

Previous Next >>)

Previous Next >

SnapProtect[™] Backup - 3PAR

< Previous Next >

PRE-REQUISITES

- 3PAR Snap and 3PAR Clone licenses.
- Thin Provisioning (4096G) and Virtual Copy licenses.
- Ensure that all members in the 3PAR array are running firmware version 2.3.1 (MU4) or higher.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



3.

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Control Host	Name	User Name	Snap Vendor	Description	× Add
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		hct\administr grpadmin		Description	Edit
fidk.hct.commvault.com			HP EVA	Compton	Edit
fidk.hct.commvault.com 172.19.66.22	5001438002	grpadmin admin	HP EVA Dell Equalogic	Compton	^

What's new?

💅 Alerts

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4

List Sn

OK Cancel Help

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13

Audit Trai

- Select **3PAR** from the **Snap Vendor** list.
 - Specify the 16-digit number obtained from the device ID of a 3PAR volume in the **Name** field.

Array Manageme	nt 🔀
1 Snap Vendor	3PAR 💌
2 Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	y from this device group
Description	
ОК	Cancel Help

Follow the steps given below to calculate the array name for the 3PAR storage device:

- 1. From the 3PAR Management console, click the **Provisioning** tab and navigate to the **Virtual Volumes** node. Click any volume in the **Provisioning** window
- 2. From the Virtual Volume Details section, click the Summary tab and write

down the **WWN** number. This is the device ID of the selected volume.

3. From the **Virtual Volume Details** section, click the **Summary** tab and write down the **WWN** number.

This is the device ID of the selected volume.

This WWN may be 8-Byte number (having 16 Hex digits) or 16 Byte number (having 32 Hex digits).

- 4. Use the following formula to calculate the array name:
 - For 8 Byte WWN (16 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

where $\mathtt{DevID.substr}\left(4,3\right)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr(12,4)}$ is the next 4 digits after the twelfth digit from the WWN number

For example: if the WWN number is 50002AC0012B0B95 (see screenshot given below for 8 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

DevID.substr(4,3) is 2AC and DevID.substr(12,4) is 0B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

• For 16 Byte WWN (32 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

where ${\tt DevID.substr}\,(4,3)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr}\,(26,\,6)$ is the next 6 digits after the twenty sixth digit from the WWN number

For example: if the WWN number is 60002AC50000000000052200000B95 (see screenshot given below for 16 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

DevID.substr(4,3) is 2AC and DevID.substr(26,6) is 000B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

- Enter the IP address of the array in the **Control Host** field.
 - Enter the access information of a local 3PAR Management user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the CPG group created on the array to be used for snapshot operations.

If you do not specify a CPG group, the default CPG group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

4.

	16 Byte WWN		Byte WWN
Provisioning) Provisioning : InServo : Span-Ecommonalt.com : Witaal Volumes	Provisioning	1) Provisioning : InSens : Spar-3.communalt.com : Virtual Valumes
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	Array Managemen	t 🔀	
	Snap Vendor	3PAR 💌	
	Name		
3 (Control Host		
1	User Name		
4	Password		
	Confirm Password		
5	Device Group		
6	Use devices only	from this device group	
	Description		
	ОК	Cancel Help	
		< Previous	Next >

SnapProtect[™] Backup - Dell Compellent

< Previous) Next >

PRE-REQUISTIES

- Dell Compellent requires the Data Instant Replay license.
- Ensure that all members in the Compellent array are running firmware version Storage Center 5.5.14 and above for 5.x and 6.2.2 and above for 6.x.

SETUP THE ARRAY INFORMATION

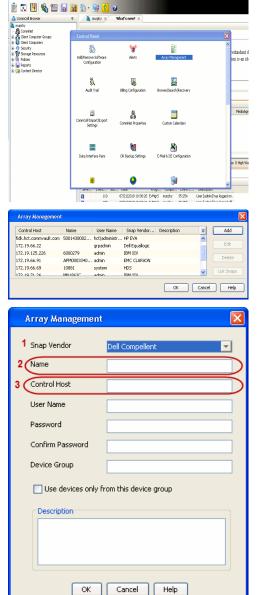
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- **3.** Select **Dell Compellent** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name and Control Host fields.

The Management IP address is also referred as the Storage Center IP address.



For reference purposes, the screenshot on the right shows the Storage Center Management Console of the Dell Compellent storage device displaying the Management IP address. 4.

- DELL Co ent 🔍 Vev 📫 Refresh 🕯 Couble : 1.6 rties - Storage Cent , Ce rol Storage Data P nim Cate Dok Sparry 245 ary C Type: 19.54 GB 2,000 1,750 1,500 1,250 41.19 Array Management Snap Vendor Dell Compellent Name Control Host User Name 4 Password Confirm Password Device Group 5 Use devices only from this device group Description OK Cancel Help Previous Next >
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- In the **Device Group** field, type none as this array does not use device groups for snapshot operations.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - Dell EqualLogic

PRE-REQUISTIES

WINDOWS

Microsoft iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

UNIX

iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

FIRMWARE VERSION

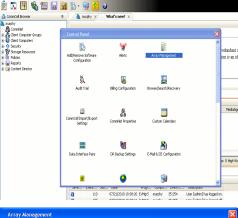
- Ensure that all members in the EqualLogic array are running firmware version 4.2.0 or higher.
- After upgrading the firmware, do either of the following:
 - o Create a new group administration account in the firmware, and set the desired permissions for this account.
 - If you plan to use the existing administration accounts from version prior to 4.2.0, reset the password for these accounts. The password can be the same as the original.

If you do not reset the password, snapshot creation will fail.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next 🕨

Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	
172 19 71 26	MN1963C	admin	TRM YTV		×	

Click Add.

2.

- **3.** Select **Dell Equallogic** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name field.

No entry is required in the **Name** field if there is no Management IP address configured.

• Specify the Group IP address in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Management IP
address and Group IP address for the Dell Equallogic storage device.

- Enter the user access information of the Group Administrator user in the **Username** and **Password** fields.
 - For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones in the **Device Group** field.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the storage pool specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

4.

Array Manageme	nt 🔀
1 Snap Vendor	Dell Equallogic
2 Name	
3 Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	y from this device group
Description	
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Array Manageme	nt 🔀
Snap Vendor	Dell Equallogic
Name	
Control Host	
User Name	
4 Password	
Confirm Password	
5 Device Group	
6 Use devices only	y from this device group
Description	
ОК	Cancel Help
	Previous Next >

SnapProtect[™] Backup - EMC Clariion, VNX

Previous Next >

PRE-REQUISITES

LICENSES

- Clariion SnapView and AccessLogix licenses for Snap and Clone.
- SYMAPI Feature: BASE/Symmetrix license required to discover Clariion storage systems.

You can use the following command to check the licenses on the host computer:

C:\SYMAPI\Config> type symapi_licenses.dat

ARRAY SOFTWARE

• EMC Solutions Enabler (6.5.1 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and NaviAgent installed on the client and proxy computers.
- If AccessLogix is not enabled, go to the Navisphere GUI, right-click EMC Clariton Storage System and click Properties. From the Data Access tab, select Enable AccessLogix.
- Clariion storage system should have run successfully through the Navisphere Storage-System Initialization Utility prior to running any Navisphere functionality.
- Ensure enough reserved volumes are configured for SnapView/Snap to work properly.

For EMC VNX:

• EMC Solutions Enabler (7.2 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and Navisphere/Unisphere Host Agent installed on the client and proxy computers.
- VNX storage system should have run successfully through the Unisphere Storage-System Initialization Utility prior to running any Unisphere functionality.

SETUP THE EMC CLARIION

Perform the following steps to provide the required storage for SnapProtect operations:

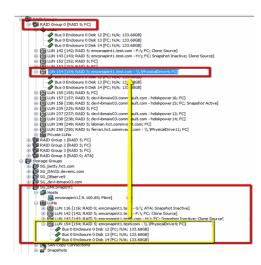
- 1. Create a RAID group
- 2. Bind the LUN
- 3. Create a Storage Group
- 4. Register the client computer (covered by installing NaviAgent)
- 5. Map the LUNs to the client computer where the NaviAgent resides
- 6. Reserved/Clone volumes target properly for SnapView

For example, as shown in the image on the right, the **Clariion ID** of **APM00033400899** has the following configuration:

- a RAID Group 0 provisioned as a RAID-5 group (Fiber Channel drives)
- LUNs are mapped to Storage Group SG_EMCSnapInt1 with LUN ID of #154 present to client computer emcsnapint1.

The example shows the serial number of LUN 154:

- RAID Group: RAID Group 0, containing 3 physical disks
- Storage Group: currently visible to a single client computer
- LUN is shown as a Fiber Channel device
- The devices under LUN 154 reside on RAID Group 0 which has RAID-5 configuration.



AUTHENTICATE CALYPSO USER INFORMATION FOR THE NAVIAGENT

Follow the steps below to specify the authorization information for EMC Solutions Enabler and Navishphere CLI to ensure administrator access to the Navisphere server.

1. To set the authorize information, run the symcfg authorization command for both the storage processors. For example:

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPA IP> -username admin -password password

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPB IP> -username admin -password password

2. Run the following command to ensure that the Clariion database is successfully loaded.

symcfg discover -clariion -file AsstDiscoFile

where AsstDiscoFile is the fully qualified path of a user-created file containing the host name or IP address of each targeted Clariion array. This file should contain one array per line.

3. Create a Navisphere user account on the storage system. For example:

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPA IP> -Scope 0 -User admin -Password password

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPB IP> -Scope 0 -User admin -Password password

- 4. Restart the NaviAgent service.
- 5. Run snapview command from the command line to ensure that the setup is ready.

On Unix computers, you might need to add the Calypso user to the agent.config file.

Before running any commands ensure that the EMC commands are verified against EMC documentation for a particular product and version.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

1.

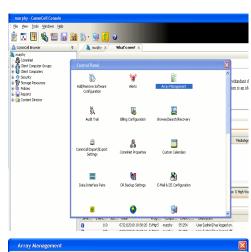
2. Click Add.

- **3.** Select **EMC CLARiiON** from the **Snap Vendor** list for both Clariion and VNX arrays.
 - Specify the serial number of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the serial number for the EMC Clariion storage device.

- Enter the access information of a Navisphere user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.



Control Host dk.hct.commvault.com	Name E001428002	User Name hct\administr	Snap Vendor	Description	*	Add
	5001450002				-	Edit
72.19.66.22		grpadmin	Dell Equalogic			Lun
72.19.125.226	6000279	admin	IBM XIV			Delete
72.19.66.91	APM0003340	admin	EMC CLARIION			Delete
72.19.66.69	10881	system	HDS		~	List Snaps
72 19 71 26	MM1863C	admin	TRM VIV			List shidps
					C	
				ОК	Cancel	Help

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1 Snap Vendor	EMC CLARIION	~
2 Name		\supset
Control Host		
User Name		
Password		
Confirm Passw	ord	
Device Group		
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	is only from this device group	
Description		ר ו
		- T
	OK Cancel Help	
Storage Management	Enterprise Storage 1	
	itter By: All 👻 Filter For: 👻	
Allocate	Storage Hosts Monitors	
Asign	Coal Domain (12:13:64:04); Logged In] Image: Coal Domain (12:13:64:04); Logged In] Image: Coal Domain (12:13:64:04); LON Pool Image: Coal Domain (12:13:64:05); LON Pool Image: Coal Domain (12:15:64:05); LON Pool Image: Coal Dom	

Array Managemei	nt 🔀	
Snap Vendor	EMC CLARIION	
Name		
Control Host		
User Name		
3 Password		
Confirm Password		
Device Group		
Use devices only	/ from this device group	
Description		
ОК	Cancel Help	
	< Previous	Next >

SnapProtect[™] Backup - EMC Symmetrix

< Previous) Next >

PRE-REQUISITES

• EMC Solutions Enabler (6.4 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

• SYMAPI Feature: BASE /Symmetrix licenses for Snap, Mirror and Clone.

You can use the following command to check the licenses on the host computer:

```
C:\SYMAPI\Config> type symapi_licenses.dat
```

By default, all functionality is already enabled in the EMC Symmetrix hardware layer. However, a Hardware Configuration File (IMPL) must be enabled before
using the array. Contact an EMC Representative to ensure TimeFinder and SRDF functionalities have been configured.

SETUP THE EMC SYMMETRIX

For SnapProtect to function appropriately, LUN Masking records/views must be visible from the host where the backup will take place:

- For DMX, the Masking and Mapping record for vcmdb must be accessible on the host executing the backup.
- For VMAX, the Masking view must be created for the host executing the backup.

CONFIGURE SYMMETRIX GATEKEEPERS

Gatekeepers need to be defined on all MediaAgents in order to allow the Symmetrix API to communicate with the array. Use the following command on each MediaAgent computer:

symgate define -sid <Symmetrix array ID> dev <Symmetrix device name>

where <Symmetrix device name> is a numbered and un-formatted Symmetrix device (e.g., 00C) which has the MPIO policy set as FAILOVER in the MPIO properties of the gatekeeper device.

LOAD THE SYMMETRIX DATABASE

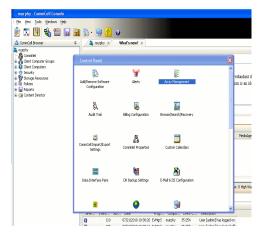
If you have the SYMCLI software installed, it is recommended that you test your local Symmetrix environment by running the following command to ensure that the Symmetrix database is successfully loaded:

symcfg discover

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- з.
- Select EMC Symmetrix from the Snap Vendor list.
- Specify the **Symm ID** of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the Symmetrix array ID (Symm ID) for the EMC Symmetrix storage device.

4.

- If Symcfg Authorization is enabled on the Symmetrix Management Console, enter the access information for the Symmetrix Management Console in the Username and Password fields.
- In the **Device Group** field, specify the name of the device group created on the client and proxy computer. The use of Group Name Service (GNS) is supported.

If you do not specify a device group, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

To understand how the software selects the target devices during $\ensuremath{\mathsf{SnapProtect}}$ operations, click here.

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SnapProtect[™] Backup - Hitachi Data Systems

PRE-REQUISITES

- Device Manager Server (7.1.1 or higher) installed on any computer.
- RAID Manager (01-25-03/05 or higher) installed on the client and proxy computers.
- Device Manager Agent installed on the client and proxy computers and configured to the Device Manager Server.

The hostname of the proxy computer and the client computer should be visible on the Device Manager Server.

- Appropriate licenses for Shadow Image and COW snapshot.
- For VSP, USP, USP-V and AMS 2000 series, create the following to allow COW operations:

COW pools

 $\,\circ\,$ V-VOLs (COW snapshots) that matches the exact block size of P-VOLs devices.

• For HUS, ensure that the source and target devices have the same **Provisioning Attribute** selected. For e.g., if the source is **Full Capacity Mode** then the target device should also be labeled as **Full Capacity Mode**.

ADDITIONAL REQUIREMENTS FOR VMWARE

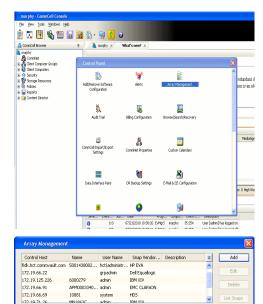
When performing SnapProtect operations on VMware using HDS as the storage array, ensure the following:

- HDS LUNs are exposed to the Virtual Server iDataAgent client and ESX server.
- All HDS pre-requisites are installed and configured on the Virtual Server iDataAgent client computer.
- The Virtual Server client computer is the physical server.
- The Virtual Machine HotAdd feature is not supported.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next >

2. Click Add.

- **3.** Select **HDS** from the **Snap Vendor** list.
 - Specify the serial number of the array in the Name field.

OK Cancel Help

For reference purposes, the screenshot on the right shows the serial number for the HDS storage device.

4.

- Enter the IP address or host name of the Device Manager Server in the **Control Host** field.
 - Enter the user access information in the Username and Password fields.
 - In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. The device group should have the following naming convention:

<COW_POOL_ID>-<LABEL> **Or** <LABEL>-<COW_POOL_ID>

where ${\tt COW_POOL_ID}{\tt (for \ COW \ job)}$ should be a number. This parameter is required.

 $<\!\!\! LABEL>$ (for SI job) should not contain special characters, such as hyphens, and should not start with a number. This parameter is optional.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

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5	Device Group				
6 (Use devices only	from this	s device group		
	Description				
	ОК	Car	ncel Help)	
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Array Management

HDS

Use devices only from this device group

OK

Cancel

Help

NAS/Management

1 Snap Vendor

Description

2 Name Control Host User Name Password Confirm Password Device Group

SnapProtect[™] Backup - HP StorageWorks EVA

< Previous Next >

SETUP THE HP SMI-S EVA

HP-EVA requires Snapshot and Clone licenses for the HP Business Copy EVA feature.

The following steps provide the necessary instructions to setup the HP EVA:

- 1. Download the HP SMI-S EVA and the HP Command View EVA software on a supported server from the HP web site.
- 2. Run the Discoverer tool located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\EVAProvider\bin folder to discover the HP-EVA arrays.
- 3. Use the CLIRefreshTool.bat tool to sync with the SMIS server after using the Command View GUI to perform any active management operations (like adding new host group or LUN). This tool is located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\CXWSCimom\bin folder.

SETUP THE ARRAY INFORMATION

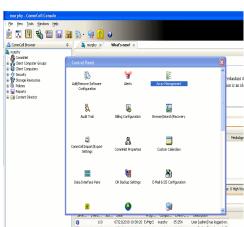
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



з.

- Select HP EVA from the Snap Vendor list.
 - Specify the World Wide Name of the array node in the Name field.



Control Host	Name	User Name	Snap Vendor	Description	*	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION			Delete
172.19.66.69	10881	system	HDS			List Snaps
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Array Managemer	ıt 📔	×
1 Snap Vendor	HP EVA	
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Control Host		
User Name		
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Confirm Password		
Device Group		
Use devices only	r from this device group	
Description		
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The World Wide Name (WWN) is the serial number for the HP EVA storage device. See the screenshot on the right for a WWN example.

The array name must be specified without the dashes used in the WWN e.g., $\tt 50014380025DEB70.$

- 4.
- Enter the name of the management server of the array in the **Control Host** field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

- Enter the user access information in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware disk group created on the array to be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

EVA Storage Network EVA 440 Contrad Disks Contrad Disks Contrad Disks Contrad Disk Groups Data Replication Contrad Data Replication Contrad Data Replication	Save changes System options General Status Summary Identification Name: EVA440 Node WWN: 6005-08b40002-0000 UUID:
Array Management	
Snap Vendor	/A 🔽
Name	
3 Control Host	
User Name	
4 Password	
Confirm Password	
5 Device Group	
6 Use devices only from	this device group
Description	

OK

Cancel

Help

Previous Next >

SnapProtect[™] Backup - IBM SAN Volume Controller (SVC)

PRE-REQUISITES

- IBM SVC requires the FlashCopy license.
- Ensure that all members in the IBM SVC array are running firmware version 6.1.0.7 or higher.
- Ensure that proxy computers are configured and have access to the storage device by adding a host group with ports and a temporary LUN.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBMSVC from the Snap Vendor list.
 - Specify the 16-digit ID of the storage device in the **Name** field.



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The **ID** is the device identification number for the IBM SVC storage device. See the screenshot on the right for reference.

- Enter the Management IP address or host name of the array in the Control Host field.
 - Enter the user access information of the local application administrator in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the physical storage pools created on the array to be used for snapshot (flash copy) operations.

If you do not specify a device group, the default storage pool will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

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		lo_grp1	Location	Local		
1504			Capacity			
-01		io_grp2	Total MDisk Capacity	7.5 TB		
			Space in MDisk Groups			
11			Space Allocated to Volumes	3.9 TB		
0		io_grp3	Total Free Space Total Volume Capacity	3.7 TB 4.8 TB		
91			Total Volume Copy Capacity	4.8 TB		
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SnapProtect[™] Backup - IBM XIV

< Previous) Next >

PRE-REQUISITES

- 1. IBM XCLI (2.3 or higher) installed on the client and proxy computers. On Unix computers, XCLI version 2.4.4 should be installed.
- 2. Set the location of XCLI in the environment and system variable path.
- 3. If XCLI is installed on a client or proxy, the client or proxy should be rebooted after appending XCLI location to the system variable path. You can use the XCLI_BINARY_LOCATION registry key to skip rebooting the computer.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBM XIV from the Snap Vendor list.
 - Specify the 7-digit serial number for the array in the **Name** field.



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1 Snap Vendor	IBM XIV
2 Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	r from this device group
Description	
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The **System ID** (S/N) is the serial number for the IBM XIV storage device. See the screenshot on the right for reference.

4.

System Configuration ×

General
System Name
Parameters
System Version
10.22
System 10 (5/N)
6006633 (\$533
10
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10/Hostname 1
10/Hostname 1
10/Hostname 3

Update
Cancel

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	User Name	
4	Password	
1	Confirm Password	
	Device Group	
	Use devices only	from this device group
	Description	
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		Previous Next

- Enter the IP address or host name of the array in the **Control Host** field.
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - LSI

< Previous (Next >

PREREQUISITES

- Ensure that the LSI Storage Management Initiative Specification (SMIS) server has access to the LSI array through TCP/IP network to perform SnapProtect
 operations.
- Ensure that the client has access to:
 - SMIS server through TCP/IP network.
 - o LSI array through iSCSI or Fiber Channel network.
- Ensure that proxy computers are configured and have access to the storage device by adding a temporary LUN to the "host" using the Storage Management Console.

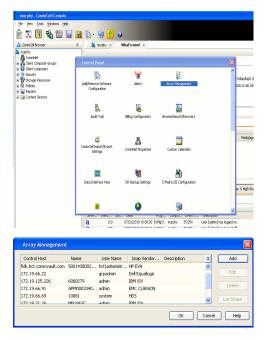
ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using SAN transport mode, ensure that the Client and the ESX Server reside in the same host group configured in the LSI array, as one volume cannot be mapped to multiple host groups.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

з.

- Select LSI from the Snap Vendor list.
 - Specify the serial number for the array in the Name field.

	Control Host	
	User Name	
	Password	
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Array Management

LSI

1 Snap Vendor

2 Name

The **Storage Subsystem world-wide identifier (ID)** is the serial number for the LSI storage device.

Use the SANtricity Storage Manager software to obtain the array name by clicking **Storage Subsystem Profile** from the **Summary** tab. See the screenshot on the right for reference.

- Specify the name of the device manager server where the array was configured in the **Control Host** field.
- Enter the user access information using the LSI SMIS server credentials of a local user in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not have a device group created on the array, specify None.
 - If you specify None in the **Device Group** field but do have a device group created on the array, the default device group will be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

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SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

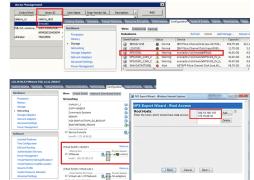
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor	NetApp	
Name	месарр	
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User Name		
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	, monitano do neo group	
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SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the **Storage Policy** in the **Storage Policy Name** box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

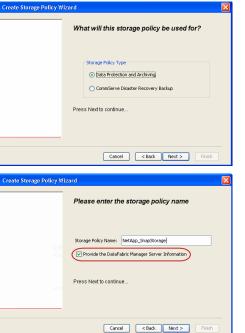
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3.

• In the **Library** list, select the default library to which the Primary Copy should be associated.

It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



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- 5. Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

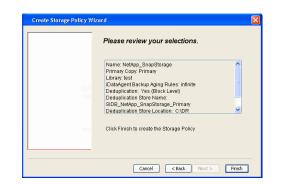
9.	٠	Provide the DataFabric Manager server information	
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- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

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	No
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	MediaAgent Name dhaval-2008
	Location: Browse
	Press Next to continue
	Cancel < Back Next > Finish
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	Please select/add the new DataFabric Manager information?
	DataFabric Manager:
	Select hwinapp02
	Host Name: venus
	Add User Name: admin
	Password:

10. Click Finish.

Cancel < Back Next > Finish

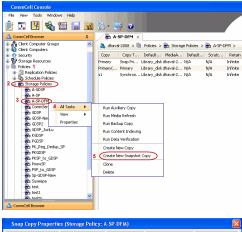


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

- **3.** Click the **Copy Policy** tab.
 - Depending on the topology you want to set up, click **Specify Source for Auxiliary Copy** and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

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- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

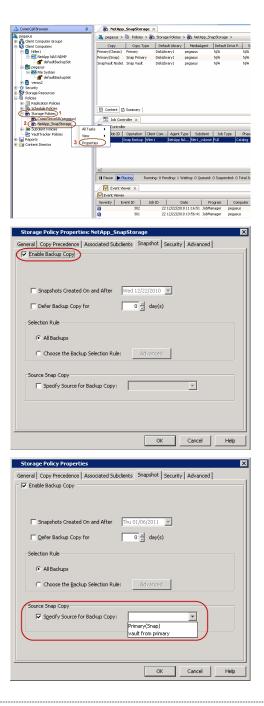
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

~

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

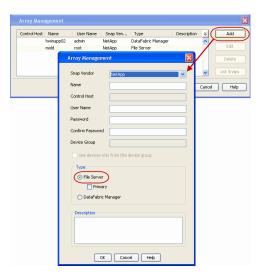
- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

4.

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SEE ALSO

Import Wizard Tool

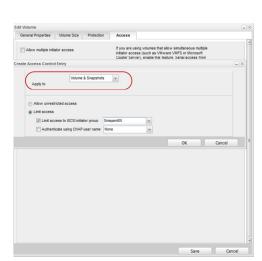
Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

SnapProtect[™] Backup - Nimble

PREREQUISITES

- From the Nimble storage array console, ensure that the Access Control Entry for the client initiator group is set to Volume and Snapshots.
- In case you are using a proxy computer for SnapProtect operations, add the initiator group for the proxy computer and set the Access Control Entry to Snapshots Only.
- Ensure that a temporary LUN is allocated to all ESX Servers that are used for snapshot operations.



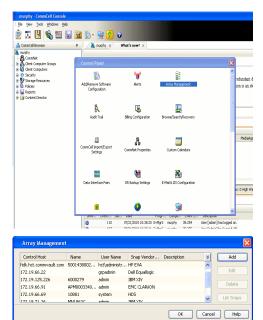
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Next 🕨

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- **3.** Select **Nimble** from the **Snap Vendor** list.
 - Specify the Data IP Address of the array in the **Name** field.

If you have more than one Data IP Address configured, you will need to add the array information for each of the configured Data IP addresses.

• Enter the Management IP Address of the array in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Data IP Address and
Management IP for the Nimble storage device.

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- Enter the access information of a user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

Array Managemen	t 🛛 🗙
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Getting Started - VMware Backup

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Server :

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PERFORM A BACKUP

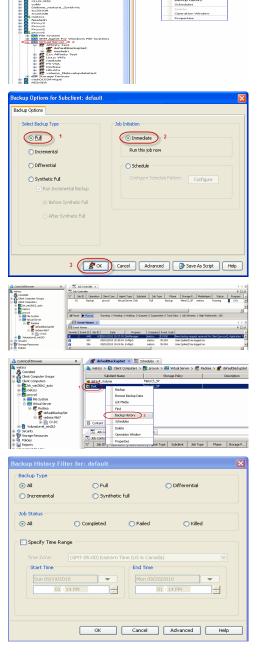
After configuring your Instance, Backup Set and Subclient, you are ready to perform your first backup.

The following section provides step-by-step instructions for running your first full backup of a single virtual machine immediately.

- **1.** From the CommCell Console, navigate to **Client Computers** | **Virtual Server**.
 - Right-click the **Subclient** and click **Backup**.
 - Select **Full** as backup type and **Immediate** to run the job immediately.
 - Click OK.

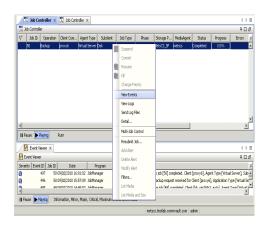
2.

- 3. You can track the progress of the job from the **Job Controller** window of the CommCell console.
- Once job is complete, view the details of job from the Backup History.
 Right-click the Subclient and select Backup History.
- 5. Click OK.



- 6. You can view the following details about the job by right-clicking the job:
 - Items that failed during the job
 - Items that succeeded during the job
 - Details of the job

- Events of the job
- Log files of the job
- Media associated with the job



Previous Next >

Getting Started - Vault/Mirror Copy

< Previous) Next >

SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - VMware Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

INLINE BACKUP COPY

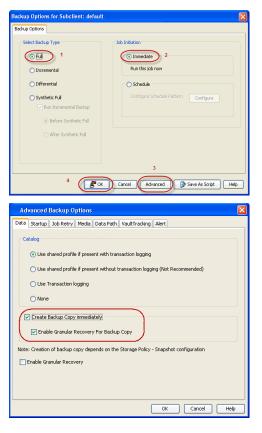
Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

- From the CommCell Console, navigate to Client Computers | <Client> |
 <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup**.
 - Select **Full** as backup type.
 - Click Advanced.

• Select Create Backup Copy immediately to create a backup copy.

Enable Granular Recovery for Backup Copy is automatically selected. This option allows you to view the file/folder level details of the backup copy.

- If you want to view the file/folder level details of the snapshot copy, select **Enable** Granular Recovery.
- Click OK.



OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- **1.** From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Backup Copy.

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- Select **Start new media** to copy the data to a different tape or optical media.
 - Select **Mark media full on Success** to mark the media that is used for this operation after the snapshot copy operation has successfully completed.

User Guide - SnapProtect

• Click OK.

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Getting Started - VMware Restore



PERFORM A RESTORE

As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following sections describe the steps involved in restoring a virtual machine to a different Virtual Center/ESX Server.

- From the CommCell Console, navigate to **Policies** | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.
 - You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.
 - Click OK.

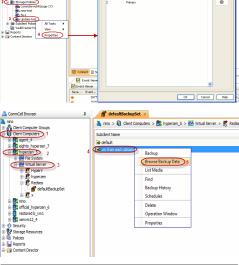
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- From the CommCell Console, navigate to *Client* | **Virtual Server**.
 - Right-click the subclient that contains the data you want to restore and click All Tasks | Browse Backup Data.

- Select the MediaAgent that was used during the storage policy creation from the Use MediaAgent drop-down list. This MediaAgent should be the one you installed along with the Virtual Server agent.
 - Click OK.

- Select the virtual machine under the backup set. Its entire contents will be automatically selected in the right pane.
 - Click Recover All Selected.



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5. Select the **Destination ESX Server** to which the virtual machine will be restored.

6. Select the **Datastore** to which the disk will be restored.

If the selected datastore does not meet the minimum requirements needed to restore the virtual machine, you can repeat this step until an acceptable datastore is found.

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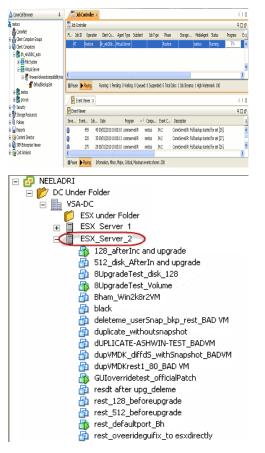
7. • Enter the **VM Name** for the virtual machine.

Ensure that you provide a fully qualified name for the virtual machine. Entering an IP address will cause the restore operation to fail.

• Click OK.

8. You can monitor the progress of the restore job in the **Job Controller** window of the CommCell Console.

9.



CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

Once the virtual machine is restored, it is automatically mounted to the virtual

If you want to configure another client, go back to Setup Clients.

center/ESX Server you selected.

< Previous Next >>

Deployment - Microsoft Exchange Database Agent

Choose the appropriate installation procedure as described in the tables below.

EXCHANGE SERVER 2010

SERVER SETUP	INSTALLATION PROCEDURE
64-bit Exchange Server	Install the 64-bit Exchange Database Agent on Exchange Server 2010 or 2007

EXCHANGE SERVER 2007

SERVER SETUP	INSTALLATION PROCEDURE
64-bit Exchange Server	Install the 64-bit Exchange Database Agent on Exchange Server 2010 or 2007
64-bit Exchange Server - Cluster	Install the 64-bit Exchange Database Agent on Exchange Server 2010 or 2007 - Clustered Environment

EXCHANGE SERVER 2003

SERVER SETUP	INSTALLATION PROCEDURE
Exchange Server	Install the Exchange Database Agent on Exchange Server 2003
Exchange Server - Cluster	Install the Exchange Database Agent on Exchange Server 2003 - Clustered Environment

Getting Started - Install the 64-bit Exchange Database Agent on Exchange Server 2010 or 2007

< Previous Next >

Follow the steps given below to install Exchange Database iDataAgent on one of the following:

- 64-bit Exchange Server 2010
- 64-bit Exchange Server 2007

WHERE TO INSTALL

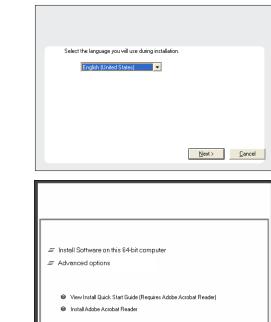
The Exchange Database *i*DataAgent can be installed directly onto the Exchange Server. This method is referred to as an on-host installation and is useful if you want to preserve hardware resources.

INSTALL THE EXCHANGE DATABASE /DATAAGENT

Use the following procedure to directly install the software from the installation package or a network drive.

- 1. Log on to the computer using an account with the following privileges:
 - Administrator of the local computer
 - Administrator of the Exchange Server
- 2. Run Setup.exe from the Software Installation Package.
- 3. Select the required language.

Click Next.



BEFORE YOU BEGIN

Download Software Packages

SnapProtect Support - Platforms

Download the latest software package to perform the install.

Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

4. Select the option to Install Calypso on this 64-bit computer.

Your screen may look different from the example shown.

5. Select I accept the terms in the license agreement. Click Next. ⊜ Exit

- 6. Expand Client Modules | Backup & Recovery | Exchange, and select Exchange Database /DataAgent.
 - Expand Common Technology Engine | MediaAgent Modules, and select MediaAgent.
 - Expand Client Modules | ContinuousDataReplicator, and select VSS Provider.
 - Click Next.

 If this computer and the CommServe is separated by a firewall, select the Configure firewall services option and then click Next.

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

If firewall configuration is not required, click **Next**.

8.	Enter the fully qualified domain name of the $\ensuremath{\textbf{CommServe Host Name}}.$
	Click Next.

Do not use space and the following characters when specifying a new name for the CommServe Host Name:

\|`~!@#\$%^&*()+=<>/?,[]{}:;'"

If there is a firewall between this machine and the CommServe, configure firewall service	es below.
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This machine can open connection to CommServe on tunnel port	
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C CommServe is reachable only through a proxy	
Installer Next >	Cancel
CommServe Name Specify the CommServe computer name and host name	
CommServe Client Name	
CommServe Host Name (Enter a valid, fully-qualified, IP host name; for example: mycomputer.mycompany.com)	
mycomputer.mycompany.com	
Installer < Back Next >	Cancel

License Agreement

Installer

Installer Select Platforms

Please read the following License Agreement. Press the PAGE DOWN key to view the entire agreement.

I accept the terms in the license agreement.
 I do not accept the terms in the license agreement.

Select the platforms you want to configure.

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End User License and Limited Warranty Agreement Software Release 9.0.0 (including Microsoft® SQL ServerTM 2008 Enterprise Edition, SQL ServerTM 2008 Enterprise Edition, SQL ServerTM 2008 Enterprise Edition Environment)

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Cancel

Next >

Move the pointer over a platform name to see a description of the platform reasons why it may be disabled.

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9. Click Next.

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 Select Add programs to the Windows Firewall Exclusion List, to add CommCell programs and services to the Windows Firewall Exclusion List.

Click Next.

This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion list.

It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.

11. Click Next.

It is recommended to select the Download latest update pack(s) option to automatically install the available updates during installation.

12. Verify the default location for software installation.

Click **Browse** to change the default location.

Click Next.

- Do not install the software to a mapped network drive.
- Do not install the software on a system drive or mount point that will be used as content for SnapProtect backup operations.
- Do not use the following characters when specifying the destination path:

/:*?"<>|#

It is recommended that you use alphanumeric characters only.

13. Select a Client Group from the list.

Click Next.

This screen will be displayed if Client Groups are configured in the CommCell Console.

15. Select Yes to stop Removable Storage Services on the MediaAgent. Click Next.

This prompt will not appear if Removable Storage Services are already disabled on the computer. $% \left({{{\mathbf{F}}_{\mathbf{r}}}^{T}} \right)$

16. Click Next.

17. Select a Storage Policy. Click Next.

Client Group Selection Select a client group for the client.
The Client Group is a logical grouping of client machines which have the same associations at various levels like Schedule Policy, Activity Control, Security and Reports.
Client group: None Selected client_group
Installer < Back Next > Cancel
Installer S
Schedule Install of Automatic Updates Choose when you want to schedule an install of the downloaded updates.
☑ Schedule Install of Automatic Updates
C Once C Weekly C Weekly C Monday C Tuesday C Wednesday C Thursday
C Friday C Saturday C Sunday Installer
< Back Next> Cancel
Installer Removable Storage Service The Removable Storage service must be stopped and disabled
The Removable Storage service must be stopped and disabled. This is required for correct functioning of the MediaAgent. Do you want to stop and disable the Removable Storage service? (* [Yes, stop and disable the Removable Storage Service] (* No, I am using Removable Storage Manager (RSM)
Installer < Back Next > Cancel
(Back Next> Cancel Installer Select Global Filter Options
Cancel Cancel Installer Select Global Filter Options Select He Global Filter Options for the Agent. Global Filter sprovides the ability to set exclusions within a CommCell to filter out data from data

- **19.** Select the backup type for Exchange Database backups. Choose either of the following options, then click **Next**.
 - Differential Specifies that each non-full Exchange Database backup secures all data that has changed since the last full backup. Transaction lobs are not purged.
 - **Incremental** Specifies that each non-full Exchange Database backup secures only that data that has changed since the last backup of any type. Committed transaction logs are purged.

- **19.** Enter the user credentials to access the Exchange Server to perform the backup operation.
 - The User Account must have Exchange Administrator privileges.
 - The installation detects the domain name. If necessary, you can modify the domain name by specifying Windows domain that the Exchange Server resides in.

- 21. The install program displays a reminder to verify that Circular Logging is disabled before performing any database backup operations. To verify that Circular Logging is disabled:
 - From Exchange System Manager, navigate to and expand the server that the Database *i*DataAgent is being installed on.
 - Verify that the Circular Logging check box has not been selected for each Storage Group. If Circular Logging has been enabled for a Storage Group, disable it at this time.

Soloct a storage polic		fault ^L	diantitu	ha						
Select a storage poli backed up.	cy for the de	fault sub	client to I	be						
Configure for L	.aptop or De	sktop Ba	ickup							
Select a stora	ige policy fro	m the pu	Il-down li	ist.						
	Unassign	ed					-			
	,						-			
Installer			< Ba		_	N	_			-
		_	< Ва	зск		Next>			ancel	
nstaller										×
Exchange Backu										
Please select a defa	ult backup ty	pe								
C Differentia	al	Backs u	p change	es in the	e Infam	ation				
		Store an Full back transacti	d Directo (up. Doe on logs	ny Serv s not pi	ice sin urge th	iation ce the last e				
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		pargoa.								
Installer										
mstaller			< Ba	ack	Г	Next>		Ca	ancel	1
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Enter Administrator ad		nation	matior	1			_			×
Enter Administrator ad	count inform	nation	matior	1						×
Enter Administrator ac	count inform	me:	matior	1						×
Enter Administrator ac	Account Inform	me:	matior	1						×
Enter Administrator ac	Account Inform	me:	matior	1						
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Enter Administrator ac	Account Inform	me:	mation	1		<u>N</u> ext>			ancel	
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Next>

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Please verify that Grcular Logging is disabled before performing any database

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Cancel

Installer

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Click OK.

23. Click Finish.

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hedule Reminder ob schedule creation reminder	
Please note: You still need to create a Job Schedule for each iDataAgent that has been installed on this client computer. Job Schedules are required to allow the iDataAgents to perform automated backup and restore operations.	
Job Schedule creation can be accomplished through the CommCell Console administration interface.	
Installer	
Impletion Report Setup complete	r.
six the website below to download latest Updates and Service Packs. Sick Finish to complete Setup.	
six the website below to download latest Updates and Service Packs. Sick Finish to complete Setup.	

Getting Started - Install the 64-bit Exchange Database Agent on Exchange Server 2007 - Clustered Environment

Previous Next >

Follow the steps given below to install the 64-bit Exchange Database iDataAgent on Exchange Server 2007 in a clustered environment.

WHERE TO INSTALL

The Exchange Database *i*DataAgent can be installed directly onto the Exchange Server. This method is referred to as an on-host installation and is useful if you want to preserve hardware resources.

BEFORE YOU BEGIN

Download Software Packages Download the latest software package to perform the install.

SnapProtect Support - Platforms Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE EXCHANGE DATABASE /DATAAGENT

- 1. Log on to the computer using an account with the following privileges:
 - Administrator of the local computer
 - Administrator of the Exchange Server
- 2. Run **Setup.exe** from the Software Installation Package.
- 3. Select the required language.

Click Next.

Select the language you will use during installation.
Next >Cancel
 View Install Quick Start Guide (Requires Adobe Acrobat Reader) Install Adobe Acrobat Reader
€ Exit
Welcome The Installer will guide you through the setup process for Software
This program will install Software on your computer. It is storagly recommended that you exit all Windows programs before running this Setup program. Dick: Cancel to quit Setup and then close any programs you have running. Click Next to continue with Setup. WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Installer Cancel

- Select the option to Install Calypso on this 64-bit computer. NOTES:
 - Your screen may look different from the example shown.

5. Click Next.

7. Select I accept the terms in the license agreement. Click Next.

8. Select Configure a Virtual Server. Click Next.

 Select the disk group in which the virtual server resides. Click Next.

- 10. Expand Client Modules | Backup & Recovery | Exchange, and select Exchange Database *i*DataAgent.
 - Expand Common Technology Engine | MediaAgent Modules, and select MediaAgent.
 - Expand Client Modules | ContinuousDataReplicator, and select VSS Provider.
 - Click Next.

Installer
It is strongly recommended that any and all visus scanning software be disabled immediately before continuing with this Software installation. Failure to do so may result in file-locking by the visus scanner and subsequent failure for setup to install its own files. Click OK once you have disabled them and setup will continue.
OK
Installer X
License Agreement
Please read the following License Agreement. Press the PAGE DOWN key to view the entire agreement.
End User License and Limited Warranty Agreement Software Release 9.0.0 (including Microsoft® SQL Server TM 2008 Enterprise Edition, SQL Server TM 2008 Express Edition and Windows Pre-Installation Environment)
I accept the terms in the license agreement. I do not accept the terms in the license agreement.
Installer
<back next=""> Cancel</back>
Installer
Cluster Type Selection Configure the Physical Node or a Virtual Server
Configuration Options ← Configure the <u>Physical node</u> ← Configure a <u>Y</u> ritual server
Installer
Virtual Server Selection
Select the virtual server you would like to configure
Choose from the following fat of disk groups configured on this cluster. 2003Cluster/VMS
<back next=""> Cancel</back>
Installer
Select Platforms
Select the platforms you want to configure.
Common Technology Engine Common Technology Engine Common Technology Engine Commol Tech

11. If this computer and the CommServe is separated by a firewall, select the **Configure** firewall services option and then click Next.

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

If firewall configuration is not required, click Next.

12. Enter the fully qualified domain name of the CommServe Host Name. Click Next.

> Do not use space and the following characters when specifying a new name for the CommServe Host Name:

\|`~!@#\$%^&*()+=<>/?,[]{}:;'"

13. Click Next.

14. Select Add programs to the Windows Firewall Exclusion List, to add CommCell programs and services to the Windows Firewall Exclusion List.

Click Next.

This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion list.

It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.

mstatter	
CommServe Name Specify the CommServ name	e computer name and host
mycomputer.	
Installer	< Back Next > Cancel
Installer Communication Int Setup will configure the	
	Select a client name Select an interface name that this computer will use to communicate with the CommServe
Installer	audi.mycompany.com
	< Back Next > Cancel
Installer	X
Windows Firewall	Exclusion List numicate through Windows
Windows Firewall i	\$ DN
Add programs	to the Windows Firewall Exclusion List
If you plan on usin exclusion list	α Windows Firewall, it is recommended to add the software programs to the
Installer	

< Back

Next >

staller

Firewall Configuration

Configure firewall services

Configure firewall services

Installer

If there is a firewall between this machine and the CommServe, configure firewall services below.

Next >

Cancel

This machine can open connection to CommServe on tunnel por

C CommServe is reachable only through a proxy

15. Click Next. Cancel

	Download latest Make sure you have internet depending on download spee	connectivity at this
ion for software installation. e the default location.	Installer	install the program
II the software to a mapped network drive. II the software on a system drive or mount point that will ontent for SnapProtect backup operations. he following characters when specifying the destination	Click Next to accept the def Destination Folder	ault location, or clic
I # ended that you use alphanumeric characters only.	Drive List	Sp < B
rom the list.	Installer Client Group Selection Select a client group for the clie	ent.
be displayed if Client Groups are configured in the cole.	The Client Gro which have th Schedule Polii	up is a logical group e same association cy, Activity Control,
	Client gn None Se client_gn	elected
	Insteller	< E
	Installer Schedule Install of Autor Choose when you want to sch downloaded updates.	
	✓ Schedule Install of Auto C Once ✓ Weekly	omatic Updates Time:

16. Verify the default locati

Click Browse to change

Click Next.

- Do not instal
- Do not install be used as co
- Do not use th path:

/:*?"<>

It is recomm

17. Select a Client Group fr

Click Next.

This screen will CommCell Cons

18. Click Next.

19. Select a Storage Policy. Click Next.

nstaller	X
	all Latest Update Packs ne latest service pack and post provider website.
	d latest update pack(s) nternet connectivity at this time. This process may take some time ad speed.
Installer	
Installer Destination Folder Select the destination I	older to install the program files.
Click Next to accept Destination Folder C: Nitiogram Files Drive List C: 928 MB Installer	the default location, or click Browse to choose an alternate location. Browse Space Required / Recommended 334 MB / 1670 MB K Back Next> Cancel
Installer	
Installer Client Group Selec Select a client group fo	
Client Group Selec Select a client group fo The Cli	tion
Client Group Selec Select a client group fo The Cli which Sched	tion the client. ent Group is a logical arouping of client machines
Client Group Selec Select a client group fo The Cli which Sched	tion the client. ent Group is a logical grouping of client machines have the same associations at various levels like ule Policy. Activity Control. Security and Reports. Stient group: Lient group:
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Client Group Select Select a client group fo The Ci which Sched Installer Installer Schedule Install of Choose when you war download dupdates.	tion The client. and Group is a logical grouping of client machines and Group is a logical grouping of client machines and have the same associations at various levels like ule Policy. Activity Control. Security and Reports. Elient group: Consecutive and Reports. Consecutiv
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- 20. Select the backup type for Exchange Database backups. Choose either of the following options, then click **Next**.
 - Differential Specifies that each non-full Exchange Database backup secures all data that has changed since the last full backup. Transaction lobs are not purged.
 - **Incremental** Specifies that each non-full Exchange Database backup secures only that data that has changed since the last backup of any type. Committed transaction logs are purged.

- **21.** Enter the user credentials to access the Exchange Server to perform the backup operation.
 - The User Account must have Exchange Administrator privileges.
 - The installation detects the domain name. If necessary, you can modify the domain name by specifying Windows domain that the Exchange Server resides in.

- 23. The install program displays a reminder to verify that Circular Logging is disabled before performing any database backup operations. To verify that Circular Logging is disabled:
 - From Exchange System Manager, navigate to and expand the server that the Database *i*DataAgent is being installed on.
 - Verify that the Circular Logging check box has not been selected for each Storage Group. If Circular Logging has been enabled for a Storage Group, disable it at this time.

backed up.	y for the default	subclient to be		
Configure for La	iptop or Desktop	Backup		
Select a storag	e policy from the	e pull-down list.		
	Unassigned		_	
Installer				
		< Back	Next>	Cancel
nstaller				X
Exchange Backup Please select a defau	Options It backup type			
C Differential	Back Store Full b trans	s up changes in the l and Directory Servic backup. Does not pury action logs.	Information ie since the last ge the	
Incrementa	I Back Store Full b com purge	ts up changes in the and Directory Servic packup or Incrementa mitted Iransaction logs ed.	Information e since the last I backup. The s are then	
Installer				
matana		< Back	Next>	Cancel
				×
nter Administrato				×
nter Administrato Enter Administrator acc				X
Enter Administrator acc				X
Enter Administrator acc	count information		_	X
Enter Administrator acc	count information	n		×
Enter Administrator acc	count information account Name: account Passwo	n		×
Enter Administrator acc	count information	n		×
Enter Administrator acc	count information account Name: account Passwo	n		×
Enter Administrator acc	count information account Name: account Passwo	n	Иехэ	X
Enter Administrator acc	count information account Name: account Passwo	n	Next>	
Enter Administrator acc	count information	n	Next >	
Enter Administrator acc A T A C C C C C S Summary of install sele	count information	rd.		<u>Cancel</u>
Enter Administrator acc A T A C C C C C C C C C C C C C	count information count Name: ccount Name: ccount Passwo Domain: EXCH ctions information to st Next to begin	nd:		<u>Cancel</u>
Enter Administrator acc A T A C C C C C S Summary of install sele	count information count Name: ccount Name: ccount Passwo Comain: EXCH colons information to gai in Newation begin are will be insta gabase DataAge	n kd: latt copying the progr copying files. ent ent ent		<u>Cancel</u>

Next>

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Please verify that Grcular Logging is disabled before performing any database

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Cancel

Installer

Storage Policy Selection

Installe

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25.

- 24. To install the software on the remaining nodes of the cluster, click **Yes**. To complete the install for this node only, click **No**.
 - Select cluster nodes from the **Preferred Nodes** list and click the arrow button to move them to the **Selected Nodes** list.

Once you complete your selections, click **Next**.

- The list of **Preferred Nodes** displays all the nodes found in the cluster; from this list you should only select cluster nodes configured to host this cluster group server.
- Do not select nodes that already have multiple instances installed.

L Ye	98 No	
Installer		×
Cluster Node Selection Select cluster nodes to configure		
Prefered Nodes VmoLuster2	Selected Nodes	Configured Nodes
		Next > Cancel

Would you like to install the software on remaining nodes on the cluster?

 Specify User Name and Password for the Domain Administrator account Information to perform the remote install on the cluster nodes you selected in the previous step.

Click Next.

27.	The progress of the remote install for the cluster nodes is displayed; the install can be
	interrupted if necessary.

Click **Stop** to prevent installation to any nodes after the current ones complete.

Click **Advanced Settings** to specify any of the following:

- Maximum number of nodes on which Setup can run simultaneously.
- Time allocated for Setup to begin executing on each node, after which the install attempt will fail.
- Time allocated for Setup to complete on each node, after which the install attempt will fail.

If, during the remote install of a cluster node, setup fails to complete or is interrupted, you must perform a local install on that node. When you do, the install begins from where it left off, or from the beginning if necessary. For procedures, see Manually Installing the Software on a Passive Node.

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nsta	ller	

Domain administrator account information

Please provide domain admir

LAB \Administrator

Domain Account Information

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mstatter					
	te install at any time. In: ue installation, but their				
Client Name	Client Status	Start Time	End Time	Result Description	
real2					
•				•	
Installed successfu Failed to install:	ully: 0			1 0 Max 1 🚍	
Elapsed time: (lsec	E	Stimated time I	eft 10 min 0 sec	
Installer					
Advanced Settin	ngs			Stop	
Installer					
	simultaneous remote n it for Setup to start on			+ machines	
Time to wait for	Setup to complete on	each remote m	achine: 15	- minutes	
			13		
		<u>×</u>			

< <u>B</u>ack

Cancel

28. Read the summary for remote installation to verify that all selected nodes were installed successfully.

Click Next.

- If any node installation fails, you must manually install the software on that node once the current installation is complete. See Manually Installing the Software on a Passive Node for step-by-step instructions.
- The message displayed on your screen will reflect the status of the selected nodes, and may look different from the example.

30. Click Finish.

nstaller 🛛	×
Results Remote install results	
Summary of remote install	
The following software (Version) were selected to be installed: + CommCell	
REAL2: Install succeeded.	-
nstaller 🛛	×
Schedule Reminder Job schedule creation reminder	
Please note: You still need to create a Job Schedule for each iDataAgent that has been installed on	
this client computer. Job Schedules are required to allow the iDataAgents to perform automated backup	
and restore operations.	
Job Schedule creation can be accomplished through the CommCell Console administration interface.	_
nstaller	7
Completion Report	
Setup complete	
Software installation completed successfully.]
Visit the website below to download latest Updates and Service Packs.	
Click Finish to complete Setup.	
<u></u>	Ŀ
Installer	
Technical Support Website]
< Previous)

Getting Started - Install the Exchange Database Agent on Exchange Server 2003

< Previous Next >

Follow the steps given below to install the Exchange Database iDataAgent on Exchange Server 2003.

WHERE TO INSTALL

The Exchange Database *i*DataAgent can be installed directly onto the Exchange Server. This method is referred to as an on-host installation and is useful if you want to preserve hardware resources.

INSTALL THE EXCHANGE DATABASE /DATAAGENT

- 1. Log on to the computer using an account with the following privileges:
 - Administrator of the local computer
 - Administrator of the Exchange Server
- 2. Run **Setup.exe** from the Software Installation Package.
- 3. Select the required language.

Click Next.

Select the language you will use during installation.
English (United States)
Next > Cancel
 Install Software on this computer Advanced options
 View documentation website View Install Quick Start Guide (Requires Adobe Acrobat Reader) Install Adobe Acrobat Reader
⇔ Exit
Installer
Welcome The Installer will guide you through the setup process for Software
This program will install Software on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program. Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with Setup.
WARNING: This program is protected by copyright law and international treaties. Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum externt possible under the law.
Installer
Next > Cancel

BEFORE YOU BEGIN

Download Software Packages

SnapProtect Support - Platforms

Download the latest software package to perform the install.

Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

4. Select the option to install software on this computer.

The options that appear on this screen depend on the computer in which the software is being installed.

5. Click Next.

6. Click OK.

7. Select I accept the terms in the license agreement. Click Next.

- **10.** Expand Client Modules | Backup & Recovery | Exchange, and select Exchange Database *i*DataAgent.
 - Expand Common Technology Engine | MediaAgent Modules, and select MediaAgent.
 - Expand Client Modules | ContinuousDataReplicator, and select VSS Provider.
 - Click Next.

11. If this computer and the CommServe is separated by a firewall, select the **Configure** firewall services option and then click Next.

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

If firewall configuration is not required, click **Next**.

12. E	inter the fully	qualified of	domain	name	of the	CommServe	Host Name.
-------	-----------------	--------------	--------	------	--------	-----------	------------

Click Next.

Do not use space and the following characters when specifying a new name for the CommServe Host Name:

\|`~!@#\$%^&*()+=<>/?,[]{}:;'"

It is strongly recommended that any and all virus scanning software be disabled immediately before continuing with this Software installation. Failure to do so may re file-locking by the virus scanner and subsequent failure for setup to install its own file	
	isult in les.
Click DK once you have disabled them and setup will continue.	
OK	
Installer	F
License Agreement	Ľ
Please read the following License Agreement. Press the PAGE DOWN key to view the entire agreement.	
	^
End User License and Limited Warranty Agreement	
Software Release 9.0.0	
(including Microsoft® SQL Server™ 2008 Enterprise Edition, SQL Server™	
2008 Express Edition and Windows Pre-Installation Environment)	~
© I accept the terms in the license agreement.	
C I do not accept the terms in the license agreement. Installer	
< Back Next > Can	cel
Installer Select Platforms	l
Select the platforms you want to configure.	
Cu Move the pointer over	a
Common Technology Engine Dettorm name to see description of the plat may he max he m	form an
CommLell Console MediaAgent Modules	
Client Modules Disk Space Disk Space	
Content Indexing and Search Web Based Search & Browse Installation Folder:	J
Archive Management O MB/ 0 MB ContinuousDataReplicator	
	ve:
Can Supporting Modules OMB/0 MB OMB/0 MB	
Installer Can	cel
Installer	
Firewall Configuration Configure firewall services	
If there is a firewall between this machine and the CommServe, configure firewall services b	elow.
Configure firewall services	
Please specify how Windows Firewall is limiting network traffic. Whether it is possible to op connection from here to a CommServe's lumnel port, whether all connections toward CommServe are blocked, and setup should instead expect CommServe to connect back t machine, or whether there is a Prow in between.	en o this
Please specify how Windows Fixewall is limiting network traffic. Whether it is possible to op connection from here to a Commiserve's turnel port, whether all connections loward Commiserve are blocked, and alterpt and/alteriated expect Commiserve to connect back to machine, or whether there is a Proxy in between. Chis machine can open connection to Commiserve on turnel port.	ien o this
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13. Click Next.

 14.
 Select Add programs to the Windows Firewall Exclusion List, to add CommCell programs and services to the Windows Firewall Exclusion List.
 Image: Click Next.

 Click Next.
 Click Next.
 Click Next.

This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion list.

It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.

15. Click Next.

16. Verify the default location for software installation.

Click **Browse** to change the default location.

Click Next.

- Do not install the software to a mapped network drive.
- Do not install the software on a system drive or mount point that will be used as content for SnapProtect backup operations.
- Do not use the following characters when specifying the destination path:
 - /:*?"<>|#

It is recommended that you use alphanumeric characters only.

17. Select a Client Group from the list.

Click Next.

This screen will be displayed if Client Groups are configured in the CommCell Console.

Communication In	
	terface Name e communication paths.
	Select a client name
	audi_cn 💌
	Select an interface name that this computer will use to communicate with the CommServe
	audi.mycompany.com
	IP Address(es) for the selected host.
Installer	
	<back next=""> Cancel</back>
Installer	
Windows Firewall Allow programs to com Firewall	Exclusion List municate through Windows
Windows Firewall	is ON
Add programs	to the Windows Firewall Exclusion List
If you plan on usin exclusion list.	g Windows Firewall, it is recommended to add the software programs to the
Installer	<pre></pre>
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19. Select a Storage Policy. Click Next.

- 20. Select the backup type for Exchange Database backups. Choose either of the following options, then click **Next**.
 - Differential Specifies that each non-full Exchange Database backup secures all data that has changed since the last full backup. Transaction lobs are not purged.
 - **Incremental** Specifies that each non-full Exchange Database backup secures only that data that has changed since the last backup of any type. Committed transaction logs are purged.

Installer	×
Client Group Selection	
Select a client group for the cl	lient.
	$\Delta = -\Delta $
The Client Gr	oup is a logical grouping of client machines
which have t	oup is a logical grouping of client machines he same associations at various levels like licy, Activity Control, Security and Reports.
Schedule Po	icy, weavily control, security and neports.
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21. Enter the user credentials to access the Exchange Server to perform the backup operation.

- The User Account must have Exchange Administrator privileges.
- The installation detects the domain name. If necessary, you can modify the domain name by specifying Windows domain that the Exchange Server resides in.

22. Click Next.

- 23. The install program displays a reminder to verify that Circular Logging is disabled before performing any database backup operations. To verify that Circular Logging is disabled:
 - From Exchange System Manager, navigate to and expand the server that the Database *i*DataAgent is being installed on.
 - Verify that the Circular Logging check box has not been selected for each Storage Group. If Circular Logging has been enabled for a Storage Group, disable it at this time.

Click **OK**.

24. Click Next.

25.

Click Finish.

	X
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Enter Administrator	account information
	Account Name:
	Account Password;
	Account Password.
	Domain:
	EXCH
	Next >
Installer	
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	ugh information to start copying the program files. If you are satisfied with the click Next to begin copying files.
+ MediaAge	oftware will be installed :
+ Windows	File System iDataAgent
+ Exchange	Database iDataAgent
+ VSS Provi	der
Destination Pat	th = C:\Program Files\
CommServe Ho	ost = mycomputer.mycompany.com
Interface Name Client =audi	e = audi.mycompany.com
	th = C:\Program Files\JobResults
Global Filters =	Use Cell level policy
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	< Back Next > Cancel
Installer	
	erify that Circular Logging is disabled before performing any database
	enty that Orcular Logging is disabled before performing any database sperations.

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Schedule Reminder Job schedule creation reminder
Please note: You still need to create a Job Schedule for each iDataAgent that has been installed on
this client computer. Job Schedules are required to allow the iDataAgents to perform automated backup and restore operations.
and resolve operations. Job Schedule creation can be accomplished through the CommCell Console administration interface.
Installer
[]
nstaller 🛛 🔀
Completion Report Setup complete
Software installation completed successfully. Visit the website below to download latest Updates and Service Packs.
Dick Finish to complete Setup.
Installer Technical Support Website

User Guide - SnapProtect

Previous Next >

Getting Started - Install the Exchange Database Agent on Exchange Server 2003 - Clustered Environment

Previous Next >

Follow the steps given below to install the Exchange Database iDataAgent on Exchange Server 2003 in a clustered environment.

WHERE TO INSTALL

The Exchange Database *i*DataAgent can be installed directly onto the Exchange Server. This method is referred to as an on-host installation and is useful if you want to preserve hardware resources.

BEFORE YOU BEGIN

Download Software Packages Download the latest software package to perform the install.

SnapProtect Support - Platforms Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE EXCHANGE DATABASE /DATAAGENT

- 1. Log on to the computer using an account with the following privileges:
 - Administrator of the local computer
 - Administrator of the Exchange Server
- 2. Run **Setup.exe** from the Software Installation Package.
- 3. Select the required language.

Click Next.

Select the language you will use during installation.
English (United States)
Next > Cancel
- Install Codevers on this assurates
Advanced options
View documentation website
 View documentation website View Install Quick Start Guide (Requires Adobe Acrobat Reader)
 View Install Quick Stat Guide (Requires Adobe Acrobat Reader) Install Adobe Acrobat Reader
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4. Select the option to install software on this computer.

The options that appear on this screen depend on the computer in which the software is being installed.

5. Click Next.

6. Click OK.

7. Select I accept the terms in the license agreement. Click Next.

8. Select Configure a Virtual Server. Click Next.

 Select the disk group in which the virtual server resides. Click Next.

- 10. Expand Client Modules | Backup & Recovery | Exchange, and select Exchange Database *i*DataAgent.
 - Expand Common Technology Engine | MediaAgent Modules, and select MediaAgent.
 - Expand Client Modules | ContinuousDataReplicator, and select VSS Provider.
 - Click Next.

Installer
It is strongly recommended that any and all virus scanning software be disabled immediately before continuing with this Software installation. Failure to do so may result in
It is strongly recommended that any and all virus scanning software be disabled immediately before continuing with this Software installation. Failure to do so may result in file-locking by the virus scanner and subsequent failure for setup to install its own files.
Click DK once you have disabled them and setup will continue.
OK
Installer
License Agreement Please read the following License Agreement. Press
the PAGE DOWN key to view the entire agreement.
3
End User License and Limited Warranty Agreement
Software Release 9.0.0
(including Microsoft® SQL Server™ 2008 Enterprise Edition, SQL Server™
2008 Express Edition and Windows Pre-Installation Environment)
I accept the terms in the license agreement.
C I do not accept the terms in the license agreement.
Installer < Back Next > Cancel
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11. If this computer and the CommServe is separated by a firewall, select the **Configure** firewall services option and then click Next.

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

If firewall configuration is not required, click Next.

12. Enter the fully qualified domain name of the CommServe Host Name. Click Next.

Do not use space and the following characters when specifying a new name for the CommServe Host Name:

\|`~!@#\$%^&*()+=<>/?,[]{}:;'"

13. Click Next.

14. Select Add programs to the Windows Firewall Exclusion List, to add CommCell programs and services to the Windows Firewall Exclusion List.

Click Next.

This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion list.

It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.

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If there is a firewall between this machine and the CommServe, configure firewall services below.

Installer Firewall Configuration Configure firewall services

Configure firewall services

15. Click Next.

Cancel

17.

18.

	Download latest update pack(s) Make sue you have internet connectivity at this depending on download speed.
	Installer < E
Verify the default location for software installation.	Installer
Click Browse to change the default location.	Destination Folder Select the destination folder to install the program
Click Next.	
 Do not install the software to a mapped network drive. Do not install the software on a system drive or mount point that will be used as content for SnapProtect backup operations. Do not use the following characters when specifying the destination path: /: *? " <> # It is recommended that you use alphanumeric characters only. 	Click Next to accept the default location, or clic Destination Folder CMProgram Files Drive List C: 328 MB Installer C E
Select a Client Group from the list.	Installer
Click Next.	Client Group Selection
	Select a client group for the client.
This screen will be displayed if Client Groups are configured in the CommCell Console.	The Client Group is a logical grou which have the same association Schedule Policy, Activity Control, Client group: None Selected client_group
Click Next .	Installer < E
	Schedule Install of Automatic Updates Choose when you want to schedule an install of th downloaded updates C Schedule Install of Automatic Updates C Once C Weekly Time:

19. Select a Storage Policy. Click Next.

Installer	
	stall Latest Update Packs the latest service pack and post e provider website.
	ad latest update pack(s) internet connectivity at this time. This process may take some time oad speed.
Installer	< Back Next > Cancel
Installer	
Destination Folde	r I folder to install the program files.
Click Next to accep Destination Folde CAPtogram Files Drive List [C: 928 MB Installer	
Installer Client Group Sele	< Back Next > Cancel
Select a client group f	
which Sche	n have the same encodations at various levels like dule Policy, Activity Control. Security and Reports. Client group: None Selected client_group
Installer	< Back Next> Cancel
	of Automatic Updates In to schedule an install of the
✓ Schedule Insta C Once ✓ Weekly	all of Automatic Updates Time: 08:31:12 PM — C Monday C Tuesday C Wednesday C Thursday C Friday C Saturday
Installer	C Sunday

- 20. Select the backup type for Exchange Database backups. Choose either of the following options, then click **Next**.
 - Differential Specifies that each non-full Exchange Database backup secures all data that has changed since the last full backup. Transaction lobs are not purged.
 - **Incremental** Specifies that each non-full Exchange Database backup secures only that data that has changed since the last backup of any type. Committed transaction logs are purged.

- **21.** Enter the user credentials to access the Exchange Server to perform the backup operation.
 - The User Account must have Exchange Administrator privileges.
 - The installation detects the domain name. If necessary, you can modify the domain name by specifying Windows domain that the Exchange Server resides in.

22. Click Next.

- 23. The install program displays a reminder to verify that Circular Logging is disabled before performing any database backup operations. To verify that Circular Logging is disabled:
 - From Exchange System Manager, navigate to and expand the server that the Database *i*DataAgent is being installed on.
 - Verify that the Circular Logging check box has not been selected for each Storage Group. If Circular Logging has been enabled for a Storage Group, disable it at this time.

iorage runcy s						
Select a storage poli backed up.	cy for the default s	ubclient to be				
E est		Dealure				
Configure for L	aptop or Desktop.	Backup				
Select a stora	age policy from the	pull-down list.				
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Exchange Backu Please select a defa						
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	Guriad					
Increment	tal Backs	s up changes in the and Directory Serv	e Informa	ation		
	Store Full ba	and Directory Serv ackup or Incremen itted Iransaction Io	tal back	ennelast up. The nen		
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Enter Administrator ad	Account Information					X
Enter Administrator ad	ccount information					X
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Enter Administrator ad	Account Information					X
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Enter Administrator ac stoller ummary Summary of install sel Setup has enoug	Account Information Account Name: Account Passwor Domain: EXCH	d:	gram file		e satis	Cancel
staller ummary Summary Setup has enoug install settings. of The following soft	Account Name:	d:	gram file		e satis	Cancel
Enter Administrator ac ummany of install sel Setup has enoug install asetings, of the MediaAgent HendiaAgent Windows Fit Windows Fit Windows Fit	Account Name: Account Name: Domain: EXCH Information to stat k finant to begin c ware will be install s statem D ada/age stat	d: at copying the pro- opying files. ed : nt	gram file		e satis	Cancel
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Enter Administrator ac Enter Administrator ac ummary Summary Setup for install see Setup for install see Setup for install see House Sector House Se	Account Name: Account Name: Domain: EXCH Information to stat k finant to begin c ware will be install s statem D ada/age stat	d: art copying the pro- opying files pro- ed : mt and the art of the pro- ed : mt and the art of the pro- ed the art of the art of the art of the art of the pro- ed the art of the	gram file		e satis	Cancel

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abled before performing any database

Cancel

Installer

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Installer

To verify that Circular Logging is	Please verify that Grcular Logging is dis- backup operations.
expand the server that the	08

Click OK.

- To install the software on the remaining nodes of the cluster, click Yes.
 To complete the install for this node only, click No.
 - Select cluster nodes from the **Preferred Nodes** list and click the arrow button to move them to the **Selected Nodes** list.

Once you complete your selections, click **Next**.

- The list of **Preferred Nodes** displays all the nodes found in the cluster; from this list you should only select cluster nodes configured to host this cluster group server.
- Do not select nodes that already have multiple instances installed.

Yes No	
Installer	<
Cluster Node Selection Select cluster nodes to configure	
Perfered Nodes Selected Nodes Configured Nodes Selected Nodes Configured Nodes C	
Next > Cancel	

Domain administrator account information

Please provide domain admir

LAB \Administrator

Domain Account Information

Would you like to install the software on remaining nodes on the cluster?

?

 Specify User Name and Password for the Domain Administrator account Information to perform the remote install on the cluster nodes you selected in the previous step.

Click Next.

27. The progress of the remote install for the cluster nodes is displayed; the install can be interrupted if necessary.

Click **Stop** to prevent installation to any nodes after the current ones complete.

Click **Advanced Settings** to specify any of the following:

- Maximum number of nodes on which Setup can run simultaneously.
- Time allocated for Setup to begin executing on each node, after which the install attempt will fail.
- Time allocated for Setup to complete on each node, after which the install attempt will fail.

If, during the remote install of a cluster node, setup fails to complete or is interrupted, you must perform a local install on that node. When you do, the install begins from where it left off, or from the beginning if necessary. For procedures, see Manually Installing the Software on a Passive Node.

Instatter					
	te install at any time. In: ue installation, but their				
Client Name	Client Status	Start Time	End Time	Result Description	
real2					
<u> </u>				•	
Installed successfi Failed to install:	ully: 0		oinstall: 🛛	1 0 Max 1 -	
Elapsed time:	, Osec		- J	left 10 min 0 sec	
Liapseu unie.	1380		Loundled une	ieic To minto sec	-
Installer Advanced Settin	ngs			Stop	Y
Installer					
Time to wa	simultaneous remote m it for Setup to start on r Setup to complete on	each remote n	achine: 2	+ minutes	

< <u>B</u>ack

Cancel

28. Read the summary for remote installation to verify that all selected nodes were installed successfully.

Click Next.

- If any node installation fails, you must manually install the software on that node once the current installation is complete. See Manually Installing the Software on a Passive Node for step-by-step instructions.
- The message displayed on your screen will reflect the status of the selected nodes, and may look different from the example.

29. Click Next.

30. Click Finish.

nstaller 🛛	×
Results Remote install results	
Summary of remote install	
The following software (Version) were selected to be installed: + CommCell	
REAL2: Install succeeded.	-
nstaller 🛛	×
Schedule Reminder Job schedule creation reminder	
Please note: You still need to create a Job Schedule for each iDataAgent that has been installed on	
this client computer. Job Schedules are required to allow the iDataAgents to perform automated backup	
and restore operations.	
Job Schedule creation can be accomplished through the CommCell Console administration interface.	_
nstaller	7
Completion Report	
Setup complete	
Software installation completed successfully.]
Visit the website below to download latest Updates and Service Packs.	
Click Finish to complete Setup.	
<u></u>	Ŀ
Installer	
Technical Support Website]
< Previous)

Getting Started - Microsoft Exchange Database Configuration

< Previous Next >

PRE-REQUISITES

- When using a proxy configuration, installation of the Exchange management tools on the proxy is required. Also, ensure that the version of the management tools is the same as the version of the Exchange server.
- When performing Integrity Check on Exchange 2010 DAG subclients, it is required to use a proxy. You can use one of the following as the proxy:
 - o DAG member server
 - o Separate computer with connectivity to the Exchange Server and with the ability to mount the snapshots
- Prior to performing a SnapProtect backup, ensure that all the available hotfixes for Virtual Disk Service (VDS) and VSS are applied.
- When performing SnapProtect backup for a Windows Cluster, a proxy server must be used for performing backup and restore operations.
- SnapProtect backup on Windows supports basic disks.

CONFIGURATION

1.

з.

Once installed, the Microsoft Exchange Database iDataAgent requires some additional configuration before running your first SnapProtect backup. Follow the steps given below to complete the configuration for this Agent.

- From the CommCell Browser, navigate to Client Computers | < Client>.
 - Right-click the client and select **Properties**.

🛆 ConmCell Browser 🛛 🗛	What's new? ×	
CommNet		ą
Client Computer Groups	What's new?	
2 Clent Computers 1	Laptop Backup	
⊕ too t All Tasks >	Laptop Backup Ager	t to protect data on laptops and desktops used in remote offices and outside of a domain
B C mure View	network. Backups ca	n be performed seamlessly using automatic schedules based on network connectivity or
Storage Properties	Show on startup	
B III Policies	Job Controller ×	
Reports Content Director	Job Controller	
		Client Co Agent Type Subclient Job Type Phase Storage MediaAgent
	There are no jobs currently	utning.
	<	
	II Pause Playing	Running: 0 Pending: 0 Walting: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams: 0 High Water
	Event Viewer ×	
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	Seve Event Job	Date Progr Compu Event C Description 307(21)/2010 12:00:29 JobNa nurphy 19:840 Data Aging operation has
		3 07/21/2010 12:00:12 JobMa nurphy 19:322 Data Aging operation has
CommCell Browser	(3) 116	07/21/2010 11:03:04 EvMgr5 murphy 35:255 User [admin] has logged off.
🖻 Agents	113 110	07(21)2010 11:02:02 EvMpS murphy 35:254 User [admin] has logged on. 07/21/2010 10:39:20 EvMpS murphy 35:256 User [admin] has logged on.
5	II Pause Playing I	formation, Mnor, Major, Critical, Maximum events shown: 200
1 object(s)		nuphy admin
Client Computer Properties		×
General Versi		
	arch Server URLs Network Throttling	Registry Key Settings Client Side Deducing Advanced
Prewair coningeration	Network Inrotaing	Policies Job Configuración Encryption
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Enter Alternate Cache Partition I	or QSnap. Please ens	ure that the volume specified is an NTFS volume.
Path to Exchange mining tool		
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- Click on the **Advanced** tab.
 - Select the Enable SnapProtect option to enable SnapProtect backup for the client.
 - Click OK.

- From the CommCell Browser, navigate to <*Client*> | Exchange Database.
- Right-click the subclient in the right pane and click **Properties**.

- 4. Click the **Storage Device** tab.
 - In the **Storage Policy** box, select the storage policy name.

🔓 CommCell Browser 🛛 🛛 🖗	DA Exchange Database ×	
testna4	🚴 testna4 > 👔 Client Computers > 🚉 hwina	pp01 > DA Exchange Database >
Clent Computer Groups	Subclient Name	Storage Policy
172.16.64.31	default	Not Assigned
⊕ avocado ⊕ 6% cvdv005589_2	Backup	
E 00 File System	List Media	
- of defaultBackupSet ⊕ of the wal-2003	Backup History	
⊕ ga dhava-2003 ⊕ 🚦 hfiler1	Schedules	
🖲 🚦 hfler2	Operation Window	
æ 🚦 hfiler3 æ 📴 hfiler4	3 Properties	
🕀 🧧 hfiler5		
E hfler6		
1 Texthange Database	Content 🖪 Summary	
OA File System	🔂 Job Controller 🗙	
Of SQL Server Kdhyperva	🔝 Job Controller	
🕀 🔂 miler64		Agent Type Subclient Job Type Phase
🗄 🔂 netappvsa 🖻 📆 sg-64	909 Auxiliary Copy	Auxiliary C
E - 04 File System	950 Auxiliary Copy	Audiary C
defaultBackupSet	1041 Auxiliary Copy	Audiary C
Subclient Properties	of default	×
cont la contrata		
aonoral i concornes		5napProtect Operations
Storage Device	Activity Control	Encryption
(a		
Data Storage Policy D	ata Transfer Option	
Storage Policy:		
RR_Sp1-PMV	•	Data Paths
Incremental Storage P	olicy: N//	
unurennen tar storage e	ancys (a)	- II
		Data Paths
		Data Facilio
Create Storage R	olicy	
		I
	ОК	Cancel Help

- 5. Click the SnapProtect Operations tab.
 - Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
 - Select the storage array from the **Available Snap Engine** drop-down list.
 - From the **Use Proxy** list, select the MediaAgent where SnapProtect and backup copy operations will be performed.

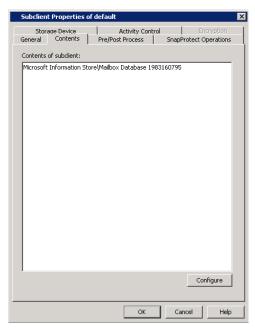
When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.

• Click **Use Separate Proxy for Snap to Tape** if you want to perform backup copy operations in a different MediaAgent.

Select the MediaAgent from the **Proxy** list.

Subclient Properties of snap
Storage Device Activity Control Encryptice SEM Onlines General Contents Pre/Post Process SnapProtect Operations
2 SnapProtect 3
Available Snap Engines
4 Use Proxy
Use Separate Proxy for Snap to Tape
Use source if proxy is unreachable
OK Cancel Help

- 6. Click the **Content** tab.
 - Click **Configure** to add or modify the content for the subclient.
 - Click OK.



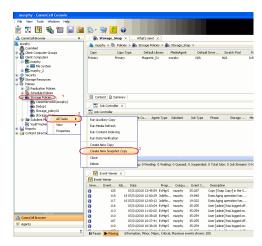
SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

CREATE A SNAPSHOT COPY

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- 1. From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Create New Snapshot Copy.



- Enter the copy name in the **Copy Name** field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.

2.

Next 🕨

Selective Copy General Retention	Associations Copy Policy	Advanced Data Paths	Deduplic Data Path Configu	
Copy Information				_
Copy <u>N</u> ame:) 2
Primary Copy				
Default Index Destinatio	n			
Library:				~
MediaAgent:				*
Drive Pool:				*
Scratch Pool:				*
3				_

CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

1.

- Click the **Snapshot** tab.
- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

File View Tools Windows Help	
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🛆 CommCell Browser 🛛 🤤	B Storage_Snap × What's new? ×
anurphy A CommNet	🤽 murphy > 🐚 Policies > 🌦 Storage Policies > 📸 Storage_Snap >
ConnetNet Client Computer Groups Client Computers	Copy Copy Type Default Library Medialgent Default Drive Scratch Pool Ret
Gent Computers Brunphy	Primary Primary Magnetic_01 murphy N/A N/A Infin Snap Primary Snap Magnetic_01 murphy N/A N/A Infin
File System	Snap Primary Snap Magnetic_01 murphy N/A N/A Infin
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	II Pause Playing Running: 0 Pending: 0 Waiting: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams: 0 Hig
	Event Werver ×
	Event Wewer
	Server Dete Progr Comput Event C Description (a) 125 07/21/2010 13:45:59 Evelops marphy 35:287 Copy [Snap Copy] in the S
	118 18 07/21/2010 12:00:29 JobMa murphy 19:840 Data Aging operation has
	117 18 07/21/2010 12:00:12 JobMa murphy 19:322 Data Aging operation has
	 116 07/21/2010 11:03:04 EvMgrS murphy 35:255 User [admin] has logged off. 113 07/21/2010 11:02:02 EvMgrS murphy 35:254 User [admin] has logged on.
	 113 07/21/2010 11:02:02: EvMgrS murphy 35:254 User [admin] has logged on. 110 07/21/2010 10:38:20: EvMgrS murphy 35:254 User [admin] has logged on.
ConniCel Browser	107 07/21/2010 10:27:41 EvMgrS murphy 35:255 User [admin] has logged off.
💞 Agents	110 07/21/2010 10:38:20 EvMgrS murphy 35:254 User [admin] has logged on.
*	II Pause Flaying Information, Minor, Major, Critical, Maximum events shown: 200
	perties: Storage_policy01
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Selection Rule	
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 All Backups 	
Choose the B	ackup Selection Rule: Advanced
L	
	3 OK Cancel Help
	(Previous) Next)

Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS	SOFTWARE STORAGE ARRAY
3PAR	DATA REPLICATOR
DELL COMPELLENT	
DELL EQUALLOGIC	
EMC CLARIION, VNX	
EMC SYMMETRIX	
FUJITSU ETERNUS DX	
HITACHI DATA SYSTEMS	
HP EVA	
IBM SVC	
IBM XIV	
LSI	
NETAPP	
NETAPP WITH SNAPVAULT/SNAPMIRROR	
NIMBLE	

Previous Next >>)

SnapProtect[™] Backup - 3PAR

< Previous Next >

PRE-REQUISITES

- 3PAR Snap and 3PAR Clone licenses.
- Thin Provisioning (4096G) and Virtual Copy licenses.
- Ensure that all members in the 3PAR array are running firmware version 2.3.1 (MU4) or higher.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



3.

	Data Interface Pairs		CR. Backup Settings		is: 0	
	6	LING	9	<u></u>		×
	0		7/21/2010 10:38:20 EvMg		User (admin) has logge	
Array Management						
Control Host	Name	User Name	Snap Vendor	Description		ıdd
	Name	User Name hct\administr		Description	<u> </u>	
Control Host	Name			Description	<u> </u>	idd idit
Control Host fidk.hct.commvault.com	Name	hct\administr	HP EVA	Description		dit
Control Host fidk.hct.commvault.com 172.19.66.22	Name 5001438002	hct\administr grpadmin admin	HP EVA Dell Equalogic	Description		

What's new?

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OK Cancel Help

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172 19 71 26

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- Select **3PAR** from the **Snap Vendor** list.
 - Specify the 16-digit number obtained from the device ID of a 3PAR volume in the **Name** field.

Follow the steps given below to calculate the array name for the 3PAR storage device:

- 1. From the 3PAR Management console, click the **Provisioning** tab and navigate to the **Virtual Volumes** node. Click any volume in the **Provisioning** window
- 2. From the Virtual Volume Details section, click the Summary tab and write

down the **WWN** number. This is the device ID of the selected volume.

3. From the **Virtual Volume Details** section, click the **Summary** tab and write down the **WWN** number.

This is the device ID of the selected volume.

This WWN may be 8-Byte number (having 16 Hex digits) or 16 Byte number (having 32 Hex digits).

- 4. Use the following formula to calculate the array name:
 - For 8 Byte WWN (16 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

where $\mathtt{DevID.substr}\left(4,3\right)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr(12,4)}$ is the next 4 digits after the twelfth digit from the WWN number

For example: if the WWN number is 50002AC0012B0B95 (see screenshot given below for 8 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

DevID.substr(4,3) is 2AC and DevID.substr(12,4) is 0B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

• For 16 Byte WWN (32 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

where ${\tt DevID.substr}\,(4,3)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr}\,(26,\,6)$ is the next 6 digits after the twenty sixth digit from the WWN number

For example: if the WWN number is 60002AC50000000000052200000B95 (see screenshot given below for 16 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

DevID.substr(4,3) is 2AC and DevID.substr(26,6) is 000B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

- Enter the IP address of the array in the **Control Host** field.
 - Enter the access information of a local 3PAR Management user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the CPG group created on the array to be used for snapshot operations.

If you do not specify a CPG group, the default CPG group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

4.

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SnapProtect[™] Backup - Dell Compellent

< Previous) Next >

PRE-REQUISTIES

- Dell Compellent requires the Data Instant Replay license.
- Ensure that all members in the Compellent array are running firmware version Storage Center 5.5.14 and above for 5.x and 6.2.2 and above for 6.x.

SETUP THE ARRAY INFORMATION

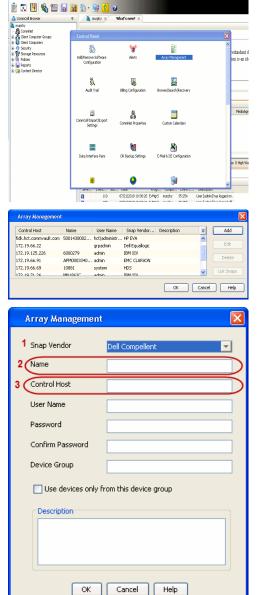
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- **3.** Select **Dell Compellent** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name and Control Host fields.

The Management IP address is also referred as the Storage Center IP address.



For reference purposes, the screenshot on the right shows the Storage Center Management Console of the Dell Compellent storage device displaying the Management IP address.

- DELL Co ent 🔍 Vev 📫 Refresh 🕯 1.6 rties - Storage Cent , Ce rol Storage Data P nim Cate Dok Sparry 245 ary C Type: 19.54 GB 2,000 1,750 1,500 1,250 Array Management Snap Vendor Dell Compellent Name Control Host User Name 4 Password Confirm Password Device Group 5 Use devices only from this device group Description OK Cancel Help Previous Next >
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- In the Device Group field, type none as this array does not use device groups for snapshot operations.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - Dell EqualLogic

PRE-REQUISTIES

WINDOWS

Microsoft iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

UNIX

iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

FIRMWARE VERSION

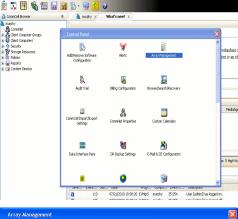
- Ensure that all members in the EqualLogic array are running firmware version 4.2.0 or higher.
- After upgrading the firmware, do either of the following:
 - o Create a new group administration account in the firmware, and set the desired permissions for this account.
 - If you plan to use the existing administration accounts from version prior to 4.2.0, reset the password for these accounts. The password can be the same as the original.

If you do not reset the password, snapshot creation will fail.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next 🕨

Control Host	Name	User Name	Snap Vendor	Description	×	Add
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172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	
172 19 71 26	MN1963C	admin	TRM VTV		~	

- 2. Click Add.
- **3.** Select **Dell Equallogic** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name field.

No entry is required in the **Name** field if there is no Management IP address configured.

• Specify the Group IP address in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Management IP
address and Group IP address for the Dell Equallogic storage device.

- Enter the user access information of the Group Administrator user in the **Username** and **Password** fields.
 - For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones in the **Device Group** field.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the storage pool specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

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6 Use devices only	y from this device group
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	Previous Next >

SnapProtect[™] Backup - EMC Clariion, VNX

Previous Next >

PRE-REQUISITES

LICENSES

- Clariion SnapView and AccessLogix licenses for Snap and Clone.
- SYMAPI Feature: BASE/Symmetrix license required to discover Clariion storage systems.

You can use the following command to check the licenses on the host computer:

C:\SYMAPI\Config> type symapi_licenses.dat

ARRAY SOFTWARE

• EMC Solutions Enabler (6.5.1 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and NaviAgent installed on the client and proxy computers.
- If AccessLogix is not enabled, go to the Navisphere GUI, right-click EMC Clariton Storage System and click Properties. From the Data Access tab, select Enable AccessLogix.
- Clariion storage system should have run successfully through the Navisphere Storage-System Initialization Utility prior to running any Navisphere functionality.
- Ensure enough reserved volumes are configured for SnapView/Snap to work properly.

For EMC VNX:

• EMC Solutions Enabler (7.2 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and Navisphere/Unisphere Host Agent installed on the client and proxy computers.
- VNX storage system should have run successfully through the Unisphere Storage-System Initialization Utility prior to running any Unisphere functionality.

SETUP THE EMC CLARIION

Perform the following steps to provide the required storage for SnapProtect operations:

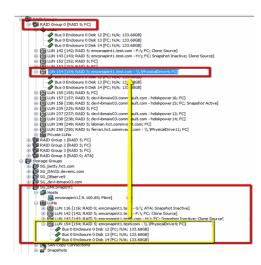
- 1. Create a RAID group
- 2. Bind the LUN
- 3. Create a Storage Group
- 4. Register the client computer (covered by installing NaviAgent)
- 5. Map the LUNs to the client computer where the NaviAgent resides
- 6. Reserved/Clone volumes target properly for SnapView

For example, as shown in the image on the right, the **Clariion ID** of **APM00033400899** has the following configuration:

- a RAID Group 0 provisioned as a RAID-5 group (Fiber Channel drives)
- LUNs are mapped to Storage Group SG_EMCSnapInt1 with LUN ID of #154 present to client computer emcsnapint1.

The example shows the serial number of LUN 154:

- RAID Group: RAID Group 0, containing 3 physical disks
- Storage Group: currently visible to a single client computer
- LUN is shown as a Fiber Channel device
- The devices under LUN 154 reside on RAID Group 0 which has RAID-5 configuration.



AUTHENTICATE CALYPSO USER INFORMATION FOR THE NAVIAGENT

Follow the steps below to specify the authorization information for EMC Solutions Enabler and Navishphere CLI to ensure administrator access to the Navisphere server.

1. To set the authorize information, run the symcfg authorization command for both the storage processors. For example:

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPA IP> -username admin -password password

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPB IP> -username admin -password password

2. Run the following command to ensure that the Clariion database is successfully loaded.

symcfg discover -clariion -file AsstDiscoFile

where AsstDiscoFile is the fully qualified path of a user-created file containing the host name or IP address of each targeted Clariion array. This file should contain one array per line.

3. Create a Navisphere user account on the storage system. For example:

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPA IP> -Scope 0 -User admin -Password password

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPB IP> -Scope 0 -User admin -Password password

- 4. Restart the NaviAgent service.
- 5. Run snapview command from the command line to ensure that the setup is ready.

On Unix computers, you might need to add the Calypso user to the agent.config file.

Before running any commands ensure that the EMC commands are verified against EMC documentation for a particular product and version.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

1.

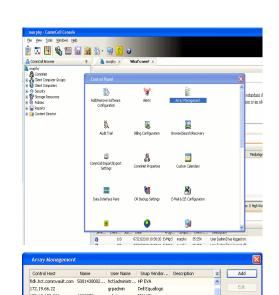
Click Add. 2.

- з. • Select EMC CLARIION from the Snap Vendor list for both Clariion and VNX arrays.
 - Specify the serial number of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the serial number for the EMC Clariion storage device.

- Enter the access information of a Navisphere user with administrative privileges in the Username and Password fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.



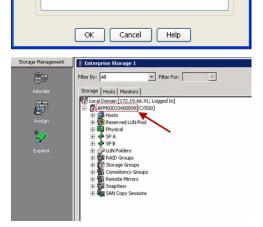
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SnapProtect[™] Backup - EMC Symmetrix

< Previous) Next >

PRE-REQUISITES

• EMC Solutions Enabler (6.4 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

• SYMAPI Feature: BASE /Symmetrix licenses for Snap, Mirror and Clone.

You can use the following command to check the licenses on the host computer:

```
C:\SYMAPI\Config> type symapi_licenses.dat
```

By default, all functionality is already enabled in the EMC Symmetrix hardware layer. However, a Hardware Configuration File (IMPL) must be enabled before
using the array. Contact an EMC Representative to ensure TimeFinder and SRDF functionalities have been configured.

SETUP THE EMC SYMMETRIX

For SnapProtect to function appropriately, LUN Masking records/views must be visible from the host where the backup will take place:

- For DMX, the Masking and Mapping record for vcmdb must be accessible on the host executing the backup.
- For VMAX, the Masking view must be created for the host executing the backup.

CONFIGURE SYMMETRIX GATEKEEPERS

Gatekeepers need to be defined on all MediaAgents in order to allow the Symmetrix API to communicate with the array. Use the following command on each MediaAgent computer:

symgate define -sid <Symmetrix array ID> dev <Symmetrix device name>

where <Symmetrix device name> is a numbered and un-formatted Symmetrix device (e.g., 00C) which has the MPIO policy set as FAILOVER in the MPIO properties of the gatekeeper device.

LOAD THE SYMMETRIX DATABASE

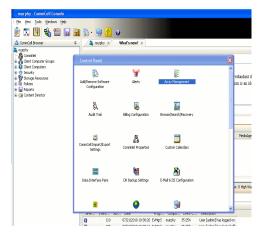
If you have the SYMCLI software installed, it is recommended that you test your local Symmetrix environment by running the following command to ensure that the Symmetrix database is successfully loaded:

symcfg discover

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- з.
- Select EMC Symmetrix from the Snap Vendor list.
- Specify the **Symm ID** of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the Symmetrix array ID (Symm ID) for the EMC Symmetrix storage device.

4.

- If Symcfg Authorization is enabled on the Symmetrix Management Console, enter the access information for the Symmetrix Management Console in the Username and Password fields.
- In the **Device Group** field, specify the name of the device group created on the client and proxy computer. The use of Group Name Service (GNS) is supported.

If you do not specify a device group, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

To understand how the software selects the target devices during $\ensuremath{\mathsf{SnapProtect}}$ operations, click here.

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Array Manageme Snap Vendor Name Control Host User Name Password Confirm Password Device Group	EMC Symmetrix	Next >

SnapProtect[™] Backup - Fujitsu ETERNUS DX

< Previous Next >

PRE-REQUISITES

- Local Copy license for Snap and Clone.
- Thin Provisioning license.
- Ensure that all members in the Fujitsu array are running firmware version V10L22-1000 or higher.
- Enable SMI-S on the storage array.
- Create a Host Affinity group for the proxy computer.
- If using SnapOPC, ensure to create a SDV and SDPV volumes.

CONFIGURE DESTINATION VOLUMES

- Source and destination volumes should be pre-paired before performing any snapshot operation. For EC snapshots (clone), pre-paired sessions should be in active state.
- To pre-pair source and destination volumes, install the ETERNUS SF Express Manager software version 14.2A or higher.
- Forbid Advanced Copy and Encrypted volumes are not supported.
- Depending on the type of snapshot being used, review the following for the creation of destination volumes:

FOR SNAP SNAPSHOTS

If pre-paired sessions are not available, SnapOPC snapshots use any available SDV volumes as their destination volumes. If you need to create a new SDV volume, ensure that the SDV volume is of equal size to the source volume.

FOR CLONE SNAPSHOTS

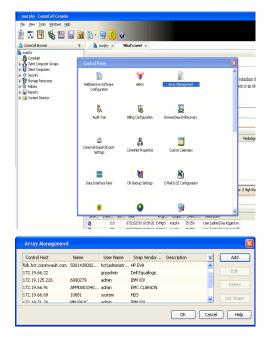
If pre-paired sessions are not available, destination volumes are automatically created for clone snapshots. If a non-existing device group is specified during array configuration in the CommCell Console, a destination volume is created based on the source volume type. However, if a valid device group is specified, the following destination volumes are created depending on the device group type:

- $\circ\,$ A Thin Provisioning volume is created if the device group is a Thin Provisioning pool.
- $\,\circ\,$ A standalone volume is created if the device group is a RAID group.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- Select Fujitsu ETERNUS from the Snap Vendor list.
 - Specify the CM IP Address of the array in the Name field.

For reference purposes,	the screenshot	on the r	ight shows	the CM I	P Address	for	the
Fujitsu storage device.							

- Enter the CM IP Address of the array in the **Control Host** field.
 - Enter the access information of a user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the RAID group or Thin Provisioning group created on the array to be used for clone operations. Device groups are not applicable for Snap snapshots.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the device group specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

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Array Management

Fujitsu ETERNUS

Use devices only from this device group

OK

Cancel Help

1 Snap Vendor

Control Host User Name Password Confirm Password Device Group

Description

Alternation

2 Name

SnapProtect[™] Backup - Hitachi Data Systems

PRE-REQUISITES

- Device Manager Server (7.1.1 or higher) installed on any computer.
- RAID Manager (01-25-03/05 or higher) installed on the client and proxy computers.
- Device Manager Agent installed on the client and proxy computers and configured to the Device Manager Server.

The hostname of the proxy computer and the client computer should be visible on the Device Manager Server.

- Appropriate licenses for Shadow Image and COW snapshot.
- For VSP, USP, USP-V and AMS 2000 series, create the following to allow COW operations:

COW pools

 $\,\circ\,$ V-VOLs (COW snapshots) that matches the exact block size of P-VOLs devices.

• For HUS, ensure that the source and target devices have the same **Provisioning Attribute** selected. For e.g., if the source is **Full Capacity Mode** then the target device should also be labeled as **Full Capacity Mode**.

ADDITIONAL REQUIREMENTS FOR VMWARE

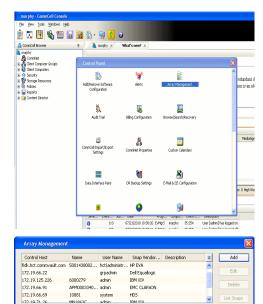
When performing SnapProtect operations on VMware using HDS as the storage array, ensure the following:

- HDS LUNs are exposed to the Virtual Server iDataAgent client and ESX server.
- All HDS pre-requisites are installed and configured on the Virtual Server iDataAgent client computer.
- The Virtual Server client computer is the physical server.
- The Virtual Machine HotAdd feature is not supported.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next >

2. Click Add.

- **3.** Select **HDS** from the **Snap Vendor** list.
 - Specify the serial number of the array in the Name field.

OK Cancel Help

For reference purposes, the screenshot on the right shows the serial number for the HDS storage device.

4.

- Enter the IP address or host name of the Device Manager Server in the **Control Host** field.
 - Enter the user access information in the Username and Password fields.
 - In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. The device group should have the following naming convention:

<COW_POOL_ID>-<LABEL> **Or** <LABEL>-<COW_POOL_ID>

where ${\tt COW_POOL_ID}{\tt (for \ COW \ job)}$ should be a number. This parameter is required.

 $<\!\!\! LABEL>$ (for SI job) should not contain special characters, such as hyphens, and should not start with a number. This parameter is optional.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

Alara Alara Sana Alara Alar Alara Alara Alar Alara Alara Alar Alara Alara Alar Alara Alara Alar	Type Servid Humber DP Address Microsofe DVC Microsofe DVD Configured Capacity Actual Capacity Pres Space Teal Carls Latt Refreshed Alerts	172.19.46. 50-09-09-00/00 50-09-70/00 9.30-78 9.32 TB	NASMataga	sot
Array Manageme	nt			×
Snap Vendor	HDS		*	
Name				
3 Control Host				\geq
User Name				5
Password				
Confirm Password				
5 Device Group				
6 🕧 Use devices onl	y from thi	s device group		
Description				
ОК	Ca	ncel Help)	
			< Previou	us Next)

Array Management

HDS

Use devices only from this device group

OK

Cancel

Help

NAS/Management

1 Snap Vendor

Description

2 Name Control Host User Name Password Confirm Password Device Group

SnapProtect[™] Backup - HP StorageWorks EVA

< Previous Next >

SETUP THE HP SMI-S EVA

HP-EVA requires Snapshot and Clone licenses for the HP Business Copy EVA feature.

The following steps provide the necessary instructions to setup the HP EVA:

- 1. Download the HP SMI-S EVA and the HP Command View EVA software on a supported server from the HP web site.
- 2. Run the Discoverer tool located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\EVAProvider\bin folder to discover the HP-EVA arrays.
- 3. Use the CLIRefreshTool.bat tool to sync with the SMIS server after using the Command View GUI to perform any active management operations (like adding new host group or LUN). This tool is located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\CXWSCimom\bin folder.

SETUP THE ARRAY INFORMATION

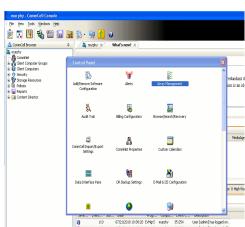
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



з.

- Select HP EVA from the Snap Vendor list.
 - Specify the World Wide Name of the array node in the Name field.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	List Snaps
172 19 71 26	MN1963C	admin	TRM YTV		×	List bridge

Array Managemer	nt 🔀
1 Snap Vendor	HP EVA
2 Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	r from this device group
Description	
ОК	Cancel Help

The World Wide Name (WWN) is the serial number for the HP EVA storage device. See the screenshot on the right for a WWN example.

The array name must be specified without the dashes used in the WWN e.g., $\tt 50014380025DEB70.$

- 4.
- Enter the name of the management server of the array in the **Control Host** field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

- Enter the user access information in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware disk group created on the array to be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

EVA Storage Network EVA Storage Network EVA40 Ovinual Disks Disk Groups Disk Groups Data Replication Hardware	Node WWN:	System options Status Summary EVA440 6005-08b40002-0000
Array Management		
Snap Vendor HF	EVA	
3 Control Host		
4 Password Confirm Password		
5 Device Group		
6 Use devices only fro	m this device group	>

OK

Cancel Help

< Previous Next >

SnapProtect[™] Backup - IBM SAN Volume Controller (SVC)

PRE-REQUISITES

- IBM SVC requires the FlashCopy license.
- Ensure that all members in the IBM SVC array are running firmware version 6.1.0.7 or higher.
- Ensure that proxy computers are configured and have access to the storage device by adding a host group with ports and a temporary LUN.

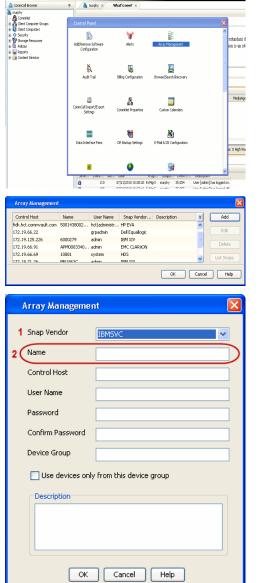
SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBMSVC from the Snap Vendor list.
 - Specify the 16-digit ID of the storage device in the **Name** field.



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Next 🕨

The **ID** is the device identification number for the IBM SVC storage device. See the screenshot on the right for reference.

44 • **•** 3.6 TB Co C 52% 🗌 🖸 😧 111 Running Tasks Array Management Snap Vendor Name Control Host 3 User Name Password Confirm Password 5 Device Group Use devices only from this device group 6 Description OK Cancel Help

< Previous Next >

- Enter the Management IP address or host name of the array in the **Control Host** field.
 - Enter the user access information of the local application administrator in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the physical storage pools created on the array to be used for snapshot (flash copy) operations.

If you do not specify a device group, the default storage pool will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - IBM XIV

< Previous) Next >

PRE-REQUISITES

- 1. IBM XCLI (2.3 or higher) installed on the client and proxy computers. On Unix computers, XCLI version 2.4.4 should be installed.
- 2. Set the location of XCLI in the environment and system variable path.
- 3. If XCLI is installed on a client or proxy, the client or proxy should be rebooted after appending XCLI location to the system variable path. You can use the XCLI_BINARY_LOCATION registry key to skip rebooting the computer.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBM XIV from the Snap Vendor list.
 - Specify the 7-digit serial number for the array in the Name field.



Confirm Password Device Group

Description

Use devices only from this device group

OK

Cancel

Help

The **System ID** (S/N) is the serial number for the IBM XIV storage device. See the screenshot on the right for reference.

System Configuration ×

General
System Name
Parameters
System Version
10.22
System 10 (5/N)
6006633 (\$533
10
10/Hostname 1
10/Hostname 1
10/Hostname 1
10/Hostname 3

Update
Cancel

	Array Managemer	it 🔀
	Snap Vendor Name	
3	Control Host	
	User Name	
4	Password	
1	Confirm Password	
	Device Group	
	Use devices only	from this device group
	Description	
	ОК	Cancel Help
		Previous Next

- Enter the IP address or host name of the array in the **Control Host** field.
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - LSI

< Previous (Next >

PREREQUISITES

- Ensure that the LSI Storage Management Initiative Specification (SMIS) server has access to the LSI array through TCP/IP network to perform SnapProtect
 operations.
- Ensure that the client has access to:
 - SMIS server through TCP/IP network.
 - o LSI array through iSCSI or Fiber Channel network.
- Ensure that proxy computers are configured and have access to the storage device by adding a temporary LUN to the "host" using the Storage Management Console.

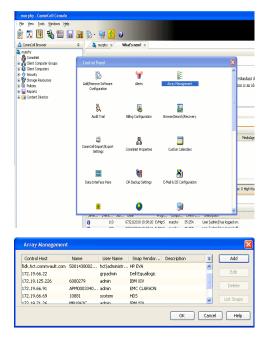
ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using SAN transport mode, ensure that the Client and the ESX Server reside in the same host group configured in the LSI array, as one volume cannot be mapped to multiple host groups.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

з.

- Select LSI from the Snap Vendor list.
 - Specify the serial number for the array in the Name field.

	Control Host	
	User Name	
	Password	
	Confirm Password	
	Device Group	
	Use devices only from this device group	
	OK Cancel Help	
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e	IB Constant	
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Array Management

LSI

1 Snap Vendor

2 Name

The **Storage Subsystem world-wide identifier (ID)** is the serial number for the LSI storage device.

Use the SANtricity Storage Manager software to obtain the array name by clicking **Storage Subsystem Profile** from the **Summary** tab. See the screenshot on the right for reference.

- Specify the name of the device manager server where the array was configured in the **Control Host** field.
- Enter the user access information using the LSI SMIS server credentials of a loca user in the **Username** and **Password** fields.
- In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not have a device group created on the array, specify None.
 - If you specify None in the **Device Group** field but do have a device group created on the array, the default device group will be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

	Array Managemer	ıt 🔀	
	Snap Vendor	LSI	
	Name		
3 (Control Host		
1	User Name		
4	Password		
	Confirm Password	/	
5	Device Group		
6 (Use devices only	from this device group	
	Description		
	ОК	Cancel Help	
		< Previous	Next >

SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

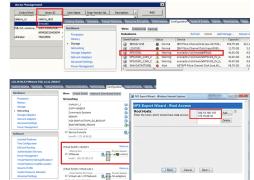
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor	NetApp	
Name	месарр	
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	from this device group	
	, monitano do neo group	
Description		
ОК	Cancel Help	
	(Previous

SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. • From the CommCell Browser, navigate to Policies.
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the Storage Policy in the Storage Policy Name box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

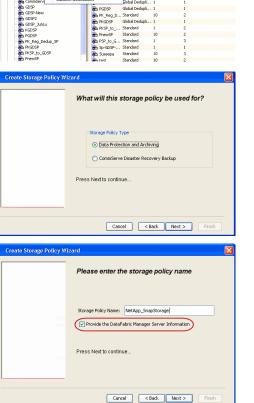
4.

3.

• In the Library list, select the default library to which the Primary Copy should be associated.

> It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



Tools

I-SP-DFN

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A-SP A-SP A-SP-DFM CommSer...

New Storage Policy 3 New Global Dedup

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Type Global Dedupli. Standard Standard

Disaster Ri Global Ded Global Ded Global Ded

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Global De Standard Global De

Standard Standard

Standard Standard

No. of Streams No. of

Create Storage Policy Wiz	zard	X
	Please select a library to be the default library for this primary copy	
No.29 access	Ubrary: test]
Meria	Press Next to continue	
ļ	Cancel < Back Next > Finish	

- 5. • Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

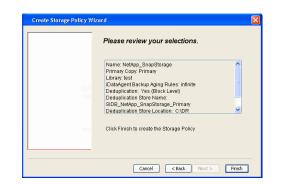
9.	٠	Provide the	DataFabric	Manager	server	information.
----	---	-------------	------------	---------	--------	--------------

- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

Create Storage Policy Wiz	zard 🛛 🔀
	Please select a MediaAgent for this copy
	MediaAgent: dhaval-2008
	Press Next to continue
	Cancel < Back Next > Finish
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard
	Please enter the streams and retention
	criteria for this policy
	Number of Device Streams:
	Choose the Primary Copy's Aging Rules:
	iDataAgent Backup data
	✓ Infinte/ 15 → Days 2 → Cycles
	Retain by Jobs 24 -
	Data Archive/Compliance Archiver
	V Infinite/ 365 Days
	Cancel < Back Next > Finish
Create Storage Policy Wiz	zard
	Do you want to enable Deduplication for the primary copy?
	Deduplication • Yes
	Enable Client Side Deduplication
	○ No
	Press Next to continue
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wiz	zard
	Please specify the location to store the
	Deduplication Store
	Name: SIDB_NetApp_SnapStor
	Deduplication Store Location:
	MediaAgent Name dhaval-2008 💌
	Location: Browse
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard
	Please select/add the new DataFabric Manager information?
	DataFabric Manager:
	Select hwinapp02
	Host Name: venus
	Add User Name: admin
	Password:

10. Click Finish.

Cancel < Back Next > Finish

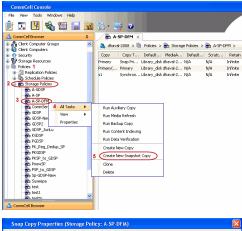


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

- **3.** Click the **Copy Policy** tab.
 - Depending on the topology you want to set up, click Specify Source for Auxiliary Copy and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

Sector Copy Retention Copy Policy Deta Plates Deta Pla
Backup Sekction All Backups Backups On and After: Thu 04(07/2011 Source Copy
Al Backups Biologis On and After: Thu 04/07/2011 Source Copy
Boolups On and After: Thu 04/07/2011
Source Copy
OK Cancel Help Shap Copy Properties (Storage Policy: A.SP-OrfA) General Reterion Copy Policy: Data Path Data Path Data Path Configuration: Data Path Configuration: Provisioning Policy: Provisi Poli

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

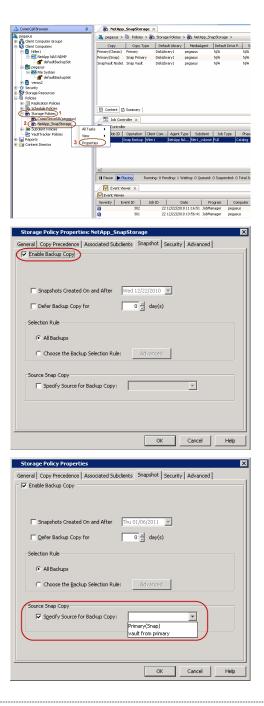
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

~

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

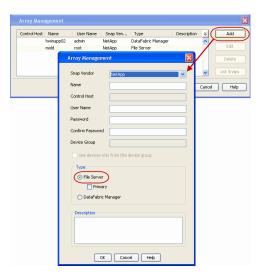
- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

4.

Page	155	of 74	2

CammCell Console					
File Wew Tools Windows Help					
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CommCell Browser		P-DFM ×			4.10
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Schedule Policies	🐞 Add Remove Software Configuration	'g' Alerts	Array Management		* *
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9 99442	7 Fill Control	() Summary			<u>×</u>
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SEE ALSO

Import Wizard Tool

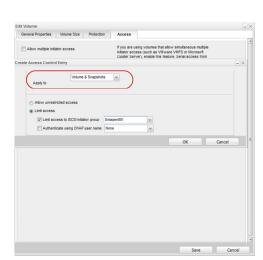
Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

SnapProtect[™] Backup - Nimble

PREREQUISITES

- From the Nimble storage array console, ensure that the Access Control Entry for the client initiator group is set to Volume and Snapshots.
- In case you are using a proxy computer for SnapProtect operations, add the initiator group for the proxy computer and set the Access Control Entry to Snapshots Only.
- Ensure that a temporary LUN is allocated to all ESX Servers that are used for snapshot operations.



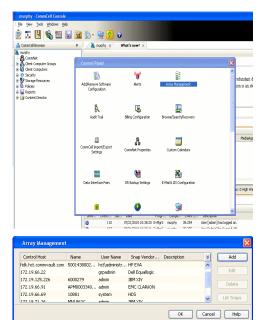
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Next 🕨

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- **3.** Select **Nimble** from the **Snap Vendor** list.
 - Specify the Data IP Address of the array in the Name field.

If you have more than one Data IP Address configured, you will need to add the array information for each of the configured Data IP addresses.

• Enter the Management IP Address of the array in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Data IP Address and
Management IP for the Nimble storage device.

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- Enter the access information of a user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

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	<pre>Previous Next ></pre>

SnapProtect[™] Backup - Data Replicator

< Previous (Next >

PRE-REQUISITES

INSTALLATION

• The use of Data Replicator with the SnapProtect backup requires MediaAgent, File System *i*DataAgent, and ContinuousDataReplicator on the source, destination, and proxy computers.

The use of a proxy server to perform SnapProtect operations is supported when a hardware storage array is used for performing the SnapProtect backup.

• The operating system of the MediaAgent to be used for SnapProtect backup must be either the same or higher version than the source computer.

STORAGE POLICY REQUIREMENTS

The Primary Snap Copy to be used for creating the snapshot copy must be a disk library.

If the Storage Policy or the disk library being used by the subclient is updated, the subclient should be recreated.

SETUP THE ARRAY

- From the CommCell Console, navigate to **<Client>** | **<Agent>**.
 - Right-click the subclient and click **Properties**.
- Click the SnapProtect Operations tab.
 - Ensure **Data Replicator** is selected from the **Available Snap Engine** drop-down list.
 - Click OK.

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Getting Started - Exchange Database iDataAgent Backup

< Previous Next >

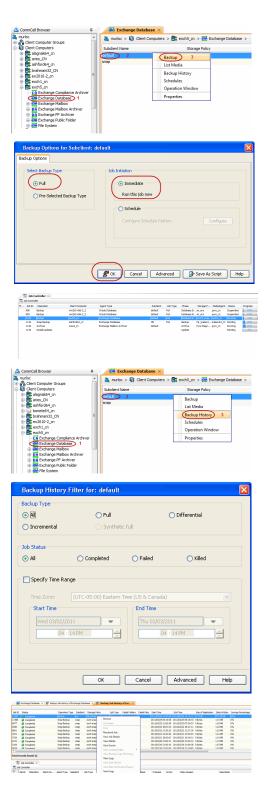
PERFORM A BACKUP

2.

- 1. Ensure that Circular Logging has been disabled on the Exchange Server.
 - From the CommCell Console, navigate to Client Computers | <Client> | Exchange Database.
 - Right-click the default subclient and click Backup.
- Select Full as backup type and Immediate to run the job immediately.
 - Click OK.

- 4. You can track the progress of the job from the **Job Controller** window of the CommCell console.
- Once job is complete, view the details of job from the Backup History. Right-click the Subclient and select Backup History.
- 6. Click OK.

- **7.** Right-click the job to:
 - View job details, such as the number of mailboxes backed up.
 - View media associated with the job.
 - View events associated with the job.
 - Resubmit the job.
 - View messages that were backed up.
 - Send the log file that is associated with the job.



User Guide - SnapProtect

Previous Next >

Getting Started - Vault/Mirror Copy

< Previous) Next >

SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

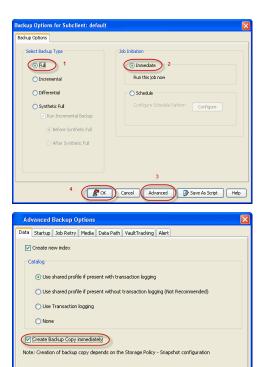
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

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User Guide - SnapProtect

2. Click OK.

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Getting Started - Microsoft Exchange Database Restore



PERFORM A RESTORE

As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following sections explain the steps for restoring a single database to a different client computer.

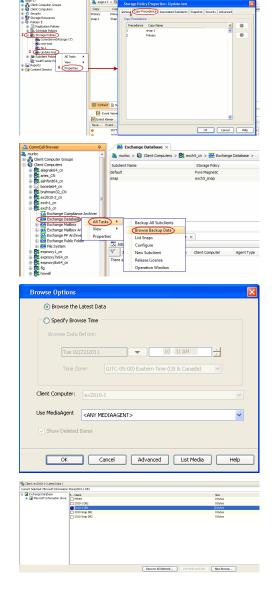
- From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.
 - You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.
 - Click OK.

1.

- From the CommCell Console, navigate to Client Computers | <Client> | Exchange Database.
 - Right-click the Agent and then click **All Tasks | Browse Backup Data**.
- 3. Select a Windows MediaAgent from the Use MediaAgent drop-down list.
 - Click OK.

4.

- Select the Microsoft Information Store in the left pane. Select a database in the right pane.
 - Click Recover All Selected.



5. • Select the name of the client computer from the **Destination Client** list.

This client should not be the same client on which the database originally resided.

- Click ... under **Out of Place** Location column.
- Select a folder on the destination client and click **OK**.
- Click OK.

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- 6. You can monitor the progress of the restore job in the **Job Controller**.
- 7. The database is restored to the directory and client that was specified.

CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.

Previous Next >>

Getting Started Deployment On a UNIX Computer - Oracle *i*DataAgent

WHERE TO INSTALL

Install the software directly on the Unix computer that you wish to protect and has the application data.

RELATED TOPICS

Download Software Packages Download the latest software package to perform the install.

Previous

Next >

SnapProtect Support - Platforms

Verify that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE ORACLE /DATAAGENT

Use the following procedure to directly install the software from the installation package or a network drive.

- 1. Logon to the client computer as **root**.
- If you are installing the software from CD, run the following command to mount the CD:

mount -t iso9660 udf /dev/cdrom /mnt/cdrom

Run the following command from the Software Installation Package:

./cvpkgadd

- The product banner and other information is displayed.
- Press Enter.

3.

- 4. Read the license agreement. Type y and press Enter.
- 5. Press Enter.

6. Press Enter.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

2) Advance options

3) Exit this menu

Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "failover" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server

You now have a choice of performing a regular Calypso install on the physical host or installing Calypso on a virtual machine for operation within a cluster.

Most users should select "Install on a physical machine" here.

1) Install on a physical machine

2) Install on a virtual machine

3) Exit

Your choice: [1]

7. If you have only one network interface, press **Enter** to accept the default network interface name and continue.

If you have multiple network interfaces, enter the interface name that you wish to use as default, and then press **Enter**.

The interface names and IP addresses depend on the computer in which the software is installed and may be different from the example shown.

8. Press Enter.

We found one network interface available on your machine. We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java GUI.

Please check the interface name below, and make connections if necessary:

Physical Machine Host Name: [angel.company.com]

Please specify the client name for this machine.

9. Type the number associated with the Oracle *i*DataAgent, Unix File System *i*DataAgent, and MediaAgent.

Press Enter.

A confirmation screen will mark your choice with an "X".
 Type d for Done, and press Enter.

11. Press Enter.

- 12. Type the appropriate number to install the latest software scripts and press Enter.
 - Select Download from the software provider website to download the latest software scripts. Make sure you have internet access.
 - Select **Use the one in the installation media** to install the software scripts from the package or share from which the installation is currently being performed.
 - Select Use the copy I already have by entering its unix path, to specify the path if you have the software script in an alternate location.

13. Press Enter.

14.

Press **Enter** to accept the default path.

- If you want to specify a different path, type the path and then press **Enter**.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press **Enter**.

In order to make sure that the client computer has read/write access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&*():/?\

- 15. Press Enter to accept the default location.
 - Enter a path to modify the default location and press Enter.
 - All the modules installed on the computer will store the log files in this directory.
- **16.** Type **Yes** and press **Enter**.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe. Physical Machine Client name: [angel]

Physical Machine Client name: [angel]

Install Calypso on physical machine 172.19.99.62 Please select the Calypso module(s) that you would like to install.

[] 1) MediaAgent [1301] [CVGxMA]

[] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[] 3) Oracle iDataAgent [1204] [CVGxOrIDA]

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:3

Install Calypso on physical machine 172.19.99.62 Please select the Calypso module(s) that you would like to install.

[X] 1) MediaAgent [1301] [CVGxMA]

[X] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[X] 3) Oracle iDataAgent [1204] [CVGxOrIDA]

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:d

Do you want to use the agents for restore only without consuming licenses? [no]

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media

3) Use the copy I already have by entering its unix path

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176 MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make 17. Type the Group name and then press Enter.

18. This prompt is relevant only when you install on Solaris. Press Enter to accept the default value for Number of Streams.

> You can type the Number of Streams that you plan to run at the same time and then press Enter.

19. Press Enter if you do not want the changes to be updated automatically.

- If you want the changes to be made automatically, type **Yes** and then press Enter.
- You will come across this prompt when you install the software on the earlier versions of Solaris.

20. Press Enter.

> You will see this prompt if you have accepted the default no and pressed Enter in the Press <ENTER> to continue. above step.

21. Press Enter.

> You will see this prompt if you have accepted the default no and pressed Enter in step 19.

22. Type a network TCP port number for the Communications Service (CVD) and press Enter.

Type a network TCP port number for the Client Event Manager Service (EvMgrC) and press Enter.

23. If you do not wish to configure the firewall services, press Enter.

> If this computer is separated from the CommServe by firewall(s), type Yes and then press Enter.

such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "oinstall" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later.

If you're planning to backup Oracle DB you should use "oinstall" group.

Would you like to assign a specific group to Software? [ves]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.

In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "oinstall" group here.

Group name: oinstall

REMINDER

If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "oinstall".

Number of Streams

IMPORTANT : Please read install document "Configure Kernel Parameters - Unix/Macintosh" from "Books Online" before start configuring kernel parameters. Please enter total number of streams that you plan to run at the same time. We need to make sure that you have enough semaphores and shared memory segments configured in /etc/system

Number of streams [10]

We now need to modify the /etc/system configuration file on this computer. It is done to make sure that there will be enough shared memory and semaphores available for Calypso programs. Please review the changes below and answer "yes" if you want us to apply them to the /etc/system file. Otherwise, the installation will proceed, the changes will be saved to some other file, and you will have to apply them manually.

set shmsys:shminfo_shmmni=8570 (was 7930) set shmsys:shminfo_shmseg=8420 (was 7780) set semsys:seminfo_semmni=8570 (was 9680) set semsys:seminfo_semmni=8570 (was 7930) set semsys:seminfo_semms1=8570 (was 7930) Do you want us to apply these changes now? [no]

Changes saved into /etc/system.gal.1744

Although a 'no' answer can be selected to this question during install, the user should make sure the min requirements (below) for shared memory are met, otherwise the backups may fail (the message in logs is 'could not start the pipeline').

set shmsys:shminfo_shmmax=4199304 set shmsys:shminfo_shmmin=1
set semsys:shminfo_shmmni=640
set semsys:shminfo_shmseg=640
set semsys:seminfo_semmns=640 set semsys:seminfo_semmni=640 set semsys:seminfo_semmsl=640 set maxusers=256 Press <ENTER> to continue.

Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.

The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.

Please enter the port numbers.

Port Number for CVD : [8400]

Port Number for EvMgrC: [8402]

Is there a firewall between this client and the CommServe? [no]

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation. Please specify hostname of the CommServe below. Make sure 24. Type the fully qualified CommServe host name and press Enter. the hostname is fully qualified, resolvable by the name Ensure that the CommServe is accessible before typing the name; services configured on this machine. otherwise the installation will fail. CommServe Host Name: mycommserve.company.com Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain 25. Press Enter. directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters. 1) Use Cell level policy 2) Always use Global filters 3) Do not use Global filters Please select how to set the Global Filters for the default subclient? [1] Type the number associated with the Client Group and press **Enter**. Client Group(s) is currently configured on CommServe 26. cs.company.com. Please choose the group(s) that you want NOTES to add this client client.company.com to. • This screen will be displayed only if Client Groups are configured for the CommCell. [] 1) Unix [] 2) DR [a=all n=none r=reverse q=quit d=done >=next <=previous ? =help] Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 1</pre> A confirmation screen will mark your choice with an "X". Client Group(s) is currently configured on CommServe 27. cs.company.com. Please choose the group(s) that you want Type **d** for done with the selection, and press **Enter** to continue. to add this client client.company.com to. [X] 1) Unix [] 2) DR [a=all n=none r=reverse q=quit d=done >=next <=previous ? =help] Enter number(s)/one of "a,n,r,g,d,>,<,?" here: d Please select one storage policy for this IDA from the 28. Enter the number associated with the storage policy you want use and press **Enter**. list below: 1) SP_StandAloneLibrary2_2 2) SP_Library3_3 3) SP_MagLibrary4_4 Storage Policy: [1] Certain Calypso packages can be associated with a virtual 29. Type 3 to the Exit option and press Enter. IP, or in other words, installed on a "virtual machine" The installation is now complete. belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server. Currently you have Calypso installed on physical node stone.company.com. Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster. 1) Add another package to stone.company.com 2) Install Calypso on a virtual machine 3) Exit

Your choice: [1] 3



Getting Started - Oracle Configuration

< Previous) Next >

CONFIGURATION

1.

The following sections provide the necessary steps required to create and configure the components for a first SnapProtect backup of an Oracle database.

- From the CommCell Browser, navigate to Client Computers | < Client >.
 - Right-click the client and select **Properties**.

- Click on the **Advanced** tab.
 - Select the **Enable SnapProtect** option to enable SnapProtect backup for the client.
 - Click OK.

- From the CommCell Browser, navigate to Client Computers | <Client>.
 - Right-click Oracle and then click Properties.
- 4. Select the **Enable Instance Discovery** checkbox.

• Click OK.

If the instances are discovered automatically, go to step 7.

If the instances are not discovered automatically, follow the step given below to manually discover the instances.

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8	Description		
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Oracle Properties			×
General Version Security Activit	y Control		
Client Name: sdr2k8			
iDataAgent: Oracle			
Installed date: Monday, May 16	, 2011		
Enable Instance Discovery			
Description]	
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Enable SnapProtect
 Enable retry on network

Retry Frequency (seconds)

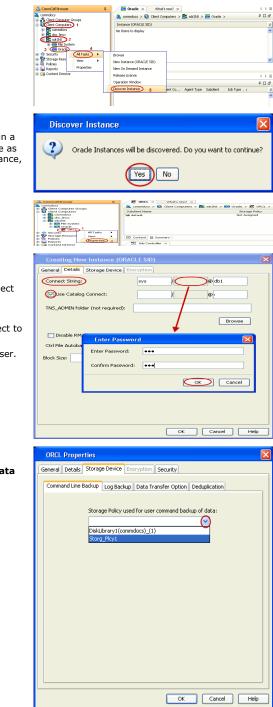
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Running: 0 Pending: 0 Walting: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams

Firewall Configuration Network Throttling Polic king Registry Key Settings Client Side Deduplicat

Browse

- From the CommCell Browser, navigate to Client Computers | <Client>.
 - Right-click **Oracle**, point to **All Tasks** and then click **Discover Instance**.



6. Click Yes.

If your Oracle database uses an ASM instance and the instance is in a different Oracle Home, you may have to manually add the instance as the discovery operation may not find it. When configuring the instance, verify the database status shows as STARTED.

- 7. From the CommCell Browser, navigate to Client Computers | <Client>|Oracle.
 - Right-click the **<Instance>** and then click **Properties**.
- 8. Skip this step if you are not using a proxy computer.
 - Click the **Details** tab.
 - In the **Use Catalog Connect** field, type the user name to connect to the Recovery Catalog database.
 - Click the grayed box in Use Catalog Connect.
 - In the **Password** field, type the password for the user to connect to the Recovery Catalog database.
 - In the **Confirm Password** box, re-type the password for the user.
 - Click OK.
- 9. Click the Storage Device tab.
 - In the **Storage Policy used for user command backup of data** box, select a storage policy name.

10. • Click the **Logs Backup** tab.

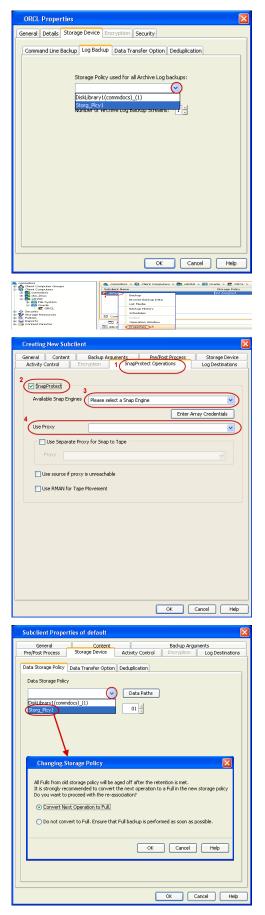
- In the **Storage Policy used for all Archive Log backups** box, select a storage policy name.
- Click OK.

- 11. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle | <Instance>.
 - Right-click the default subclient and then click Properties.
- **12.** Click the **SnapProtect Operations** tab.
 - Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
 - Select the storage array from the **Available Snap Engine** dropdown list.
 - From the Use Proxy list, select the MediaAgent where backup copy operations will be performed.
 - When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.
 - For clustered environments, ensure the proxy you want to select is not part of a cluster setup.

13. • Click the **Storage Device** tab.

- In the **Data Storage Policy** list, select a Storage Policy name.
- Click **OK** to convert the next backup as a full backup.
- Click OK.

Click Next \blacktriangleright to continue. If you do not have Storage Policy created, follow the step given below to create a storage policy.



14. Create a Storage Policy:

- 1. Click Create Storage Policy.
- 2. Follow the prompts displayed in the Storage Policy Wizard. The required options are mentioned below:
 - Select the Storage Policy type as Data Protection and Archiving and click Next.
 - Enter the name in the Storage Policy Name box and click Next.
 - From the Library list, click the name of a disk library to which the primary copy should be associated and then click Next.
 Ensure that you select a library attached to a MediaAgent operating in the current release.
 - From the MediaAgent list, click the name of a MediaAgent that will be used to create the primary copy and then click Next.
 - For the device streams and the retention criteria information, click **Next** to accept default values.
 - Select **Yes** to enable deduplication for the primary copy.
 - From the **MediaAgent** list, click the name of the MediaAgent that will be used to store the Deduplication store.
 - Type the name of the folder in which the deduplication database must be located in the Deduplication Store Location or click the Browse button to select the folder and then click **Next**.
 - Review the details and click **Finish** to create the Storage Policy.

SKIP THIS SECTION IF NOT USING SOLARIS.

Click Next 🕨 to Continue.

1.

ENABLE SNAPPROTECT BACKUPS ON SOLARIS ZONE

Follow the steps given below to enable SnapProtect backups on each of the non-global zone clients containing the application data.

- From the CommCell Console, navigate to Client Computers | < Client >.
- Right-click the client and select **Properties**.

- 2. Click Advanced tab.
 - Select the Global Zone host name from the drop-down list.
 - Click OK.
 - We support disks on a global zone mounted using loopback File System on a non global zone.
 - This option need not be enabled if you are using a NFS share. This is because when using NFS mount paths, the operations are limited to the non-global zone and does not use the global zone.

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CommCell Browser P	What's new? ×
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Client Computer Groups	What's new?
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 Repeat the above steps on all the non-global zone clients containing the application data.

SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

CREATE A SNAPSHOT COPY

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Create New Snapshot Copy**.

Ple Vew Tools Windows Help	
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- Enter the copy name in the **Copy Name** field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.

CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

Next >

i File Yew Tools Windows Help D 🔽 🔛 🛂 📽 🔛 📠 🖼 🕉 - 🔐 🚺 🤡 ent Default Drive ... Scratch Pool Ret N/A N/A Infin N/A N/A Infin Copy Type Default Library Medialog Primary Nagnetic_01 murphy Primary Snap Nagnetic_01 murphy 🖽 Content 🖪 Summary 3ab Controller × 🔽 Job Controller FL., Job ID Operation Client Co... Agent Type Subclient Job Type Phase Storage... Med II Pause Playing Running: 0 Pending: 0 Walting: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams: 0 Hig Event W
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- Click the **Snapshot** tab.
 - Select Enable Backup Copy option to enable movement of snapshots to media.
 - Click OK.

Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS	SOFTWARE STORAGE ARRAY	
3PAR	DATA REPLICATOR	
DELL COMPELLENT		
DELL EQUALLOGIC		
EMC CLARIION, VNX		
EMC SYMMETRIX		
FUJITSU ETERNUS DX		
HITACHI DATA SYSTEMS		
HP EVA		
IBM SVC		
IBM XIV		
LSI		
ΝΕΤΑΡΡ		
NETAPP WITH SNAPVAULT/SNAPMIRROR		

Previous Next >>

SnapProtect[™] Backup - 3PAR

< Previous Next >

PRE-REQUISITES

- 3PAR Snap and 3PAR Clone licenses.
- Thin Provisioning (4096G) and Virtual Copy licenses.
- Ensure that all members in the 3PAR array are running firmware version 2.3.1 (MU4) or higher.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



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Control Host fidk.hct.commvault.com 172.19.66.22 172.19.125.226	Name 5001438002 6000279 APM0003340	hct\administr grpadmin admin	HP EVA Dell Equallogic IBM XIV	Description		Edit

What's new?

💅 Alerts

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- Select **3PAR** from the **Snap Vendor** list.
 - Specify the 16-digit number obtained from the device ID of a 3PAR volume in the **Name** field.

Follow the steps given below to calculate the array name for the 3PAR storage device:

- 1. From the 3PAR Management console, click the **Provisioning** tab and navigate to the **Virtual Volumes** node. Click any volume in the **Provisioning** window
- 2. From the Virtual Volume Details section, click the Summary tab and write

down the **WWN** number. This is the device ID of the selected volume.

3. From the **Virtual Volume Details** section, click the **Summary** tab and write down the **WWN** number.

This is the device ID of the selected volume.

This WWN may be 8-Byte number (having 16 Hex digits) or 16 Byte number (having 32 Hex digits).

- 4. Use the following formula to calculate the array name:
 - For 8 Byte WWN (16 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

where $\mathtt{DevID.substr}\left(4,3\right)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr(12,4)}$ is the next 4 digits after the twelfth digit from the WWN number

For example: if the WWN number is 50002AC0012B0B95 (see screenshot given below for 8 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

DevID.substr(4,3) is 2AC and DevID.substr(12,4) is 0B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

• For 16 Byte WWN (32 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

where ${\tt DevID.substr}\,(4,3)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr}\,(26,\,6)$ is the next 6 digits after the twenty sixth digit from the WWN number

For example: if the WWN number is 60002AC50000000000052200000B95 (see screenshot given below for 16 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

DevID.substr(4,3) is 2AC and DevID.substr(26,6) is 000B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

- Enter the IP address of the array in the **Control Host** field.
 - Enter the access information of a local 3PAR Management user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the CPG group created on the array to be used for snapshot operations.

If you do not specify a CPG group, the default CPG group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

4.

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5 Device Group			
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SnapProtect[™] Backup - Dell EqualLogic

PRE-REQUISTIES

WINDOWS

Microsoft iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

UNIX

iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

FIRMWARE VERSION

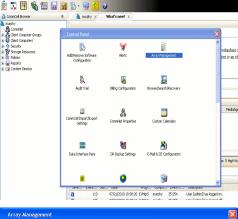
- Ensure that all members in the EqualLogic array are running firmware version 4.2.0 or higher.
- After upgrading the firmware, do either of the following:
 - o Create a new group administration account in the firmware, and set the desired permissions for this account.
 - If you plan to use the existing administration accounts from version prior to 4.2.0, reset the password for these accounts. The password can be the same as the original.

If you do not reset the password, snapshot creation will fail.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



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Next 🕨

Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	
172 19 71 26	MN1963C	admin	TRM VTV		~	

- 2. Click Add.
- **3.** Select **Dell Equallogic** from the **Snap Vendor** list.
 - Specify the Management IP address in the **Name** field.

No entry is required in the **Name** field if there is no Management IP address configured.

• Specify the Group IP address in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Management IP
address and Group IP address for the Dell Equallogic storage device.

- Enter the user access information of the Group Administrator user in the **Username** and **Password** fields.
 - For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones in the **Device Group** field.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the storage pool specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

4.

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	Previous Next >

SnapProtect[™] Backup - EMC Clariion, VNX

Previous Next >

PRE-REQUISITES

LICENSES

- Clariion SnapView and AccessLogix licenses for Snap and Clone.
- SYMAPI Feature: BASE/Symmetrix license required to discover Clariion storage systems.

You can use the following command to check the licenses on the host computer:

C:\SYMAPI\Config> type symapi_licenses.dat

ARRAY SOFTWARE

• EMC Solutions Enabler (6.5.1 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and NaviAgent installed on the client and proxy computers.
- If AccessLogix is not enabled, go to the Navisphere GUI, right-click EMC Clariton Storage System and click Properties. From the Data Access tab, select Enable AccessLogix.
- Clariion storage system should have run successfully through the Navisphere Storage-System Initialization Utility prior to running any Navisphere functionality.
- Ensure enough reserved volumes are configured for SnapView/Snap to work properly.

For EMC VNX:

• EMC Solutions Enabler (7.2 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and Navisphere/Unisphere Host Agent installed on the client and proxy computers.
- VNX storage system should have run successfully through the Unisphere Storage-System Initialization Utility prior to running any Unisphere functionality.

SETUP THE EMC CLARIION

Perform the following steps to provide the required storage for SnapProtect operations:

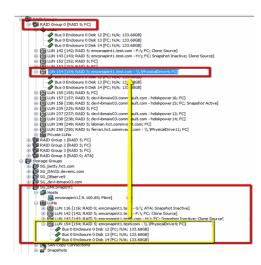
- 1. Create a RAID group
- 2. Bind the LUN
- 3. Create a Storage Group
- 4. Register the client computer (covered by installing NaviAgent)
- 5. Map the LUNs to the client computer where the NaviAgent resides
- 6. Reserved/Clone volumes target properly for SnapView

For example, as shown in the image on the right, the **Clariion ID** of **APM00033400899** has the following configuration:

- a RAID Group 0 provisioned as a RAID-5 group (Fiber Channel drives)
- LUNs are mapped to Storage Group SG_EMCSnapInt1 with LUN ID of #154 present to client computer emcsnapint1.

The example shows the serial number of LUN 154:

- RAID Group: RAID Group 0, containing 3 physical disks
- Storage Group: currently visible to a single client computer
- LUN is shown as a Fiber Channel device
- The devices under LUN 154 reside on RAID Group 0 which has RAID-5 configuration.



AUTHENTICATE CALYPSO USER INFORMATION FOR THE NAVIAGENT

Follow the steps below to specify the authorization information for EMC Solutions Enabler and Navishphere CLI to ensure administrator access to the Navisphere server.

1. To set the authorize information, run the symcfg authorization command for both the storage processors. For example:

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPA IP> -username admin -password password

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPB IP> -username admin -password password

2. Run the following command to ensure that the Clariion database is successfully loaded.

symcfg discover -clariion -file AsstDiscoFile

where AsstDiscoFile is the fully qualified path of a user-created file containing the host name or IP address of each targeted Clariion array. This file should contain one array per line.

3. Create a Navisphere user account on the storage system. For example:

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPA IP> -Scope 0 -User admin -Password password

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPB IP> -Scope 0 -User admin -Password password

- 4. Restart the NaviAgent service.
- 5. Run snapview command from the command line to ensure that the setup is ready.

On Unix computers, you might need to add the Calypso user to the agent.config file.

Before running any commands ensure that the EMC commands are verified against EMC documentation for a particular product and version.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

1.

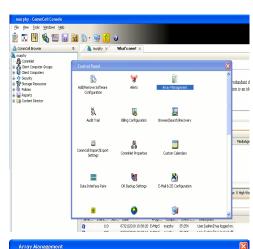
2. Click Add.

- **3.** Select **EMC CLARiiON** from the **Snap Vendor** list for both Clariion and VNX arrays.
 - Specify the serial number of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the serial number for the EMC Clariion storage device.

- Enter the access information of a Navisphere user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
72.19.66.22		grpadmin	Dell Equalogic			Edit
72.19.125.226	6000279	admin	IBM XIV			
72.19.66.91	APM0003340	admin	EMC CLARIION			Delete
72.19.66.69	10881	system	HDS		~	List Snaps
72 19 71 26	Mb1963C	admin	TRM YTV		×	List bridge
				ОК	Cancel	Help

Array Management 🛛 🔀				
1 Snap Vendor				
2 Name				
Control Host				
User Name				
Password				
Confirm Password				
Device Group				
Lise devices only	y from this device group			
	n in and do neo group			
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Array Managemei	nt 🔀	
Snap Vendor	EMC CLARIION	
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Control Host		
User Name		
3 Password		
Confirm Password		
Device Group		
Use devices only	/ from this device group	
Description		
ОК	Cancel Help	
	< Previous	Next >

SnapProtect[™] Backup - EMC Symmetrix

< Previous) Next >

PRE-REQUISITES

• EMC Solutions Enabler (6.4 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

• SYMAPI Feature: BASE /Symmetrix licenses for Snap, Mirror and Clone.

You can use the following command to check the licenses on the host computer:

```
C:\SYMAPI\Config> type symapi_licenses.dat
```

By default, all functionality is already enabled in the EMC Symmetrix hardware layer. However, a Hardware Configuration File (IMPL) must be enabled before
using the array. Contact an EMC Representative to ensure TimeFinder and SRDF functionalities have been configured.

SETUP THE EMC SYMMETRIX

For SnapProtect to function appropriately, LUN Masking records/views must be visible from the host where the backup will take place:

- For DMX, the Masking and Mapping record for vcmdb must be accessible on the host executing the backup.
- For VMAX, the Masking view must be created for the host executing the backup.

CONFIGURE SYMMETRIX GATEKEEPERS

Gatekeepers need to be defined on all MediaAgents in order to allow the Symmetrix API to communicate with the array. Use the following command on each MediaAgent computer:

symgate define -sid <Symmetrix array ID> dev <Symmetrix device name>

where <Symmetrix device name> is a numbered and un-formatted Symmetrix device (e.g., 00C) which has the MPIO policy set as FAILOVER in the MPIO properties of the gatekeeper device.

LOAD THE SYMMETRIX DATABASE

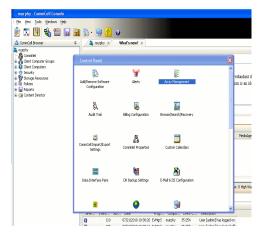
If you have the SYMCLI software installed, it is recommended that you test your local Symmetrix environment by running the following command to ensure that the Symmetrix database is successfully loaded:

symcfg discover

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- з.
- Select EMC Symmetrix from the Snap Vendor list.
- Specify the **Symm ID** of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the Symmetrix array ID (Symm ID) for the EMC Symmetrix storage device.

4.

- If Symcfg Authorization is enabled on the Symmetrix Management Console, enter the access information for the Symmetrix Management Console in the Username and Password fields.
- In the **Device Group** field, specify the name of the device group created on the client and proxy computer. The use of Group Name Service (GNS) is supported.

If you do not specify a device group, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

To understand how the software selects the target devices during $\ensuremath{\mathsf{SnapProtect}}$ operations, click here.

172.19.66.22	User Name Snap Vendor Description V ict\administr HP EVA Irpadmin Dell Equalogic	Edit
	idmin IBM XIV	Delete
172.19.66.69 10881 s	ystem HDS	List Snaps
	OK Cancel	Help
Array Managemer	nt	
1 Snap Vendor	EMC Symmetrix	~
2 Name		\supset
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	/ from this device group	
Description		
ОК	Cancel Help	
	EMC Symmetrix Manage	
File Control Achimistration Help + + Troperties II Config Session II Aler Properties	Refresh View E+Export E E E E E E E E E Conversarial History E Replication Monitor E GoS Monitor	Logout No Alerts
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tests (s)	st a fielder or an object in the tree.	
Constant (%) C	t s fødder av an object in tilte tree.	
Const (%) Const (%)	st a folder or an object in the tree.	
Comparison (2) Device (2)		
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Array Managemen Snap Vendor		
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Array Managemen Snap Vendor Name Control Host	nt	
Array Managemen Snap Vendor Name Control Host User Name	nt	
Array Managemen Snap Vendor Name Control Host User Name Password	nt	
Array Managemen Snap Vendor Name Control Host User Name Password Confirm Password	nt	
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Array Managemen Snap Vendor Name Control Host User Name Password Confirm Password Device Group	EMC Symmetrix	

SnapProtect[™] Backup - Hitachi Data Systems

PRE-REQUISITES

- Device Manager Server (7.1.1 or higher) installed on any computer.
- RAID Manager (01-25-03/05 or higher) installed on the client and proxy computers.
- Device Manager Agent installed on the client and proxy computers and configured to the Device Manager Server.

The hostname of the proxy computer and the client computer should be visible on the Device Manager Server.

- Appropriate licenses for Shadow Image and COW snapshot.
- For VSP, USP, USP-V and AMS 2000 series, create the following to allow COW operations:

COW pools

 $\,\circ\,$ V-VOLs (COW snapshots) that matches the exact block size of P-VOLs devices.

• For HUS, ensure that the source and target devices have the same **Provisioning Attribute** selected. For e.g., if the source is **Full Capacity Mode** then the target device should also be labeled as **Full Capacity Mode**.

ADDITIONAL REQUIREMENTS FOR VMWARE

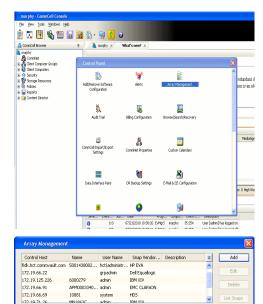
When performing SnapProtect operations on VMware using HDS as the storage array, ensure the following:

- HDS LUNs are exposed to the Virtual Server iDataAgent client and ESX server.
- All HDS pre-requisites are installed and configured on the Virtual Server iDataAgent client computer.
- The Virtual Server client computer is the physical server.
- The Virtual Machine HotAdd feature is not supported.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next >

2. Click Add.

- **3.** Select **HDS** from the **Snap Vendor** list.
 - Specify the serial number of the array in the Name field.

OK Cancel Help

For reference purposes, the screenshot on the right shows the serial number for the HDS storage device.

4.

- Enter the IP address or host name of the Device Manager Server in the **Control Host** field.
 - Enter the user access information in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. The device group should have the following naming convention:

<COW_POOL_ID>-<LABEL> **Or** <LABEL>-<COW_POOL_ID>

where ${\tt COW_POOL_ID}{\tt (for \ COW \ job)}$ should be a number. This parameter is required.

 $<\!\!\! LABEL>$ (for SI job) should not contain special characters, such as hyphens, and should not start with a number. This parameter is optional.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

Alerts		Baroa	USP@172.19.66.94	
Reports		Contail Manual an	039	
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ashboard	* ·	Microsofe DBC	50.49.49.40/10	
D+M P+M		Nicrocode DKC Nicrocode SVP	50.19.79/10	
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		Free Space	109.30 98	
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-		_		
5 D	Device Group			
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6 🤇	Use devices only	/ From this	s device group 🦒	
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	OK	Car	ncel Help	
			<	Previous

Array Management

HDS

Use devices only from this device group

OK

Cancel

Help

NAS/Management

1 Snap Vendor

Description

2 Name Control Host User Name Password Confirm Password Device Group

SnapProtect[™] Backup - HP StorageWorks EVA

< Previous Next >

SETUP THE HP SMI-S EVA

HP-EVA requires Snapshot and Clone licenses for the HP Business Copy EVA feature.

The following steps provide the necessary instructions to setup the HP EVA:

- 1. Download the HP SMI-S EVA and the HP Command View EVA software on a supported server from the HP web site.
- 2. Run the Discoverer tool located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\EVAProvider\bin folder to discover the HP-EVA arrays.
- 3. Use the CLIRefreshTool.bat tool to sync with the SMIS server after using the Command View GUI to perform any active management operations (like adding new host group or LUN). This tool is located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\CXWSCimom\bin folder.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



з.

- Select HP EVA from the Snap Vendor list.
 - Specify the World Wide Name of the array node in the Name field.



Control Host	Name	User Name	Snap Vendor	Description	*	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION			Delete
172.19.66.69	10881	system	HDS			List Snaps
172 19 71 26	MN1963C	admin	TRM YTV		~	List briaps

Array Managemer	nt 🔀
1 Snap Vendor	HP EVA
2 Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	from this device group
Description	
ОК	Cancel Help

The World Wide Name (WWN) is the serial number for the HP EVA storage device. See the screenshot on the right for a WWN example.

The array name must be specified without the dashes used in the WWN e.g., $\tt 50014380025DEB70.$

- 4.
- Enter the name of the management server of the array in the **Control Host** field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

- Enter the user access information in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware disk group created on the array to be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

Be EVA Storage Network	Save chang	ges System options	
Konstanting Konstantin Konstantin Konstantin Konstantin Konstantin	General	Status Summ	ary
I Cal Virtual Disks	Identification		
🖾 🙀 Disk Groups	Name:	EVA440	
Data Replication	Node WWN: UUID:	5001-4380-025D-EB70 6005-08b40002-000	\geq
	UUD:	6005-08640002-000	0
Array Managemen	it		×
Snap Vendor	HP EVA	~	
Name			
3 Control Host			D
User Name			
4 Password			
Confirm Password			ı J
5 Device Group			
	<u> </u>		
6 Use devices only	from this device group	シ	
Description			

OK

Cancel

Help

Previous Next >

SnapProtect[™] Backup - IBM SAN Volume Controller (SVC)

PRE-REQUISITES

- IBM SVC requires the FlashCopy license.
- Ensure that all members in the IBM SVC array are running firmware version 6.1.0.7 or higher.
- Ensure that proxy computers are configured and have access to the storage device by adding a host group with ports and a temporary LUN.

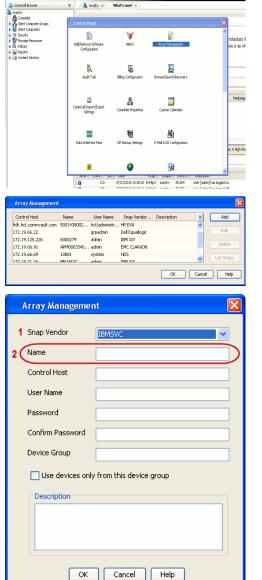
SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBMSVC from the Snap Vendor list.
 - Specify the 16-digit ID of the storage device in the **Name** field.



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The ${\bf ID}$ is the device identification number for the IBM SVC storage device. See the screenshot on the right for reference.

4.

- 44 3.6 TB Co 52% 🗌 🖸 😧 111 Running Tasks Array Management Snap Vendor Name Control Host 3 User Name Password Confirm Password 5 Device Group Use devices only from this device group 6 Description OK Cancel Help
 - < Previous Next >

- Enter the Management IP address or host name of the array in the Control Host field.
 - Enter the user access information of the local application administrator in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the physical storage pools created on the array to be used for snapshot (flash copy) operations.

If you do not specify a device group, the default storage pool will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - IBM XIV

< Previous) Next >

PRE-REQUISITES

- 1. IBM XCLI (2.3 or higher) installed on the client and proxy computers. On Unix computers, XCLI version 2.4.4 should be installed.
- 2. Set the location of XCLI in the environment and system variable path.
- 3. If XCLI is installed on a client or proxy, the client or proxy should be rebooted after appending XCLI location to the system variable path. You can use the XCLI_BINARY_LOCATION registry key to skip rebooting the computer.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- Select IBM XIV from the Snap Vendor list.
 - Specify the 7-digit serial number for the array in the Name field.



Confirm Password Device Group

Description

Use devices only from this device group

OK

Cancel

Help

The **System ID** (S/N) is the serial number for the IBM XIV storage device. See the screenshot on the right for reference.

4.

System Configuration ×

General
System Name
Parameters
System Version
10.22
System 10 (5/N)
6006633 (\$533
10
10/Hostname 1
10/Hostname 1
10/Hostname 1
10/Hostname 3

Update
Cancel

	Array Managemer	it 🔀
	Snap Vendor Name	
3	Control Host	
	User Name	
4	Password	
1	Confirm Password	
	Device Group	
	Use devices only	from this device group
	Description	
	ОК	Cancel Help
		Previous Next

- Enter the IP address or host name of the array in the **Control Host** field.
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - LSI

< Previous (Next >

PREREQUISITES

- Ensure that the LSI Storage Management Initiative Specification (SMIS) server has access to the LSI array through TCP/IP network to perform SnapProtect
 operations.
- Ensure that the client has access to:
 - SMIS server through TCP/IP network.
 - $\circ~$ LSI array through iSCSI or Fiber Channel network.
- Ensure that proxy computers are configured and have access to the storage device by adding a temporary LUN to the "host" using the Storage Management Console.

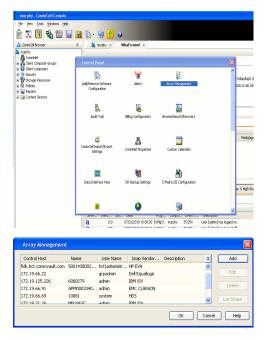
ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using SAN transport mode, ensure that the Client and the ESX Server reside in the same host group configured in the LSI array, as one volume cannot be mapped to multiple host groups.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

з.

- Select LSI from the Snap Vendor list.
 - Specify the serial number for the array in the Name field.

	Control Host
	User Name
	Password
	Confirm Password
	Device Group
	Use devices only from this device group
	Description
	OK Cancel Help
2	👺 san_nas_lsi - Storage Subsystem Prolife
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Array Management

LSI

1 Snap Vendor

2 Name

The **Storage Subsystem world-wide identifier (ID)** is the serial number for the LSI storage device.

Use the SANtricity Storage Manager software to obtain the array name by clicking **Storage Subsystem Profile** from the **Summary** tab. See the screenshot on the right for reference.

- Specify the name of the device manager server where the array was configured in the **Control Host** field.
- Enter the user access information using the LSI SMIS server credentials of a local user in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not have a device group created on the array, specify None.
 - If you specify None in the **Device Group** field but do have a device group created on the array, the default device group will be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

	Array Manageme	nt 🔀	
	Snap Vendor	LSI 👻	
	Name		
3	Control Host		
	User Name		
4	Password		
	Confirm Password		
1	Device Group		
6	Use devices onl	y from this device group	
	Description		
	ОК	Cancel Help	
		< Previous	Next >

SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

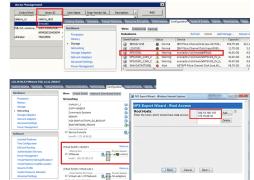
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

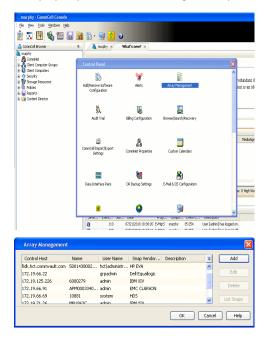
The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor	NebAcc	
	NetApp	×
Name		
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
	Construction and a second	
Use devices oni	y from this device group	
Description		
ОК	Cancel Help	
	(Previous

SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the **Storage Policy** in the **Storage Policy Name** box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

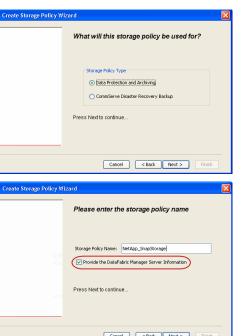
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3.

• In the **Library** list, select the default library to which the Primary Copy should be associated.

It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



Tools Windows Help

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- 5. Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

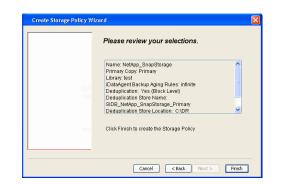
9.	٠	Provide the	DataFabric	Manager	server	information.
----	---	-------------	------------	---------	--------	--------------

- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

Create Storage Policy Wi	zard 🔀
	Please select a MediaAgent for this copy
	MediaAgent: dhaval-2008
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard
	Please enter the streams and retention
	criteria for this policy
	Number of Device Streams:
	Choose the Primary Copy's Aging Rules:
	DataAgent Backup data
	✓ Infinite/ 15 ± Days 2 ± Cycles
	Retain by Jobs 24
	Data Archive/Compliance Archiver
	V Infinite/ 365 Days
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard 🔀
	Do you want to enable Deduplication for the
	primary copy?
	Deduplication
	• Yes
	Enable Client Side Deduplication
	○ No
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard 🔀
	Please specify the location to store the
	Deduplication Store
	Name: SIDB_NetApp_SnapStor Deduplication Store Location:
	MediaAgent Name dhaval-2008
	Location: Browse
	Press Next to continue
	Cancel <back next=""> Finish</back>
Create Storage Policy Wi	zard
	Please select/add the new DataFabric Manager
	information?
	DataFabric Manager:
	Select hwinapp02
	Host Name: venus
	Host Name: venus User Name: admin

10. Click Finish.

Cancel < Back Next > Finish

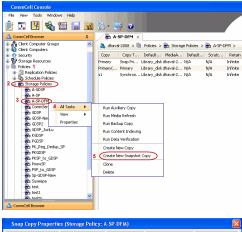


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

3. • Click the **Copy Policy** tab.

• Depending on the topology you want to set up, click **Specify Source for Auxiliary Copy** and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

	Primary	Snap Copy Properties (Storage Policy: A-SP-DFM)
Primary-Mirror-Vault	Mirror	Selective Copy Associations Advanced Deduplication Provisioning General Retention Copy Policy Data Paths Data Path Configuration
Primary-Vault	Primary	
Primary-Vault-Mirror	Vault	Backup Selection
Primary-Mirror-Mirror	Mirror	Al Backups
 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drops available from the Click OK. The secondary snapshot copy is created. 	op-down list.	Backups Chrand Mitter: The Del/07/2011 Partice Copy Image: Source for Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Status CK Cancel Heb Status Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Source Copy: Primary Primary Primary Primary Source Copy: Source For Copy: Primary Primary Primary Primary Source Copy: Source For Copy: Source For Copy Primary Primar

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

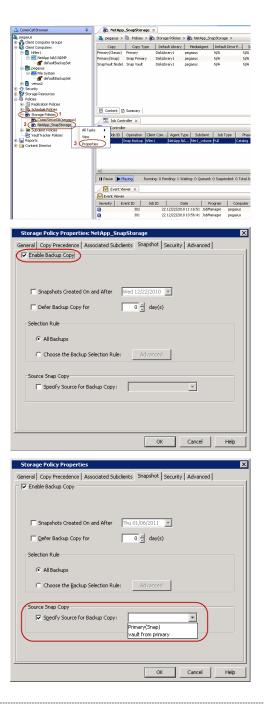
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

~

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

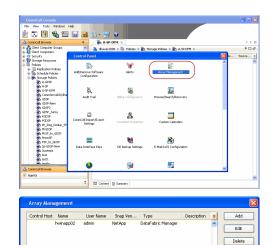
- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

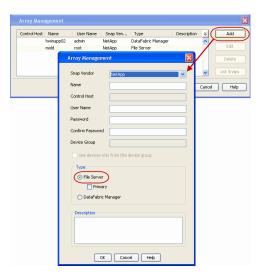
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Page 2	07 of	742



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	Confirm Password	
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	Use devices only	r from this device group
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	Description	
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SEE ALSO

Import Wizard Tool

Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

SnapProtect[™] Backup - Data Replicator

< Previous (Next >

PRE-REQUISITES

INSTALLATION

• The use of Data Replicator with the SnapProtect backup requires MediaAgent, File System *i*DataAgent, and ContinuousDataReplicator on the source, destination, and proxy computers.

The use of a proxy server to perform SnapProtect operations is supported when a hardware storage array is used for performing the SnapProtect backup.

• The operating system of the MediaAgent to be used for SnapProtect backup must be either the same or higher version than the source computer.

STORAGE POLICY REQUIREMENTS

The Primary Snap Copy to be used for creating the snapshot copy must be a disk library.

If the Storage Policy or the disk library being used by the subclient is updated, the subclient should be recreated.

SETUP THE ARRAY

- From the CommCell Console, navigate to **<Client>** | **<Agent>**.
 - Right-click the subclient and click **Properties**.
- Click the **SnapProtect Operations** tab.
 - Ensure **Data Replicator** is selected from the **Available Snap Engine** drop-down list.
 - Click OK.

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Getting Started Backup - Oracle iDataAgent

Previous Next >

- From the CommCell Browser, navigate to Client Computers | <Client> | Oracle | <Instance>.
 - Right-click the default subclient and click Backup.
- 2. Click Full as backup type and then click Immediate.
 - Click OK.
- 3. You can track the progress of the job from the **Job Controller** window of the CommCell console.
- 4. Once the job is complete, view the job details from the **Backup History**. Right-click the **Subclient** and select **Backup History**.
- 5. Click OK.

- 6. Right-click the job to:
 - Browse the database that was backed up.
 - View RMAN Logs.
 - Resubmit the job.
 - View job details.
 - View media associated with the job.
 - View events associated with the job.
 - View or send the log file that is associated with the job.

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Getting Started - Vault/Mirror Copy

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SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- **1.** From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

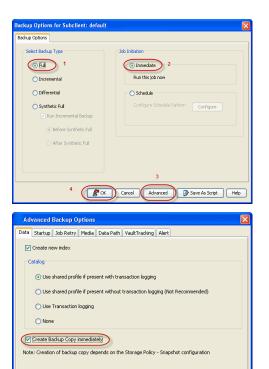
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

Cancel Help

(OK

User Guide - SnapProtect

2. Click OK.

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Getting Started - Oracle Restore



PERFORM A RESTORE

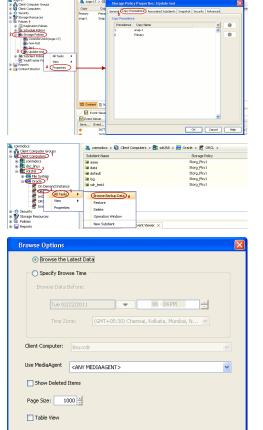
As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following sections explain the steps for restoring a database.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.
 - You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.
 - Click OK.
 - From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
 - Right-click the *<Instance>*, point to **All Tasks**, and then click **Browse Backup Data**.
- 3. Click OK.

2.

5.



Cancel Advanced List Media

Help

ed... New Browse...

OK

Crade

- In the right pane of the Browse window, click the <*Instance*> and select all the entities.
 - Click Recover All Selected.
 - Select the Use Snap Restore checkbox.
 - If you are restoring from a backup copy, clear the checkbox.
 - Click Advanced.

Verify that the Status of the database is displayed as STARTED; if necessary click the **Refresh** button to refresh the status.

• Click the **Options** tab.

- In the **Reset Logs** box, select **None**.
- Select the Switch Database mode for Restore checkbox.
- Click OK.

7. Click **OK**.

7. You can monitor the progress of the restore job in the **Job Controller**.

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- 8.
- Once the database is restored, verify that the restored database and log files are available in the original location.

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CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.

< Previous (Next >

Getting Started - Microsoft SQL Server Deployment



WHERE TO INSTALL

Install the software on a computer on which SQL Server resides.

BEFORE YOU BEGIN

Download Software Packages

Download the latest software package to perform the install.

SnapProtect Support - Platforms

Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE MICROSOFT SQL SERVER /DATAAGENT

Use the following procedure to directly install the software from the installation package or a network drive.

- 1. Log on to the client computer as Administrator or as a member of the Administrator group on that computer.
- 2. Run Setup.exe from the Software Installation Package.

If you are installing on Windows Server Core editions, navigate to Software Installation Package through command line, and then run **Setup.exe**.

3. Select the required language.

Click Next.

	Select the language you will use during installation. (English (United States)
	Next > Cancel
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	≓ Install Software on this computer ≓ Advanced options
	View documentation website
	View Install Quick Start Guide (Requires Adobe Acrobat Reader)
	🖨 Install Adobe Acrobat Reader
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	License Agreement
	Please read the following License Agreement. Press the PAGE DOWN key to view the entire agreement.
	End User License and Limited Warranty Agreement
	Software Release 9.0.0
	(including Microsoft® SQL Server™ 2008 Enterprise Edition, SQL Server™ 2008 Express Edition and Windows Pre-Installation Environment)
	End Hoov I isource Armounut
	I accept the terms in the license agreement.
	C I do not accept the terms in the license agreement.
	Installer
	< Back Next> Cancel

4. Select the option to install software on this computer.

The options that appear on this screen depend on the computer in which the software is being installed.

5. Select I accept the terms in the license agreement. Click Next.

6. • Expand Client Modules | Backup & Recovery | Database and select SQL Server *i*DataAgent.

- Expand Common Technology Engine | MediaAgent Modules, and select MediaAgent.
- Expand Client Modules | ContinuousDataReplicator, and select VSS Provider.
- Click Next.

7. If this computer and the CommServe is separated by a firewall, select the **Configure firewall services** option and then click **Next**.

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

If firewall configuration is not required, click Next.

8.	Enter the fully qualified domain name of the $\ensuremath{\textbf{CommServe Host Name}}.$
	Click Next.

Do not use space and the following characters when specifying a new name for the CommServe Host Name:

\|`~!@#\$%^&*()+=<>/?,[]{}:;'"

9. Click Next.

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10. Select Add programs to the Windows Firewall Exclusion List, to add CommCell programs and services to the Windows Firewall Exclusion List.

Click Next.

This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion list.

It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.

It is recommended to select the **Download latest update pack(s)** option to automatically install the available updates during installation.

12. Verify the default location for software installation.

Click $\ensuremath{\textbf{Browse}}$ to change the default location.

Click Next.

- Do not install the software to a mapped network drive.
- Do not install the software on a system drive or mount point that will be used as content for SnapProtect backup operations.
- Do not use the following characters when specifying the destination path:

/:*?"<>|#

It is recommended that you use alphanumeric characters only.

13. Select a Client Group from the list.

Click Next.

This screen will be displayed if Client Groups are configured in the CommCell Console.

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14. Click Next.

15. Select Yes to stop Removable Storage Services on the MediaAgent. Click Next.

This prompt will not appear if Removable Storage Services are already disabled on the computer. $% \left({{{\left({{{{\bf{n}}}} \right)}_{i}}}_{i}} \right)$

16. Click Next.

17. Select a Storage Policy. Click Next.

18. Click Next.

When **Auto Discover Instances** is enabled, new instances are automatically discovered every 24 hours.

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20. Click Next.

21. Click Finish.

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Summary of install selections	
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install settings, click Next to begin copying files.	
The following software will be installed :	<u>~</u>
+ MediaAgent + Windows File System iDataAgent	
+ SQL Server DataAgent + VSS Provider	
Destination Path = C:\Program Files\ CommServe Host = mycomputer.mycompany.com Interface Name = audi.mycompany.com	
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Getting Started - Microsoft SQL Server Configuration

Previous Next >

PRE-REQUISITES

- Prior to performing a SnapProtect backup, ensure that all the available hotfixes for Virtual Disk Service (VDS) and VSS are applied.
- When performing SnapProtect backup for a Windows Cluster, a proxy server must be used for performing backup and restore operations.
- SnapProtect backup on Windows supports basic disks.

CONFIGURATION

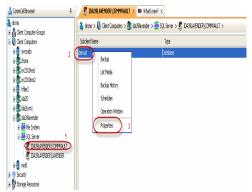
1.

Once the SQL Server *i*DataAgent has been installed, a SQL Server instance is automatically created. The following section provides the necessary steps required to associate a database to the subclient to perform your first SnapProtect backup.

- From the CommCell Browser, navigate to Client Computers | < Client >.
 - Right-click the client and select Properties.

- Click on the **Advanced** tab.
 - Select the Enable SnapProtect option to enable SnapProtect backup for the client.
 - Click OK.

aptop Backup Laptop Back network Ba Job Controller 🔍 Job Controller FL...] Job ID Operation Client Co.... Agent Type Subclient Job Type Phase Storage II Pause Pia Eveni nurphy nurphy Groups Firewall Configuration Network Throttling Poli ontent Indexing Registry Key Settings Client Side Deduplicat Job Conf Browse Enable SnapProtect Enable retry or Retry Frequency (30 ÷ Retry Count 40 ÷ OK Cancel Help



- From the CommCell Browser, navigate to <*Client*> | SQL Server.
 - Right-click the default subclient and click **Properties**.

5.

6.

- 4. Click the **Storage Device** tab.
 - In the **Storage Policy** box, select the storage policy name.

Subclient Properties of default			X
General Content	Backup Rules	Pre	Post Process
Storage Device Activity (0 Security	SQL Settings
1 Data Storage Policy Log Storage Policy	y Data Transfer Option 1	Deduplication	
Storage Policy:			
ex snap	V	2	Data Paths
Incremental Storage Policy:	N/A		
Create Storage Policy			
Number of streams for data backup:	1 -		
		СК	Cancel Help

- Click the SnapProtect Operations tab.
- Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
- Select the storage array from the Available Snap Engine drop-down list.
- From the **Use Proxy** list, select the MediaAgent where SnapProtect and backup copy operations will be performed.
 - When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.
- Click **Use Separate Proxy for Snap to Tape** if you want to perform backup copy operations in a different MediaAgent.

Select the MediaAgent from the **Proxy** list.

- Select the Content tab.
 - Click **Configure** to discover and associate databases to the subclient.

Subclient Properties of SP SQL snap	
General Content Backup Rules Pre/Post Process Storage De Encryption 1 SnapProtect Operations Security	
Encryption 1 SnapProtect Operations Security	SQL Settings
2 SnapProtect (Applicable only to Full and Differential jobs)	
Available Snap Engines	$>^3$
Enter Array Credentials	
Use Proxy	
Use Separate Proxy for Snap to Tape	
Proxy.	
Use source if proxy is unreachable	
ОК	ancel Help
Subclient Properties of default	×
	Security SQL Settings ackup Rules
General Content Ba Database List: 1	ickup Rules
Total: 0 database(s).	nfigure Delete

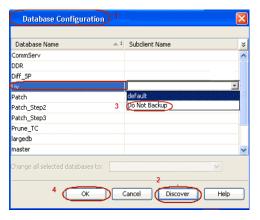
Click Discover.

- Select a database to be backed up from the Database Name column.
- Databases that you want to exclude from backups can be assigned to **Do Not Backup** subclient. This data will never be backed up without manually initiating a backup.

You can select a range of databases and use **Change all selected databases to** drop-down list to assign a single subclient to all the databases.

OK Cancel He

- Click OK.
- Click **OK** from the **Subclient Properties** window.



SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

CREATE A SNAPSHOT COPY

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- 1. From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Create New Snapshot Copy.

File View Tools Windows Help	
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🛆 CommCell Browser 🛛 🔍	B Storage_Snap × What's new? ×
a nurphy Consultat	🙇 murphy > 🐚 Policies > 🚠 Storage Policies > ሕ Storage_Snap >
Committee Committee Client Computer Groups Client Computers	Copy Copy Type Default Library MediaAgent Default Drive Scratch Pool
	Primary Primary Magnetic_01 marphy NJA N/A
🛞 🏧 File System	
murphy_2 Security	
Storage Resources Policies	
Replication Policies	
Schedule Policies A Storage Policies	Content D Summary
CommGerveDR(murphy)	S Job Controller ×
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VaultTracket Verv >	Run Media Befresh
B Reports Properties Original Content Director	Run Content Indexing
	Run Data Verification
	Create New Copy
\subseteq	Create New Snapshot Copy
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	a 117 10 07/21/2010 12:00:12 JobMa murphy 19:322 Data Aging operation has
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🛆 CommCell Browser	[2] 110 07/21/2010 10:38:20 EvMgr5 murphy 35:254 User [admin] has logged on.
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Snap Copy Propert	ties (Storage Policy: Storage_policy01)
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Selective Copy General Retention Copy Information Copy Name: Primary Copy Default Index Destination Library: MediaAgent: Drive Pool: Scratch Bool:	Associations Advanced Deduplication Copy Policy Data Paths Data Path Configuration

2. • Enter the copy name in the **Copy Name** field.

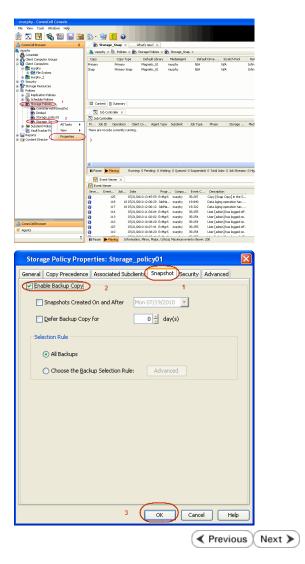
- Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
- Click OK.

CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

Next 🕨

- 1. From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**



- Click the **Snapshot** tab.
 - Select Enable Backup Copy option to enable movement of snapshots to media.
 - Click OK.

Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS	SOFTWARE STORAGE ARRAY	
3PAR	DATA REPLICATOR	
DELL COMPELLENT		
DELL EQUALLOGIC		
EMC CLARIION, VNX		
EMC SYMMETRIX		
FUJITSU ETERNUS DX		
HITACHI DATA SYSTEMS		
HP EVA		
IBM SVC		
IBM XIV		
LSI		
NETAPP		
NETAPP WITH SNAPVAULT/SNAPMIRROR		
NIMBLE		

Previous Next >>

SnapProtect[™] Backup - 3PAR

< Previous Next >

PRE-REQUISITES

- 3PAR Snap and 3PAR Clone licenses.
- Thin Provisioning (4096G) and Virtual Copy licenses.
- Ensure that all members in the 3PAR array are running firmware version 2.3.1 (MU4) or higher.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



3.

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Array Managemen					
Control Host	Name	User Name	Snap Vendor	Description	× Add
Control 110sc					
fidk.hct.commvault.com		hct\administr		beschption	^
		hct\administr grpadmin		Description	Edit
fidk.hct.commvault.com			HP EVA	Compton	Edit
fidk.hct.commvault.com 172.19.66.22	5001438002	grpadmin admin	HP EVA Dell Equalogic	Compton	^

What's new?

💅 Alerts

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OK Cancel Help

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13

Audit Trai

- Select **3PAR** from the **Snap Vendor** list.
 - Specify the 16-digit number obtained from the device ID of a 3PAR volume in the **Name** field.

Array Managemer	it 🔀
1 Snap Vendor	3PAR 💌
2 Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	from this device group
Description	
ОК	Cancel Help

Follow the steps given below to calculate the array name for the 3PAR storage device:

- 1. From the 3PAR Management console, click the **Provisioning** tab and navigate to the **Virtual Volumes** node. Click any volume in the **Provisioning** window
- 2. From the Virtual Volume Details section, click the Summary tab and write

down the **WWN** number. This is the device ID of the selected volume.

3. From the **Virtual Volume Details** section, click the **Summary** tab and write down the **WWN** number.

This is the device ID of the selected volume.

This WWN may be 8-Byte number (having 16 Hex digits) or 16 Byte number (having 32 Hex digits).

- 4. Use the following formula to calculate the array name:
 - For 8 Byte WWN (16 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

where $\mathtt{DevID.substr}\left(4,3\right)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr(12,4)}$ is the next 4 digits after the twelfth digit from the WWN number

For example: if the WWN number is 50002AC0012B0B95 (see screenshot given below for 8 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

DevID.substr(4,3) is 2AC and DevID.substr(12,4) is 0B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

• For 16 Byte WWN (32 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

where ${\tt DevID.substr}\,(4,3)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr}\,(26,\,6)$ is the next 6 digits after the twenty sixth digit from the WWN number

For example: if the WWN number is 60002AC50000000000052200000B95 (see screenshot given below for 16 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

DevID.substr(4,3) is 2AC and DevID.substr(26,6) is 000B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

- Enter the IP address of the array in the **Control Host** field.
 - Enter the access information of a local 3PAR Management user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the CPG group created on the array to be used for snapshot operations.

If you do not specify a CPG group, the default CPG group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

4.

	16 Byte WWN		Byte WWN
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5 Device Group		
6 Use devices of	only from this device group	
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SnapProtect[™] Backup - Dell Compellent

< Previous) Next >

PRE-REQUISTIES

- Dell Compellent requires the Data Instant Replay license.
- Ensure that all members in the Compellent array are running firmware version Storage Center 5.5.14 and above for 5.x and 6.2.2 and above for 6.x.

SETUP THE ARRAY INFORMATION

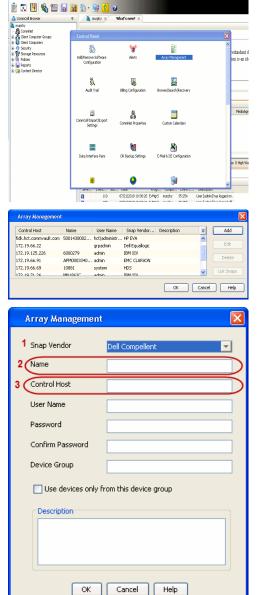
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- **3.** Select **Dell Compellent** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name and Control Host fields.

The Management IP address is also referred as the Storage Center IP address.



For reference purposes, the screenshot on the right shows the Storage Center Management Console of the Dell Compellent storage device displaying the Management IP address. 4.

- DELL Co ent 🔍 Vev 📫 Refresh 🕯 1.6 rties - Storage Cent , Ce rol Storage Data P nim Cate Dok Sparry 245 ary C Type: 19.54 GB 2,000 1,750 1,500 1,250 Array Management Snap Vendor Dell Compellent Name Control Host User Name 4 Password Confirm Password Device Group 5 Use devices only from this device group Description OK Cancel Help Previous Next >
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- In the Device Group field, type none as this array does not use device groups for snapshot operations.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - Dell EqualLogic

PRE-REQUISTIES

WINDOWS

Microsoft iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

UNIX

iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

FIRMWARE VERSION

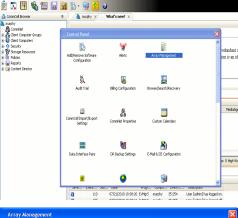
- Ensure that all members in the EqualLogic array are running firmware version 4.2.0 or higher.
- After upgrading the firmware, do either of the following:
 - o Create a new group administration account in the firmware, and set the desired permissions for this account.
 - If you plan to use the existing administration accounts from version prior to 4.2.0, reset the password for these accounts. The password can be the same as the original.

If you do not reset the password, snapshot creation will fail.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next 🕨

Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			Delete
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	List Snap
172 19 71 26	MN1963C	admin	TRM YTV		×	LISC DITOP

- 2. Click Add.
- **3.** Select **Dell Equallogic** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name field.

No entry is required in the **Name** field if there is no Management IP address configured.

• Specify the Group IP address in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Management IP
address and Group IP address for the Dell Equallogic storage device.

- Enter the user access information of the Group Administrator user in the **Username** and **Password** fields.
 - For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones in the **Device Group** field.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the storage pool specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

4.

Array Manageme	nt 🔀
1 Snap Vendor	Dell Equallogic
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Snap Vendor	Dell Equallogic
Name	
Control Host	
User Name	
4 Password	
Confirm Password	
5 Device Group	
6 Use devices only	y from this device group
Description	
ОК	Cancel Help
	Previous Next >

SnapProtect[™] Backup - EMC Clariion, VNX

Previous Next >

PRE-REQUISITES

LICENSES

- Clariion SnapView and AccessLogix licenses for Snap and Clone.
- SYMAPI Feature: BASE/Symmetrix license required to discover Clariion storage systems.

You can use the following command to check the licenses on the host computer:

C:\SYMAPI\Config> type symapi_licenses.dat

ARRAY SOFTWARE

• EMC Solutions Enabler (6.5.1 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and NaviAgent installed on the client and proxy computers.
- If AccessLogix is not enabled, go to the Navisphere GUI, right-click EMC Clariton Storage System and click Properties. From the Data Access tab, select Enable AccessLogix.
- Clariion storage system should have run successfully through the Navisphere Storage-System Initialization Utility prior to running any Navisphere functionality.
- Ensure enough reserved volumes are configured for SnapView/Snap to work properly.

For EMC VNX:

• EMC Solutions Enabler (7.2 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and Navisphere/Unisphere Host Agent installed on the client and proxy computers.
- VNX storage system should have run successfully through the Unisphere Storage-System Initialization Utility prior to running any Unisphere functionality.

SETUP THE EMC CLARIION

Perform the following steps to provide the required storage for SnapProtect operations:

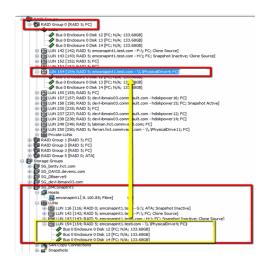
- 1. Create a RAID group
- 2. Bind the LUN
- 3. Create a Storage Group
- 4. Register the client computer (covered by installing NaviAgent)
- 5. Map the LUNs to the client computer where the NaviAgent resides
- 6. Reserved/Clone volumes target properly for SnapView

For example, as shown in the image on the right, the **Clariion ID** of **APM00033400899** has the following configuration:

- a RAID Group 0 provisioned as a RAID-5 group (Fiber Channel drives)
- LUNs are mapped to Storage Group SG_EMCSnapInt1 with LUN ID of #154 present to client computer emcsnapint1.

The example shows the serial number of LUN 154:

- RAID Group: RAID Group 0, containing 3 physical disks
- Storage Group: currently visible to a single client computer
- LUN is shown as a Fiber Channel device
- The devices under LUN 154 reside on RAID Group 0 which has RAID-5 configuration.



AUTHENTICATE CALYPSO USER INFORMATION FOR THE NAVIAGENT

Follow the steps below to specify the authorization information for EMC Solutions Enabler and Navishphere CLI to ensure administrator access to the Navisphere server.

1. To set the authorize information, run the symcfg authorization command for both the storage processors. For example:

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPA IP> -username admin -password password

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPB IP> -username admin -password password

2. Run the following command to ensure that the Clariion database is successfully loaded.

symcfg discover -clariion -file AsstDiscoFile

where AsstDiscoFile is the fully qualified path of a user-created file containing the host name or IP address of each targeted Clariion array. This file should contain one array per line.

3. Create a Navisphere user account on the storage system. For example:

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPA IP> -Scope 0 -User admin -Password password

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPB IP> -Scope 0 -User admin -Password password

- 4. Restart the NaviAgent service.
- 5. Run snapview command from the command line to ensure that the setup is ready.

On Unix computers, you might need to add the Calypso user to the agent.config file.

Before running any commands ensure that the EMC commands are verified against EMC documentation for a particular product and version.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

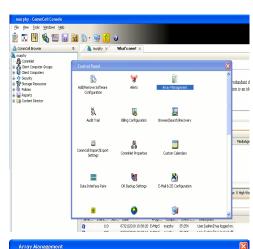
1.

2. Click Add.

- **3.** Select **EMC CLARiiON** from the **Snap Vendor** list for both Clariion and VNX arrays.
 - Specify the serial number of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the serial number for the EMC Clariion storage device.

- Enter the access information of a Navisphere user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS			List Snaps
172 19 71 26	MM1963C	admin	TRM VIV		~	List bridps

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1 Snap Vendor		
2 Name)
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Device Group		
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	< Previous	Next >

SnapProtect[™] Backup - EMC Symmetrix

< Previous) Next >

PRE-REQUISITES

• EMC Solutions Enabler (6.4 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

• SYMAPI Feature: BASE /Symmetrix licenses for Snap, Mirror and Clone.

You can use the following command to check the licenses on the host computer:

```
C:\SYMAPI\Config> type symapi_licenses.dat
```

By default, all functionality is already enabled in the EMC Symmetrix hardware layer. However, a Hardware Configuration File (IMPL) must be enabled before
using the array. Contact an EMC Representative to ensure TimeFinder and SRDF functionalities have been configured.

SETUP THE EMC SYMMETRIX

For SnapProtect to function appropriately, LUN Masking records/views must be visible from the host where the backup will take place:

- For DMX, the Masking and Mapping record for vcmdb must be accessible on the host executing the backup.
- For VMAX, the Masking view must be created for the host executing the backup.

CONFIGURE SYMMETRIX GATEKEEPERS

Gatekeepers need to be defined on all MediaAgents in order to allow the Symmetrix API to communicate with the array. Use the following command on each MediaAgent computer:

symgate define -sid <Symmetrix array ID> dev <Symmetrix device name>

where <Symmetrix device name> is a numbered and un-formatted Symmetrix device (e.g., 00C) which has the MPIO policy set as FAILOVER in the MPIO properties of the gatekeeper device.

LOAD THE SYMMETRIX DATABASE

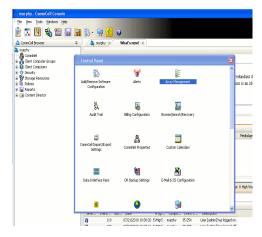
If you have the SYMCLI software installed, it is recommended that you test your local Symmetrix environment by running the following command to ensure that the Symmetrix database is successfully loaded:

symcfg discover

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- 3.
- Select EMC Symmetrix from the Snap Vendor list.
- Specify the **Symm ID** of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the Symmetrix array ID (Symm ID) for the EMC Symmetrix storage device.

4.

- If Symcfg Authorization is enabled on the Symmetrix Management Console, enter the access information for the Symmetrix Management Console in the Username and Password fields.
- In the **Device Group** field, specify the name of the device group created on the client and proxy computer. The use of Group Name Service (GNS) is supported.

If you do not specify a device group, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

To understand how the software selects the target devices during $\ensuremath{\mathsf{SnapProtect}}$ operations, click here.

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SnapProtect[™] Backup - Fujitsu ETERNUS DX

< Previous Next >

PRE-REQUISITES

- Local Copy license for Snap and Clone.
- Thin Provisioning license.
- Ensure that all members in the Fujitsu array are running firmware version V10L22-1000 or higher.
- Enable SMI-S on the storage array.
- Create a Host Affinity group for the proxy computer.
- If using SnapOPC, ensure to create a SDV and SDPV volumes.

CONFIGURE DESTINATION VOLUMES

- Source and destination volumes should be pre-paired before performing any snapshot operation. For EC snapshots (clone), pre-paired sessions should be in active state.
- To pre-pair source and destination volumes, install the ETERNUS SF Express Manager software version 14.2A or higher.
- Forbid Advanced Copy and Encrypted volumes are not supported.
- Depending on the type of snapshot being used, review the following for the creation of destination volumes:

FOR SNAP SNAPSHOTS

If pre-paired sessions are not available, SnapOPC snapshots use any available SDV volumes as their destination volumes. If you need to create a new SDV volume, ensure that the SDV volume is of equal size to the source volume.

FOR CLONE SNAPSHOTS

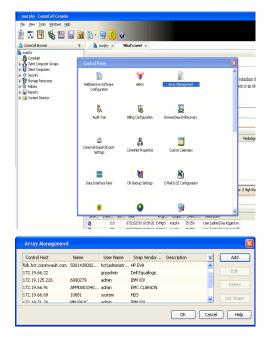
If pre-paired sessions are not available, destination volumes are automatically created for clone snapshots. If a non-existing device group is specified during array configuration in the CommCell Console, a destination volume is created based on the source volume type. However, if a valid device group is specified, the following destination volumes are created depending on the device group type:

- $\circ\,$ A Thin Provisioning volume is created if the device group is a Thin Provisioning pool.
- $\,\circ\,$ A standalone volume is created if the device group is a RAID group.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- Select Fujitsu ETERNUS from the Snap Vendor list.
 - Specify the CM IP Address of the array in the Name field.

For reference purposes,	the	screenshot	on	the	right	shows	the	СМ	IΡ	Address	for	the
Fujitsu storage device.												

4.

- Enter the CM IP Address of the array in the **Control Host** field.
 - Enter the access information of a user with administrative privileges in the Username and Password fields.
 - In the **Device Group** field, specify the name of the RAID group or Thin Provisioning group created on the array to be used for clone operations. Device groups are not applicable for Snap snapshots.
 - Select the Use devices only from this device group option to use only the snapshot devices available in the device group specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

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6 Use devices or Description	Ily from this device group	
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Array Management

Fujitsu ETERNUS

Use devices only from this device group

1 Snap Vendor

Control Host User Name Password Confirm Password Device Group

Description

2 Name

SnapProtect[™] Backup - Hitachi Data Systems

PRE-REQUISITES

- Device Manager Server (7.1.1 or higher) installed on any computer.
- RAID Manager (01-25-03/05 or higher) installed on the client and proxy computers.
- Device Manager Agent installed on the client and proxy computers and configured to the Device Manager Server.

The hostname of the proxy computer and the client computer should be visible on the Device Manager Server.

- Appropriate licenses for Shadow Image and COW snapshot.
- For VSP, USP, USP-V and AMS 2000 series, create the following to allow COW operations:

COW pools

 $\,\circ\,$ V-VOLs (COW snapshots) that matches the exact block size of P-VOLs devices.

• For HUS, ensure that the source and target devices have the same **Provisioning Attribute** selected. For e.g., if the source is **Full Capacity Mode** then the target device should also be labeled as **Full Capacity Mode**.

ADDITIONAL REQUIREMENTS FOR VMWARE

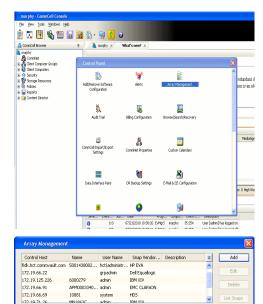
When performing SnapProtect operations on VMware using HDS as the storage array, ensure the following:

- HDS LUNs are exposed to the Virtual Server iDataAgent client and ESX server.
- All HDS pre-requisites are installed and configured on the Virtual Server iDataAgent client computer.
- The Virtual Server client computer is the physical server.
- The Virtual Machine HotAdd feature is not supported.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next >

2. Click Add.

- **3.** Select **HDS** from the **Snap Vendor** list.
 - Specify the serial number of the array in the Name field.

OK Cancel Help

For reference purposes, the screenshot on the right shows the serial number for the HDS storage device.

4.

- Enter the IP address or host name of the Device Manager Server in the **Control Host** field.
 - Enter the user access information in the Username and Password fields.
 - In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. The device group should have the following naming convention:

<COW_POOL_ID>-<LABEL> **Or** <LABEL>-<COW_POOL_ID>

where ${\tt COW_POOL_ID}{\tt (for \ COW \ job)}$ should be a number. This parameter is required.

 $<\!\!\! LABEL>$ (for SI job) should not contain special characters, such as hyphens, and should not start with a number. This parameter is optional.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

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Array Management

HDS

Use devices only from this device group

OK

Cancel

Help

NAS/Management

1 Snap Vendor

Description

2 Name Control Host User Name Password Confirm Password Device Group

SnapProtect[™] Backup - HP StorageWorks EVA

< Previous Next >

SETUP THE HP SMI-S EVA

HP-EVA requires Snapshot and Clone licenses for the HP Business Copy EVA feature.

The following steps provide the necessary instructions to setup the HP EVA:

- 1. Download the HP SMI-S EVA and the HP Command View EVA software on a supported server from the HP web site.
- 2. Run the Discoverer tool located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\EVAProvider\bin folder to discover the HP-EVA arrays.
- 3. Use the CLIRefreshTool.bat tool to sync with the SMIS server after using the Command View GUI to perform any active management operations (like adding new host group or LUN). This tool is located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\CXWSCimom\bin folder.

SETUP THE ARRAY INFORMATION

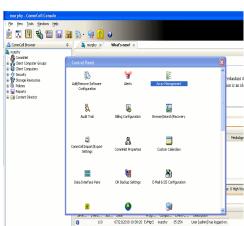
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



з.

- Select HP EVA from the Snap Vendor list.
 - Specify the World Wide Name of the array node in the Name field.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
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72.19.125.226	6000279	admin	IBM XIV			
72.19.66.91	APM0003340	admin	EMC CLARIION			Delete
72.19.66.69	10881	system	HDS			List Snaps
172 19 71 26	Mb11963C	admin	TRM YTV		~	List priaps

Array Managemer	nt 🔀
1 Snap Vendor	HP EVA
2 Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	from this device group
Description	
ОК	Cancel Help

The World Wide Name (WWN) is the serial number for the HP EVA storage device. See the screenshot on the right for a WWN example.

The array name must be specified without the dashes used in the WWN e.g., $\tt 50014380025DEB70.$

- 4.
- Enter the name of the management server of the array in the **Control Host** field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

- Enter the user access information in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware disk group created on the array to be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

	_				
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EVA440		General		Status Summary	,
🖾 🗇 Virtual Disks		Identification		,	
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		UUID:	6005	-08b40002-0000	
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5 Device Group					
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Description					

ОК

Cancel

Help

< Previous Next >

SnapProtect[™] Backup - IBM SAN Volume Controller (SVC)

PRE-REQUISITES

- IBM SVC requires the FlashCopy license.
- Ensure that all members in the IBM SVC array are running firmware version 6.1.0.7 or higher.
- Ensure that proxy computers are configured and have access to the storage device by adding a host group with ports and a temporary LUN.

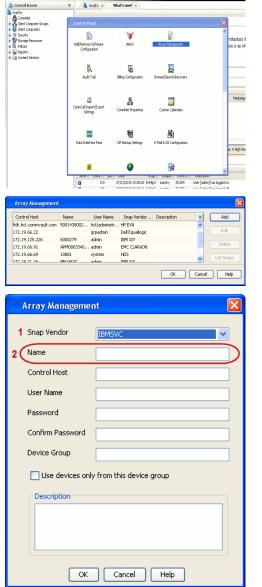
SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. • From the CommCell Console, navigate to Tools | Control Panel.
 - Click Array Management.

Click Add. 2.

- 3. • Select IBMSVC from the Snap Vendor list.
 - Specify the 16-digit ID of the storage device in the Name field.



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What's new? >

< Previous

Next 🕨

The **ID** is the device identification number for the IBM SVC storage device. See the screenshot on the right for reference.

- 4. Enter the Management IP address or host name of the array in the **Control Host** field.
 - Enter the user access information of the local application administrator in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the physical storage pools created on the array to be used for snapshot (flash copy) operations.

If you do not specify a device group, the default storage pool will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

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			Space in MDisk Groups				
11			Space Allocated to Volumes	3.9 TB			
0		io_grp3	Total Free Space Total Volume Capacity	3.7 TB 4.8 TB			
			Total Volume Copy Capacity	4.8 TB			
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· ·							
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SnapProtect[™] Backup - IBM XIV

< Previous) Next >

PRE-REQUISITES

- 1. IBM XCLI (2.3 or higher) installed on the client and proxy computers. On Unix computers, XCLI version 2.4.4 should be installed.
- 2. Set the location of XCLI in the environment and system variable path.
- 3. If XCLI is installed on a client or proxy, the client or proxy should be rebooted after appending XCLI location to the system variable path. You can use the XCLI_BINARY_LOCATION registry key to skip rebooting the computer.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBM XIV from the Snap Vendor list.
 - Specify the 7-digit serial number for the array in the Name field.



Confirm Password Device Group

Description

Use devices only from this device group

OK

Cancel

Help

The **System ID** (S/N) is the serial number for the IBM XIV storage device. See the screenshot on the right for reference.

4.

System Configuration ×

General
System Name
Parameters
System Version
10.22
System 10 (5/N)
6006633 (\$533
10
10/Hostname 1
10/Hostname 1
10/Hostname 1
10/Hostname 3

Update
Cancel

	Array Managemer	it 🔀
	Snap Vendor Name	
3	Control Host	
	User Name	
4	Password	
1	Confirm Password	
	Device Group	
	Use devices only	from this device group
	Description	
	ОК	Cancel Help
		Previous Next

- Enter the IP address or host name of the array in the **Control Host** field.
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - LSI

< Previous (Next >

PREREQUISITES

- Ensure that the LSI Storage Management Initiative Specification (SMIS) server has access to the LSI array through TCP/IP network to perform SnapProtect
 operations.
- Ensure that the client has access to:
 - SMIS server through TCP/IP network.
 - $\circ~$ LSI array through iSCSI or Fiber Channel network.
- Ensure that proxy computers are configured and have access to the storage device by adding a temporary LUN to the "host" using the Storage Management Console.

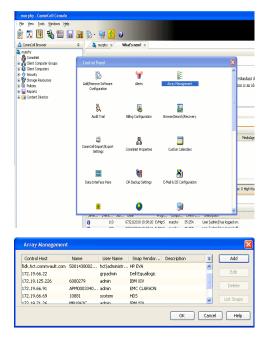
ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using SAN transport mode, ensure that the Client and the ESX Server reside in the same host group configured in the LSI array, as one volume cannot be mapped to multiple host groups.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

з.

- Select LSI from the Snap Vendor list.
 - Specify the serial number for the array in the Name field.

	Control Host	
	User Name	
	Password	
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Array Management

LSI

1 Snap Vendor

2 Name

The **Storage Subsystem world-wide identifier (ID)** is the serial number for the LSI storage device.

Use the SANtricity Storage Manager software to obtain the array name by clicking **Storage Subsystem Profile** from the **Summary** tab. See the screenshot on the right for reference.

٠	Specify the name of the device manager server where the array was configured in
	the Control Host field.

- Enter the user access information using the LSI SMIS server credentials of a local user in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not have a device group created on the array, specify None.

If you specify None in the **Device Group** field but do have a device group created on the array, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

	Array Managemei	nt 🔀	
	Snap Vendor	LSI	
	Name		
3 (Control Host		
1	User Name		
4	Password		
	Confirm Password		
5	Device Group		
6 (Use devices only	/ from this device group	
	Description		
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SnapProtect[™] Backup - NetApp

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PREREQUISITES

LICENSES

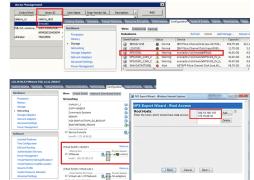
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

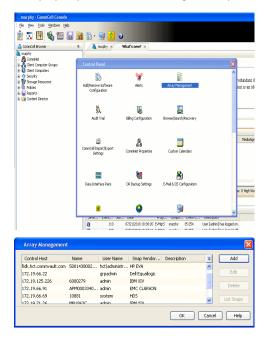
The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	×
Snap Vendor	NetAre	
	NetApp	×
Name		
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	/ from this device group	
Description		
ОК	Cancel Help	
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SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the **Storage Policy** in the **Storage Policy Name** box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

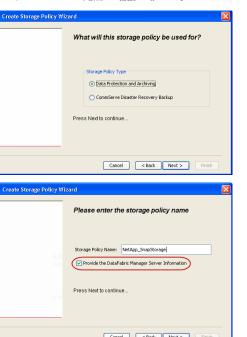
4.

3.

• In the **Library** list, select the default library to which the Primary Copy should be associated.

It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



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Create Storage Policy Wi	zard 🛛 🕅
	Please select a library to be the default library for this primary copy
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100	Press Next to continue
	Carcel < Back Next > Frish

- 5. Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

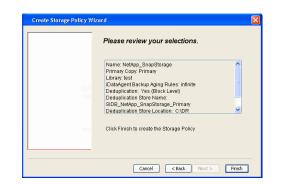
9.	٠	Provide the	DataFabric	Manager	server	information.
----	---	-------------	------------	---------	--------	--------------

- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

Create Storage Policy Wiz	zard 🛛 🔀
	Please select a MediaAgent for this copy
	MediaAgent: dhaval-2008
	Press Next to continue
	Cancel < Back Next > Finish
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard
	Please enter the streams and retention
	criteria for this policy
	Number of Device Streams:
	Choose the Primary Copy's Aging Rules:
	iDataAgent Backup data
	✓ Infinte/ 15 → Days 2 → Cycles
	Retain by Jobs 24 -
	Data Archive/Compliance Archiver
	V Infinite/ 365 Days
	Cancel < Back Next > Finish
Create Storage Policy Wiz	zard
	Do you want to enable Deduplication for the primary copy?
	Deduplication • Yes
	Enable Client Side Deduplication
	○ No
	Press Next to continue
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wiz	zard
	Please specify the location to store the
	Deduplication Store
	Name: SIDB_NetApp_SnapStor
	Deduplication Store Location:
	MediaAgent Name dhaval-2008 💌
	Location: Browse
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard
	Please select/add the new DataFabric Manager information?
	DataFabric Manager:
	Select hwinapp02
	Host Name: venus
	Add User Name: admin
	Password:

10. Click Finish.

Cancel < Back Next > Finish

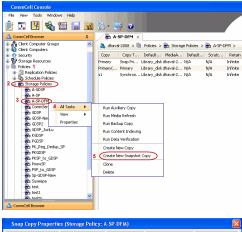


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

- **3.** Click the **Copy Policy** tab.
 - Depending on the topology you want to set up, click **Specify Source for Auxiliary Copy** and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

Primary-Mirror	Primary	Snap Copy Properties (Storage Policy: A-SP-DFM)
Primary-Mirror-Vault	Mirror	Selective Copy Associations Advanced Deduplication Provisioning General Retention Copy Policy Data Paths Data Path Data Path
Primary-Vault	Primary	
Primary-Vault-Mirror	Vault	
Primary-Mirror-Mirror	Mirror	
Primary-Vault-Mirror	Vault Mirror PS. he drop-down list. om the list.	
		Hall_primorymored_JP2 Hall_primorymitred_JP2 Hall_primorymitred_JP3 Hall_primorymitred_JP4 Add All >> Add All >> C< Remove All

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

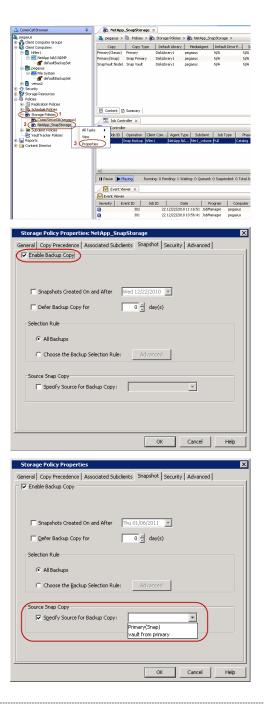
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

~

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

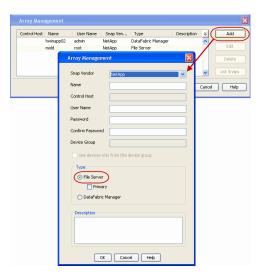
- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

4.

Page 259 of 742	

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Comm/Cell Console
File New Tools Windows Help



SEE ALSO

Import Wizard Tool

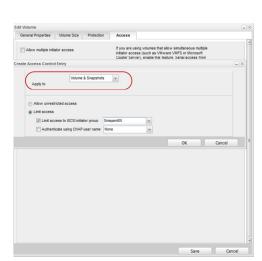
Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

SnapProtect[™] Backup - Nimble

PREREQUISITES

- From the Nimble storage array console, ensure that the Access Control Entry for the client initiator group is set to Volume and Snapshots.
- In case you are using a proxy computer for SnapProtect operations, add the initiator group for the proxy computer and set the Access Control Entry to Snapshots Only.
- Ensure that a temporary LUN is allocated to all ESX Servers that are used for snapshot operations.



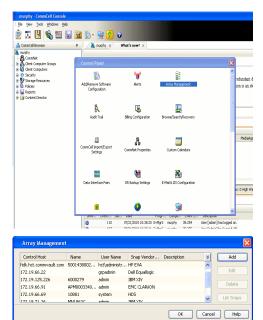
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Next 🕨

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- **3.** Select **Nimble** from the **Snap Vendor** list.
 - Specify the Data IP Address of the array in the **Name** field.

If you have more than one Data IP Address configured, you will need to add the array information for each of the configured Data IP addresses.

• Enter the Management IP Address of the array in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Data IP Address and
Management IP for the Nimble storage device.

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- Enter the access information of a user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

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	<pre>Previous Next ></pre>

SnapProtect[™] Backup - Data Replicator

< Previous (Next >

PRE-REQUISITES

INSTALLATION

• The use of Data Replicator with the SnapProtect backup requires MediaAgent, File System *i*DataAgent, and ContinuousDataReplicator on the source, destination, and proxy computers.

The use of a proxy server to perform SnapProtect operations is supported when a hardware storage array is used for performing the SnapProtect backup.

• The operating system of the MediaAgent to be used for SnapProtect backup must be either the same or higher version than the source computer.

STORAGE POLICY REQUIREMENTS

The Primary Snap Copy to be used for creating the snapshot copy must be a disk library.

If the Storage Policy or the disk library being used by the subclient is updated, the subclient should be recreated.

SETUP THE ARRAY

- From the CommCell Console, navigate to **<Client>** | **<Agent>**.
 - Right-click the subclient and click **Properties**.
- Click the **SnapProtect Operations** tab.
 - Ensure **Data Replicator** is selected from the **Available Snap Engine** drop-down list.
 - Click OK.

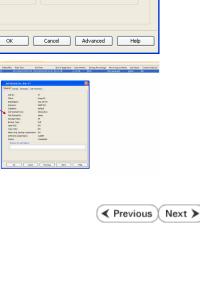
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Getting Started Backup - SQL Server iDataAgent

- 1. • From the CommCell Browser, navigate to Client Computers | <Client> | SQL Server | <Instance>.
 - Right-click the default subclient and click Backup.
- 2. • Click Full as backup type and then click Immediate.
 - Click OK.

- 3. You can track the progress of the job from the Job Controller window of the CommCell console.
- Once the job is complete, view the job details from the **Backup History**. Right-click the **Subclient** and select **Backup History**. 4.
- 5. Click OK.

- 6. Right-click the job to:
 - Browse the databases that were backed up.
 - View items that failed, if any, during the job.
 - Resubmit the job.
 - · View job details.
 - View media associated with the job.
 - View events associated with the job.
 - View backup items (you can view the database files that were backed up e.g., .mdf, .ldf).
 - View or send the log file that is associated with the job.



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Getting Started - Vault/Mirror Copy

< Previous) Next >

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Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

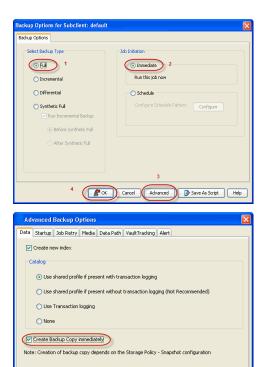
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

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(OK

User Guide - SnapProtect

2. Click OK.

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Getting Started - Microsoft SQL Server Restore

< Previous Next >

PERFORM A RESTORE

As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following sections explain the steps for restoring a database to a different location on the same destination server.

- From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.

You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.

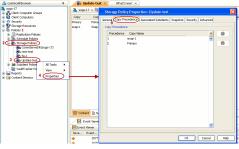
• Click OK.

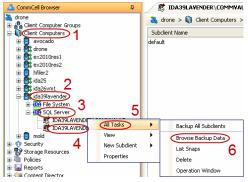
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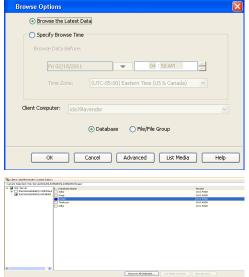
- From the CommCell Browser, navigate to Client Computers | <Client> | SQL Server.
 - Right-click the instance and then click **All Tasks | Browse Backup Data**.



- 4. Click the instance node in the left pane. Select the database you want to restore in the right pane.
 - Click Recover All Selected.







5. Click Advanced.

6. • Click the **Options** tab.

- Rename the database name under the **Database** column.
- Change the path of the database and log files under the **Physical Path** column.
- Click OK.

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General

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Restore Time and Time zone

Recovery Types and UndoPath

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Restore Options

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 Apply Log backups only
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Unconditionally overwrite existing database or files
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- Click the Data Path tab.
 - Select a Windows MediaAgent from the **Use MediaAgent** drop-down list.
 - Click OK.

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8. Click OK.

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9. You can monitor the progress of the restore job in the **Job Controller**.

10. The database and the log files are restored to the location specified in step 6.

CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.

< Previous Next >>

Getting Started - NAS Configuration



PRE-REQUISITES

- Prior to performing a SnapProtect backup, ensure that all the available hotfixes for Virtual Disk Service (VDS) and VSS are applied.
- When performing SnapProtect backup for a Windows Cluster, a proxy server must be used for performing backup and restore operations.
- SnapProtect backup on Windows supports basic disks.

CONFIGURATION

The software for the NAS *i*DataAgent is installed automatically as part of the MediaAgent installation. However, the client is not automatically created in the CommCell Console.

Follow the steps given below to create and configure the NAS client for a first SnapProtect backup. If the data you want to backup resides on a vFiler, configure the vFiler as the NAS client.

1. From the CommCell Browser, right-click the **Client Computers** node and click **New Client**.

• Click OK.

2		
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Provide the File Server details to add the NDMP Server.

For any ONTAP version, do not provide the host name or IP address of the management port (e.g., e0M). Use the host name or IP address of a data port (e.g., e0A, e0B).

- Click Detect.
- Click OK.

A new client is created and listed under the Client Computers node. The default subclient is created automatically.

Any NAS storage device that will be used for backing up secondary storage data (Vault, Mirror or backup copy) must be configured as a **NAS Client** in the CommCell with the same name that is used by the DFM server to communicate to the secondary NAS file server.

4. From the CommCell Browser, right-click the NAS client just created and select **Properties**.

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- Click on the Advanced tab.
 - Select the Enable SnapProtect option to enable SnapProtect backup for the
 - client. • Click **OK**.

- From the CommCell Browser, right-click the subclient.
 - Click Properties.

- **7.** Click the **Storage Device** tab.
 - In the **Storage Policy** box, select the storage policy name.

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8. • Click the SnapProtect Operations tab.

- Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
- Select NetApp from the Available Snap Engine drop-down list.

Subclient Properties of default
General Content Filters Pre/Post Process Security Storage Device Encryption 1 SnapProtect Operations
2 SnapProtect 3
Available Snap Engines
Enter Array Credentials
OK Cancel Help

9. • Click the **Content** tab.

• Click **Browse** and specify the content for the subclient.

It is recommended that you add full volume as the sublcient content and not a sub directory or a qtree.

• Click OK.

The subclient content must contain data that resides on the storage device volume; do not include local drives as subclient content. If you added a vFiler as a client, do not include the root volume.

Subclient Properties of test		2
Storage Device Encryption General Content Filters	SnapProtect O Pre/Post Process	Operations
Contents of subclient:		
/vol/duncan_vol2		Delete
		Browse
Backup Content Path:		Add
Case Sensitive		
		1
	OK Cancel	Help

SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

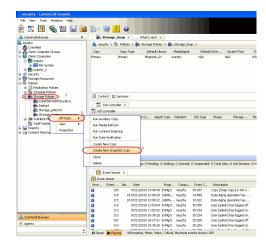
1.

CREATE A SNAPSHOT COPY

Next 🕨

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **All Tasks** | **Create New Snapshot Copy.**



- **2.** Enter the copy name in the **Copy Name** field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.

Selective Copy	Associations	Advance		
eneral Retention	Copy Policy	Data Paths	Data Path Config	juration
Copy Information				_
Copy <u>N</u> ame:				\mathbf{D}
Primary Copy				
Cumary copy				
Default Index Destinati	on			
Library:				~
MediaAgent:				~
Drive Pool:				~
Scratch Pool:				*
3				

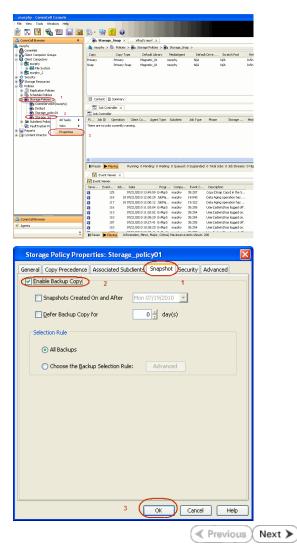
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

1.

- Click the **Snapshot** tab.
- Select **Enable Backup Copy** option to enable movement of snapshots to media.
- Click OK.



SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

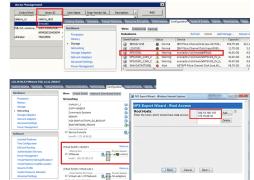
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

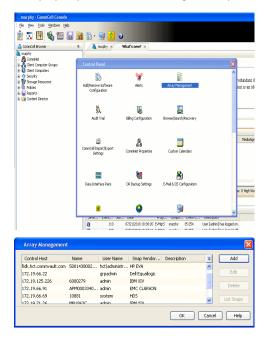
The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor	NetAre	
	NetApp	
Name		
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	y from this device group	
Description		
ОК	Cancel Help	
	((Previous

SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. • From the CommCell Browser, navigate to Policies.
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the Storage Policy in the Storage Policy Name box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

4.

3.

• In the Library list, select the default library to which the Primary Copy should be associated.

> It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



Tools

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	Please select a library to be the default library for this primary copy
<u>97</u>	Library: Jest
1000	Press Next to continue
	Cancel <back next=""> Finish</back>

- 5. • Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

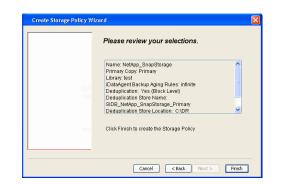
9.	٠	Provide the DataFabric Manager server information	
----	---	---	--

- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

Create Storage Policy Wizard Please select a MediaAgent for this copy
Please select a MediaAgent for this copy
MediaAgent: dhaval-2008
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Press Next to continue
Cancel < Back Next > Finish
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criteria for this policy
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Retain by Jobs 24
Data Archive/Compliance Archiver
✓ Infinite/ 365 - Osys
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Create Storage Policy Wizard
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primary copy?
Deduplication
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Cancel <back next=""> Fridh</back>
Cancel <back next=""> Finish</back>
Cancel <back next=""> Fridh</back>
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Create Storage Policy Wizard Please specify the location to store the Deduplication Store Name: SIDE_MetApp_SnapStor
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Create Storage Policy Wizard Create Storage Policy Wizard Please specify the location to store the Deduplication Store Name: SIBE MetApp_SnapSto Deduplication Store Location: MediaAgent Name dravel-2008 V Location: Press Next to continue Create Storage Policy Wizard Please select/add the new DataFabric Manager information? DetaFibric Manager: Select Select Pressod2

10. Click Finish.

Cancel < Back Next > Finish

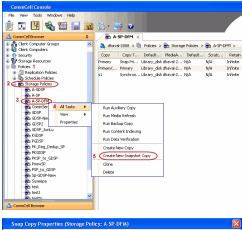


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

- **3.** Click the **Copy Policy** tab.
 - Depending on the topology you want to set up, click **Specify Source for Auxiliary Copy** and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

	Primary	Snap Copy Properties (Storage Policy: A-SP-DFM)
Primary-Mirror-Vault	Mirror	Selective Copy Associations Advanced Deduplication Provisioning General Retention Copy Policy Data Paths Data Path Configuration
Primary-Vault	Primary	
Primary-Vault-Mirror	Vault	Backup Selection
Primary-Mirror-Mirror	Mirror	Al Backups
 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drops available from the Click OK. The secondary snapshot copy is created. 	op-down list.	Backups Chrand Mitter: The Del/07/2011 Partice Copy Image: Source for Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Status CK Cancel Heb Status Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Copy: Del/or Auxiliary Copy: Primary Image: Source for Auxiliary Copy: Primary Source Copy: Source Copy: Primary Primary Primary Primary Source Copy: Source For Copy: Primary Primary Primary Primary Source Copy: Source For Copy: Source For Copy Primary Primar

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

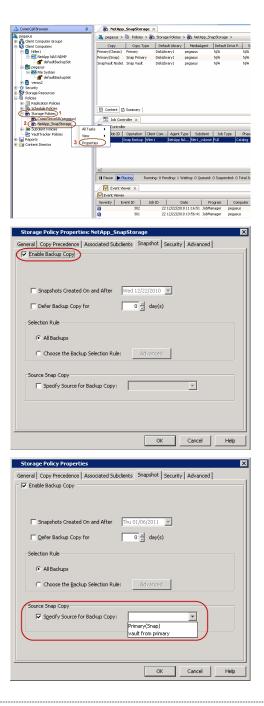
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

~

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.
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User Name

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NetApp

Use devices only from this device group

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

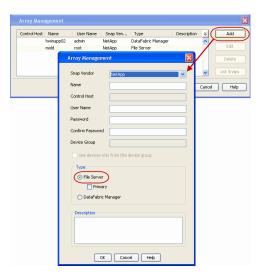
- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

4.

Page 285 of 742



SEE ALSO

Import Wizard Tool

Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

Getting Started - NAS iDataAgent Backup

- From the CommCell Console, navigate to <*Client*> | <*File Server*> NAS NDMP | defaultBackupSet.
 - Right-click the **Subclient** and click **Backup**.

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OK Cancel Advanced Help

• Select **Full** as backup type.

If you are backing up vFiler data and the physical file server (where the vFiler resides) has not been specified in Array Management, click **Advanced**. From the **Advanced Backup Options** dialog box, click the **Skip Catalog phase for SnapProtect** option as indexing is not supported for vFiler backups.

- Click OK.
- **3.** You can track the progress of the job from the **Job Controller** window.
- Once job is complete, view the details of job from the Job History.
 Right-click the client computer, click View | Job History.

5. Click OK.

- 6. Right-click the job to:
 - Browse the NAS data that was backed up.
 - Resubmit the job.
 - View the job details.
 - View media associated with the job.
 - View events associated with the job.

- View backup items (displays the NAS data that was backed up).
- View or send the log file associated with the job.



Getting Started - Vault/Mirror Copy

< Previous) Next >

SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

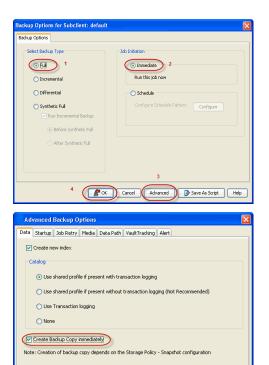
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

Cancel Help

(OK

User Guide - SnapProtect

2. Click OK.

Copy Copy Type	Rorage Policies > 💑 SNAP- Default Library	NediaAgent	Default Drive Pool	Scratch Pool
Dri Drimary	SNAP-191-90-MAG1	inap-vm-90_2	N/A	N/A
s SNAP-COPY-SNAP Primery Snep	5NAP-VM-90-MAG1	shap-vm-90_2	M/A	NSA
Policies				
5				
31				
2				
1				
(Recymoner)				
Harmanay Copy				
Put Peud Kertesti				
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P Run Data Verification				
Create New Copy				
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) No of Simultaneous Jobs to run	1			
) Allow Maximum				
Start New Media				
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Mark Media Full On Success				
Cancel Advanced	1 🔂 🤒 S	ave As So	ript	Help
Cancel Advanced	H 🕑 S	ave As So	ript	Help

Getting Started - NAS Restore

< Previous Next >

PERFORM A RESTORE

As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

ConniCell Browser

The following sections explain the steps for restoring the data of a volume to a different location in the file server. If you are restoring from a vFiler backup, click the **Previous** button above to follow the steps to create a backup copy, and restore your vFiler data from the backup copy.

- From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - Select the backup copy and set the copy precedence as 1.
 - Click OK.

1.

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Reports		393	Backup	happy01	SOL Server	Files and File	Transactio	
Content Director		555						

Update-test × What's new? ×

- From the CommCell Console, navigate to *Client* | *File Server* NAS NDMP.
 - Right-click the backup set and click **All Tasks** | **Browse Backup Data**.

3. Click OK.

Browse Options
Browse the Latest Data
Specify Browse Time
Browse Data Before:
Wed 06/01/2011 • 04:05PM -
Time Zone: (GMT-05:00) Eastern Time (US & Canada) v
Client Computer: Avocado v
Use MediaAgent <pre></pre> <p< td=""></p<>
Specify Browse Path:
Show Deleted Items
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OK Cancel Advanced List Media Help
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- Expand the backup set node in the left pane. Select the volume containing the data you want to restore.
 - Click Recover All Selected.
- Clear the Restore ACLS and Use Direct Access Restore checkboxes. Selecting these options are not applicable when restoring data from a snapshot.
 - Clear the **Restore to same folder** checkbox.
 - Specify the destination path by clicking Browse.
 - Click **Preserve** or **Remove** source paths to specify whether the restore operation will keep or remove the specified number of levels from the beginning or end of the source path.
 - Click OK.

General					Brows	ing for destination	on folder on Av	ocado			
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6. You can track the progress of the job from the **Job Controller** window.

CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.

Previous Next >>

Getting Started - Microsoft Hyper-V Deployment



WHERE TO INSTALL

Install the software directly on the Hyper-V Server.

BEFORE YOU BEGIN

Download Software Packages

Download the latest software package to perform the install.

SnapProtect Support - Platforms

Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE VIRTUAL SERVER /DATAAGENT (HYPER-V)

The Virtual Server *i*DataAgent is used to protect Hyper-V virtual machine data. Use the following procedure to directly install the software from the installation package or a network drive.

- 1. Run **Setup.exe** from the Software Installation Package.
- 2. Select the required language.

Click Next.

3.	Select the	option to	Install	Calypso	on this	64-bit	computer.
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Your screen may look different from the example shown.

4. Select I accept the terms in the license agreement. Click Next.

Select the language you will use during installation	L	
English (United States)		
	<u>N</u> ext >	Cancel
Install Software on this computer		
Advanced options		
View documentation wahrite		
View documentation website		
🖨 View Install Quick Start Guide (Requires Adobe	Acrobat Reader)	
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- 5. Expand Client Modules | Backup & Recovery | File System, and select Virtual Server Agent.
 - Expand Common Technology Engine | MediaAgent Modules, and select MediaAgent.
 - Expand Client Modules | ContinuousDataReplicator, and select VSS Provider.
 - Click Next.

	Installer
	Select Platforms
	Select the platforms you want to configure.
	Common Technology Engine CommServe Modules CommServe Modules CommServe Modules CommCell Console Mediadgent Modules Content Indiversity and Search Web Bared Search & Browse Anchive Management Communus/DataReplicator ShM Supporting Modules Tools ShM Supporting Modules Mediadded Mediadded ShM ShM Supporting Modules Mediadded ShM Sherical Registry Keys In Use
	Installer Cancel
	Installer
t	Setup will now install Microsoft .NET Framework for the selected platforms. Click Yes' to continue. Choosing No' will exit the Setup. In such a case, you may resume Setup later at any time.
	<u>Yes</u> <u>N</u> o
nfigure	Installer
	Firewall Configuration Configure firewal services
nd	
	If there is a firewall between this machine and the CommServe, configure firewall services below.
	Configure firewall services
	Please specify how Windows Firewall is limiting network traffic. Whether it is possible to open connection from here to a CommServe's tunnel port, whether all connections toward CommServe are blocked, and setup brould instead expect CommServe to connect back to this
	machine, or whether there is a Proxy in between.
	 This machine can open connection to CommServe on tunnel port CommServe can open connection toward this machine
	C CommServe is reachable only through a proxy
	Installer
	Next> Cancel
	Installer
	CommServe Name
	Specify the CommServe computer name and host name
	CommServe Client Name
	CommServe Host Name
	Commiserve Host Name (Enter a valid, fully-qualified, IP host name; for example: mycomputer.mycompany.com)
	mycomputer.mycompany.com
	Installer
	< Back Next > Cancel
	Installer Communication Interface Name Setup will configure the communication paths.
	Select a client name
	Select a client name
	Select an interface name that this computer will use to
	communicate with the CommServe
	audi.mycompany.com
	IP Address(es) for the selected host.
	lastallas

< Back Next >

6. Click **YES** to install Microsoft .NET Framework package.

- This prompt is displayed only when Microsoft .NET Framework is not installed.
- Once the Microsoft .NET Framework is installed, the software automatically installs the Microsoft Visual J# 2.0 and Visual C++ redistributable packages.
- 7. If this computer and the CommServe is separated by a firewall, select the **Configure** firewall services option and then click Next.

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

If firewall configuration is not required, click **Next**.

8.	Enter the fully qualified domain name of the CommServe Host Name.
	Click Next.

Do not use space and the following characters when specifying a new name for the CommServe Host Name:

\|`~!@#\$%^&*()+=<>/?,[]{}:;'"

9. Click Next.

 Select Add programs to the Windows Firewall Exclusion List, to add CommCell programs and services to the Windows Firewall Exclusion List. Cancel

User Guide - SnapProtect

Click Next.

This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion list.

It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.

11. Click Next.

 $\label{eq:click} Click \; \textbf{Browse} \; \text{to change the default location}.$

Click Next.

- Do not install the software to a mapped network drive.
- Do not install the software on a system drive or mount point that will be used as content for SnapProtect backup operations.
- Do not use the following characters when specifying the destination path:

/:*?"<>|#

It is recommended that you use alphanumeric characters only.

13. Select a Client Group from the list.

Click Next.

This screen will be displayed if Client Groups are configured in the CommCell Console.

nstaller	
Windows Firewall Exclusion Li	st
Allow programs to communicate through Firewall	Windows
Windows Firewall is ON	
Add programs to the Windows R	Firewall Exclusion List
If you plan on using Windows Firew exclusion list.	vall, it is recommended to add the software programs to the
Installer	
	< Back Next > Cancel
nstaller	X
Download and Install Latest Up Download and Install the latest service p pack from the software provider website	date Packs pack and post
🗖 Download latest update pa	ack(s)
Make sure you have internet connectiv depending on download speed.	rity at this time. This process may take some time
Installer	
	<back next=""> Cancel</back>
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14. Click Next.

15. Select Yes to stop Removable Storage Services on the MediaAgent. Click Next.

This prompt will not appear if Removable Storage Services are already disabled on the computer. $% \left({{{\left({{{{\bf{n}}}} \right)}_{i}}}_{i}} \right)$

16. Click Next.

17. Select a Storage Policy. Click Next.

18. Click Next.

Installer	🔀 🛛
Schedule Install of Auto	
Choose when you want to sc downloaded updates.	hedule an install of the
🔽 Schedule Install of Aut	omatic Updates
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C Once	Time: 08:31:12 PM
Weekly	
	Monday C Tuesday
	O Wednesday O Thursday
	C Friday C Saturday
	C Sunday
Installer	
	< Back Next > Cancel
Installer	
Removable Storage Se	rvice
The Removable Storage serv disabled	vice must be stopped and
The Remainship Char	ervice must be stopped and disabled. This is required for correct
functioning of the MediaA	envice mass be stopped and disabled. This is required for correct gent.
Do you want to stop and o	lisable the Removable Storage service?
6 Mar da and da an	the Branewakie Charges Couries
	the Removable Storage Service
No, I am using Hemov	able Storage Manager (RSM)
Installer	
	<back next=""> Cancel</back>
Installer	
Installer Select Global Filter Opt	
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Select Global Filter Opt	ions
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19. Click Next.

20. Click Finish.

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Job schedule creation reminder	
Please note:	
You still need to create a Job Schedule for each iDataAgent that this client computer.	has been installed on
Job Schedules are required to allow the iDataAgents to perform a and restore operations.	automated backup
Job Schedule creation can be accomplished through the CommC administration interface.	Cell Console
Installer	Next>
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Completion Report Setup complete	
Software installation completed successfully.	
Visit the website below to download latest Updates and Service Packs	
Dick Finish to complete Setup.	
	<u>_</u>
Installer	
Technical Support Website	Einish
	<pre> Previous Next) </pre>

Getting Started - Microsoft Hyper-V Configuration

< Previous Next >

CONFIGURATION

1.

Once the Virtual Server iDataAgent has been installed, configure an Instance, a Backup Set and a Subclient to facilitate backups. The following sections provide the necessary steps required to create and configure these components for a first SnapProtect backup of a single virtual machine.

- From the CommCell Browser, navigate to Client Computers | < Client >.
 - Right-click the client and select **Properties**.

🛆 CommCell Browser 🛛 🗛	What's new? ×
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- Click on the **Advanced** tab.
 - Select the **Enable SnapProtect** option to enable SnapProtect backup for the
 - client.
 - Click OK.

- From the CommCell Browser, navigate to *Client* | **Virtual Server**.
 - Right-click the Virtual Server agent and click All Tasks | Create New Instance.

4. • Enter the Instance Name.

- Select Microsoft Virtual Server/Hyper-V from Vendor Type menu.
- Click OK.

- 5.
- From the CommCell Browser, right-click the Default Backup Set.
 - Click Properties.

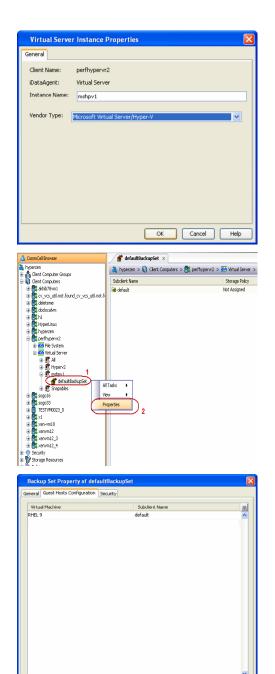
Click Discover, on the Guest Hosts Configuration tab.
 Discovery process might take several minutes to complete.

- Select the default subclient from Change all selected guest hosts to list.
 - Click Apply.
 - Click OK.

7.

Discover

OK Cancel Help



Change all selected guest host to

- 8.
- From the CommCell Browser, navigate to the default subclient.
- Click **Properties**.

9. Ensure **Disk-Level** from **Backup Type** is selected.

Backup Set Property of de		X
General Guest Hosts Configuratio Virtual Machine RHEL 9		
Change all selected guest host to get gue	OK Cancel	Viscover Apply Help
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vlicies eports		
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Clent Name: Billing Department: iDataAgent: Backup Set: Subclient name: Number of Data Readers: Note: This is a default subclit CBackup Type	perfhypervr2 Not Defined/Not Defined Wrtual Server defaultBackupSet default 1n nt.	
Disk Level Volume Level File Level Description		
	OK Cancel	Help

- Click the **Storage Device** tab.
 - In the **Storage Policy** box, select the storage policy name.

11.

12.

		Subclient Properties of default
		Activity Control Encryption SnapProtect Operations Content General Filters Pre/Post Process Security Storage Device
		Data Storage Policy Data Transfer Option Deduplication
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		Dedupe Data Paths
		Incremental Storage Policy: N/A
		Data Paths
		Create Storage Policy
		OK Cancel Help
	Click the SnapProtect Operations tab.	Subclient Properties of default
	Click SnapProtect option to enable SnapProtect backup for the selected subclient.	General Filters Pre/Post Process Security Storage Device Activity Control Encryption SnapProtect Operations Content
•	Select the storage array from the Available Snap Engine drop-down list.	2
	From the Use Proxy list, select the MediaAgent where SnapProtect and backup	✓ SnapProtect 3
	copy operations will be performed.	Available Snap Engine
	When performing SnapProtect backup using proxy,	4 Enter Array Credentials
	ensure that the operating system of the proxy server is	
	either same or higher version than the client computer.	Use Separate Proxy for Snap to Tape
	Click Use Separate Proxy for Snap to Tape if you want to perform backup copy	Proxy hyperzen
	operations in a different MediaAgent.	
	Select the MediaAgent from the Proxy list.	
		OK Cancel Help
	Click the Content tob	Subclient Properties of default
	Click the Content tab. Click Configure if you need to configure an additional virtual machine for the	General Filters Pre/Post Process Security Storage Device
	subclient.	Activity Control Encryption SnapProtect Operations Content
	Click OK .	Virtual Machine 🗧
		4gb
		Configure
		OK Cancel Help

SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

CREATE A SNAPSHOT COPY

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

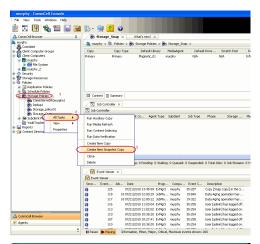
- From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Create New Snapshot Copy.

- Enter the copy name in the **Copy Name** field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.

2.

1.

2.



Snap Copy Propert	ies (Storage Policy: Storage_policy01) 🛛 🛛 🔀
Selective Copy General Retention	Associations Advanced Deduplication Copy Policy Data Paths Data Path Configuration
1 Copy Information Copy <u>N</u> ame:	2
Primary Copy	
Library:	
MediaAgent:	
Scratch Pool:	V
	4 OK Cancel Help
	4 OK Cancel Help

CONFIGURE BACKUP COPY

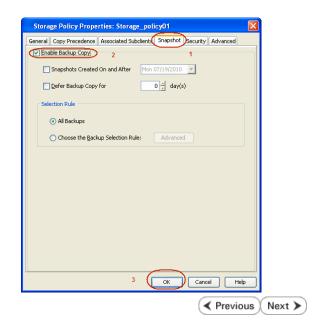
Follow the steps given below to configure Backup Copy for moving snapshots to media.

- From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

murphy - CommCell Console										
File View Tools Windows Help		-	_	_						
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• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.



Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS

NETAPP

NETAPP WITH SNAPVAULT/SNAPMIRROR

(Previous) Next >>

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SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

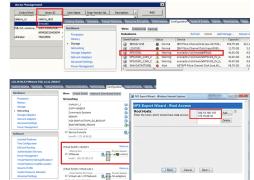
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

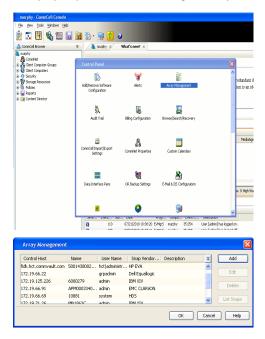
The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor		
Name	NetApp	
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	/ from this device group	
Description	,	
Description		
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		(Previous)

SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the **Storage Policy** in the **Storage Policy Name** box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

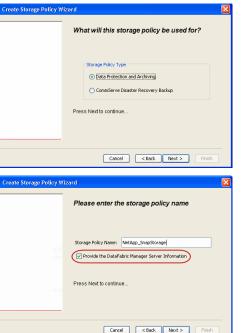
4.

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• In the **Library** list, select the default library to which the Primary Copy should be associated.

It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



Tools Windows Help

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Create Storage Policy Wizard 🛛 🔀
Please select a library to be the default library for this primary copy
Library: Test
Press Next to continue
Cancel Cancel Frish

- 5. Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

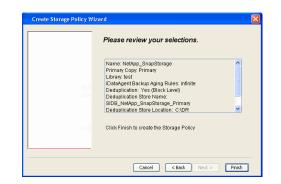
9.	٠	Provide the DataFabric Manager server information	
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- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

Create Storage Policy Wiz	zard 🔀
	Please select a MediaAgent for this copy
	MediaAgent: dhaval-2008
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard
	Please enter the streams and retention
	criteria for this policy
	Number of Device Streams:
	Choose the Primary Copy's Aging Rules: IDataAgent Backup data
	DataAgent Backup data
	Retain by Jobs 24 -
	Data Archive/Compliance Archiver
	V Infinite/ 365 Days
	Cancel < Back Next > Finish
Create Storage Policy Wiz	zard
	Do you want to enable Deduplication for the
	primary copy?
	Dedupication
	Yes Fnable Client Side Deduplication
	No
	Press Next to continue
	Cancel Sack Next > Finish
	Califer Coack Next Prish
Create Storage Policy Wiz	zard
	Please specify the location to store the
	Deduplication Store
	Name: SIDB_NetApp_SnapStor
	Deduplication Store Location:
	MediaAgent Name dhaval-2008
	Location: Browse
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard 🔀
	Please select/add the new DataFabric Manager information?
	DataFabric Manager:
	Select hwinapp02
	Host Name: venus
	Add User Name: admin
	Password:

10. Click Finish.

Cancel < Back Next > Finish

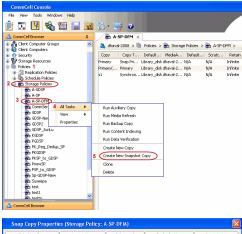


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

- **3.** Click the **Copy Policy** tab.
 - Depending on the topology you want to set up, click Specify Source for Auxiliary Copy and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

Primary-Mirror Primary Primary-Mirror-Vault Mirror Primary-Vault Primary Primary-Vault-Mirror Vault Primary-Mirror-Mirror Mirror	Selective Copy Associations Advanced Deduplication Provisioning General Retarition Copy Policy Data Paths Data Path Configuration Backup Selection Backup Selec
Primary-Vault-Mirror Vault	Badup Selection Al Badups Badups On and After: Thu 04/07/2011 Source Copy
	Al Bashups Backups On and After: Thu 04/07/2011 Source Copy
Primary-Mirror Mirror	Badups On and After: Thu 04/07/2011
	Source Copy
	OK Carrol Heb
Click the Provisioning tab.	Snap Copy Properties (Storage Policy: A-SP-DFM)
Click Refresh to display the DFM entities.	General Retention Copy Policy Data Paths Data Paths Selective Copy Associations Advanced Deduplication Provisioning
Select the Provisioning Policy from the drop-down list.	DataFabric Manager Name: hwinapp02
Select the Resource Pools available from the list.	Refresh DataFabric Manager Entities:
	Provisioning Policy:
Click OK .	3 Resource Pools
The secondary snapshot copy is created.	Available: Selected: iscott-mold Hhu_sascademirry_sarget, M1 Hhu_sascademirry_sarget, M1 Add > Hhu_mary_mark_M6 Add > Hhu_seconderymark_M5 Add Al >> Add Al >> <
	Name: scott-mold Space Status: Normal
	Total Size:2.52 TB Available Size:961.49 GB
	Filer Aggregate Space Status Total Size Available Size V mold dev_n_test Normal 2.52 TB 961.49 GB A

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

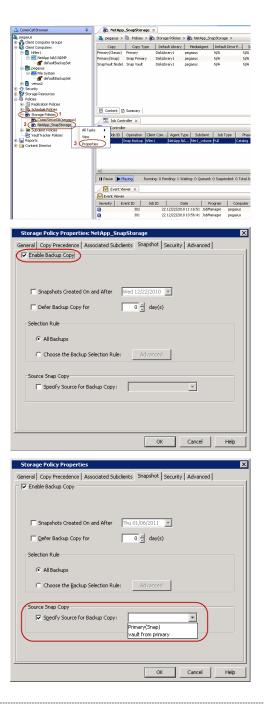
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

~

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

4.

Page	314	of 7	742

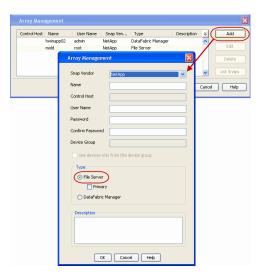
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1 Snap Vendor	OK Cancel Help
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1 Snap Vendor 2 Name	OK Carcel Help
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1 Snap Vendor 2 Name Control Host 3 User Name Password Confirm Password Device Group Use devices onl Type: 4 • File Server	NetApp
1 Snap Vendor 2 Name Control Host 3 User Name Password Confirm Password Device Group Use devices onl	NetApp

Description

OK

Cancel

Help



SEE ALSO

Import Wizard Tool

Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

Getting Started - Microsoft Hyper-V Backup

PERFORM A BACKUP

2.

After configuring the Instance, BackupSet, and Subclient you are ready to perform your first backup.

The following section provides step-by-step instructions for running your first full backup of a single virtual machine immediately.

- 1. From the CommCell Console, navigate to Client Computers | Virtual Server
 - Right-click the **Subclient** and click **Backup**.

- 🗺 🗙 🎭 Clent: snap-vm-90_2 (La... 🗴 🚠 SNAP-VM-90-SP1 🗴 😫 Clent: xer wnθ (Latest ... 🗴 🖏 Clie 👗 xen-vm9 > 🏮 Client Computers > 🕅 snap-vm-90_2 > 🔤 Virbual Server > 🕂 TEST-INST > 💣 def e Polic; tual Server List Media Find Backup Histor Schedules Properties up Options for Subclient: default Backup Options Select Backup Type Job Initiation (Immediate Run this job now Incremental O Differential O Schedule O Synthetic Ful Before Synthetic Full 3 (🗗 ок Cancel Advanced 😰 Save As Script Help Jab ID pe Subclient Job Type Phase Storage P... Mec 💣 defaultBackupSet 🗴 🔠 😒 les × metscs > 🟮 Client Computers > 쫝 proxy6 > 🍱 Virtual Server > 🛒 Redsea > 💣 o Subclient Name Storage Policy History 2 ype Subclient Job Type Phase Storage P... Backup Type 🔿 Full 💿 All Differential Incremental O Synthetic ful Job Statu: 📀 All ○ Killed Completed Failed Specify Time Range Start Time End Time OK Cancel Advanced Help
- Select Full as backup type and Immediate to run the job immediately.
 Click OK.

- **3.** You can track the progress of the job from the **Job Controller** window of the CommCell console.
- Once job is complete, view the details of job from the Backup History. Right-click the Subclient and select Backup History.
- 5. Click OK.

- 6. You can view the following details about the job by right-clicking the job:
 - Items that failed during the job
 - Items that succeeded during the job



- Details of the job
- Events of the job
- Log files of the job
- Media associated with the job



Previous Next >

Getting Started - Vault/Mirror Copy

< Previous) Next >

SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

CommCell Browser	0	/ @		_SnapStorage	×				
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				,		<u> </u>			
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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

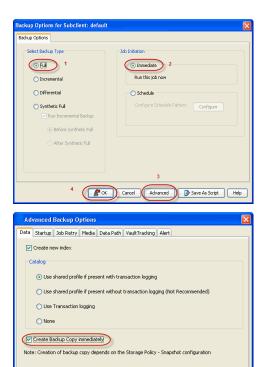
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

Cancel Help

(OK

User Guide - SnapProtect

2. Click OK.

Groups Copy Copy Type Pri Primary	Default Library SNAP-VM-90-MAG1	NedaAgent	Default Drive Pool	Scratch Pool
Pri Primary SNAP-COPY-SNAP Primary Snap			N/A.	N/A N/A
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olicies				
452				
11 1971 -				
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All Tasks Run Auxiliary Copy				
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Properties Run Backup Copy				
Run Content Indexing Run Data Verification				
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Allow Maximum				
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-				
Start New Media				
Mark Media Full On Success				
Cancel Advanced		Save As S	cript	Help
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Getting Started - Microsoft Hyper-V Restore



PERFORM A RESTORE

As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following sections describe the steps involved in restoring a virtual machine.

- From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.

You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.

• Click OK.

1.

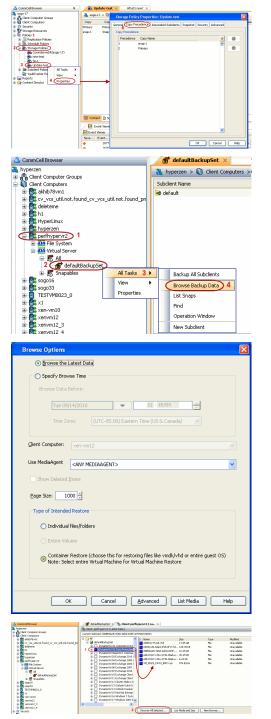
- From the CommCell Console, navigate to *Client* | **Virtual Server**.
 - Right-click the backup set that contains the data you want to restore and click All Tasks | Browse Backup Data.



4.

•	 Select the virtual machine und 	er the backup	set.	Its entire	contents	will be
	automatically selected in the ri	ght pane.				

• Click Recover All Selected.



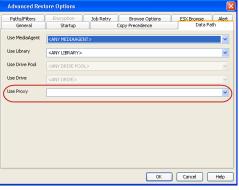
Destination Client.

• Enter the VM Name for the virtual machine.

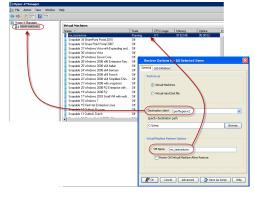
Ensure that you provide a fully qualified name for the virtual machine. Entering an IP address will cause the restore operation to fail.

- 6. Hyper-V Live migration cluster restores require the use of a proxy to mount the snapshots. If you have a Hyper-V cluster, do the following:
 - Click Advanced.
 - Select the Data Path tab.
 - Select a proxy from the **Use Proxy** dropdown to mount the snapshot.
 - Click OK.
 - Click **OK** from the **Restore Options** dialog box.
- 7. You can monitor the progress of the restore job in the **Job Controller** window of the CommCell Console.
- Once the virtual machine is restored, it is automatically mounted to the Hyper-V Server of the specified client computer.

Restore Options for All Selected Items
eneral Job Initiation
Restore as
Virtual Machines
 Virtual Hard Disk file
Destination client perfhypervr2
Specify destination path
C:\temp 1 Browse
Virtual Machine Restore Options
2 VM Name vm_testrestore
Power ON Virtual Machine After Restore
Cancel Advanced Advanced Advanced Advanced







CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.

< Previous Next >>

Getting Started - SAP for Oracle *i*DataAgent Deployment in a Non-Global Zone

Previous Next >

WHERE TO INSTALL

Install the software on each of the non-global zones where you have application data.

It is recommended to install the software on the global zone to protect non-changing or static data on non-global zones. If the data is dynamic or contains application data, install the software on the non-global zone.

INSTALL THE SAP FOR ORACLE /DATAAGENT

Use the following procedure to directly install the software from the installation package or a network drive.

1. Logon to the client computer as **root** or as a sudo user.

If you are installing the software using a sudo user account, make sure that sudo user account is configured on this computer. For more information, see FAQ - Install.

2. Mount the installation disc on the non-global zone.

mkdir <Non-Global Zone root location>/<Non-Global Zone local directory>

mount -F lofs <Global zone software Install Disc mount point> <Non-Global Zone root location>/<Non-Global Zone local directory>

Connect to Non-Global Zone terminal

3. Run the following command from the Software Installation Package:

./cvpkgadd

- 4. The product banner and other information is displayed.
 - Press Enter.
- 5. Read the license agreement. Type y and press Enter.
- 6. Press Enter.

7. Press Enter.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

2) Advance options

BEFORE YOU BEGIN

Download Software Packages

SnapProtect Support - Platforms

Download the latest software package to perform the install.

Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

3) Exit this menu

Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

You now have a choice of performing a regular Calypso install on the physical host or installing Calypso on a virtual machine for operation within a cluster.

Most users should select "Install on a physical machine" here.

- 1) Install on a physical machine
- 2) Install on a virtual machine
- 3) Exit
- Your choice: [1]

8. If you have only one network interface, press **Enter** to accept the default network interface name and continue.

If you have multiple network interfaces, enter the interface name that you wish to use as default, and then press **Enter**.

The interface names and IP addresses depend on the computer in which

We found one network interface available on your machine. We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java GUI. the software is installed and may be different from the example shown.

- 9. Press Enter.
- **10.** Type the number associated with the **SAP for Oracle** *i***DataAgent**, **Unix File System** *i***DataAgent**, and the **MediaAgent**.

A confirmation screen will mark your choice with an "X".
 Type d for Done, and press Enter.

12. Press Enter.

13. Type the appropriate number to install the latest software scripts and press Enter.

- Select **Download from the software provider website** to download the latest software scripts. Make sure you have internet access.
- Select **Use the one in the installation media** to install the software scripts from the package or share from which the installation is currently being performed.
- Select Use the copy I already have by entering its unix path, to specify the path if you have the software script in an alternate location.
- 14. Press Enter.

15.

- Press Enter to accept the default path.
 - If you want to specify a different path, type the path and then press Enter.
 - If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press **Enter**.

Please check the interface name below, and make connections if necessary:

Physical Machine Host Name: [angel.company.com]

Please specify the client name for this machine.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe.

Physical Machine Client name: [angel]

Please select the Calypso module(s) that you would like to install.

] 1) UNIX File System iDataAgent [1101] [CVGxIDA] 2) MediaAgent [1301] [CVGxMA] ProxyHost iDataAgent [1102] [CVGxProxyIDA] 3)] 4) Documentum iDataAgent [1126] [CVGxDctmIDA]] 5) Oracle iDataAgent [1204] [CVGxOrIDA] 3) Oracle ibacangent [1105] [COGNOTBA]
6) SAP for Oracle [1205] [CVGNOTSAP]
7) SAP for MaxDB [1206] [CVGNSAPMAXDB]
8) Informix iDataAgent [1201] [CVGNIFIDA
9) Sybase iDataAgent [1202] [CVGNYbIDA] 10) DB2 iDataAgent [1207] [CVGxDB2] 11) MySQL iDataAgent [1208] [CVGxMySQL]
12) PostGres iDataAgent [1209] [CVGxPostGres] 13) Lotus Notes Database iDataAgent [1051] [CVGxLndbIDA] [a=all n=none r=reverse q=quit d=done >=next <=previous ? =help] Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 1 2 6</pre> Please select the Calypso module(s) that you would like to install. [X] 1) UNIX File System iDataAgent [1101] [CVGxIDA] [X] 2) MediaAgent [1301] [CVGxMA] 3) ProxyHost iDataAgent [1102] [CVGxProxyIDA]] 4) Documentum iDataAgent [1126] [CVGxDctmIDA]] 5) Oracle iDataAgent [1204] [CVGxOrIDA] [] J) SAP for Oracle [1205] [CVGxOrSAP] [] 7) SAP for MaxDB [1205] [CVGxSAPMAXDB] [] 8) Informix iDataAgent [1201] [CVGxIfIDA] [] 9) Sybase iDataAgent [1202] [CVGxSybIDA] [] 10) DB2 iDataAgent [1207] [CVGxDB2] [] 11) MySQL iDataAgent [1208] [CVGxMySQL] [] 12) PostGres iDataAgent [1209] [CVGxPostGres] 13) Lotus Notes Database iDataAgent [1051] [CVGxLndbIDA] [a=all n=none r=reverse q=quit d=done >=next <=previous ? helpl Enter number(s)/one of "a,n,r,q,d,>,<,?" here: d Do you want to use the agents for restore only without consuming licenses? [no] Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack. If you choose to download it from the website now, please

This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media

3) Use the copy I already have by entering its unix path

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176 MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

In order to make sure that the client computer has ${\tt read/write}$ access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&*():/?\

- 16. Press Enter to accept the default location.
 - Enter a path to modify the default location and press Enter.
 - All the modules installed on the computer will store the log files in this directory.

17. Type Yes and press Enter.

18. Type the Group name and then press Enter.

19. This prompt is relevant only when you install on Solaris. Press Enter to accept the default value for Number of Streams.

> You can type the Number of Streams that you plan to run at the same time and then press Enter.

20. Press **Enter** if you do not want the changes to be updated automatically.

- If you want the changes to be made automatically, type Yes and then press Enter.
- You will come across this prompt when you install the software on the earlier versions of Solaris.

21. Press Enter.

You will see this prompt if you have accepted the default no and pressed Enter in the Press <ENTER> to continue. above step.

22. Press Enter.

You will see this message if you have accepted the default answer and pressed Enter in step 20.

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100ME of free space available. All log files will be created in a "calypso/Log_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later.

If you're planning to backup Oracle DB you should use "dba" group.

Would you like to assign a specific group to Software? [yes]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.

In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "oinstall" group here.

Group name: oinstall

REMINDER

If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "oinstall".

Number of Streams

IMPORTANT : Please read install document "Configure Kernel Parameters - Unix/Macintosh" from "Books Online" before you start configuring kernel parameters. Please enter the total number of streams that you plan to run at the same time. We need to make sure that you have enough semaphores and shared memory segments configured in /etc/system.

Number of streams [10]

We now need to modify the /etc/system configuration file on this computer. It is done to make sure that there will be enough shared memory and semaphores available for Calypso programs. Please review the changes below and answer "yes" if you want us to apply them to the /etc/system file. Otherwise, the installation will proceed, the changes will be saved to some other file, and you will have to apply them manually.

set shmsys:shminfo_shmmni=8570 (was 7930)
set shmsys:shminfo_shmseg=8420 (was 7780) set semsys:seminfo_semmns=10320 (was 9680) set semsys:seminfo_semmni=8570 (was 7930) set semsys:seminfo_semmsl=8570 (was 7930) Do you want us to apply these changes now? [no]

Changes saved into /etc/system.gal.1744

Although a 'no' answer can be selected to this question during install, the user should make sure the min requirements (below) for shared memory are met, otherwise the backups may fail (the message in logs is 'could not start the pipeline').

set shmsys:shminfo_shmmax=4199304 set shmsys:shminfo_shmmin=1
set semsys:shminfo_shmmni=640
set semsys:shminfo_shmseg=640
set semsys:seminfo_semmns=640

		set semsys:seminfo_semmni=640 set semsys:seminfo_semms1=640 set maxusers=256 Press <enter> to continue.</enter>
23.	Type a network TCP port number for the Communications Service (CVD) and press Enter .	Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.
	Type a network TCP port number for the Client Event Manager Service (EvMgrC) and press Enter .	Tunning on the same matrime. The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.
		Please enter the port numbers.
		Port Number for CVD : [8400]
		Port Number for EvMgrC: [8402]
24.	If you do not wish to configure the firewall services, press Enter .	Is there a firewall between this client and the CommServe? [no]
	If this computer is separated from the CommServe by firewall(s), type Yes and then press Enter .	
	For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.	
25.	Type the fully qualified CommServe host name and press Enter.	Please specify hostname of the CommServe below. Make sure
	Ensure that the CommServe is accessible before typing the name;	the hostname is fully qualified, resolvable by the name services configured on this machine.
	otherwise the installation will fail.	CommServe Host Name: mycommserve.company.com
26.	Press Enter.	Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters.
		1) Use Cell level policy
		2) Always use Global filters
		3) Do not use Global filters
		Please select how to set the Global Filters for the default subclient? [1]
27.	Type the appropriate number to select the Client Group and press Enter .	Client Group(s) is currently configured on CommServe cs.company.com. Please choose the group(s) that you want
	This screen will be displayed only if Client Groups are configured for the CommCell	<pre>to add this client client.company.com to. [] 1) Unix</pre>
		[] 2) DR
		<pre>[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]</pre>
		<pre>Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 1</pre>
28.	A confirmation screen will mark your choice with an " X ". Type d for Done , and press Enter .	Client Group(s) is currently configured on CommServe cs.company.com. Please choose the group(s) that you want to add this client client.company.com to.
		[X] 1) Unix
		[] 2) DR
		<pre>[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]</pre>
		Enter number(s)/one of "a,n,r,q,d,>,<,?" here: d
29.	Enter the number associated with the storage policy you want use and press Enter.	Please select one storage policy for this IDA from the list below:
		1) SP StandAloneLibrary2 2
		2) SP Library3 3
		3) SP MagLibrary4 4
		Storage Policy: [1]
30.	Type the path of the SAPEXE directory and then press Enter .	Please specify the location of SAPEXE directory. SAPEXE:
31.	Type 3 to the Exit option and press Enter . The installation is now complete.	Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail- over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.
		Currently you have Calypso installed on physical node

angel.company.com.

Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster.

1) Add another package to angel.company.com

2) Install Calypso on a virtual machine

3) Exit

Your choice: [3]



Getting Started - SAP for Oracle Configuration

Previous Next >

CONFIGURATION

2.

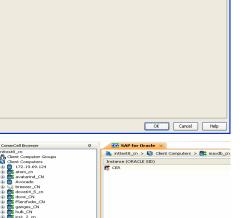
٠ client. • Click OK.

Once the SAP for Oracle iDataAgent has been installed, configure an Instance to facilitate backups. Each instance references an Oracle database. Also it is recommended to create separate subclients for data and log backups. The following sections provide the necessary steps required to create and configure these components for a first SnapProtect backup of an Oracle database.

- 1. • From the CommCell Browser, navigate to Client Computers | < Client >.
 - Right-click the client and select **Properties**.

• Click on the Advanced tab.

A Concolonada A Conc	What's seed* ×
ConnCel traver P Aprils 1 objects)	Image: State
Client Computer Proper General Version Security Job Configuration Encryption	ties Adhalav Cardol Groups Frewall Configuration Network Throtting Policies (Advances) Contract Indexing Registry Key Settings Client Side Deduplication
CDR Log File Location 2 C Enable SnapProtect C Enable retry on network of Retry Frequency (seconds Retry Count	
	OK Cancel Help



- з. • From the CommCell Browser, navigate to <Client> | SAP for Oracle.
 - Right-click SAP for Oracle and click All Tasks | New Instance (ORACLE SID).

Select the Enable SnapProtect option to enable SnapProtect backup for the

Enter the Instance Name.

4.

• Enter the user name in User Account to access the Oracle application on a Unix client.

 ${\tt Use < SID_name > adm, } \ in \ order \ to \ perform \ backup \ and \ restore \ operations \ from \ }$ CommCell Console for the associated instance.

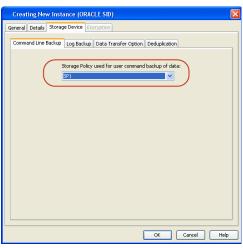
Make sure that the user has administrator privileges to access the Oracle application.

- Browse or enter the path to the Oracle application files in Oracle Home.
- Browse or enter the path to the Oracle data and control files in SAP DATA PATH.
- Select a **Storage Policy** from the drop down list.

- 5. Click **Details** tab and add the following information:
 - Enter the target database connect string in **Connect String**.
 - Browse or enter the path to the SAP EXE folder in SAP EXE Folder (Required).

Creating New Instance (ORACLE SID)
General Details Storage Device Encryption SnapProtect Operations
Client Name: sunsign
iDataAgent: SAP for Oracle
Instance (ORACLE SID): CER
User Account: 2 CERadm
ORACLE HOME: 3 /database/orade10g Browse
SAP DATA PATH: 4 /database/orade10g/SAPDB/CER Browse
Storage Policy used for the data of default subclent:
Description
OK Cancel Help
Creating New Instance (ORACLE SID)
General Details Storage Device Encryption
Connect String: sys / •••••• @ cer
SAP EXE Folder (Required): /usr/sap/CER/sys/exe/run
Browse
OK Cancel Help
Crastics New Jostanes (ODACLE SID)
Creating New Instance (ORACLE SID)

- 6. Click Storage Device tab.
 - Select a **Storage Policy used for user command backup of data** from the drop down list.



- 7.
 - Click Log Backup tab.
 - Select a **Storage Policy used for all Archive Log backups** from the drop down list.
 - Click OK.

- 8. From the CommCell Browser, navigate to *Client* | SAP for Oracle.
 - Right-click the <Instance> and click All Tasks | New Subclient.

9. In the **Subclient Name** field, type a name.

B C nagaraju_2_cn	2 Dranks P Provine Backup Data Restore Delete Delete Delete New SubJeiert 3 3
Creating New Subclien General Content Pre/Post P Client Name: Billing Department:	t rocess Storage Device Activity Control Encryption linuxsep_CN
iDataAgent: Instance (ORACLE SID):	SAP for Oracle
Subclient name:	SC1

CER Properties

Inttest8_cn Clent Computer Groups Clent Computers 172.19.69.124

__cn arind__CN

1

Seneral Details Storage Device Encryption Security
Command Line Backup Log Backup Data Transfer Option Deduplication

SP1

Storage Policy used for all Archive Log backups

Subclient Name

Number of Archive Log Backup Streams

V Data Paths

2

OK Cancel Help

🚺 Client Computers > 🚉 maxdb_cn > 🛄

10.

- Click the SnapProtect Operations tab.
- Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
- Select the storage array from the Available Snap Engine drop-down list.
- From the Use Proxy list, select the MediaAgent where SnapProtect and backup copy operations will be performed.

When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer. OK Cancel Help

• Click Use Separate Proxy for Snap to Tape if you want to perform backup copy operations in a different MediaAgent.

Select the MediaAgent from the **Proxy** list.

Creating New Subclient
General Content Pre/Post Process Storage Device Activity Control Encryption 1 SnapProtect Operations
2 V EnepProtecti 3
Available Snap Engines
4 Enter Array Credentials
Use Proxy
Use Separate Proxy for Snap to Tape
Proxy
Use source if proxy is unreachable
OK Cancel Help

11. Click the **Content** tab and clear the check box for **Backup Archive Log**.

Creating New Subclient							
General Content Pre/Post Process Storage Device Activity Control Encryption							
Selective Online Full							
Backup Device: ③ Util_File							
Data							
Backup Mode: Online Database Offline Database Online Subset							
Current Database View: Refresh							
CER H-II PSAPCER H-II PSAPLERUR H-II PSAPLNDO H-II SYSAUX H-II SYSTEM							
Items in bold are not included in any Online Subset subclient.							
Backup Archive Log Archive Delete Deable Switch Current Log Archive Log Second Copy							
OK Cancel Help							

- Click the **Storage Device** tab.
 - Select a **Data Storage Policy** from the drop down list.
 - Click OK.

13.

Creating New Subclient	
General Content Pre/Post Process Storage Device Activity Control Encryption	1
Data Storage Policy Data Transfer Option Deduplication	
Data Storage Policy	
SP_Regular_B60	
Number of Data Backup Streams:	
OK Cancel	Help
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BackgrinescogProperties Delete Operation Window Operation Window	
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e 🔐 must byg254bt_CN e 🔐 tuest byg254bt_CN e 😭 tvmw2k8r2x54	
Creating New Subclient	
General Content Pre/Post Process Storage Device Activity Control Encryption	L
Client Name: linuxsap_CN	
Billing Department:	
iDataAgent: SAP for Oracle	
Instance (ORACLE SID): TRD	
Subclient name: SC1	
Description	

From the CommCell Browser, navigate to *Client>* | SAP for Oracle.
Right-click the *Instance>* and click All Tasks | New Subclient.

14. In the **Subclient Name** field, type a name.

15. Click the **Content** tab and clear the check box for **Data**.

• Click the **Storage Device** tab.

- Select a **Data Storage Policy** from the drop down list.
- Click OK.

Sele	Content Pr			Decidera II.		and the second
	ective Online		is Storage	Device 4	ctivity Co	oncrol Encry
Backup I						
	Device:	💽 Util_Fik	3	ORman	util	🔵 util_f
	Backup Moo					(ille - Datab
	раскир мос	ne:	Online E Online S			ITILIE Datab
		tabase View;				Refi
	CER					
	😟 - 😥 PS	APCER APCERUSR				
	€ 2 SY	APUNDO				
		STEM				
	Items in bo	ld are not incl	uded in any (Online Sub	set subcl	ient.
Ba	ckup Archive	Log		Archiv	e Delete	
		Current Log				ond Copy
					OK	Cancel
Creati	ing New S	ubclient				
General	Content Pr	re/Post Proces	;s Storage	Device 🛛	lictivity Ci	ontrol Encr
Data St	orage Policy	Data Transl	rer Option 🛛 I	Deduplica	ion	
Data	Storage Polic	cy				
	Regular_B60		<u> </u>	Data	Paths	
Numb	er of Data B	iackup Stream	s:	1	-	

ating New Subcli

SKIP THIS SECTION IF NOT USING SOLARIS.

Click Next > to Continue.

ENABLE SNAPPROTECT BACKUPS ON SOLARIS ZONE

Follow the steps given below to enable SnapProtect backups on each of the non-global zone clients containing the application data.

- 1. From the CommCell Console, navigate to **Client Computers** | *<Client>*.
 - Right-click the client and select **Properties**.

OK Cancel Help

- Click Advanced tab.
 - Select the Global Zone host name from the drop-down list.
 - Click OK.
 - We support disks on a global zone mounted using loopback File System on a non global zone.
 - This option need not be enabled if you are using a NFS share. This is because when using NFS mount paths, the operations are limited to the non-global zone and does not use the global zone.

🛆 CommCell Browser 🛛 🖗	What's new? ×				
CommNet Clent Conputer Groups	What's new?				
	Laptop Backup Laptop Backup Agent to protect data on laptops and desktops used in remote offices and outside of a doma network: Backups can be performed resultesty using automatic schedules bared on network connectivity				
Security Properties 3	Show on startup				
- 1 Policies - Po	Solution X				
- 🙀 Content Director	Job Controller FL Job ID Operation Client Co Agent Type Subclient Job Type Phase Storage MediaAg				
	There are no jobs currently running.				
	S Running: 0 Pending: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams: 0 High W				
	Event Wever ×				
	Event Wewer Seven. Event Job Date Progr Compu Event C Description				
	118 18.07/21/2010 12:00:29 3xM4a munthy 19:880 Data Anino operation has				
🛆 ConmCell Browser	 117 18 07/21/2010 12:000 12:00645 numbry 19/322 Data Aging operation has 116 07/21/2010 11:00:04 EVMpr5 numbry 35:255 User [admin] has logged off. 				
🖗 Agents 👻	113 07/21/2010 11:02:02 EVMprS murphy 35:254 User [admin] has logged on. 110 07/21/2010 10:38:20 EvMorS murphy 35:254 User Ladmin] has logged on.				
	II Pause Playing Information, Minor, Major, Critical, Maximum events shown: 200				
1 object(s)	waphy ad				
Client Computer Proper	rties				
	Activity Control Groups Firewall Configuration Network Throttling Policies Advanced Content Indexing Registry Key Settings Client Side Deduplication				
	1				
CDR Log File Location					
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Cox Log me Location	Browse				
Concept Pile Excession	Browse				
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Enable SnapProtect Enable retry on network	errors				
Enable SnapProtect Enable retry on network Retry Frequency (seconds	arrors a) 30 [-]				
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Enable SnapProtect Enable SnapProtect Enable retry on network Retry Frequency (seconds Retry Count 2	errors				
Enable SnapProtect Enable retry on network Retry Frequency (seconds	arrors a) 30 [-]				
Enable SnapProtect Enable SnapProtect Enable retry on network Retry Frequency (seconds Retry Count 2	errors				
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Enable SnapProtect Enable retry on network Retry Frequency (seconds Retry Count	errors				
Enable SnapProtect Enable SnapProtect Enable retry on network Retry Frequency (seconds Retry Count 2	errors				
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Enable SnapProtect Enable SnapProtect Enable retry on network Retry Frequency (seconds Retry Count 2	errors				
Enable SnapProtect Enable retry on network Retry Frequency (seconds Retry Count 2	errors				

 Repeat the above steps on all the non-global zone clients containing the application data.

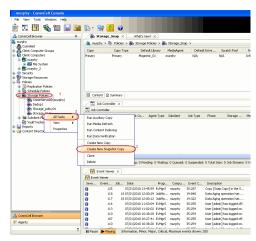
SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

CREATE A SNAPSHOT COPY

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- 1. From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Create New Snapshot Copy.



- Enter the copy name in the **Copy Name** field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.

2.

Next >

Selective Copy General Retention	Associations Copy Policy	Advanced Data Paths	Deduplic Data Path Configu	
Copy Information				_
Copy <u>N</u> ame:) 2
Primary Copy				
Default Index Destinatio	n			
Library:				~
MediaAgent:				*
Drive Pool:				*
Scratch Pool:				*
3				_

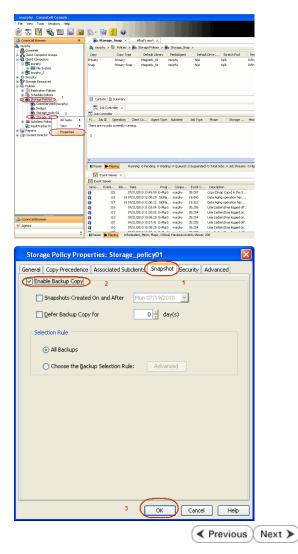
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

1.

- Click the **Snapshot** tab.
- Select **Enable Backup Copy** option to enable movement of snapshots to media.
- Click OK.



Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS	SOFTWARE STORAGE ARRAY	
3PAR	DATA REPLICATOR	
DELL COMPELLENT		
DELL EQUALLOGIC		
EMC CLARIION, VNX		
EMC SYMMETRIX		
FUJITSU ETERNUS DX		
HITACHI DATA SYSTEMS		
HP EVA		
IBM SVC		
IBM XIV		
LSI		
ΝΕΤΑΡΡ		
NETAPP WITH SNAPVAULT/SNAPMIRROR		

Previous Next >>

SnapProtect[™] Backup - 3PAR

< Previous Next >

PRE-REQUISITES

- 3PAR Snap and 3PAR Clone licenses.
- Thin Provisioning (4096G) and Virtual Copy licenses.
- Ensure that all members in the 3PAR array are running firmware version 2.3.1 (MU4) or higher.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



3.

		fare Pairs (R Backup Settings	E-Mail 8.115 Configuration	
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		2	Ø	<u> </u>	
	0		7/21/2010 10:38:20 EvM		User (admin) has logged on.
Array Management					
Control Host	Name	User Name	Snap Vendor	Description	× Add
fidk.hct.commvault.com	5001438002	hct\administr			Edit
172.19.66.22		grpadmin	Dell Equalogic		
172.19.125.226	6000279	admin	IBM XIV		
172.19.66.91	APM0003340	admin	EMC CLARIION		-
172.19.66.69	10881	system	HDS		

What's new?

💅 Alerts

5

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4

List Sn

OK Cancel Help

Diagonal and the second second

172 19 71 26

13

Audit Trai

- Select **3PAR** from the **Snap Vendor** list.
 - Specify the 16-digit number obtained from the device ID of a 3PAR volume in the **Name** field.

Array Managemen	t 🔀
1 Snap Vendor	3PAR 🗸
Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	from this device group
Description	
OK	Cancel Help

Follow the steps given below to calculate the array name for the 3PAR storage device:

- 1. From the 3PAR Management console, click the **Provisioning** tab and navigate to the **Virtual Volumes** node. Click any volume in the **Provisioning** window
- 2. From the Virtual Volume Details section, click the Summary tab and write

down the **WWN** number. This is the device ID of the selected volume.

3. From the **Virtual Volume Details** section, click the **Summary** tab and write down the **WWN** number.

This is the device ID of the selected volume.

This WWN may be 8-Byte number (having 16 Hex digits) or 16 Byte number (having 32 Hex digits).

- 4. Use the following formula to calculate the array name:
 - For 8 Byte WWN (16 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

where $\mathtt{DevID.substr}\left(4,3\right)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr(12,4)}$ is the next 4 digits after the twelfth digit from the WWN number

For example: if the WWN number is 50002AC0012B0B95 (see screenshot given below for 8 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

DevID.substr(4,3) is 2AC and DevID.substr(12,4) is 0B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

• For 16 Byte WWN (32 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

where ${\tt DevID.substr}\,(4,3)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr}\,(26,\,6)$ is the next 6 digits after the twenty sixth digit from the WWN number

For example: if the WWN number is 60002AC50000000000052200000B95 (see screenshot given below for 16 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

DevID.substr(4,3) is 2AC and DevID.substr(26,6) is 000B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

- Enter the IP address of the array in the **Control Host** field.
 - Enter the access information of a local 3PAR Management user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the CPG group created on the array to be used for snapshot operations.

If you do not specify a CPG group, the default CPG group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

4.

	16 Byte WWN		8 Byte WWN
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SnapProtect[™] Backup - Dell EqualLogic

PRE-REQUISTIES

WINDOWS

Microsoft iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

UNIX

iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

FIRMWARE VERSION

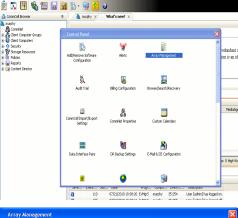
- Ensure that all members in the EqualLogic array are running firmware version 4.2.0 or higher.
- After upgrading the firmware, do either of the following:
 - o Create a new group administration account in the firmware, and set the desired permissions for this account.
 - If you plan to use the existing administration accounts from version prior to 4.2.0, reset the password for these accounts. The password can be the same as the original.

If you do not reset the password, snapshot creation will fail.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next 🕨

Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			Delete
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	List Snap
172 19 71 26	MN1963C	admin	TRM YTV		×	LISC DITOP

Click Add.

2.

- **3.** Select **Dell Equallogic** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name field.

No entry is required in the **Name** field if there is no Management IP address configured.

• Specify the Group IP address in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Management IP
address and Group IP address for the Dell Equallogic storage device.

- Enter the user access information of the Group Administrator user in the **Username** and **Password** fields.
 - For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones in the **Device Group** field.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the storage pool specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

4.

Array Manageme	nt 🔀
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User Name	
4 Password	
Confirm Password	
5 Device Group	
6 Use devices only	y from this device group
Description	
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	Previous Next >

SnapProtect[™] Backup - EMC Clariion, VNX

Previous Next >

PRE-REQUISITES

LICENSES

- Clariion SnapView and AccessLogix licenses for Snap and Clone.
- SYMAPI Feature: BASE/Symmetrix license required to discover Clariion storage systems.

You can use the following command to check the licenses on the host computer:

C:\SYMAPI\Config> type symapi_licenses.dat

ARRAY SOFTWARE

• EMC Solutions Enabler (6.5.1 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and NaviAgent installed on the client and proxy computers.
- If AccessLogix is not enabled, go to the Navisphere GUI, right-click EMC Clariton Storage System and click Properties. From the Data Access tab, select Enable AccessLogix.
- Clariion storage system should have run successfully through the Navisphere Storage-System Initialization Utility prior to running any Navisphere functionality.
- Ensure enough reserved volumes are configured for SnapView/Snap to work properly.

For EMC VNX:

• EMC Solutions Enabler (7.2 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and Navisphere/Unisphere Host Agent installed on the client and proxy computers.
- VNX storage system should have run successfully through the Unisphere Storage-System Initialization Utility prior to running any Unisphere functionality.

SETUP THE EMC CLARIION

Perform the following steps to provide the required storage for SnapProtect operations:

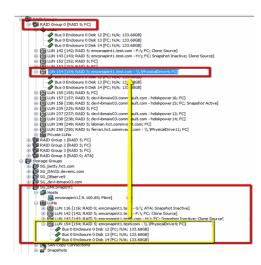
- 1. Create a RAID group
- 2. Bind the LUN
- 3. Create a Storage Group
- 4. Register the client computer (covered by installing NaviAgent)
- 5. Map the LUNs to the client computer where the NaviAgent resides
- 6. Reserved/Clone volumes target properly for SnapView

For example, as shown in the image on the right, the **Clariion ID** of **APM00033400899** has the following configuration:

- a RAID Group 0 provisioned as a RAID-5 group (Fiber Channel drives)
- LUNs are mapped to Storage Group SG_EMCSnapInt1 with LUN ID of #154 present to client computer emcsnapint1.

The example shows the serial number of LUN 154:

- RAID Group: RAID Group 0, containing 3 physical disks
- Storage Group: currently visible to a single client computer
- LUN is shown as a Fiber Channel device
- The devices under LUN 154 reside on RAID Group 0 which has RAID-5 configuration.



AUTHENTICATE CALYPSO USER INFORMATION FOR THE NAVIAGENT

Follow the steps below to specify the authorization information for EMC Solutions Enabler and Navishphere CLI to ensure administrator access to the Navisphere server.

1. To set the authorize information, run the symcfg authorization command for both the storage processors. For example:

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPA IP> -username admin -password password

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPB IP> -username admin -password password

2. Run the following command to ensure that the Clariion database is successfully loaded.

symcfg discover -clariion -file AsstDiscoFile

where AsstDiscoFile is the fully qualified path of a user-created file containing the host name or IP address of each targeted Clariion array. This file should contain one array per line.

3. Create a Navisphere user account on the storage system. For example:

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPA IP> -Scope 0 -User admin -Password password

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPB IP> -Scope 0 -User admin -Password password

- 4. Restart the NaviAgent service.
- 5. Run snapview command from the command line to ensure that the setup is ready.

On Unix computers, you might need to add the Calypso user to the agent.config file.

Before running any commands ensure that the EMC commands are verified against EMC documentation for a particular product and version.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

1.

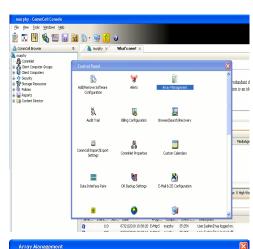
2. Click Add.

- **3.** Select **EMC CLARiiON** from the **Snap Vendor** list for both Clariion and VNX arrays.
 - Specify the serial number of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the serial number for the EMC Clariion storage device.

- Enter the access information of a Navisphere user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
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SnapProtect[™] Backup - EMC Symmetrix

< Previous) Next >

PRE-REQUISITES

• EMC Solutions Enabler (6.4 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

• SYMAPI Feature: BASE /Symmetrix licenses for Snap, Mirror and Clone.

You can use the following command to check the licenses on the host computer:

```
C:\SYMAPI\Config> type symapi_licenses.dat
```

By default, all functionality is already enabled in the EMC Symmetrix hardware layer. However, a Hardware Configuration File (IMPL) must be enabled before
using the array. Contact an EMC Representative to ensure TimeFinder and SRDF functionalities have been configured.

SETUP THE EMC SYMMETRIX

For SnapProtect to function appropriately, LUN Masking records/views must be visible from the host where the backup will take place:

- For DMX, the Masking and Mapping record for vcmdb must be accessible on the host executing the backup.
- For VMAX, the Masking view must be created for the host executing the backup.

CONFIGURE SYMMETRIX GATEKEEPERS

Gatekeepers need to be defined on all MediaAgents in order to allow the Symmetrix API to communicate with the array. Use the following command on each MediaAgent computer:

symgate define -sid <Symmetrix array ID> dev <Symmetrix device name>

where <Symmetrix device name> is a numbered and un-formatted Symmetrix device (e.g., 00C) which has the MPIO policy set as FAILOVER in the MPIO properties of the gatekeeper device.

LOAD THE SYMMETRIX DATABASE

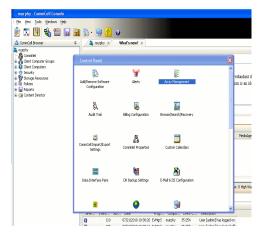
If you have the SYMCLI software installed, it is recommended that you test your local Symmetrix environment by running the following command to ensure that the Symmetrix database is successfully loaded:

symcfg discover

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- з.
- Select EMC Symmetrix from the Snap Vendor list.
- Specify the Symm ID of the array in the Name field.

For reference purposes, the screenshot on the right shows the Symmetrix array ID (Symm ID) for the EMC Symmetrix storage device.

4.

- If Symcfg Authorization is enabled on the Symmetrix Management Console, enter the access information for the Symmetrix Management Console in the Username and Password fields.
- In the Device Group field, specify the name of the device group created on the client and proxy computer. The use of Group Name Service (GNS) is supported.

If you do not specify a device group, the default device group will be used for snapshot operations.

- Select the Use devices only from this device group option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

To understand how the software selects the target devices during SnapProtect operations, click here.

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SnapProtect[™] Backup - Hitachi Data Systems

PRE-REQUISITES

- Device Manager Server (7.1.1 or higher) installed on any computer.
- RAID Manager (01-25-03/05 or higher) installed on the client and proxy computers.
- Device Manager Agent installed on the client and proxy computers and configured to the Device Manager Server.

The hostname of the proxy computer and the client computer should be visible on the Device Manager Server.

- Appropriate licenses for Shadow Image and COW snapshot.
- For VSP, USP, USP-V and AMS 2000 series, create the following to allow COW operations:

COW pools

 $\,\circ\,$ V-VOLs (COW snapshots) that matches the exact block size of P-VOLs devices.

• For HUS, ensure that the source and target devices have the same **Provisioning Attribute** selected. For e.g., if the source is **Full Capacity Mode** then the target device should also be labeled as **Full Capacity Mode**.

ADDITIONAL REQUIREMENTS FOR VMWARE

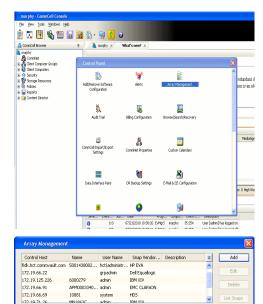
When performing SnapProtect operations on VMware using HDS as the storage array, ensure the following:

- HDS LUNs are exposed to the Virtual Server iDataAgent client and ESX server.
- All HDS pre-requisites are installed and configured on the Virtual Server iDataAgent client computer.
- The Virtual Server client computer is the physical server.
- The Virtual Machine HotAdd feature is not supported.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next >

2. Click Add.

- **3.** Select **HDS** from the **Snap Vendor** list.
 - Specify the serial number of the array in the Name field.

OK Cancel Help

For reference purposes, the screenshot on the right shows the serial number for the HDS storage device.

4.

- Enter the IP address or host name of the Device Manager Server in the **Control Host** field.
 - Enter the user access information in the Username and Password fields.
 - In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. The device group should have the following naming convention:

<COW_POOL_ID>-<LABEL> **Or** <LABEL>-<COW_POOL_ID>

where ${\tt COW_POOL_ID}{\tt (for \ COW \ job)}$ should be a number. This parameter is required.

 $<\!\!\! LABEL>$ (for SI job) should not contain special characters, such as hyphens, and should not start with a number. This parameter is optional.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

Alerts Reparts • Settings • Settings • Shoard Dr-M PriM Trim Trim Trim Trim Com	- 90 20	Microcode DKC Nicrocode SVP Configured Capacity Actual Capacity Free Space Total Cache	172.19.646 50-499-35-09400 50-499-35-09400 50-499-35-0940 50-499-35 50-27 TB 100.39-08 16.03-08 16.03-08	NASManag	Internet
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6 🤇	Use devices only	from thi	s device group		
	Description				
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Array Management

HDS

Use devices only from this device group

OK

Cancel

Help

NAS/Management

1 Snap Vendor

Description

2 Name Control Host User Name Password Confirm Password Device Group

SnapProtect[™] Backup - HP StorageWorks EVA

< Previous Next >

SETUP THE HP SMI-S EVA

HP-EVA requires Snapshot and Clone licenses for the HP Business Copy EVA feature.

The following steps provide the necessary instructions to setup the HP EVA:

- 1. Download the HP SMI-S EVA and the HP Command View EVA software on a supported server from the HP web site.
- 2. Run the Discoverer tool located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\EVAProvider\bin folder to discover the HP-EVA arrays.
- 3. Use the CLIRefreshTool.bat tool to sync with the SMIS server after using the Command View GUI to perform any active management operations (like adding new host group or LUN). This tool is located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\CXWSCimom\bin folder.

SETUP THE ARRAY INFORMATION

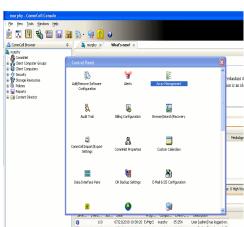
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



з.

- Select HP EVA from the Snap Vendor list.
 - Specify the World Wide Name of the array node in the Name field.



Control Host	Name	User Name	Snap Vendor	Description	*	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION			Delete
172.19.66.69	10881	system	HDS			List Snaps
172 19 71 26	MN1963C	admin	TRM YTV		~	List briaps

Array Managemer	ıt 📔	×
1 Snap Vendor	HP EVA	
2 Name)
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	r from this device group	
Description		
ОК	Cancel Help	

The World Wide Name (WWN) is the serial number for the HP EVA storage device. See the screenshot on the right for a WWN example.

The array name must be specified without the dashes used in the WWN e.g., $\tt 50014380025DEB70.$

- 4.
- Enter the name of the management server of the array in the **Control Host** field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

- Enter the user access information in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware disk group created on the array to be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

EVA Storage Network By EVA440 Constant Storage Network Constant Storage Network Constant Storage Constant Storage Constant Storage Constant Storage Constant Storage		Node WWN: 50	System optin Status Sun VA440 01-4380-025D-EB 05-08b40002-0	Imary
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Snap Vendor Name	HP EVA			
3 Control Host				
4 Password Confirm Password				
5 Device Group				
6 Use devices only Description	r from this o	device group)	

ОК

Cancel

Help

Previous Next >

SnapProtect[™] Backup - IBM SAN Volume Controller (SVC)

PRE-REQUISITES

- IBM SVC requires the FlashCopy license.
- Ensure that all members in the IBM SVC array are running firmware version 6.1.0.7 or higher.
- Ensure that proxy computers are configured and have access to the storage device by adding a host group with ports and a temporary LUN.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBMSVC from the Snap Vendor list.
 - Specify the 16-digit ID of the storage device in the **Name** field.



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What's new? >

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Next 🕨

The ${\bf ID}$ is the device identification number for the IBM SVC storage device. See the screenshot on the right for reference.

4.

44 • **•** Co C 52% 🗌 🖸 😧 111 Running Tasks Array Management Snap Vendor Name Control Host 3 User Name Password Confirm Password 5 Device Group Use devices only from this device group 6 Description OK Cancel Help

• Enter the Management IP address or host name of the array in the **Control Host** field.

- Enter the user access information of the local application administrator in the **Username** and **Password** fields.
- In the **Device Group** field, specify the name of the physical storage pools created on the array to be used for snapshot (flash copy) operations.

If you do not specify a device group, the default storage pool will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - IBM XIV

< Previous) Next >

PRE-REQUISITES

- 1. IBM XCLI (2.3 or higher) installed on the client and proxy computers. On Unix computers, XCLI version 2.4.4 should be installed.
- 2. Set the location of XCLI in the environment and system variable path.
- 3. If XCLI is installed on a client or proxy, the client or proxy should be rebooted after appending XCLI location to the system variable path. You can use the XCLI_BINARY_LOCATION registry key to skip rebooting the computer.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBM XIV from the Snap Vendor list.
 - Specify the 7-digit serial number for the array in the Name field.



Confirm Password Device Group

Description

Use devices only from this device group

OK

Cancel

Help

The **System ID** (S/N) is the serial number for the IBM XIV storage device. See the screenshot on the right for reference.

4.

System Configuration ×

General
System Name
Parameters
System Version
10.22
System 10 (5/N)
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10/Hostname 1
10/Hostname 1
10/Hostname 3

Update
Cancel

	Array Managemer	it 🔀
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3	Control Host	
	User Name	
4	Password	
1	Confirm Password	
	Device Group	
	Use devices only	from this device group
	Description	
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		Previous Next

- Enter the IP address or host name of the array in the **Control Host** field.
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - LSI

< Previous (Next >

PREREQUISITES

- Ensure that the LSI Storage Management Initiative Specification (SMIS) server has access to the LSI array through TCP/IP network to perform SnapProtect
 operations.
- Ensure that the client has access to:
 - SMIS server through TCP/IP network.
 - $\circ~$ LSI array through iSCSI or Fiber Channel network.
- Ensure that proxy computers are configured and have access to the storage device by adding a temporary LUN to the "host" using the Storage Management Console.

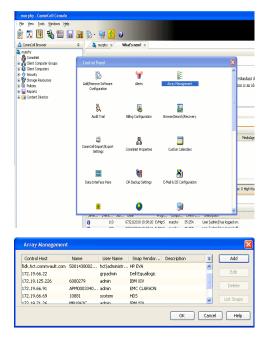
ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using SAN transport mode, ensure that the Client and the ESX Server reside in the same host group configured in the LSI array, as one volume cannot be mapped to multiple host groups.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

з.

- Select LSI from the Snap Vendor list.
 - Specify the serial number for the array in the Name field.

	Control Host		
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	Use devices only from this device group		
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Array Management

LSI

1 Snap Vendor

2 Name

The **Storage Subsystem world-wide identifier (ID)** is the serial number for the LSI storage device.

Use the SANtricity Storage Manager software to obtain the array name by clicking **Storage Subsystem Profile** from the **Summary** tab. See the screenshot on the right for reference.

- Specify the name of the device manager server where the array was configured in the **Control Host** field.
- Enter the user access information using the LSI SMIS server credentials of a loca user in the **Username** and **Password** fields.
- In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not have a device group created on the array, specify None.
 - If you specify None in the **Device Group** field but do have a device group created on the array, the default device group will be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

	Array Managemei	nt 🔀	
	Snap Vendor	LSI	
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	User Name		
4	Password		
1	Confirm Password		
5	Device Group		
6	Use devices only	y from this device group	
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SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

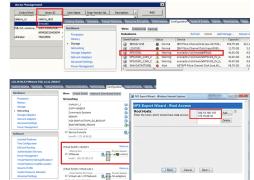
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

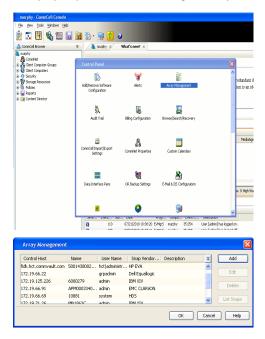
The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor	NetAee	
	NetApp	×
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User Name		
Password		
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SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the **Storage Policy** in the **Storage Policy Name** box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

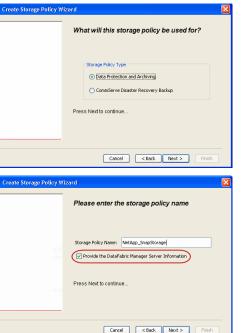
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• In the **Library** list, select the default library to which the Primary Copy should be associated.

It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



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Cancel < Back Next > Hinish
Create Storage Policy Wizard 🛛 🔀
Please select a library to be the default library for this primary copy
Library: Test
Press Next to continue
Cancel Cancel Frish

- 5. Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

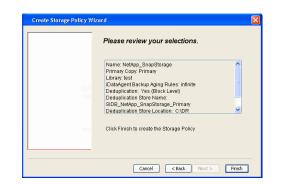
9.	٠	Provide the DataFabric Manager server information	
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- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

Create Storage Policy Wiz	zard 🔀
	Please select a MediaAgent for this copy
	MediaAgent: dhaval-2008
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard
	Please enter the streams and retention
	criteria for this policy
	Number of Device Streams:
	Choose the Primary Copy's Aging Rules: IDataAgent Backup data
	DataAgent Backup data
	Retain by Jobs 24 -
	Data Archive/Compliance Archiver
	V Infinite/ 365 Days
	Cancel < Back Next > Finish
Create Storage Policy Wiz	zard
	Do you want to enable Deduplication for the
	primary copy?
	Dedupication
	Yes Fnable Client Side Deduplication
	No
	Press Next to continue
	Cancel Sack Next > Finish
	Califer Coack Next Prish
Create Storage Policy Wiz	zard
	Please specify the location to store the
	Deduplication Store
	Name: SIDB_NetApp_SnapStor
	Deduplication Store Location:
	MediaAgent Name dhaval-2008
	Location: Browse
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard 🔀
	Please select/add the new DataFabric Manager information?
	DataFabric Manager:
	Select hwinapp02
	Host Name: venus
	Add User Name: admin
	Password:

10. Click Finish.

Cancel < Back Next > Finish

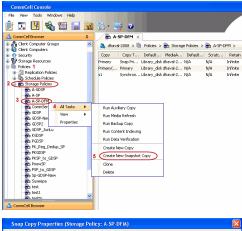


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

3. • Click the **Copy Policy** tab.

• Depending on the topology you want to set up, click **Specify Source for Auxiliary Copy** and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

Sector Copy Apposition Adverse Peduatoon Provisions General Retention Copy Policy Data Plate Data Plate Calle Solicitor Al Basiuge Boolups On and After: The 04(07/2011 Source Copy Specify Source for Advellary Copy: Timary
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OK Cancel Help Shap Copy Properties (Storage Policy: A.SP-OrfA) General Reterion Copy Policy Data Path Data Path Data Path Configuration Data Path Copy Policy: A.SP-OrfA) Deta Path Configuration Received Data Path Data Path Deta Path Deta Path Configuration Received Deta Path Provisioning Deta Path Deta Path Configuration Received Provisioning Provisioning Policy: Provisioning Policy: Selected: Selected:

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

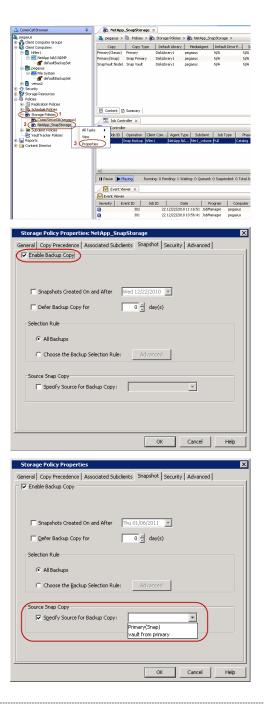
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

~

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

4.

Page 365 of 742	

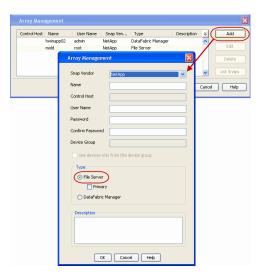
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Help

OK

Cancel

Pie view Tools Windows Help Pie View Tools Windows Help



SEE ALSO

Import Wizard Tool

Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

SnapProtect[™] Backup - Data Replicator

< Previous (Next >

PRE-REQUISITES

INSTALLATION

• The use of Data Replicator with the SnapProtect backup requires MediaAgent, File System *i*DataAgent, and ContinuousDataReplicator on the source, destination, and proxy computers.

The use of a proxy server to perform SnapProtect operations is supported when a hardware storage array is used for performing the SnapProtect backup.

• The operating system of the MediaAgent to be used for SnapProtect backup must be either the same or higher version than the source computer.

STORAGE POLICY REQUIREMENTS

The Primary Snap Copy to be used for creating the snapshot copy must be a disk library.

If the Storage Policy or the disk library being used by the subclient is updated, the subclient should be recreated.

SETUP THE ARRAY

- From the CommCell Console, navigate to **<Client>** | **<Agent>**.
 - Right-click the subclient and click **Properties**.
- Click the SnapProtect Operations tab.
 - Ensure **Data Replicator** is selected from the **Available Snap Engine** drop-down list.
 - Click OK.

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Getting Started - SAP for Oracle Backup

Previous Next >

After configuring your instance, and subclient, you are ready to perform your first backup.

PERFORM A BACKUP

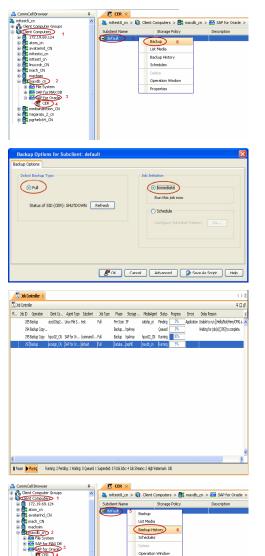
The following section provides step-by-step instructions for running your first full backup:

- From the CommCell Console, navigate to Client Computers | <Client> | SAP for Oracle | <Instance>
 - Right-click the **Subclient** and click **Backup**.
- 2. Select Full as backup type and Immediate to run the job immediately.
 - Click OK.

3. You can track the progress of the job from the **Job Controller** window of the CommCell console.

If you are using a stand-alone drive, you are prompted to load a specific cartridge into the drive. If you are using a library, you will not receive this prompt. The system loads the tapes automatically. Your cartridges should be appropriately labeled. This will enable you to locate the correct cartridge for a restore job, if necessary.

4. Once job is complete, view the details of job from the **Backup History**. Right-click the **Subclient** and select **Backup History**.



Backup Type () All 🔘 Full Differential 🔘 Incremental 🔿 Synthetic full Job Status 💿 All Completed O Failed 🚫 Killed 🔄 Specify Time Range Start Time End Time --1 ÷ OK Cancel Advanced Help 🖉 CER 🗙 👘 What's new? 🗙 😰 Event Viewer 🗙 🧐 Backup Job History of ghb 🗙
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 2010 Browse Find Wew BR Tools Log Resubmit Job... View Job Details View Media View Events

> View Logs View Stub file list View Data Verific Send Logs

- 6. You can view the following details about the job by right-clicking the job:
 - Items that failed during the job
 - Items that succeeded during the job
 - Details of the job
 - Events of the job
 - Log files of the job
 - Media associated with the job



Getting Started - Vault/Mirror Copy

< Previous) Next >

SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- **1.** From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

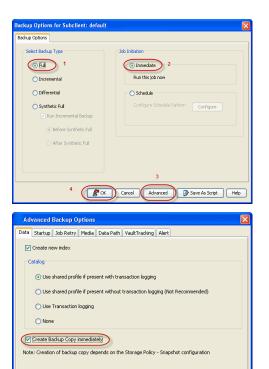
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

Cancel Help

(OK

User Guide - SnapProtect

2. Click OK.

Proups Copy Copy Type	Default Library	NediaAgent	Default Drive Pool	Scratch Pool
Dei Deimann	SNAP-199-90-MAG1	snap-vm-90_2	N/A	N/A
SNAP-COPY-SNAP Primery Snap	SMP-VM-90-MAG1	shap-vm-90_2	Ma.	N/A
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er Run Data Verification				
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Allow Maximum				
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Start New Media				
Mark Media Full On Success				
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Cancel Advanced				
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Getting Started - SAP for Oracle Restore



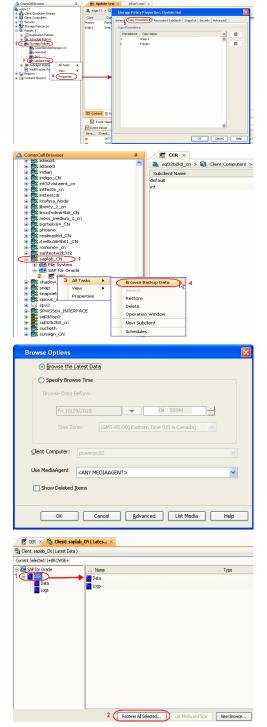
It is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following section comprehends the steps involved in restoring your entire database.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.
 You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.
 - Click OK.
- From the CommCell Console, navigate to *Client* | **SAP for Oracle**.
 - Right-click the instance that contains the data you want to restore and click All Tasks | Browse Backup Data.

3. Click OK.

- Select the instance node in the left pane. The data and logs will be automatically selected in the right pane.
 - Click Recover All Selected.



< Previous

Next >

5. • Choose the Number of streams to use for restore.

- Select the following options to restore the database.
 - Restore Archive Log
 - Restore Data
 - Recover
- Verify that the Status of the database is displayed as MOUNTED; if necessary click Refresh to get the latest status.
- Click OK.

	racle Restore Options 🛛 🛛 🔀
Destinat	ion Clent: saplab_CN Vumber of streams to use for restore:
₹ 3	Restore Control File Restore Archive Log Restore Data Refresh
Scri	ct Preview Cancel Advanced 🚱 Save As Script Help
Warnin	ie 🔀
♪	Database must be MOUNTED in order to perform entire database restore. Please keep the database in MOUNT mode and then press OK.
	Сапсе

If the database is not mounted, a warning dialog appears to remind you to set the database in $\ensuremath{\mathsf{MOUNT}}$ mode.

To mount the database, enter the following commands in the machine hosting the database:

[root]# export ORACLE_SID=<instance name>

[root]# sqlplus "/ as sysdba"

[root]# shutdown immediate;

[root]# startup mount;

Once the database is mounted, click $\ensuremath{\text{OK.}}$

6. You can monitor the progress of the restore job in the **Job Controller**.

ontroller										
										906
Operation	Client Computer	Agent Type	≤1 Subclient	Job Type	Phase	Storage	NediaAgent	Status	Progress	Error
Backup	orasolaris	DB2 on Unix	default	Full	Deta Backup	jia_data	2010954	Running	85%	
Backup	rdlab04	Oracle Database	34064-back	.pSPFile Full	Detabase B.,	ying_ora	280364		10%	Applic
Restore	capiab_CN	54P for Orade			Restore		peusi/4	Running	485	
	Backup Backup Jostone	Backup rdlab04	Backup rdiab04 Oracle Database	Backup rdiab04 Oracle Database 34064-back	Backup rdiab04 Oracle Database 34064-backupSPFile Full	Backup roleb04 Oracle Database 34064-backupSPFile Full Database B.	Backup rdab04 Oracle Database 34064-backupSPFile Full Database B ying_ora	Beckup rdiel04 Orecle Database 34064-backupSPRie Full Database Bying_one zeux04	Backup rdieb04 Oracle Database 34064-backup/SPFile Full Database B ying_one zeuzi/4 Pending	Backup roleb04 Onecle Database 34064-backupSPRIe Full Database B ying_one zeuzó4 Pending 10%

7. The database is restored to the directory where it resides.

CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.



Getting Started - DB2 iDataAgent Deployment

Use the following steps to install the DB2 iDataAgent on a Unix computer.

WHERE TO INSTALL

Install the software directly on the Unix computer that you wish to protect and has the application data.

RELATED TOPICS

Download Software Packages Download the latest software package to perform the install.

SnapProtect Support - Platforms

Verify that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE DB2 /DATAAGENT

Use the following procedure to directly install the software from the installation package or a network drive.

- 1. Logon to the client computer as root.
- If you are installing the software from CD, run the following command to mount the 2. CD:

mount -t iso9660 udf /dev/cdrom /mnt/cdrom

Run the following command from the Software Installation Package:

./cvpkgadd

- 3. The product banner and other information is displayed. Press Enter.
- Read the license agreement. Type y and press Enter. 4.
- 5. Press Enter.

6. Press Enter.

interface name and continue

as default, and then press Enter.

7.

Please select a setup task you want to perform from the list below:

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

- 2) Advance options
- 3) Exit this menu

Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

You now have a choice of performing a regular Calypso install on the physical host or installing Calypso on a virtual machine for operation within a cluster.

Most users should select "Install on a physical machine" here.

1) Install on a physical machine

2) Install on a virtual machine

3) Exit

Your choice: [1]

We found one network interface available on your machine. If you have only one network interface, press Enter to accept the default network We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be If you have multiple network interfaces, enter the interface name that you wish to use able to additionally customize Datapipe Interface Pairs used for the backup data traffic later in the Calypso Java

GUT.

The interface names and IP addresses depend on the computer in which the software is installed and may be different from the example shown.

Please check the interface name below, and make connections if necessary:



- Press Enter. 8.
- 9. Type the number associated with the DB2 iDataAgent, Media Agent, and Unix File Install Calypso on physical machine 172.19.99.62 System iDataAgent.

10. A confirmation screen will mark your choice with an "X". Type d for Done, and press Enter.

11. Press Enter.

12. Type the appropriate number to install the latest software scripts and press **Enter**.

- Select Download from the software provider website to download the latest software scripts. Make sure you have internet access.
- Select Use the one in the installation media to install the software scripts from the package or share from which the installation is currently being performed.
- Select Use the copy I already have by entering its unix path, to specify the path if you have the software script in an alternate location.
- 13. Press Enter.

14. Press Enter to accept the default path.

- If you want to specify a different path, type the path and then press Enter.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press Enter.

In order to make sure that the client computer has <code>read/write</code> access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&*():/?\

- 15. Press Enter to accept the default location.
 - Enter a path to modify the default location and press Enter.
 - All the modules installed on the computer will store the log files in this directory.

Physical Machine Host Name: [angel.company.com]

Please specify the client name for this machine.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe. Physical Machine Client name: [angel]

Please select the Calypso module(s) that you would like to install.

[] 1) MediaAgent [1301] [CVGxMA]

[] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[] 3) DB2 iDataAgent [1207] [CVGxDB2]

[a=all n=none r=reverse g=guit d=done >=next <=previous ? =help]

Enter number(s)/one of "a,n,r,g,d,>,<,?" here:3

Install Calypso on physical machine 172.19.99.62

Please select the Calypso module(s) that you would like to install.

[X] 1) MediaAgent [1301] [CVGxMA]

[X] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[X] 3) DB2 iDataAgent [1207] [CVGxDB2]

[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:d</pre>

Do you want to use the agents for restore only without consuming licenses? [no]

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media

3) Use the copy I already have by entering its unix path

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but 16. Type **Yes** and press **Enter**. some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group. We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later. If you're planning to backup Oracle DB you should use "dba" group. Would you like to assign a specific group to Software? [yes] 17. Type the Group name and then press Enter. Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run. In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here. Group name: mydb2 REMINDER If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "dba". 18. This prompt is relevant only when you install on Solaris. Number of Streams IMPORTANT : Please read install document "Configure Kernel Parameters - Unix/Macintosh" from "Books Online" before you start configuring kernel parameters. Please enter the Press **Enter** to accept the default value for **Number of Streams**. total number of streams that you plan to run at the same time. We need to make sure that you have enough semaphores You can type the Number of Streams that you plan to run at the same and shared memory segments configured in /etc/system. time and then press Enter. Number of streams [10] We now need to modify the /etc/system configuration file 19. Press Enter if you do not want the changes to be updated automatically. on this computer. It is done to make sure that there will NOTES: be enough shared memory and semaphores available for Calypso programs. Please review the changes below and answer "yes" if you want us to apply them to the /etc/system file. Otherwise, the installation will proceed, the changes will be saved to some other file, and • If you want the changes to be made automatically, type Yes and then press Enter. · You will come across this prompt when you install the software on the earlier you will have to apply them manually. versions of Solaris. set shmsys:shminfo_shmmni=8570 (was 7930) set shmsys:shminfo_shmseg=8420 (was 7780) set semsys:seminfo_semmns=10320 (was 9680) set semsys:seminfo_semmni=8570 (was 7930)
set semsys:seminfo_semmsl=8570 (was 7930) Do you want us to apply these changes now? [no] 20. Press Enter. Changes saved into /etc/system.gal.1744 You will see this prompt if you have accepted the default no and pressed Enter in the Press <ENTER> to continue. above step. Although a 'no' answer can be selected to this question during install, the user should make sure the min 21. Press Enter. requirements (below) for shared memory are met, otherwise the backups may fail (the message in logs is 'could not You will see this prompt if you have accepted the default no and pressed Enter in step 19. start the pipeline'). set shmsys:shminfo_shmmax=4199304 set shmsys:shminio_shmmin=1
set semsys:shminfo_shmmin=1
set semsys:shminfo_shmseq=640
set semsys:seminfo_semnn=640
set semsys:seminfo_semnn=640 set semsys:seminfo_semmsl=640 set maxusers=256 Press <ENTER> to continue. Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances 22. Type a network TCP port number for the Communications Service (CVD) and press Enter. running on the same machine. Type a network TCP port number for the Client Event Manager Service (EvMgrC) and The port numbers selected must be from the reserved port press Enter. number range and have not been registered by another application on this machine. Please enter the port numbers. Port Number for CVD : [8400]

23. If you do not wish to configure the firewall services, press **Enter**.

Is there a firewall between this client and the CommServe?

Port Number for EvMgrC: [8402]

		[no]
	If this computer is separated from the CommServe by firewall(s), type	[10]
	Yes and then press Enter.	
	For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.	
24.	Type the fully qualified CommServe host name and press Enter.	Please specify hostname of the CommServe below. Make sure the hostname is fully qualified, resolvable by the name
	Ensure that the CommServe is accessible before typing the name;	services configured on this machine.
	otherwise the installation will fail.	CommServe Host Name: mycommserve.company.com
25.	Type the number associated with the Client Group and press Enter . NOTES	Client Group(s) is currently configured on CommServe cs.company.com. Please choose the group(s) that you want to add this client client.company.com to.
	• This screen will be displayed only if Client Groups are configured for the CommCell.	[] 1) Unix
		[] 2) DR
		[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]
		<pre>Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 1</pre>
26.	A confirmation screen will mark your choice with an "X". Type d for done with the selection, and press Enter to continue.	Client Group(s) is currently configured on CommServe cs.company.com. Please choose the group(s) that you want to add this client client.company.com to.
		[X] 1) Unix
		[] 2) DR
		<pre>[a=all n=none r=reverse q=quit d=done >=next <=previous ? =help]</pre>
		<pre>Enter number(s)/one of "a,n,r,q,d,>,<,?" here: d</pre>
27.	Enter the number associated with the storage policy you want use and press Enter .	Please select one storage policy for this IDA from the list below:
		1) SP_StandAloneLibrary2_2
		2) SP_Library3_3
		3) SP_MagLibrary4_4
20		Storage Policy: [1]
28.	Type the path for storing the DB2 archive files and then press Enter	Please enter path to the DB2 Archive Directory. DB2 Archive Directory: /BU area/db2/log
	NOTE	
	• If the path that you enter does not exist, you will be asked if you want to create this path. In such a case, accept the yes default and then press Enter.	
29.	Type the path to the DB2 Audit Error Directory and then press Enter .	Please enter path to the DB2 Audit Error Directory.
	NOTE	DB2 Logs Directory: /BU_area/db2/log1
	 If the path that you enter does not exist, you will be asked if you want to create this path. In such a case, accept the yes default and then press Enter. 	
30.	Type the path for storing the DB2 Retrieve files and then press Enter .	Please enter path to the DB2 Retrieve Directory. DB2 Retrieve Directory: /BU_area/db2/ret
	NOTES	DB2 Retrieve Directory: /B0_area/db2/ret
	 If the path that you enter does not exist, you will be asked if you want to create this path. In such a case, accept the yes and then press Enter. 	
31.	If you want to integrate the software with DB2 now, accept yes and press Enter . If you want to do this later, type No and press Enter .	In order to complete integration of Calypso with DB2, we need to create links to some Calypso binaries in each of the DB2 instance directories. We can either do it now, or if you prefer, you can run /space/opt/calypso /iDataAgent/Db2_install.sh script later yourself.
		Would you like us to integrate Calypso with DB2 now? [yes]
32.	Specify the DB2 Instance User name that was selected when the DB2 instance was installed. This is the first bit of information required to integrate the product with the appropriate DB2 server.	To integrate Calypso with a DB2 server we need to create a set of links under lib subdirectory of the DB2 installation directory.
	Type this name or accept the default and then press Enter .	Please specify the DB2 Instance User Name that was selected when DB2 Instance was installed.
		DB2 Instance User Name: [db2inst1]
33.	Press Enter.	Calypso links will be created in /BU_area/db2as/sqllib/lib.
		Press <enter> to continue</enter>
34.	Press Enter .	Would you like to configure another DB2 instance?
		Configure? [no]
35.	Type 3 to the Exit option and press Enter .	Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine"

The installation is now complete.

belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

Currently you have Calypso installed on physical node stone.company.com.

Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster.

1) Add another package to stone.company.com

2) Install Calypso on a virtual machine

3) Exit

Your choice: [1] 3



Getting Started - DB2 Configuration

< Previous) Next >

CONFIGURATION

1.

з.

4.

Once the DB2 *i*DataAgent is installed, configure an Instance and a Backup Set to facilitate backups. Each Backup Set references a DB2 database. Also it is recommended to create separate subclients for data backups and archive log backups.

The following sections provide the necessary steps required to create and configure these components for a first SnapProtect backup of the DB2 database.

- From the CommCell Browser, navigate to Client Computers | < Client >.
- Right-click the client and select **Properties**.

CommNet Clent Computer Groups Clent Computer 1	What's new?
Clent Computer Groups	
2 R marphanet All Tasks	Laptop Backup Laptop Backup Laptop Backup
	servork. Backups can be performed reaminesty using automatic schedules based on network connectivity or
	V show on startup
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🕀 🙀 Content Director	Job Controller H., Job Operation Clerk Co., Agent Type Subclerk Job Type Phase Storage MediaAgent Thum are all the month execution particle.
	Pium Job ID Operation Client Louin Agent Type Subclient Job Type Phase Storage MediaAgent There are no jobs currently running.
	and a second second second
	II Pause Flaying Running: 0 Pending: 0 Walting: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams: 0 High Wate
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	117 18 07/21/2010 12 00 12 30Ma pwpthy 19:322 Data Adding operation bas
CommCell Browser	116 07/21/2010 11:03:04 EvMgr5 murphy 35:255 User [admin] has logged off.
Agents	113 07(21/2010 11:02:02: EvMgr5 murphy 35:254 User [admin] has logged on. 10 07(21/2010 10:08:00: EvMor5 murphy 35:256 User [admin] has logged on.
3	III 002212000 1135200 Everyd 5 muttery 35259 User (same) new topped on. In 002212001 103520 Everyd 5 muttery 35256 User (same) has topped on. II Pause Playing Information, Minor, Major, Dritkal, Maximum everyds shown: 200
1 object(s)	murphy admin
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Job Configuration Encryption	Advanced Content Indexing Registry Key Settings Client Side Deduplication
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🗆 🔽 Enable retry on network	errors
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Retry Count	40 -
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- Click on the **Advanced** tab.
 - Select the Enable SnapProtect option to enable SnapProtect backup for the
 - client.

 Click OK.

- From the CommCell Browser, navigate to Client Computers | <Client>.
 - Right-click DB2 and click All Tasks | New Instance.

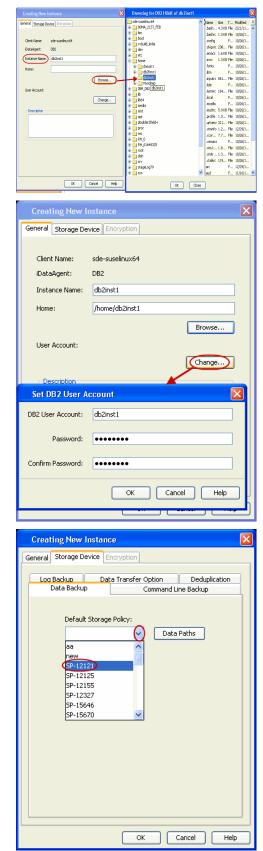
- In the Instance Name field, type a name.
 - In the Home field, click Browse and select the path to the DB2 application files.

• Click Change.

- In the **User Account** field, type the user name to access the DB2 application.
- In the **Password** field, type the password for the user.
- In the **Confirm Password** field, re-type the password for the user.

• Click OK.

- Click the **Storage Device** tab.
 - In the **Default Storage Policy** box, select a storage policy name for data backups.



- 7. Click the **Command Line Backup** tab.
 - In the **Storage Policy for Command Line Backup** box, select a storage policy name.

- Click the Logs Backup tab.
 - In the **Storage Policy for All Log Files** box, select a storage policy name for log backups.
 - Click OK.

8.

9.

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	SP-12327			
	SP-15646 SP-15670			
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Log	Example of the second s	Comm Data Transfer Optio cy for All Log Files:	n Dedu Data Paths	Dication

Delete 3 Create New Backup Set

Creating New Instance

X

- From the CommCell Browser, navigate to Client Computers | <Client> | DB2.
 - Right-click the <Instance> and click All Tasks | Create New Backup Set.

- **10.** Under **Available DB Names**, click the database name, and then click the arrow button to move the database name to the **Selection** box.
 - Click OK.

- **11.** From the CommCell Browser, navigate to the *Instance*.
 - Right-click the *Backup Set* and click **All Tasks** | **New Subclient**.

12. In the **Subclient Name** field, type a name.

13.

- Click the **SnapProtect Operations** tab.
- Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
- Select the storage array from the **Available Snap Engine** drop-down list.
- From the Use Proxy list, select the MediaAgent where backup copy operation will be performed.

When performing IntelliSnap backup copy using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.

Creating New Backup Set
Creating New Backup Names Available DB Names: Selection: COCCEP REPDB Storage Policy for All Log Files: DE2DFFData Storage Policy for All Log Files: DE2DFFData Coccel Help Cancel Help Concel tower Concel
Cancel Heb Ceneral Content Backup Arguments Backup Arguments Schered Content Backup Arguments Backup Control Content Backup Control Content Backup Arguments Backup Control Content Backup Arguments Backup Control Content Backup Arguments Content Backup Arguments Backup Control Content Backup Arguments Content

- **14.** Click the **Storage Device** tab.
 - In the **Data Storage Policy** list, select the same storage policy used for data backups in **Step 6**.

The subclient should use the same storage policy set for data backups at the instance level in order to prevent job failure.

• Click OK.

15. Click **OK**.

16.

•	From the Com	mCell Browser	, navigate to	the <instance>.</instance>

• Right-click the <Backup Set> and click All Tasks | New Subclient.

17. In the **Subclient Name** field, type a name.

Creating New Subclient		X
General Control Contro	e Device Activity	Backup Arguments Control Encryption Security
Data Storage Policy Data Tran	sfer Option Deduplica	ion
Storage Policy:		Data Paths
scorpicy1		Data Patis
Incremental Storage Policy:		N/A
		Data Paths
Create Storage Policy		
Number of Data Backup Stream	ms:	1 *
		OK Cancel Help
Backup Schedule		
his newly added item may no	ot be covered by an	existing backup schedule.
o you want to create a back	up schedule for it?	
Associate to schedule po	licy System Crea	ed (All Agent Types) 🛛 👻
) Schedule		
0		
🔵 Do Not Schedule		
	C C	K Cancel Help
ammCell Browser 🛛 🖓		
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drxw2k3b32 Properties	Delete	

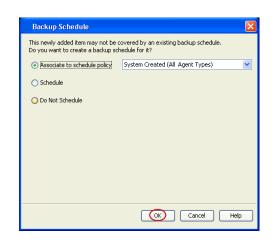
sxsles10 x2k7_32 **18.** • Click the **Content** tab.

• Clear the **Backup Data** checkbox.

- **19.** Click the **Backup Arguments** tab.
 - Click the **Back up Log Files** checkbox.
 - Click OK.

Creating New Su	bolient 🔀
Pre/Post Process	Storage Device Activity Control Encryption Security
General	Content Backup Arguments
Client Computer:	db2v97exp64
iDataAgent:	D82
Instance:	db2inst1
Backup Set:	SAMPLE
Subclient name:	subclient for log backup
Description	
	OK Cancel Help
Creating New Su	bolient 🛛 🔀
Pre/Post Process	Storage Device Activity Control Encryption Security
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Use Db2 Compre	ession
lf you select "Offline B	aokup" all running DB2 applications before backup will be terminated.
Back up Log Files	
-	- 49
🔲 Delete Log File	s Arter

Cancel Help



SKIP THIS SECTION IF NOT USING SOLARIS.

Click Next > to Continue.

ENABLE SNAPPROTECT BACKUPS ON SOLARIS ZONE

(Next 🕨

Follow the steps given below to enable SnapProtect backups on each of the non-global zone clients containing the application data.

- 1. From the CommCell Console, navigate to **Client Computers** | *<Client>*.
 - Right-click the client and select **Properties**.

à _	
CommNet	What's new?
G Clent Computers 1	Laptop Backup
2 Al Tasks	Laptop Backup Agent to protect data on laptops and desktops used in remote offices and outside of a domain
B C murr Ven +	network. Backups can be performed reamlessly using automatic schedules bared on network connectivity or
· Storage	Show on startup
Policies Policies Policies	Job Controller X
🗄 🙀 Content Director	🔁 Job Controller
	FL. Job ID Operation Client Co Agent Type Subclient Job Type Phase Storage MediaAgent There are no jobs currently running.
	Insee are no pos currency running.
	II Pause Finying Running: 0 Pending: 0 Waiting: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams: 0 High Wate
	Event Viewer X
	Event Wewer Seve., Event., Job., Date Progr., Compu., Event C., Description
	118 18 07/21/2010 12:00:29 JobHa murphy 19:840 Data Aging operation has
🛆 ConniCel Browser	117 18 07/21/2010 12:00:12 JobMa numbry 19:322 Data Aging operation has
F Agents	Inf 07/21/2010 11:00:04 EvMprS murphy 35:255 User [admin] has logged off. Inf 07/21/2010 11:02:02 EvMprS murphy 35:254 User [admin] has logged on.
*	III 07/21/2010 10:38:20 FullorS mumbu 35:256 Liser Ladmin bas instead on
	III Pause Playing Information, Minor, Major, Critical, Maximum events shown: 200
1 object(s)	nurphy admin
Client Computer Proper	ties 🛛 🛛 🕹
General Version Security	
Job Configuration Encryption	Advanced Content Indexing Registry Key Settings Client Side Deduplication
	1 —
CDR Log File Location	
	Browse
Enable SnapProtect	
Enable retry on network	
Enable retry of network	errors
Retry Frequency (seconds	30 -
Retry Count	40 -
2	
Global zone host name)
	OK Cancel Help

- Click Advanced tab.
 - Select the **Global Zone host name** from the drop-down list.
 - Click OK.
 - We support disks on a global zone mounted using loopback File System on a non global zone.
 - This option need not be enabled if you are using a NFS share. This is because when using NFS mount paths, the operations are limited to the non-global zone and does not use the global zone.

 Repeat the above steps on all the non-global zone clients containing the application data.

SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

CREATE A SNAPSHOT COPY

Next >

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- 1. From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Create New Snapshot Copy.

- Enter the copy name in the **Copy Name** field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.

2.

File Vew Tools Windows Help	
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🛕 CommCell Browser 🛛 🔍	Borage_Snap × What's new? × What's new? × Mourphy > 10 Policies > 36 Storage Policies > 36 Storage_Snap >
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	Event Viewer ×
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	117 16 07/21/2010 12:00:12 JobMa murphy 19:322 Deta Aging operation has 116 07/21/2010 11:03:04 EvMaps murphy 39:255 User [admin] has logged off.
	3 113 07/21/2010 11:02:02 EvMgr5 murphy 35:254 User [admin] has logged on.
CommCel Browser	110 07/21/2010 10:38:20 EvMigris murphy 35:254 User [admin] has logged on. 107 07/21/2010 10:27:41 EvMigris murphy 35:255 User [admin] has logged off.
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CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

murphy - CommCell Console							
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- **2.** Click the **Snapshot** tab.
 - Select Enable Backup Copy option to enable movement of snapshots to media.
 - Click OK.

User Guide - SnapProtect

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Enable Backup Copy 2 1	
Snapshots Created On and After Mon 07/19/2010	
Defer Backup Copy for 0 day(s)	
Selection Rule	
• All Backups	
Choose the Backup Selection Rule: Advanced	
3 OK Cancel Hel	
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Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS
3PAR
DELL COMPELLENT
DELL EQUALLOGIC
EMC CLARIION, VNX
EMC SYMMETRIX
FUJITSU ETERNUS DX
HITACHI DATA SYSTEMS
HP EVA
IBM SVC
IBM XIV
LSI
ΝΕΤΑΡΡ
NETAPP WITH SNAPVAULT/SNAPMIRROR

Previous Next >>

Previous Next >

SnapProtect[™] Backup - 3PAR

< Previous Next >

PRE-REQUISITES

- 3PAR Snap and 3PAR Clone licenses.
- Thin Provisioning (4096G) and Virtual Copy licenses.
- Ensure that all members in the 3PAR array are running firmware version 2.3.1 (MU4) or higher.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



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172.19.66.69	10881	system	HDS		

What's new?

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OK Cancel Help

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- Select **3PAR** from the **Snap Vendor** list.
 - Specify the 16-digit number obtained from the device ID of a 3PAR volume in the **Name** field.

Array Managemen	t 🔀
1 Snap Vendor	3PAR 🗸
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Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	from this device group
Description	
OK	Cancel Help

Follow the steps given below to calculate the array name for the 3PAR storage device:

- 1. From the 3PAR Management console, click the **Provisioning** tab and navigate to the **Virtual Volumes** node. Click any volume in the **Provisioning** window
- 2. From the Virtual Volume Details section, click the Summary tab and write

down the **WWN** number. This is the device ID of the selected volume.

3. From the **Virtual Volume Details** section, click the **Summary** tab and write down the **WWN** number.

This is the device ID of the selected volume.

This WWN may be 8-Byte number (having 16 Hex digits) or 16 Byte number (having 32 Hex digits).

- 4. Use the following formula to calculate the array name:
 - For 8 Byte WWN (16 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

where $\mathtt{DevID.substr}\left(4,3\right)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr(12,4)}$ is the next 4 digits after the twelfth digit from the WWN number

For example: if the WWN number is 50002AC0012B0B95 (see screenshot given below for 8 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

DevID.substr(4,3) is 2AC and DevID.substr(12,4) is 0B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

• For 16 Byte WWN (32 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

where ${\tt DevID.substr}\,(4,3)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr}\,(26,\,6)$ is the next 6 digits after the twenty sixth digit from the WWN number

For example: if the WWN number is 60002AC50000000000052200000B95 (see screenshot given below for 16 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

DevID.substr(4,3) is 2AC and DevID.substr(26,6) is 000B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

- Enter the IP address of the array in the **Control Host** field.
 - Enter the access information of a local 3PAR Management user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the CPG group created on the array to be used for snapshot operations.

If you do not specify a CPG group, the default CPG group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

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SnapProtect[™] Backup - Dell EqualLogic

PRE-REQUISTIES

WINDOWS

Microsoft iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

UNIX

iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

FIRMWARE VERSION

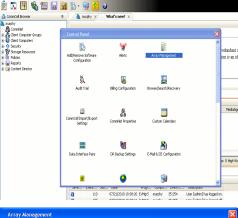
- Ensure that all members in the EqualLogic array are running firmware version 4.2.0 or higher.
- After upgrading the firmware, do either of the following:
 - o Create a new group administration account in the firmware, and set the desired permissions for this account.
 - If you plan to use the existing administration accounts from version prior to 4.2.0, reset the password for these accounts. The password can be the same as the original.

If you do not reset the password, snapshot creation will fail.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



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Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			Delete
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	List Snap
172 19 71 26	MN1963C	admin	TRM VTV		×	LISC DI IQU

Click Add.

2.

- **3.** Select **Dell Equallogic** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name field.

No entry is required in the **Name** field if there is no Management IP address configured.

• Specify the Group IP address in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Management IP
address and Group IP address for the Dell Equallogic storage device.

- Enter the user access information of the Group Administrator user in the **Username** and **Password** fields.
 - For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones in the **Device Group** field.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the storage pool specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

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SnapProtect[™] Backup - EMC Clariion, VNX

Previous Next >

PRE-REQUISITES

LICENSES

- Clariion SnapView and AccessLogix licenses for Snap and Clone.
- SYMAPI Feature: BASE/Symmetrix license required to discover Clariion storage systems.

You can use the following command to check the licenses on the host computer:

C:\SYMAPI\Config> type symapi_licenses.dat

ARRAY SOFTWARE

• EMC Solutions Enabler (6.5.1 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and NaviAgent installed on the client and proxy computers.
- If AccessLogix is not enabled, go to the Navisphere GUI, right-click EMC Clariton Storage System and click Properties. From the Data Access tab, select Enable AccessLogix.
- Clariion storage system should have run successfully through the Navisphere Storage-System Initialization Utility prior to running any Navisphere functionality.
- Ensure enough reserved volumes are configured for SnapView/Snap to work properly.

For EMC VNX:

• EMC Solutions Enabler (7.2 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and Navisphere/Unisphere Host Agent installed on the client and proxy computers.
- VNX storage system should have run successfully through the Unisphere Storage-System Initialization Utility prior to running any Unisphere functionality.

SETUP THE EMC CLARIION

Perform the following steps to provide the required storage for SnapProtect operations:

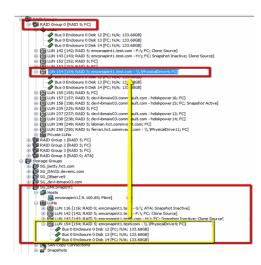
- 1. Create a RAID group
- 2. Bind the LUN
- 3. Create a Storage Group
- 4. Register the client computer (covered by installing NaviAgent)
- 5. Map the LUNs to the client computer where the NaviAgent resides
- 6. Reserved/Clone volumes target properly for SnapView

For example, as shown in the image on the right, the **Clariion ID** of **APM00033400899** has the following configuration:

- a RAID Group 0 provisioned as a RAID-5 group (Fiber Channel drives)
- LUNs are mapped to Storage Group SG_EMCSnapInt1 with LUN ID of #154 present to client computer emcsnapint1.

The example shows the serial number of LUN 154:

- RAID Group: RAID Group 0, containing 3 physical disks
- Storage Group: currently visible to a single client computer
- LUN is shown as a Fiber Channel device
- The devices under LUN 154 reside on RAID Group 0 which has RAID-5 configuration.



AUTHENTICATE CALYPSO USER INFORMATION FOR THE NAVIAGENT

Follow the steps below to specify the authorization information for EMC Solutions Enabler and Navishphere CLI to ensure administrator access to the Navisphere server.

1. To set the authorize information, run the symcfg authorization command for both the storage processors. For example:

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPA IP> -username admin -password password

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPB IP> -username admin -password password

2. Run the following command to ensure that the Clariion database is successfully loaded.

symcfg discover -clariion -file AsstDiscoFile

where AsstDiscoFile is the fully qualified path of a user-created file containing the host name or IP address of each targeted Clariion array. This file should contain one array per line.

3. Create a Navisphere user account on the storage system. For example:

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPA IP> -Scope 0 -User admin -Password password

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPB IP> -Scope 0 -User admin -Password password

- 4. Restart the NaviAgent service.
- 5. Run snapview command from the command line to ensure that the setup is ready.

On Unix computers, you might need to add the Calypso user to the agent.config file.

Before running any commands ensure that the EMC commands are verified against EMC documentation for a particular product and version.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

1.

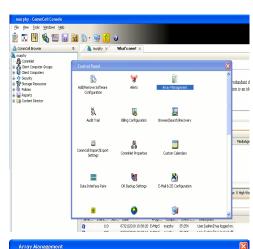
2. Click Add.

- **3.** Select **EMC CLARiiON** from the **Snap Vendor** list for both Clariion and VNX arrays.
 - Specify the serial number of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the serial number for the EMC Clariion storage device.

- Enter the access information of a Navisphere user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
72.19.66.22		grpadmin	Dell Equalogic			Edit
72.19.125.226	6000279	admin	IBM XIV			
72.19.66.91	APM0003340	admin	EMC CLARIION			Delete
72.19.66.69	10881	system	HDS		~	List Snaps
72 19 71 26	Mb1963C	admin	TRM YTV		×	List bridge
				ОК	Cancel	Help

Array Management 🛛 🔀					
1 Snap Vendor					
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SnapProtect[™] Backup - EMC Symmetrix

< Previous) Next >

PRE-REQUISITES

• EMC Solutions Enabler (6.4 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

• SYMAPI Feature: BASE /Symmetrix licenses for Snap, Mirror and Clone.

You can use the following command to check the licenses on the host computer:

```
C:\SYMAPI\Config> type symapi_licenses.dat
```

By default, all functionality is already enabled in the EMC Symmetrix hardware layer. However, a Hardware Configuration File (IMPL) must be enabled before
using the array. Contact an EMC Representative to ensure TimeFinder and SRDF functionalities have been configured.

SETUP THE EMC SYMMETRIX

For SnapProtect to function appropriately, LUN Masking records/views must be visible from the host where the backup will take place:

- For DMX, the Masking and Mapping record for vcmdb must be accessible on the host executing the backup.
- For VMAX, the Masking view must be created for the host executing the backup.

CONFIGURE SYMMETRIX GATEKEEPERS

Gatekeepers need to be defined on all MediaAgents in order to allow the Symmetrix API to communicate with the array. Use the following command on each MediaAgent computer:

symgate define -sid <Symmetrix array ID> dev <Symmetrix device name>

where <Symmetrix device name> is a numbered and un-formatted Symmetrix device (e.g., 00C) which has the MPIO policy set as FAILOVER in the MPIO properties of the gatekeeper device.

LOAD THE SYMMETRIX DATABASE

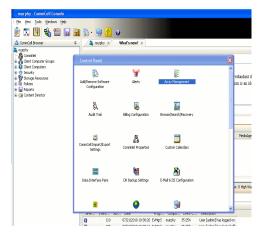
If you have the SYMCLI software installed, it is recommended that you test your local Symmetrix environment by running the following command to ensure that the Symmetrix database is successfully loaded:

symcfg discover

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- з.
- Select EMC Symmetrix from the Snap Vendor list.
- Specify the **Symm ID** of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the Symmetrix array ID (Symm ID) for the EMC Symmetrix storage device.

4.

- If Symcfg Authorization is enabled on the Symmetrix Management Console, enter the access information for the Symmetrix Management Console in the Username and Password fields.
- In the **Device Group** field, specify the name of the device group created on the client and proxy computer. The use of Group Name Service (GNS) is supported.

If you do not specify a device group, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

To understand how the software selects the target devices during $\ensuremath{\mathsf{SnapProtect}}$ operations, click here.

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SnapProtect[™] Backup - Hitachi Data Systems

PRE-REQUISITES

- Device Manager Server (7.1.1 or higher) installed on any computer.
- RAID Manager (01-25-03/05 or higher) installed on the client and proxy computers.
- Device Manager Agent installed on the client and proxy computers and configured to the Device Manager Server.

The hostname of the proxy computer and the client computer should be visible on the Device Manager Server.

- Appropriate licenses for Shadow Image and COW snapshot.
- For VSP, USP, USP-V and AMS 2000 series, create the following to allow COW operations:

 $\circ~$ COW pools

- $\,\circ\,$ V-VOLs (COW snapshots) that matches the exact block size of P-VOLs devices.
- For HUS, ensure that the source and target devices have the same **Provisioning Attribute** selected. For e.g., if the source is **Full Capacity Mode** then the target device should also be labeled as **Full Capacity Mode**.

ADDITIONAL REQUIREMENTS FOR VMWARE

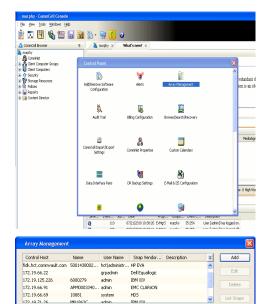
When performing SnapProtect operations on VMware using HDS as the storage array, ensure the following:

- HDS LUNs are exposed to the Virtual Server iDataAgent client and ESX server.
- All HDS pre-requisites are installed and configured on the Virtual Server iDataAgent client computer.
- The Virtual Server client computer is the physical server.
- The Virtual Machine HotAdd feature is not supported.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next >

2. Click Add.

- **3.** Select **HDS** from the **Snap Vendor** list.
 - Specify the serial number of the array in the Name field.

OK Cancel Help

For reference purposes, the screenshot on the right shows the serial number for the HDS storage device.

4.

- Enter the IP address or host name of the Device Manager Server in the **Control Host** field.
 - Enter the user access information in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. The device group should have the following naming convention:

<COW_POOL_ID>-<LABEL> **Or** <LABEL>-<COW_POOL_ID>

where ${\tt COW_POOL_ID}{\tt (for \ COW \ job)}$ should be a number. This parameter is required.

 $<\!\!\! LABEL>$ (for SI job) should not contain special characters, such as hyphens, and should not start with a number. This parameter is optional.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

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6	Confirm Password				1
5 (Device Group				
6 🤇	Use devices only	from this	s device group		
	Description				
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			((Previous	χ

Array Management

HDS

Use devices only from this device group

OK

Cancel

Help

NAS/Management

1 Snap Vendor

Description

2 Name Control Host User Name Password Confirm Password Device Group

SnapProtect[™] Backup - HP StorageWorks EVA

< Previous Next >

SETUP THE HP SMI-S EVA

HP-EVA requires Snapshot and Clone licenses for the HP Business Copy EVA feature.

The following steps provide the necessary instructions to setup the HP EVA:

- 1. Download the HP SMI-S EVA and the HP Command View EVA software on a supported server from the HP web site.
- 2. Run the Discoverer tool located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\EVAProvider\bin folder to discover the HP-EVA arrays.
- 3. Use the CLIRefreshTool.bat tool to sync with the SMIS server after using the Command View GUI to perform any active management operations (like adding new host group or LUN). This tool is located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\CXWSCimom\bin folder.

SETUP THE ARRAY INFORMATION

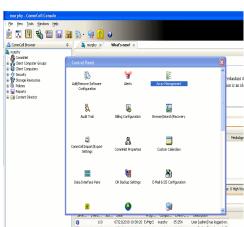
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



з.

- Select HP EVA from the Snap Vendor list.
 - Specify the World Wide Name of the array node in the Name field.



Control Host	Name	User Name	Snap Vendor	Description	*	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION			Delete
172.19.66.69	10881	system	HDS			List Snaps
172 19 71 26	MN1963C	admin	TRM YTV		~	List briaps

Array Managemer	ıt 📔	×
1 Snap Vendor	HP EVA	
2 Name)
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	r from this device group	
Description		
ОК	Cancel Help	

The World Wide Name (WWN) is the serial number for the HP EVA storage device. See the screenshot on the right for a WWN example.

The array name must be specified without the dashes used in the WWN e.g., 50014380025DEB70.

- 4.
- Enter the name of the management server of the array in the **Control Host** field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

- Enter the user access information in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware disk group created on the array to be used for snapshot operations.
- Select the Use devices only from this device group option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

 EVA Storage Network Marce EVA40 Virtual Disks Turtual Disk Groups Data Replication Hardware 	Save changes System options General Status Summary Identification Identification Name: EVA440 Node WWN: 50014380-025D-EB70 UUID: 6005-08b40002-0000
Array Management	
Snap Vendor HP EV	/A
Name	
3 Control Host	
User Name	
4 Password	
Confirm Password	
5 Device Group	
6 Use devices only from	this device group
Description	

ОК

Cancel

Help

Previous Next >

SnapProtect[™] Backup - IBM SAN Volume Controller (SVC)

PRE-REQUISITES

- IBM SVC requires the FlashCopy license.
- Ensure that all members in the IBM SVC array are running firmware version 6.1.0.7 or higher.
- Ensure that proxy computers are configured and have access to the storage device by adding a host group with ports and a temporary LUN.

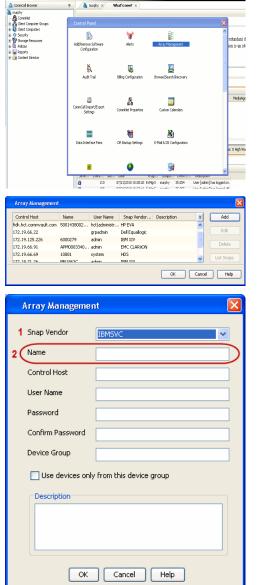
SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBMSVC from the Snap Vendor list.
 - Specify the 16-digit ID of the storage device in the **Name** field.



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The ${\bf ID}$ is the device identification number for the IBM SVC storage device. See the screenshot on the right for reference.

4.

- 44 3.6 TB Cor C 52% 🗌 🖸 😧 111 Running Tasks Array Management Snap Vendor Name Control Host 3 User Name Password Confirm Password 5 Device Group Use devices only from this device group 6 Description OK Cancel Help
- Enter the Management IP address or host name of the array in the Control Host field.
 - Enter the user access information of the local application administrator in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the physical storage pools created on the array to be used for snapshot (flash copy) operations.

If you do not specify a device group, the default storage pool will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - IBM XIV

< Previous) Next >

PRE-REQUISITES

- 1. IBM XCLI (2.3 or higher) installed on the client and proxy computers. On Unix computers, XCLI version 2.4.4 should be installed.
- 2. Set the location of XCLI in the environment and system variable path.
- 3. If XCLI is installed on a client or proxy, the client or proxy should be rebooted after appending XCLI location to the system variable path. You can use the XCLI_BINARY_LOCATION registry key to skip rebooting the computer.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBM XIV from the Snap Vendor list.
 - Specify the 7-digit serial number for the array in the Name field.



Device Group

Description

Use devices only from this device group

OK

Cancel

Help

The ${\bf System \ ID}\ ({\bf S}/{\bf N})$ is the serial number for the IBM XIV storage device. See the screenshot on the right for reference.

4.

System Configuration ×

General
System Name
Parameters
System Version
10.22
System 10 (5/N)
6006633 (\$533
10
10/Hostname 1
10/Hostname 1
10/Hostname 1
10/Hostname 3

Update
Cancel

	Array Managemer	it 🔀
	Snap Vendor Name	
3	Control Host	
	User Name	
4	Password	
1	Confirm Password	
	Device Group	
	Use devices only	from this device group
	Description	
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		Previous Next

- Enter the IP address or host name of the array in the **Control Host** field.
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - LSI

< Previous (Next >

PREREQUISITES

- Ensure that the LSI Storage Management Initiative Specification (SMIS) server has access to the LSI array through TCP/IP network to perform SnapProtect
 operations.
- Ensure that the client has access to:
 - SMIS server through TCP/IP network.
 - $\circ~$ LSI array through iSCSI or Fiber Channel network.
- Ensure that proxy computers are configured and have access to the storage device by adding a temporary LUN to the "host" using the Storage Management Console.

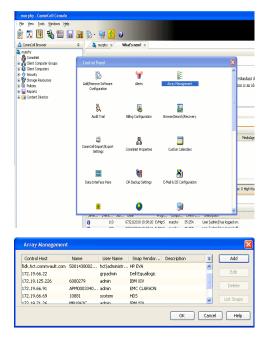
ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using SAN transport mode, ensure that the Client and the ESX Server reside in the same host group configured in the LSI array, as one volume cannot be mapped to multiple host groups.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

з.

- Select LSI from the Snap Vendor list.
 - Specify the serial number for the array in the Name field.

4.

	Control Host	
	User Name	
	Password	
	Confirm Password	
	Device Group	
	Use devices only from this device group	
	Description	
	OK Cancel Help	
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Array Management

LSI

1 Snap Vendor

2 Name

The **Storage Subsystem world-wide identifier (ID)** is the serial number for the LSI storage device.

Use the SANtricity Storage Manager software to obtain the array name by clicking **Storage Subsystem Profile** from the **Summary** tab. See the screenshot on the right for reference.

- Specify the name of the device manager server where the array was configured in the **Control Host** field.
- Enter the user access information using the LSI SMIS server credentials of a loca user in the **Username** and **Password** fields.
- In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not have a device group created on the array, specify None.
 - If you specify None in the **Device Group** field but do have a device group created on the array, the default device group will be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

A	rray Managemer	ıt 🔀	
1	Snap Vendor	L51 💌	
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3	Control Host		
1	User Name		
4	Password		
	Confirm Password		
5	Device Group		
6 (Use devices only	r from this device group	
	Description		
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SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

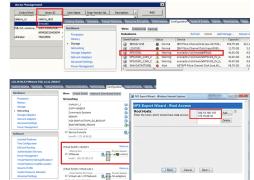
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

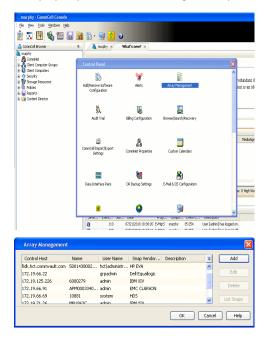
The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor	NetApp	
Name	месарр	
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	from this device group	
	, monitano do neo group	
Description		
ОК	Cancel Help	
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SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the **Storage Policy** in the **Storage Policy Name** box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

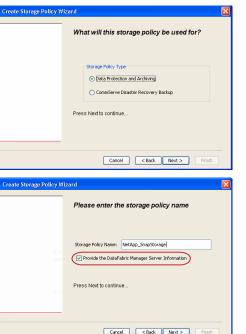
4.

3.

 In the Library list, select the default library to which the Primary Copy should be associated.

It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



Tools

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Create Storage Policy Wiz	ard 🛛 🗙
	Please select a library to be the default library for this primary copy
<u>1</u>	Library: test
area.	Press Next to continue
	Cancel < Back Next > Finish

- 5. Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

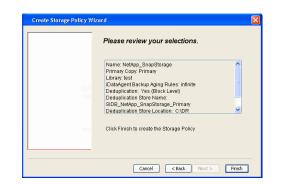
9.	٠	Provide the	DataFabric	Manager	server	information.
----	---	-------------	------------	---------	--------	--------------

- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

Create Storage Policy Wiz	eard 🔀
	Please select a MediaAgent for this copy
	MediaAgent: dhaval-2008
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard 🔀
	Please enter the streams and retention criteria for this policy
	Number of Device Streams:
	Choose the Primary Copy's Aging Rules:
	iDataAgent Backup data
	✓ Infinite/ 15 ± Days 2 ± Cycles
	Retain by Jobs 24
	Data Archive/Compliance Archiver
	V Infinite/ 365 Days
	Cancel < Back Next > Finish
Create Storage Policy Wiz	ard 🛛 🔀
	Do you want to enable Deduplication for the
	primary copy?
	Deduplication
	Yes
	Client Side Deduplication
	◯ No
	Press Next to continue
	Cancel <back next=""> Finish</back>
Create Storage Policy Wiz	zard 🛛 🔀
	Please specify the location to store the Deduplication Store
	Name: SIDB_NetApp_SnapStor
	Deduplication Store Location:
	MediaAgent Name dhaval-2008
	Location: Browse
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi:	zard
	Please select/add the new DataFabric Manager information?
	- DataEshirir Manazari
	DataFabric Manager:
	Select winapp02
	Host Name: venus
	Add User Name: admin
	Password:

10. Click Finish.

Cancel < Back Next > Finish

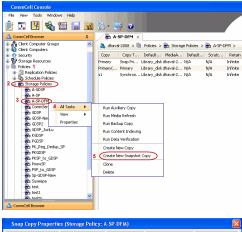


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

- **3.** Click the **Copy Policy** tab.
 - Depending on the topology you want to set up, click Specify Source for Auxiliary Copy and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drop-down list. Select the Resource Pools available from the list. 	Primary-Mirror	Primary	Snap Copy Properties (Storage Policy: A-SP-DFM)
 Primary-Vault Mirror Vault Primary-Mirror-Mirror Vault Primary-Mirror-Mirror Mirror Virtualt-Mirror Virtualt-Mirror<!--</td--><td>1</td><td>Mirror</td><td></td>	1	Mirror	
 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drop-down list. Select the Resource Pools available from the list. Click OK. The secondary snapshot copy is created. 		Primary	
 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drop-down list. Select the Resource Pools available from the list. Click OK. The secondary snapshot copy is created. 		Vault	
 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drop-down list. Select the Resource Pools available from the list. Click OK. The secondary snapshot copy is created. 	Primary-Mirror-Mirror	Mirror	
Resource Proof Info Nome: scott-mold ▼ Space Status ● Normal Total Steric 5.2 TB Available Steright H9 GB Fifer Apgrepath Space Status 04d Steric Fifer Apgrepath Space Status 04d Steric Model der_jn_ttest ● Normal 2.52 TB 961.49 GB	 Primary-Mirror-Mirror Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drot Select the Resource Pools available from th Click OK. 	Mirror pp-down list.	Bodiuss Chi and Miter: The ONITION INFORMATION INFORMATI

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

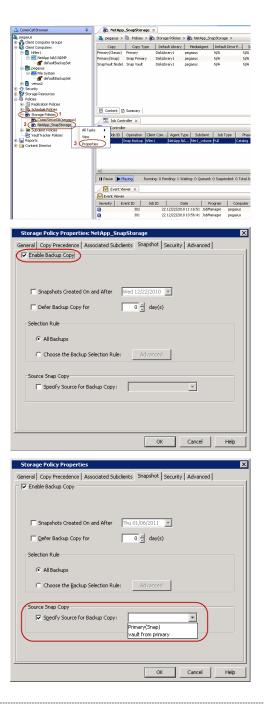
It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

OK Cancel He



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.
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Array Management

Snap Vendor

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A

NetApp

Use devices only from this device group

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

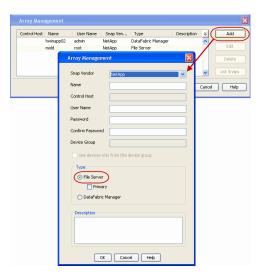
- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

4.

Page 418 of 742	2



SEE ALSO

Import Wizard Tool

Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

Getting Started - DB2 Backup

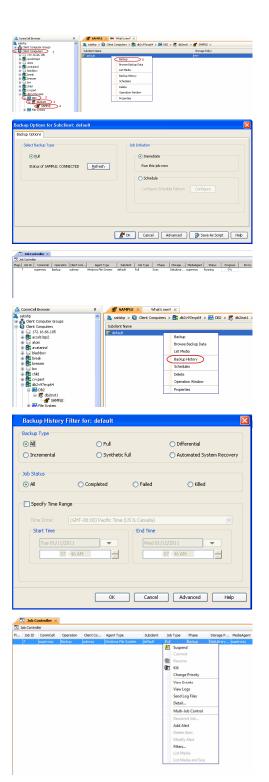
PERFORM A BACKUP

Once the storage policy is configured, you are ready to perform your first backup.

The following section provides step-by-step instructions for performing your first backup:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | DB2 | <Instance>
 - Right-click the subclient and click **Backup**.
- Select Full as backup type and Immediate to run the job immediately.
 - Click OK.
- **3.** You can track the progress of the job from the **Job Controller**.
- 4. Once job is complete, view the details of job from the **Backup History**. Right-click the **Subclient** and select **Backup History**.
- 5. Click OK.

- 6. You can view the following details about the job by right-clicking the job:
 - Items that failed during the job
 - Items that succeeded during the job
 - Details of the job
 - Events of the job
 - Log files of the job
 - Media associated with the job



< Previous

Next >

User Guide - SnapProtect

(Previous) Next >)

Getting Started - Vault/Mirror Copy

< Previous) Next >

SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- **1.** From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.
- nt Type Subclient Job Type Phase Stor Run Data Verificatio Event ID Job ID Event xCopy Opti General Job Initiation Select a Storage Policy NetApp_SnapStorage -Select Source MediaAgent <ANY MEDIAAGENT> • Copy Selection All Copies C Select A Copy -Number Of Readers 1 + C Number Of Streams Allow Maximum Start New Media 🦳 Mark Media Full On Success 🔲 Use Most Recent Full Backup For Auxcopy Wait For All Parallel Copy Resources 🗗 ок Cancel Advanced 孕 Save As Script Help chedule Deta Schedule Name C One Time Start Time 8:00 AM Daily
 Daily
 C Weekly C Monthly C Yearly Cancel OK Help Options>>

- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.



Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

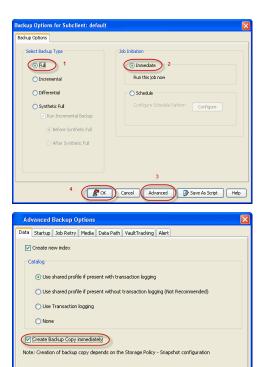
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

Cancel Help

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User Guide - SnapProtect

2. Click OK.

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Getting Started - DB2 Restore



PERFORM A RESTORE

As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following sections explain the steps for restoring the entire database to a different computer.

- **1.** From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.

You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.

- Click OK.
- From the CommCell Browser, navigate to **Client Computers | <***Client***> | DB2**.
 - Right-click the backup set and then click All Tasks | Browse Backup Data.

3. Click OK.

6 OK Cancel He 📅 SAMPLE 🗙 🗪 W CommCell Br 5satishp 🚵 satishp > 🚺 Client Corr Client Computer Groups Subclient Name 🗃 default atom blackbox 🗟 bw 🚉 child cyxpert db2v97exp6 🖮 🔣 db2in: Δ 6 5 SAMPLE All Tasks DA File Syste Browse Backup Data directdv3 View Restore dmw2k3b32
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- 4. Select the entire database in the left pane.
 - Click Recover All Selected.
- Select the Use Snap Restore checkbox to restore the database to a different computer.
 - Select the **Destination Computer** in which to restore the entire database.

Ensure that the source and destination computers have the same directory structure and user/group IDs of the DB2 instance you are restoring. User Guide - SnapProtect

• Click OK.

1 Use Snap Restore		
 Entire Database 	🔘 Database Subset	 History Files
The latest Database V	iew:	
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Destination Computer:	ibmaix22	×
Destination Instance:	db2inst3	×
Target Database Name:	SVCDB1	
Target Database Path:		Browse
3 🖉 ок	Cancel Advanced	Save As Script Help

6. You can monitor the progress of the restore job in the **Job Controller**.

CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.

Previous Next >

Getting Started - Unix File System Deployment

Use the following steps to install the File System iDataAgent on a Linux computer.

WHERE TO INSTALL

Install the software directly on the Linux computer that you wish to protect.

BEFORE YOU BEGIN

Download Software Packages

Download the latest software package to perform the install.

SnapProtect Support - Platforms

Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE UNIX FILE SYSTEM /DATAAGENT

Use the following procedure to directly install the software from the installation package or a network drive.

1. Logon to the client computer as **root** or as a sudo user.

If you are installing the software using a sudo user account, make sure that sudo user account is configured on this computer. For more information, see FAQ - Install.

2. If you are installing the software from CD, run the following command to mount the CD:

mount -t iso9660 udf /dev/cdrom /mnt/cdrom

Run the following command from the Software Installation Package:

./cvpkgadd

3. The product banner and other information is displayed.

Press Enter.

- Read the license agreement. Type y and press Enter. 4.
- 5. Press Enter.

Press Enter. 6.

7.

interface name and continue.

as default, and then press Enter.

Please select a setup task you want to perform from the list below.

Advance options provide extra setup features such as creating custom package, recording/replaying user selections and installing External Data Connector software.

1) Install data protection agents on this computer

- 2) Advance options
- 3) Exit this menu

Your choice: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "failover" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

You now have a choice of performing a regular Calypso install on the physical host or installing Calypso on a virtual machine for operation within a cluster.

Most users should select "Install on a physical machine" here.

- 1) Install on a physical machine
- 2) Install on a virtual machine
- 3) Exit
- Your choice: [1]

We found one network interface available on your machine. If you have only one network interface, press Enter to accept the default network We will associate it with the physical machine being installed, and it will also be used by the CommServe to connect to the physical machine. Note that you will be able to additionally customize Datapipe Interface Pairs If you have multiple network interfaces, enter the interface name that you wish to use used for the backup data traffic later in the Calypso Java GUI.

The interface names and IP addresses depend on the computer in which the software is installed and may be different from the example shown. Please check the interface name below, and make connections if necessary:

Physical Machine Host Name: [angel.company.com]



- 8. Press Enter.
- 9. Type the number associated with the Unix File System iDataAgent and MediaAgent.
 Press Enter.
- A confirmation screen will mark your choice with an "X".
 Type d for Done, and press Enter.

11. Press Enter.

12. Type the appropriate number to install the latest software scripts and press **Enter**.

- Select **Download from the software provider website** to download the latest software scripts. Make sure you have internet access.
- Select **Use the one in the installation media** to install the software scripts from the package or share from which the installation is currently being performed.
- Select Use the copy I already have by entering its unix path, to specify the path if you have the software script in an alternate location.
- 13. Press Enter.

14.

Press Enter to accept the default path.

- If you want to specify a different path, type the path and then press **Enter**.
- If you want to install the software binaries to an NFS shared drive, specify the directory on which you have mounted the NFS file system and then press **Enter**.

In order to make sure that the client computer has ${\tt read/write}$ access to NFS shared drive, review the steps described in Installing Software Binaries to an NFS Shared Drive.

Do not use the following characters when specifying the path:

!@#\$%^&*():/?\

- **15.** Press **Enter** to accept the default location.
 - Enter a path to modify the default location and press Enter.
 - All the modules installed on the computer will store the log files in this directory.

16. Press Enter.

Please specify the client name for this machine.

It does not have to be the network host name: you can enter any word here without spaces. The only requirement is that it must be unique on the CommServe.

Physical Machine Client name: [angel]

Install Calypso on physical machine angel

Please select the Calypso module(s) that you would like to install.

[] 1) MediaAgent [1301] [CVGxMA]

[] 2) UNIX File System iDataAgent [1101] [CVGxIDA]

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:2</pre>

Install Calypso on physical machine 172.19.99.62

Please select the Calypso module(s) that you would like to install.

[X] 1) UNIX File System iDataAgent [1101] [CVGxIDA]

[X] 2) MediaAgent [1301] [CVGxMA]

[] 3) ProxyHost iDataAgent [1102] [CVGxProxyIDA]

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here:d</pre>

Do you want to use the agents for restore only without consuming licenses? [no]

Installation Scripts Pack provides extra functions and latest support and fix performed during setup time. Please specify how you want to get this pack.

If you choose to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

1) Download from the software provider website.

2) Use the one in the installation media

3) Use the copy I already have by entering its unix path

Your choice: [1] 2

Keep Your Install Up to Date - Latest Service Pack

Latest Service Pack provides extra functions and latest support and fix for the packages you are going to install. You can download the latest service pack from software provider website.

If you decide to download it from the website now, please make sure you have internet connectivity at this time. This process may take some time depending on the internet connectivity.

Do you want to download the latest service pack now? [no]

Please specify where you want us to install Calypso binaries.

It must be a local directory and there should be at least 176MB of free space available. All files will be installed in a "calypso" subdirectory, so if you enter "/opt", the files will actually be placed into "/opt/calypso".

Installation Directory: [/opt]

Please specify where you want to keep Calypso log files.

It must be a local directory and there should be at least 100MB of free space available. All log files will be created in a "calypso/Log_Files" subdirectory, so if you enter "/var/log", the logs will actually be placed into "/var/log/calypso/Log_Files".

Log Directory: [/var/log]

Most of Software processes run with root privileges, but some are launched by databases and inherit database access rights. To make sure that registry and log files can be written to by both kinds of processes we can either make 17. Type the Group name and then press Enter.

18. Type a network TCP port number for the Communications Service (CVD) and press **Enter**.

Type a network TCP port number for the Client Event Manager Service (EvMgrC) and press ${\mbox{\bf Enter}}.$

19. If you do not wish to configure the firewall services, press **Enter**.

If this computer is separated from the CommServe by firewall(s), type $\ensuremath{\text{Yes}}$ and then press $\ensuremath{\text{Enter}}.$

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

20. Type the fully qualified CommServe host name and press Enter.

Ensure that the CommServe is accessible before typing the name; otherwise the installation will fail.

21. Press Enter.

22. Type the appropriate number to select the **Client Group** and press **Enter**.

This screen will be displayed only if Client Groups are configured for the CommCell

A confirmation screen will mark your choice with an "X".
 Type d for Done, and press Enter.

such files world-writeable or we can grant write access only to processes belonging to a particular group, e.g. a "calypso" or a "dba" group.

We highly recommend now that you create a new user group and enter its name in the next setup screen. If you choose not to assign a dedicated group to Software processes, you will need to specify the access permissions later.

If you're planning to backup Oracle DB you should use "dba" group.

Would you like to assign a specific group to Software? [yes]

Please enter the name of the group which will be assigned to all Software files and on behalf of which all Software processes will run.

In most of the cases it's a good idea to create a dedicated "calypso" group. However, if you're planning to use Oracle iDataAgent or SAP Agent, you should enter Oracle's "dba" group here.

Group name: sky1

REMINDER

If you are planning to install Calypso Informix, DB2, PostgreSQL, Sybase or Lotus Notes iDataAgent, please make sure to include Informix, DB2, etc. users into group "sky1".

Press <ENTER> to continue ...

Every instance of Calypso should use a unique set of network ports to avoid interfering with other instances running on the same machine.

The port numbers selected must be from the reserved port number range and have not been registered by another application on this machine.

Please enter the port numbers.

Port Number for CVD : [8400]

Port Number for EvMgrC: [8402]

Is there a firewall between this client and the CommServe? [no]

Please specify hostname of the CommServe below. Make sure the hostname is fully qualified, resolvable by the name services configured on this machine.

CommServe Host Name: mycommserve.company.com

Commcell Level Global Filters are set through Calypso GUI's Control Panel in order to filter out certain directories or files from backup Commcell-widely. If you turn on the Global filters, they will be effective to the default subclient. There are three options you can choose to set the filters.

1) Use Cell level policy

2) Always use Global filters

3) Do not use Global filters

Please select how to set the Global Filters for the default subclient? [1]

Client Group(s) is currently configured on CommServe cs.company.com. Please choose the group(s) that you want to add this client client.company.com to.

[] 1) Unix

[] 2) DR

[a=all n=none r=reverse q=quit d=done >=next <=previous ?
=help]</pre>

Enter number(s)/one of "a,n,r,q,d,>,<,?" here: 1

Client Group(s) is currently configured on CommServe cs.company.com. Please choose the group(s) that you want to add this client client.company.com to.

[X] 1) Unix

[] 2) DR

[a=all n=none r=reverse q=quit d=done >=next <=previous ?

=help]

list below:

Enter number(s)/one of "a,n,r,q,d,>,<,?" here: d</pre>

Please select one storage policy for this IDA from the

24. Enter the number associated with the storage policy you want use and press Enter.

SP_StandAloneLibrary2_2

2) SP_Library3_3

3) SP_MagLibrary4_4

Storage Policy: [1]

Certain Calypso packages can be associated with a virtual IP, or in other words, installed on a "virtual machine" belonging to some cluster. At any given time the virtual machine's services and IP address are active on only one of the cluster's servers. The virtual machine can "fail-over" from one server to another, which includes stopping services and deactivating IP address on the first server and activating the IP address/services on the other server.

Currently you have Calypso installed on physical node angel.company.com.

Now you have a choice of either adding another package to the existing installation or configure Calypso on a virtual machine for use in a cluster.

1) Add another package to angel.company.com

2) Install Calypso on a virtual machine

3) Exit

Previous Next >

Your choice: [3]

24. Enter the number associated with the storage policy you want use and p

25. Type 3 and press Enter.

The installation is now complete.

Getting Started - Unix File System Configuration

< Previous Next >

CONFIGURATION

1.

3.

Once installed, the Linux File System iDataAgent requires some additional configuration before running your first SnapProtect backup. Follow the steps given below to complete the configuration for this Agent.

- From the CommCell Browser, navigate to Client Computers | < Client >.
 - Right-click the client and select **Properties**.

- 2. • Click on the **Advanced** tab.
 - Select the Enable SnapProtect option to enable SnapProtect backup for the
 - client.

Job Controller x ... Job ID Operation Client Co... Agent Type Subclient Job Type Phase Storage ... II Pause Playing 🛃 Even ontrol Groups Firewall Configuration Network Throtting Polici ed Content Indexing Registry Key Settings Client Side Deduplication General Version Security Job Configuration Encryption Advanc CDR Lon File Browse Enable SnapProtect Enable retry on nei Retry Frequency (seconds) 30 ÷ Retry Count 40 ÷ OK Cancel Help 💣 defaultBackupSet 🗙 🍓 ford > 🚺 Client Comput 📑 ford > 🗖 File Browse Backup Data List Media Erase Data Find Backup History Schedules * Content 🛐 Summary

What's new? >

Laptop Backup Laptop Backup network, Back

- - Click OK.

• From the CommCell Browser, navigate to <Client> | File System. • Right click the default subclient and click Properties.

- 4. • Click the Storage Device tab.
 - In the **Storage Policy** box, select the storage policy name.

Subclient Properties of default
Activity Control Encryption Open Files Failure Actions General Content Filters Pre/Post Process Security Storage Device
Data Storage Policy Data Transfer Option Deduplication
Storage Policy:
Incremental Storage Policy: N/A
Data Paths
Create Storage Policy
OK Cancel Help
Subclient Properties of default

- 5. Click the SnapProtect Operations tab.
 - Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
 - Select the storage array from the **Available Snap Engine** drop-down list.
 - From the **Use Proxy** list, select the MediaAgent where SnapProtect and backup copy operations will be performed.
 - When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.
 - Click **Use Separate Proxy for Snap to Tape** if you want to perform backup copy operations in a different MediaAgent.

Select the MediaAgent from the **Proxy** list.

Subclient Properties of de	fault		×
General Content Activity Control Encrypt	Filters Pre/Post Process Security		1
2 SnapProtect			
Available Snap Engines	Please select a Snap Engine	·	
4	En	ter Array Credentials	
Use Proxy	yy for Soan to Tane		
Proxy		v	
Use source if proxy	is unreachable		
	OK	Cancel Help	

- Click the **Content** tab.
 - Click **Browse** and specify the content for the subclient.
 - Click OK.

6.

The subclient content must contain data that resides on the storage device volume; do not include local drives as subclient content.

The root folder (/) or a folder belonging to the root volume should not be added as subclient content.

Subclient Properties of default	
	cryption SnapProtect Operations
General Content Filters	Pre/Post Process Security
Contents of subclient:*	
/mnt/f2	Delete
	Browse
	Add Paths
1	
🔲 Enable Apple Double Support	
	1
Expand symbolic links of subclient content	Discover
*Subdie	nt content in italics uses regular expressions
	OK Cancel Help

SKIP THIS SECTION IF NOT USING SOLARIS.

Click Next > to Continue.

ENABLE SNAPPROTECT BACKUPS ON SOLARIS ZONE

Follow the steps given below to enable SnapProtect backups on each of the non-global zone clients containing the application data.

- 1. From the CommCell Console, navigate to **Client Computers** | *<Client>*.
 - Right-click the client and select **Properties**.

•	Click	Advanced	l tah
•	CIICK	Advanced	l LaD.

2.

- Select the **Global Zone host name** from the drop-down list.
 - Click OK.
 - We support disks on a global zone mounted using loopback File System on a non global zone.
 - This option need not be enabled if you are using a NFS share. This is because when using NFS mount paths, the operations are limited to the non-global zone and does not use the global zone.

🛆 CommCell Browser 🛛 🖗	What's new? ×
CommNet	
😨 🚠 Client Conputer Groups	What's new?
2 Minurghin	Laptop Backup
- 05 € AI 1593 >	Laptop Backup Agent to protect data on laptops and desktops used in remote offices and outside of a domain network. Backups can be performed resulterely using automatic schedules based on network connectivity or
a O Security	
* To Storage	Show on startup
Reports	Jab Controller X
Content Director	3ab Controller
	FL Job ID Operation Clent Co Agent Type Subclent Job Type Phase Storage MediaAgent
	There are no jobs currently running.
	¢
	II Pause 🕨 Playing Running: O Pending: O Walting: O Queued: O Suspended: O Total Jobs: O Job Streams: O High Water
	Vent Vewer ×
	Event Wever
	Seve Event Job Date Progr Compu Event C Description
	118 18 07/21/2010 12:00:29 JobMs nurphy 19:840 Data Aging operation has
🛕 CommCel Browser	 117 18 07/21/2010 12:00:12 JobMa nwphy 19:322 Data Aging operation has 116 07/21/2010 11:03:04 EVMpr5 nwphy 35:255 User [admin] has logged off.
🛒 Agents	a 113 07/21/2010 11:02:02 EVMgrS murphy 35:254 User [admin] has logged on.
:	10 0721/2010 10:38:20. Evidencial neuropsis 35:254 User Laderich has looned on If Pause Proying Information, Minor, Major, Critical, Maximum events shown: 200
1 object(s)	murphy admin
Client Computer Proper	ties 🛛 🛛
General Version Security	Activity Control Groups Firewall Configuration Network Throttling Policies
Job Configuration Encryption	Advanced Content Indexing Registry Key Settings Client Side Deduplication
	1
CDR Log File Location	
	Browse
Enable SnapProtect	
Enable retry on network	errors
Retry Frequency (seconds	30 -
Retry Count	40 +
2	
Global zone host name	· · · · · · · · · · · · · · · · · · ·
	OK Cancel Help

3. Repeat the above steps on all the non-global zone clients containing the application

Next 🕨

data.

SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

CREATE A SNAPSHOT COPY

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- 1. From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Create New Snapshot Copy.**

murphy - CommCell Console	
File Vew Tools Windows Help	B. C. A. A.
🔀 🛵 🛄 🧠 🦛 🕮 📶	b Storage_Snap × What's new? ×
a number	🙇 murphy > 🐚 Policies > 👼 Storage Policies > 💑 Storage_Shap >
Committee Glient Computer Groups Glient Computers	Copy Copy Type Default Library MediaAgent Default Drive Scratch Pool Po Primary Primary Magnetic_01 murphy N/A N/A Infi
murphy murphy murphy murphy murphy murphy	
B murphy_2 Security Security Storage Resources	
Policies Policies Policies Policies	
Schedule Policies	Content 🗋 Summary
CommServeDR(murphy)	Job Controller X
Sorage_policy01 Sorage_online All Tasks	Xob Controller Run Austilery Copy K.Co Agent Type Subclient Job Type Phase Storage Me
VaultTracker View >	Run Azonary Copy Run Media Refresh
General Properties General Director	Run Content Indexing Run Data Verflication
	Create New Copy
<	Create New Snapshot Copy
	Delete g: 0 Pending: 0 Walting: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams: 0 H
	Event Wewer x
	Event Viewer Seve Event Job Date Progr Compu Event C Description
	International Interna International Internationali
	117 18 07/21/2010 12:00:12 JobMa murphy 19:322 Data Aging operation has 116 07/21/2010 11:03:04 EvMgr5 murphy 35:255 User [admin] has logged off.
CommCel Browser	III 07/21/2010 11:02:02 EvMigris murphry 35:254 User [admin] has logged on. III 07/21/2010 10:38:20 EvMigris murphry 35:254 User [admin] has logged on.
F Agents	International Interna International Internationali
:	II Pause Flaying Information, Minor, Major, Critical, Maximum events shoen: 200
Snap Copy Propert	ies (Storage Policy: Storage_policy01) 🛛 🛛 🔀
Selective Copy	Associations Advanced Deduplication
General Retention	Copy Policy Data Paths Data Path Configuration
Copy Information	
Copy <u>N</u> ame:	
Primary Copy	
Default Index Destination	
Der ault muex Descinatio	
Library:	✓
MediaAgent:	
Drive Pool:	×
Scratch Pool:	▼
3	
	4 (OK) Cancel Help

- Enter the copy name in the **Copy Name** field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.

CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

Next >

i File Yew Tools Windows Help D 🔽 🔛 🛂 📽 🔛 📠 🖼 🕉 - 🔐 🚺 🥝 ent Default Drive ... Scratch Pool Ret N/A N/A Infin N/A N/A Infin Copy Type Default Library Medialog Primary Nagnetic_01 murphy Primary Snap Nagnetic_01 murphy 🖽 Content 🖪 Summary 3ab Controller × 🔽 Job Controller FL., Job ID Operation Client Co... Agent Type Subclient Job Type Phase Storage... Med II Pause Playing Running: 0 Pending: 0 Walting: 0 Queued: 0 Suspended: 0 Total Jobs: 0 Job Streams: 0 Hig Event W Description
 Copy [Snap Copy] In the S.,
 Data Aging operation has .,
 Data Aging operation has ..
 Data Aging operation has ..
 User [admin] has logged on.
 User [admin] has logged on. 125 118 117 116 113 110 107 Storage Policy Properties: Storage_policy01 General Copy Precedence Associated Subclient Snapshot Security Advanced Enable Backup Copy 2 1 Snapshots Created On and After Mon 07/19/2010 Defer Backup Copy for 0 📩 day(s) Selection Rule All Backups Choose the Backup Selection Rule: Advanced 3 (ок Cancel Help < Previous Next >

- Click the **Snapshot** tab.
 - Select Enable Backup Copy option to enable movement of snapshots to media.
 - Click OK.

Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS	SOFTWARE STORAGE ARRAY	
3PAR	DATA REPLICATOR	
DELL COMPELLENT		
DELL EQUALLOGIC		
EMC CLARIION, VNX		
EMC SYMMETRIX		
FUJITSU ETERNUS DX		
HITACHI DATA SYSTEMS		
HP EVA		
IBM SVC		
IBM XIV		
LSI		
ΝΕΤΑΡΡ		
NETAPP WITH SNAPVAULT/SNAPMIRROR		

Previous Next >>

SnapProtect[™] Backup - 3PAR

< Previous Next >

PRE-REQUISITES

- 3PAR Snap and 3PAR Clone licenses.
- Thin Provisioning (4096G) and Virtual Copy licenses.
- Ensure that all members in the 3PAR array are running firmware version 2.3.1 (MU4) or higher.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



3.

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	1		0	<u></u>		
	0		/21/2010 10:38:20 EvMg		User (admin) has log	
Array Management						
Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.66.22 172.19.125.226	6000279	grpadmin admin	Dell Equalogic IBM XIV			
	6000279 APM0003340	admin				Edit Delete

What's new?

💅 Alerts

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B

4

OK Cancel Help

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172 10 71 26

13

Audit Trai

- Select **3PAR** from the **Snap Vendor** list.
 - Specify the 16-digit number obtained from the device ID of a 3PAR volume in the **Name** field.

Follow the steps given below to calculate the array name for the 3PAR storage device:

- 1. From the 3PAR Management console, click the **Provisioning** tab and navigate to the **Virtual Volumes** node. Click any volume in the **Provisioning** window
- 2. From the Virtual Volume Details section, click the Summary tab and write

down the **WWN** number. This is the device ID of the selected volume.

3. From the **Virtual Volume Details** section, click the **Summary** tab and write down the **WWN** number.

This is the device ID of the selected volume.

This WWN may be 8-Byte number (having 16 Hex digits) or 16 Byte number (having 32 Hex digits).

- 4. Use the following formula to calculate the array name:
 - For 8 Byte WWN (16 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

where $\mathtt{DevID.substr}\left(4,3\right)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr(12,4)}$ is the next 4 digits after the twelfth digit from the WWN number

For example: if the WWN number is 50002AC0012B0B95 (see screenshot given below for 8 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

DevID.substr(4,3) is 2AC and DevID.substr(12,4) is 0B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

• For 16 Byte WWN (32 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

where ${\tt DevID.substr}\,(4,3)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr}\,(26,\,6)$ is the next 6 digits after the twenty sixth digit from the WWN number

For example: if the WWN number is 60002AC50000000000052200000B95 (see screenshot given below for 16 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

DevID.substr(4,3) is 2AC and DevID.substr(26,6) is 000B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

- Enter the IP address of the array in the **Control Host** field.
 - Enter the access information of a local 3PAR Management user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the CPG group created on the array to be used for snapshot operations.

If you do not specify a CPG group, the default CPG group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

4.

	16 Byte WWN		8 Byte WWN
Provisioning) Provisioning : Indens : Span-Lizommwalt.com : Virtual Volumes	Previsioning	🕽 🔟 Provisioning : InSens : Spar-Ecommunalt.com : Vistaal Valumes
v El triens	Summary Virtual Idunes Alerts	v El triens	Summary Whull Idures Allers
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Unexported	8 28:64 Januard, 208, This C1, WINCOUR 201	🐻 Unexported	8 38x64.p.gavant_208_Tel: CV_WRC00R204
By Denice Type	8 28x64 p. parant 482 Cit (dRicc) aci 8 28x64 p. parant 482 vol. Cit properties aci 9 28x64 p. parant 482 vol. Cit properties aci 9 28x64 p. parant 482 vol. Cit properties aci 9 28x64 p. parant 482 vol. Cit (dRicc) aci 9 28x64 p. parant	🖻 👸 By Device Type	 B 28x64 p.parent 428 CV (dRicc) 803 B 28x64 p.parent 428 vol. CV properties loss
🖻 🚼 By RAID Type	2dot4 peret 42 (P, rd) herape	🕨 🚼 By RAID Type	3804 parani 42 pr. dl hespan
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🕨 💭 KLMa	B HRYKWWFESTESHI Viewd	P (□ VL06)	B IRVANWESTESHI VIDAG
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🚱 Donaite	8 9_2_H2H2H_238 -	Ocnairs 😧	8 9.2,1021,235
K	Vetaal Volume Details	e	Virtual Volume Details
Common Actions		Common Actions	
😵 Greate Witual Volume .	Sunnery Settings VUINs Levout Werts	😵 Create Witual Volume	Summary Settings VLIA's Levaut Alerts
🙀 Create Wrbual Copy	General C	Create Wrtual Capy	General C
Greate Physical Copy	Name IERANAWERFE-FOIG	Greate Physical Capy	Name (REAMWATEST-FS)-61
🚱 Create CPG	ID 114	🚱 Create CPG	B 1314
🕼 Creake WURL -	Demain -	🕼 Create VIIII .	Demain -
E Systems 1	set -	E Sextern 1	Set -
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Ri Revela Conv.	Made Its	Rectande Conv.	Made IV

Array Managemen	t 🔀	
Snap Vendor	3PAR 🗸	
Name		
3 Control Host		
User Name		
4 Password		
Confirm Password		
5 Device Group		
6 Use devices only	from this device group	
Description		
ОК	Cancel Help	
	< Previous	Next >

SnapProtect[™] Backup - Dell EqualLogic

PRE-REQUISTIES

WINDOWS

Microsoft iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

UNIX

iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

FIRMWARE VERSION

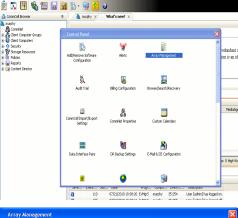
- Ensure that all members in the EqualLogic array are running firmware version 4.2.0 or higher.
- After upgrading the firmware, do either of the following:
 - o Create a new group administration account in the firmware, and set the desired permissions for this account.
 - If you plan to use the existing administration accounts from version prior to 4.2.0, reset the password for these accounts. The password can be the same as the original.

If you do not reset the password, snapshot creation will fail.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next 🕨

Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	
172 19 71 26	MN1963C	admin	TRM YTV		×	

Click Add.

2.

- **3.** Select **Dell Equallogic** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name field.

No entry is required in the **Name** field if there is no Management IP address configured.

• Specify the Group IP address in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Management IP
address and Group IP address for the Dell Equallogic storage device.

- Enter the user access information of the Group Administrator user in the **Username** and **Password** fields.
 - For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones in the **Device Group** field.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the storage pool specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

4.

Array Manageme	nt 🔀
1 Snap Vendor	Dell Equallogic
2 Name	
3 Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	y from this device group
Description	
ОК	Cancel Help
EQUALLOGIC ≩ Group E+ Ø Group Contigui	Account greater - Logged in (rith)
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Array Manageme	nt 🔀
Snap Vendor	Dell Equallogic
Name	
Control Host	
User Name	
4 Password	
Confirm Password	
5 Device Group	
6 Use devices only	y from this device group
Description	
ОК	Cancel Help
	Previous Next >

SnapProtect[™] Backup - EMC Clariion, VNX

Previous Next >

PRE-REQUISITES

LICENSES

- Clariion SnapView and AccessLogix licenses for Snap and Clone.
- SYMAPI Feature: BASE/Symmetrix license required to discover Clariion storage systems.

You can use the following command to check the licenses on the host computer:

C:\SYMAPI\Config> type symapi_licenses.dat

ARRAY SOFTWARE

• EMC Solutions Enabler (6.5.1 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and NaviAgent installed on the client and proxy computers.
- If AccessLogix is not enabled, go to the Navisphere GUI, right-click EMC Clariton Storage System and click Properties. From the Data Access tab, select Enable AccessLogix.
- Clariion storage system should have run successfully through the Navisphere Storage-System Initialization Utility prior to running any Navisphere functionality.
- Ensure enough reserved volumes are configured for SnapView/Snap to work properly.

For EMC VNX:

• EMC Solutions Enabler (7.2 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and Navisphere/Unisphere Host Agent installed on the client and proxy computers.
- VNX storage system should have run successfully through the Unisphere Storage-System Initialization Utility prior to running any Unisphere functionality.

SETUP THE EMC CLARIION

Perform the following steps to provide the required storage for SnapProtect operations:

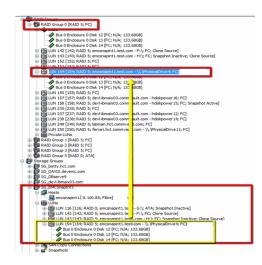
- 1. Create a RAID group
- 2. Bind the LUN
- 3. Create a Storage Group
- 4. Register the client computer (covered by installing NaviAgent)
- 5. Map the LUNs to the client computer where the NaviAgent resides
- 6. Reserved/Clone volumes target properly for SnapView

For example, as shown in the image on the right, the **Clariion ID** of **APM00033400899** has the following configuration:

- a RAID Group 0 provisioned as a RAID-5 group (Fiber Channel drives)
- LUNs are mapped to Storage Group SG_EMCSnapInt1 with LUN ID of #154 present to client computer emcsnapint1.

The example shows the serial number of LUN 154:

- RAID Group: RAID Group 0, containing 3 physical disks
- Storage Group: currently visible to a single client computer
- LUN is shown as a Fiber Channel device
- The devices under LUN 154 reside on RAID Group 0 which has RAID-5 configuration.



AUTHENTICATE CALYPSO USER INFORMATION FOR THE NAVIAGENT

Follow the steps below to specify the authorization information for EMC Solutions Enabler and Navishphere CLI to ensure administrator access to the Navisphere server.

1. To set the authorize information, run the symcfg authorization command for both the storage processors. For example:

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPA IP> -username admin -password password

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPB IP> -username admin -password password

2. Run the following command to ensure that the Clariion database is successfully loaded.

symcfg discover -clariion -file AsstDiscoFile

where AsstDiscoFile is the fully qualified path of a user-created file containing the host name or IP address of each targeted Clariion array. This file should contain one array per line.

3. Create a Navisphere user account on the storage system. For example:

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPA IP> -Scope 0 -User admin -Password password

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPB IP> -Scope 0 -User admin -Password password

- 4. Restart the NaviAgent service.
- 5. Run snapview command from the command line to ensure that the setup is ready.

On Unix computers, you might need to add the Calypso user to the agent.config file.

Before running any commands ensure that the EMC commands are verified against EMC documentation for a particular product and version.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

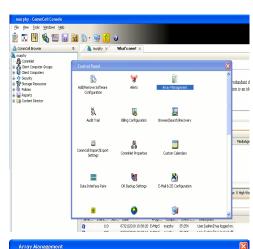
1.

2. Click Add.

- **3.** Select **EMC CLARiiON** from the **Snap Vendor** list for both Clariion and VNX arrays.
 - Specify the serial number of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the serial number for the EMC Clariion storage device.

- Enter the access information of a Navisphere user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION			Delete
172.19.66.69	10881	system	HDS		~	List Snaps
172 19 71 26	MN1963C	admin	TRM YTV		×	List bridps

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2 Name)
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4.

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Device Group		
Use devices only	/ from this device group	
Description		
ОК	Cancel Help	
	< Previous	Next >

SnapProtect[™] Backup - EMC Symmetrix

< Previous) Next >

PRE-REQUISITES

• EMC Solutions Enabler (6.4 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

• SYMAPI Feature: BASE /Symmetrix licenses for Snap, Mirror and Clone.

You can use the following command to check the licenses on the host computer:

```
C:\SYMAPI\Config> type symapi_licenses.dat
```

By default, all functionality is already enabled in the EMC Symmetrix hardware layer. However, a Hardware Configuration File (IMPL) must be enabled before
using the array. Contact an EMC Representative to ensure TimeFinder and SRDF functionalities have been configured.

SETUP THE EMC SYMMETRIX

For SnapProtect to function appropriately, LUN Masking records/views must be visible from the host where the backup will take place:

- For DMX, the Masking and Mapping record for vcmdb must be accessible on the host executing the backup.
- For VMAX, the Masking view must be created for the host executing the backup.

CONFIGURE SYMMETRIX GATEKEEPERS

Gatekeepers need to be defined on all MediaAgents in order to allow the Symmetrix API to communicate with the array. Use the following command on each MediaAgent computer:

symgate define -sid <Symmetrix array ID> dev <Symmetrix device name>

where <Symmetrix device name> is a numbered and un-formatted Symmetrix device (e.g., 00C) which has the MPIO policy set as FAILOVER in the MPIO properties of the gatekeeper device.

LOAD THE SYMMETRIX DATABASE

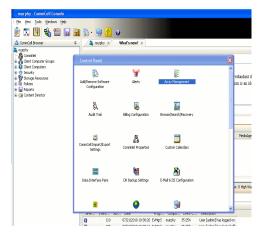
If you have the SYMCLI software installed, it is recommended that you test your local Symmetrix environment by running the following command to ensure that the Symmetrix database is successfully loaded:

symcfg discover

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- з.
- Select EMC Symmetrix from the Snap Vendor list.
- Specify the **Symm ID** of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the Symmetrix array ID (Symm ID) for the EMC Symmetrix storage device.

4.

- If Symcfg Authorization is enabled on the Symmetrix Management Console, enter the access information for the Symmetrix Management Console in the Username and Password fields.
- In the **Device Group** field, specify the name of the device group created on the client and proxy computer. The use of Group Name Service (GNS) is supported.

If you do not specify a device group, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

To understand how the software selects the target devices during $\ensuremath{\mathsf{SnapProtect}}$ operations, click here.

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172.19.66.91 APM0003340	admin admin	EMC CLARIION			Delete	
172.19.66.69 10881	system admin	HDS TRM VIV		~	List Snaps	
			ОК	Cancel	Help	
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2 Name						
Control Host						
User Name						
Password						
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Device Group						
Use devices onl	y from th	his device (group			
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ОК		ancel	Help)		
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Control Host Confirm Password Confirm Password Confirm Password Device Group Use devices only	nt EMC S	odjest in the tree.				A 7

SnapProtect[™] Backup - Hitachi Data Systems

PRE-REQUISITES

- Device Manager Server (7.1.1 or higher) installed on any computer.
- RAID Manager (01-25-03/05 or higher) installed on the client and proxy computers.
- Device Manager Agent installed on the client and proxy computers and configured to the Device Manager Server.

The hostname of the proxy computer and the client computer should be visible on the Device Manager Server.

- Appropriate licenses for Shadow Image and COW snapshot.
- For VSP, USP, USP-V and AMS 2000 series, create the following to allow COW operations:

COW pools

 $\,\circ\,$ V-VOLs (COW snapshots) that matches the exact block size of P-VOLs devices.

• For HUS, ensure that the source and target devices have the same **Provisioning Attribute** selected. For e.g., if the source is **Full Capacity Mode** then the target device should also be labeled as **Full Capacity Mode**.

ADDITIONAL REQUIREMENTS FOR VMWARE

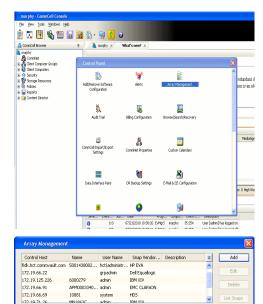
When performing SnapProtect operations on VMware using HDS as the storage array, ensure the following:

- HDS LUNs are exposed to the Virtual Server iDataAgent client and ESX server.
- All HDS pre-requisites are installed and configured on the Virtual Server iDataAgent client computer.
- The Virtual Server client computer is the physical server.
- The Virtual Machine HotAdd feature is not supported.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next >

2. Click Add.

- **3.** Select **HDS** from the **Snap Vendor** list.
 - Specify the serial number of the array in the Name field.

OK Cancel Help

For reference purposes, the screenshot on the right shows the serial number for the HDS storage device.

4.

- Enter the IP address or host name of the Device Manager Server in the **Control Host** field.
 - Enter the user access information in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. The device group should have the following naming convention:

<COW_POOL_ID>-<LABEL> **Or** <LABEL>-<COW_POOL_ID>

where ${\tt COW_POOL_ID}{\tt (for \ COW \ job)}$ should be a number. This parameter is required.

 $<\!\!\! LABEL>$ (for SI job) should not contain special characters, such as hyphens, and should not start with a number. This parameter is optional.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

Alerts Reports Settings Nashboard		Serial Humber IP Address	172.19.66.		
	ao	Nicrocode SVP Configured Capacity Actual Capacity	50-09-79/00 9.34 TB 9.32 TB		
ITSN ISSN	so	Free Space Total Cadre Last Refreshed Alerts	16.00 09 2011/04/13 9:01:01		
				NASManag	ament
Ar	ray Managemer	it			×
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Ν	Jame				
3	Control Host				\supset
1	Jser Name				\sum
4 ₽	Password				
6	Confirm Password				ノ
5 C	evice Group				
6 🤇	Use devices only	from this	s device group		
	Description				
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				< Previo	us)

Array Management

HDS

Use devices only from this device group

OK

Cancel

Help

NAS/Management

1 Snap Vendor

Description

2 Name Control Host User Name Password Confirm Password Device Group

SnapProtect[™] Backup - HP StorageWorks EVA

< Previous Next >

SETUP THE HP SMI-S EVA

HP-EVA requires Snapshot and Clone licenses for the HP Business Copy EVA feature.

The following steps provide the necessary instructions to setup the HP EVA:

- 1. Download the HP SMI-S EVA and the HP Command View EVA software on a supported server from the HP web site.
- 2. Run the Discoverer tool located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\EVAProvider\bin folder to discover the HP-EVA arrays.
- 3. Use the CLIRefreshTool.bat tool to sync with the SMIS server after using the Command View GUI to perform any active management operations (like adding new host group or LUN). This tool is located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\CXWSCimom\bin folder.

SETUP THE ARRAY INFORMATION

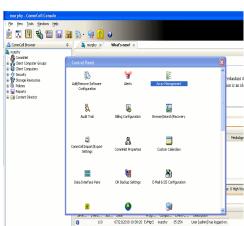
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



з.

- Select HP EVA from the Snap Vendor list.
 - Specify the World Wide Name of the array node in the Name field.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
72.19.66.22		grpadmin	Dell Equalogic			Edit
72.19.125.226	6000279	admin	IBM XIV			
72.19.66.91	APM0003340	admin	EMC CLARIION			Delete
72.19.66.69	10881	system	HDS			List Snaps
172 19 71 26	Mb11963C	admin	TRM YTV		~	List phaps

Array Managemer	nt 🔀
1 Snap Vendor	HP EVA
2 Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	from this device group
Description	
ОК	Cancel Help

The World Wide Name (WWN) is the serial number for the HP EVA storage device. See the screenshot on the right for a WWN example.

The array name must be specified without the dashes used in the WWN e.g., $\tt 50014380025DEB70.$

- 4.
- Enter the name of the management server of the array in the **Control Host** field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

- Enter the user access information in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware disk group created on the array to be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

EVA Storage Network EVA440 Contral Disks Disk Groups Disk Groups Data Replication Hardware	Node WWN: 500	System options Status Summary A440 14380-025D-EB70 5-08b40002-0000
Array Management		
Snap Vendor HP E	VA	~
3 Control Host		
4 Password		
Confirm Password		
5 Device Group		
6 Use devices only from	this device group	
Description		

ОК

Cancel

Help

Previous Next >

SnapProtect[™] Backup - IBM SAN Volume Controller (SVC)

PRE-REQUISITES

- IBM SVC requires the FlashCopy license.
- Ensure that all members in the IBM SVC array are running firmware version 6.1.0.7 or higher.
- Ensure that proxy computers are configured and have access to the storage device by adding a host group with ports and a temporary LUN.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBMSVC from the Snap Vendor list.
 - Specify the 16-digit ID of the storage device in the **Name** field.

💅 Alerts 13 B is an it Audit Tr 5 4 8 1 8) High W **1** • Ø 07/21/2010 10:38:20 6 Control Host fidk.hct.commva 172.19.66.22 Snap Vendor. HP EVA Dell Equallogic Add ¥ hct\admin grpadmin 172.19.125.226 admin IBM XIV EMC CLARIKON 172.19.66.91 APM0003340.. admin 172.19.66.69 10881 HDS system 172 10 71 24 OK Cancel Help Array Management 1 Snap Vendor IBM2 2 Name Control Host User Name Password Confirm Password Device Group Use devices only from this device group Description

OK

Cancel

Help

December Control Browser Control Browser Control Browser Control Browser Control Browser Control Contr

What's new? >

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Next 🕨

The **ID** is the device identification number for the IBM SVC storage device. See the screenshot on the right for reference.

4.

44 • **•** Co C 52% 🗌 🖸 😧 111 Running Tasks Array Management Snap Vendor Name Control Host 3 User Name Password Confirm Password 5 Device Group Use devices only from this device group 6 Description OK Cancel Help

• Enter the Management IP address or host name of the array in the **Control Host** field.

- Enter the user access information of the local application administrator in the **Username** and **Password** fields.
- In the **Device Group** field, specify the name of the physical storage pools created on the array to be used for snapshot (flash copy) operations.

If you do not specify a device group, the default storage pool will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - IBM XIV

< Previous) Next >

PRE-REQUISITES

- 1. IBM XCLI (2.3 or higher) installed on the client and proxy computers. On Unix computers, XCLI version 2.4.4 should be installed.
- 2. Set the location of XCLI in the environment and system variable path.
- 3. If XCLI is installed on a client or proxy, the client or proxy should be rebooted after appending XCLI location to the system variable path. You can use the XCLI_BINARY_LOCATION registry key to skip rebooting the computer.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBM XIV from the Snap Vendor list.
 - Specify the 7-digit serial number for the array in the Name field.



Confirm Password Device Group

Description

Use devices only from this device group

OK

Cancel

Help

The $\mbox{System ID}\ (\mbox{S/N})$ is the serial number for the IBM XIV storage device. See the screenshot on the right for reference.

4.

System Configuration ×

General
System Name
Parameters
System Version
10.22
System 10 (5/N)
6006633 (\$533
10
10/Hostname 1
10/Hostname 1
10/Hostname 1
10/Hostname 3

Update
Cancel

	Array Managemer	it 🔀
	Snap Vendor Name	
3	Control Host	
	User Name	
4	Password	
1	Confirm Password	
	Device Group	
	Use devices only	from this device group
	Description	
	ОК	Cancel Help
		Previous Next

- Enter the IP address or host name of the array in the **Control Host** field.
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - LSI

< Previous (Next >

PREREQUISITES

- Ensure that the LSI Storage Management Initiative Specification (SMIS) server has access to the LSI array through TCP/IP network to perform SnapProtect
 operations.
- Ensure that the client has access to:
 - SMIS server through TCP/IP network.
 - $\circ~$ LSI array through iSCSI or Fiber Channel network.
- Ensure that proxy computers are configured and have access to the storage device by adding a temporary LUN to the "host" using the Storage Management Console.

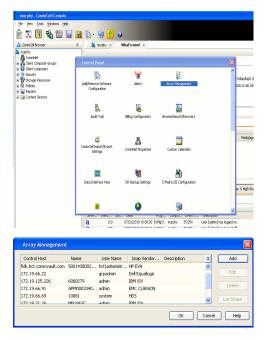
ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using SAN transport mode, ensure that the Client and the ESX Server reside in the same host group configured in the LSI array, as one volume cannot be mapped to multiple host groups.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

з.

- Select LSI from the Snap Vendor list.
 - Specify the serial number for the array in the Name field.

	Control Host	
	User Name	
	Password	
	Confirm Password	
	Device Group	
	Use devices only from this device group	
	Description	
	OK Cancel Help	
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in	IS Senary Control of any Control of Control	
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Array Management

LSI

1 Snap Vendor

2 Name

The **Storage Subsystem world-wide identifier (ID)** is the serial number for the LSI storage device.

Use the SANtricity Storage Manager software to obtain the array name by clicking **Storage Subsystem Profile** from the **Summary** tab. See the screenshot on the right for reference.

٠	Specify the name of the device manager server where the array was configured in
	the Control Host field.

- Enter the user access information using the LSI SMIS server credentials of a local user in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not have a device group created on the array, specify None.

If you specify None in the **Device Group** field but do have a device group created on the array, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

	Array Manageme	nt	×	
	Snap Vendor	LSI		
	Name			
3	Control Host		D	
	User Name		\mathcal{A}	
4	Password			
	Confirm Password		J	
(Device Group			
6	Use devices on	y from this device group		
	Description			
	ОК	Cancel Help		
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SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

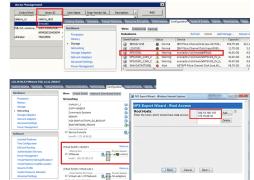
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor	NetAee	
	NetApp	×
Name		
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Lise devices only	y from this device group	
Description	,	
Description		
ОК	Cancel Help	
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SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - $\circ~$ Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the **Storage Policy** in the **Storage Policy Name** box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

4.

3.

 In the Library list, select the default library to which the Primary Copy should be associated.

It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



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iDSP_JunLu GDSP

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n GDSP

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Hein

New Storage Policy 3 New Global Deduplication

Subclient As

 Image: Storage Policies

 Image: Storage Policies

 Image: Storage Policies

 Image: Storage Policies

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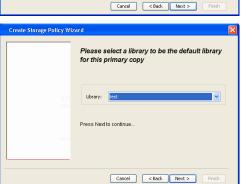
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- 5. Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

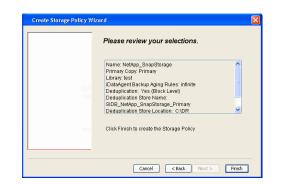
9.	٠	Provide the DataFabric Manager server information	
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- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

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	Password:

10. Click Finish.

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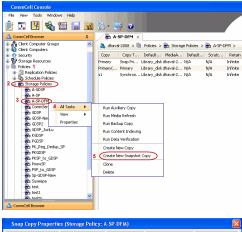


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

- **3.** Click the **Copy Policy** tab.
 - Depending on the topology you want to set up, click **Specify Source for Auxiliary Copy** and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

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 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drop-down list. Select the Resource Pools available from the list. Click OK. 	
 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drop-down list. Select the Resource Pools available from the list. Click OK. 	
 Click the Provisioning tab. Click Refresh to display the DFM entities. Select the Provisioning Policy from the drop-down list. Select the Resource Pools available from the list. Click OK. 	
The secondary snapshot copy is created.	ancel Help

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

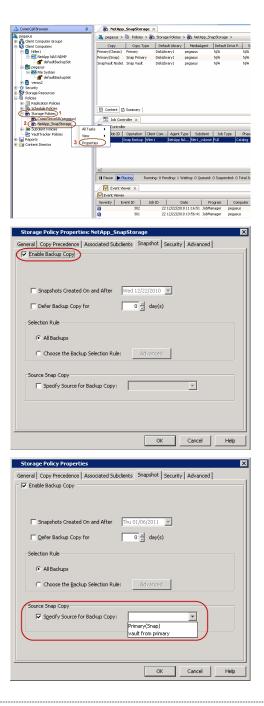
It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

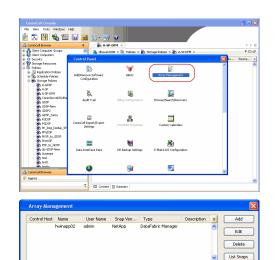
- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

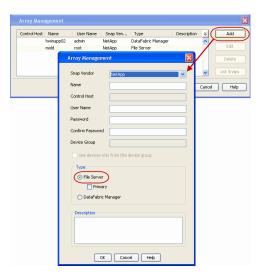
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Page 465 of 742



OK Cancel Help

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SEE ALSO

Import Wizard Tool

Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

SnapProtect[™] Backup - Data Replicator

< Previous) Next >

PRE-REQUISITES

INSTALLATION

• The use of Data Replicator with the SnapProtect backup requires MediaAgent, File System *i*DataAgent, and ContinuousDataReplicator on the source, destination, and proxy computers.

The use of a proxy server to perform SnapProtect operations is supported when a hardware storage array is used for performing the SnapProtect backup.

• The operating system of the MediaAgent to be used for SnapProtect backup must be either the same or higher version than the source computer.

STORAGE POLICY REQUIREMENTS

The Primary Snap Copy to be used for creating the snapshot copy must be a disk library.

If the Storage Policy or the disk library being used by the subclient is updated, the subclient should be recreated.

SETUP THE ARRAY

- From the CommCell Console, navigate to **<Client>** | **<Agent>**.
 - Right-click the subclient and click **Properties**.
- Click the SnapProtect Operations tab.
 - Ensure **Data Replicator** is selected from the **Available Snap Engine** drop-down list.
 - Click OK.

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Getting Started - Linux File System Backup

PERFORM A BACKUP

Once the storage policy is configured, you are ready to perform your first backup.

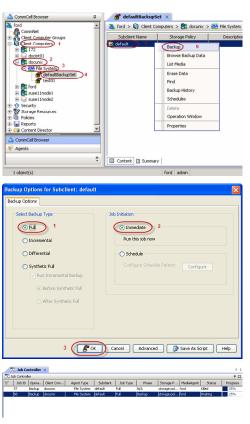
The following section provides step-by-step instructions for performing your first backup:

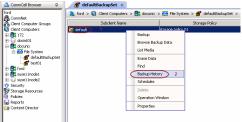
- From the CommCell Browser, navigate to Client Computers | <Client> | File System | defaultBackupSet.
 - Right-click the default subclient and click **Backup**.

- Click **Full** as backup type and then click **Immediate**.
 - Click OK.

2.

- **3.** You can track the progress of the job from the **Job Controller** window of the CommCell console.
- 4. Once the job is complete, view the job details from the **Backup History**. Right-click the **Subclient** and select **Backup History**.





5. Click **OK**.



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- 6. You can view the following details about the job by right-clicking the job:
 - Items that failed during the job
 - Items that succeeded during the job
 - Details of the job
 - Events of the job
 - Log files of the job
 - Media associated with the job

Getting Started - Vault/Mirror Copy

< Previous) Next >

SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

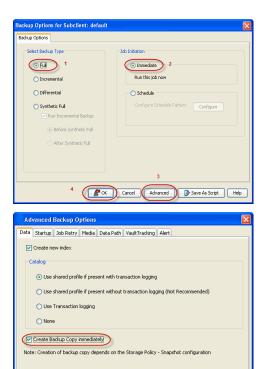
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

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User Guide - SnapProtect

2. Click OK.

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Getting Started - Unix File System Restore



PERFORM A RESTORE

As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following sections explain the steps for restoring the backup data.

- From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the <storage policy> and click Properties.
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.
 - You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.
 - Click OK.

1.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | defaultBackupSet.
 - Right-click the default subclient and then click Browse Backup Data.
- 3. Click OK.

- 4. Expand the **defaultBackupSet** and navigate to **etc** folder.
 - Select the **etc** folder.
 - Click Recover All Selected.

If you attempt to restore a running executable file, the application may crash and core dump.

• Clear the Overwrite Files and Restore to same folder options.

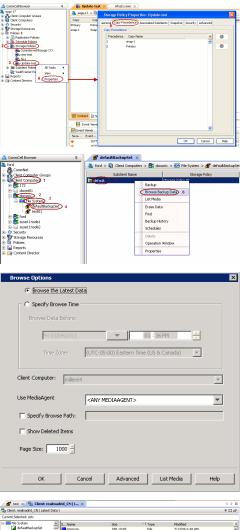
• Specify the destination path by clicking **Browse** button.

This will ensure that the existing files are not overwritten.

• Click OK.

5.

Restored data retains its original permissions. The ACLs are restored after the permissions are restored. Do not restore ACLs to any directory that has the "sticky bit" on.



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🕀 🔽 alchenist	2 9	insors.conf	83.18 KB	File	1/26/10 4:43 PM	
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6. You can monitor the progress of the restore job in the **Job Controller**.

7. Once the File System is restored, verify that the restored files/folders are available in [parc02] # 1s /.metacity the restore destination etc

CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.

Previous Next >

Getting Started - Windows File System Deployment



WHERE TO INSTALL

Install the software on a client computer that you want to protect.

BEFORE YOU BEGIN

Download Software Packages

Download the latest software package to perform the install.

SnapProtect Support - Platforms

Make sure that the computer in which you wish to install the software satisfies the minimum requirements.

INSTALL THE WINDOWS FILE SYSTEM /DATAAGENT

Use the following procedure to directly install the software from the installation package or a network drive.

- 1. Run Setup.exe from the Software Installation Package.
- 2. Select the required language. Click Next.

3.	Select the c	ption to	install	software	on	this	computer.

The options that appear on this screen depend on the computer in which the software is being installed.

4. Select I accept the terms in the license agreement. Click Next.

	Select the language you will use during installation.
	English (United States)
	Next > Cancel
_	
	≓ Install Software on this computer
	Advanced options
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- Expand Client Modules | Backup & Recovery | File System and select Windows File System iDataAgent.
 - Expand Common Technology Engine | MediaAgent Modules, and select MediaAgent.
 - Expand Client Modules | ContinuousDataReplicator, and select VSS Provider.
 - Click Next.

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φ ι	Click 'Yes' to continue. Choosing 'No' will exit the Setup. In such a case, you may resume
9	Setup later at any time.
	Yes <u>N</u> o
Installer	Configuration 🔀
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If there is a	a firewall between this machine and the CommServe, configure firewall services below.
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6. Click **YES** to install Microsoft .NET Framework package.

- This prompt is displayed only when Microsoft .NET Framework is not installed.
- Once the Microsoft .NET Framework is installed, the software automatically installs the Microsoft Visual J# 2.0 and Visual C++ redistributable packages.
- 7. If this computer and the CommServe is separated by a firewall, select the **Configure** firewall services option and then click Next.

For firewall options and configuration instructions, see Firewall Configuration and continue with the installation.

If firewall configuration is not required, click **Next**.

8.	Enter the fully qualifi	ed domain name	e of the CommServe	Host Name.

Click Next.

Do not use space and the following characters when specifying a new name for the CommServe Host Name:

\|`~!@#\$%^&*()+=<>/?,[]{}:;'"

9. Click Next.

10.	Select Add programs to the Windows Firewall Exclusion List, to add CommCell
	programs and services to the Windows Firewall Exclusion List.

Cancel

< Back Next >

User Guide - SnapProtect

Click Next.

ovt	Installer
ext. This option enables CommCell operations across Windows firewall by adding CommCell programs and services to Windows firewall exclusion	Windows Firewall Exclusion List Allow programs to communicate through Windows Firewall
list.	Windows Firewall is ON
It is recommended to select this option even if Windows firewall is disabled. This will allow the CommCell programs and services to function if the Windows firewall is enabled at a later time.	Add programs to the Windows Firewall Exclusion List If you plan on using Windows Firewall, it is recommended to add the software programs to the exclusion fielt.
ext . 5 recommended to select the Download latest update pack(s) option to omatically install the available updates during installation.	Installer Installer Cancel Installer Convolutional and Install Latest Update Packs Download and Install IL Latest Update Packs Download and Install He latest service pack and post pack from the software provider website. Download latest update pack(s) Make sure you have internet connectivity at this time. This process may take some time depending on download speed.
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rowse to change the default location.	Destination Folder Select the destination folder to install the program files.
ext.	
 Do not install the software to a mapped network drive. Do not install the software on a system drive or mount point that will be used as content for SnapProtect backup operations. Do not use the following characters when specifying the destination path: /: * ? " <> # It is recommended that you use alphanumeric characters only. 	Click Next to accept the default location, or click Browse to choose an alternate location. Destination Folder Browse Drive List Browse Drive List Space Required / Recommended 1394 MB / 1670 MB Installer
	Kale Kext Cancel
a Client Group from the list. ext .	Installer Client Group Selection Select a client group for the client.
This screen will be displayed if Client Groups are configured in the CommCell Console.	The Client Group is a logical grouping of client machines which have the same associations at various levels like Schedule Policy. Activity Control, Security and Reports. Client group: None Selected client_group
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ext	

Click Next. 11.

NOTES

• It is recommended to select the Download la automatically install the available updates dur

12. Verify the default location for software installation

Click **Browse** to change the default location.

Click Next.

- Do not install the software to a mapped
- Do not install the software on a system be used as content for SnapProtect ba
- Do not use the following characters wh path:

Select a Client Group from the list. 13.

Click Next.

14. Click Next. 15. Select Yes to stop Removable Storage Services on the MediaAgent. Click Next.

This prompt will not appear if Removable Storage Services are already disabled on the computer. $% \left({{{\left({{{{\bf{n}}}} \right)}_{i}}}_{i}} \right)$

16. Click Next.

17. Select a Storage Policy. Click Next.

18. Click Next.

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🔽 Schedule Install of Aut	omatic Updates
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	C Sunday
Installer	
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Installer	
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The Remainship Char	ervice must be stopped and disabled. This is required for correct
functioning of the MediaA	envice mass be stopped and disabled. This is required for correct gent.
Do you want to stop and o	lisable the Removable Storage service?
6 Mar da and da an	the Benerickle Charges Courses
	the Removable Storage Service
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19. Click Next.

20. Click Finish.

Installer	×
Summary Summary of install selections	
Setup has enough information to start copying the program files. If you are satisfied with the install settings, click Next to begin copying files.	
The following software will be installed :	
nstaller	×
Schedule Reminder Job schedule creation reminder	1
Please note: You still need to create a Job Schedule for each DataAgent that has been installed on this client computer. Job Schedules are required to allow the DataAgents to perform automated backup and restore operations. Job Schedule creation can be accomplished through the CommCell Console administration interface.	
Installer Next >	2000
atallar.	
nstaller Completion Report Setup complete	
Software installation completed successfully. Virit the website below to download latest Updates and Service Packs. Click Finish to complete Setup.	4
Installer Technical Support Website	
Previo	us)

Getting Started - Windows File System Configuration

PRE-REQUISITES

- Prior to performing a SnapProtect backup, ensure that all the available hotfixes for Virtual Disk Service (VDS) and VSS are applied.
- When performing SnapProtect backup for a Windows Cluster, a proxy server must be used for performing backup and restore operations.
- SnapProtect backup on Windows supports basic disks.

CONFIGURATION

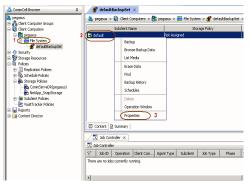
1.

Once installed, the Windows File System *i*DataAgent requires some additional configuration before running your first SnapProtect backup. Follow the steps given below to complete the configuration for this Agent.

- From the CommCell Browser, navigate to Client Computers | < Client>.
 - Right-click the client and select **Properties**.

- Click on the **Advanced** tab.
 - Select the Enable SnapProtect option to enable SnapProtect backup for the client.
 - Click OK.

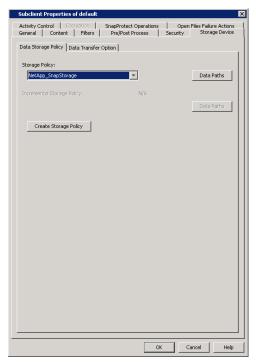
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- 3. From the CommCell Console, navigate to *Client>* | **File System**.
 - Right-click the subclient and click **Properties**.

4. • Click the **Storage Device** tab.

• In the **Storage Policy** box, select the storage policy name.



Click the SnapProtect Operations tab.

- Click **SnapProtect** option to enable SnapProtect backup for the selected subclient.
- Select the storage array from the **Available Snap Engine** drop-down list.
- From the **Use Proxy** list, select the MediaAgent where SnapProtect and backup copy operations will be performed.

When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.

• Click Use Separate Proxy for Snap to Tape if you want to perform backup copy operations in a different MediaAgent.

Select the MediaAgent from the **Proxy** list.

Subclient Properties of default	X
General Content Filters Bre/Rost Process Activity Control Encryption	
2 V EnapProtect Available Snap Engines Please select a Snap Engines	
Please select a shap Engl	Enter Array Credentials
4 Use Proxy	
Use Separate Proxy for Snap to Tape	
Proxy	_
Use source if proxy is unreachable	
	OK Cancel Help

- Click the **Content** tab.
 - Click Browse and specify the content for the subclient.
 - Click OK.

The subclient content must contain data that resides on the storage device volume; do not include local drives or UNC paths as subclient content.

Subclient Properties of default	
	otect Operations Open Files Failure Actions Post Process Security Storage Device
	Schere Storage Schere
Contents of subclient: /vol/duncan_vol2	
/volument_vol	Delete
	Browse
	Add Paths
	As User
Backup System State	
Danap System state	
	OK Cancel Help

SKIP THIS SECTION IF YOU ALREADY CREATED A SNAPSHOT COPY.

Click Next > to Continue.

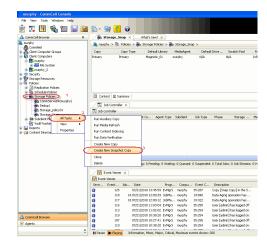
1.

CREATE A SNAPSHOT COPY

Next 🕨

Create a snapshot copy for the Storage Policy. The following section provides step-by-step instructions for creating a Snapshot Copy.

- From the CommCell Console, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Create New Snapshot Copy.**



- **2.** Enter the copy name in the **Copy Name** field.
 - Select the Library, MediaAgent, master Drive Pool and Scratch Pool from the lists (not applicable for disk libraries).
 - Click OK.

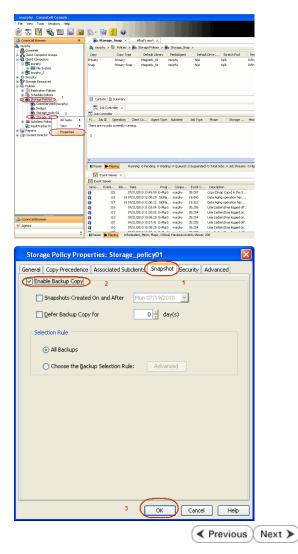
Selective Copy General Retention	Associations Copy Policy	Advanced Data Paths	Deduplic Data Path Configu	
Copy Information				_
Copy <u>N</u> ame:) 2
Primary Copy				
Default Index Destinatio	n			
Library:				~
MediaAgent:				*
Drive Pool:				*
Scratch Pool:				*
3				_

CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- From the CommCell Browser, navigate to **Policies | Storage Policies**.
 - Right-click the **<storage policy>** and click **Properties.**

- Click the **Snapshot** tab.
- Select **Enable Backup Copy** option to enable movement of snapshots to media.
- Click OK.



Storage Array Configuration

CHOOSE THE STORAGE ARRAY

HARDWARE STORAGE ARRAYS	SOFTWARE STORAGE ARRAY	
3PAR	DATA REPLICATOR	
DELL COMPELLENT		
DELL EQUALLOGIC		
EMC CLARIION, VNX		
EMC SYMMETRIX		
FUJITSU ETERNUS DX		
HITACHI DATA SYSTEMS		
HP EVA		
IBM SVC		
IBM XIV		
LSI		
ΝΕΤΑΡΡ		
NETAPP WITH SNAPVAULT/SNAPMIRROR		
NIMBLE		

Previous Next >>

SnapProtect[™] Backup - 3PAR

< Previous Next >

PRE-REQUISITES

- 3PAR Snap and 3PAR Clone licenses.
- Thin Provisioning (4096G) and Virtual Copy licenses.
- Ensure that all members in the 3PAR array are running firmware version 2.3.1 (MU4) or higher.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



3.

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		1	Ø	<u></u>	×	
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Array Management						
Array Management Control Host	t Name	User Name	Snap Vendor	Description	× Add	
Control Host	Name	User Name hct\administr		Description	Add	
Control Host	Name 5001438002			Description		
Control Host fidk.hct.commvault.com	Name 5001438002	hct\administr	HP EVA	Description	Edit	
Control Host fidk.hct.commvault.com 172.19.66.22	Name 5001438002	hct\administr grpadmin admin	HP EVA Dell Equalogic	Description	<u> </u>	
Control Host fidk.hct.commvault.com 172.19.66.22 172.19.125.226	Name 5001438002 6000279 APM0003340	hct\administr grpadmin admin	HP EVA Dell Equallogic IBM XIV	Description	Edit	e

What's new?

💅 Alerts

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OK Cancel Help

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Audit Trai

- Select **3PAR** from the **Snap Vendor** list.
 - Specify the 16-digit number obtained from the device ID of a 3PAR volume in the **Name** field.

Follow the steps given below to calculate the array name for the 3PAR storage device:

- 1. From the 3PAR Management console, click the **Provisioning** tab and navigate to the **Virtual Volumes** node. Click any volume in the **Provisioning** window
- 2. From the Virtual Volume Details section, click the Summary tab and write

down the **WWN** number. This is the device ID of the selected volume.

3. From the **Virtual Volume Details** section, click the **Summary** tab and write down the **WWN** number.

This is the device ID of the selected volume.

This WWN may be 8-Byte number (having 16 Hex digits) or 16 Byte number (having 32 Hex digits).

- 4. Use the following formula to calculate the array name:
 - For 8 Byte WWN (16 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

where $\mathtt{DevID.substr}\left(4,3\right)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr(12,4)}$ is the next 4 digits after the twelfth digit from the WWN number

For example: if the WWN number is 50002AC0012B0B95 (see screenshot given below for 8 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + 00 + DevID.substr(12,4)

DevID.substr(4,3) is 2AC and DevID.substr(12,4) is 0B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

• For 16 Byte WWN (32 Hex digit WWN)

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

where ${\tt DevID.substr}\,(4,3)$ is the next 3 digits after the fourth digit from the WWN number

where ${\tt DevID.substr}\,(26,\,6)$ is the next 6 digits after the twenty sixth digit from the WWN number

For example: if the WWN number is 60002AC50000000000052200000B95 (see screenshot given below for 16 Byte WWN), using the following formula:

2FF7000 + DevID.substr(4,3) + DevID.substr(26,6)

DevID.substr(4,3) is 2AC and DevID.substr(26,6) is 000B95

After adding all the values, the resulting array name is 2FF70002AC000B95.

- Enter the IP address of the array in the **Control Host** field.
 - Enter the access information of a local 3PAR Management user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the CPG group created on the array to be used for snapshot operations.

If you do not specify a CPG group, the default CPG group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK to save the information.

	16 Byte WWN		8 Byte WWN
Provisioning	👔 Provisioning : Indexs : Spar-I.commwail.com : Virtual Valumes	Provisioning	Devicioning : Indexs : Sper-Ecommonalt.com : Virtual Valumes
V E Itlens	Summary Witual Islanes Allerts	v El triens	Summary Whitel Idunes Alerts
V E tour-2 commant.com	Samay + 60 rates - Filty - All Corr	V E bur-Loommak.com	Server + 60 rate # Piter # Cor
CPGs Z Z	Name A Exported	iii Oficia ▼ Statusi Italunes	Name A Exported
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Dr 🔂 By Denice Type Dr 🔂 By RAID Type	20x4 p.prest, 42 01 (dRicc) aci 20x4 p.prest, 42 yol 01 propriot, aci 20x4 p.prest, 42 yol 01 propriot, aci 20x4 prest, 42 yol 01 propriot, aci	 By Device Type By RAID Type 	 Stabil p.preset (42 Stabil p.preset (42 pol) Stabil p.preset (42 pol) Stabil p.preset (42 pol)
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Common Actions	Vetaal Volume Debals Summy Settings VUIIIs Lavout, Werts	c n n n n n n n n n n n n n n n n n n n	Vetaal Volume Details Summy Settings VLIVIs Level Alerts
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nots	Provisioning Ful WWN 60030/CS0000000000522000086 Copy 01 -		Provisioning ful WWN S0003AC58022886 Copy 0f -
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	Array Managemer	nt 🔀	
	Snap Vendor	3PAR 🗸	
	Name		
3 (Control Host		
1	User Name		
4	Password		
	Confirm Password		
5	Device Group		
6	Use devices only	r from this device group	
	Description		
	ОК	Cancel Help	
		< Previous	Next)

SnapProtect[™] Backup - Dell Compellent

< Previous) Next >

PRE-REQUISTIES

- Dell Compellent requires the Data Instant Replay license.
- Ensure that all members in the Compellent array are running firmware version Storage Center 5.5.14 and above for 5.x and 6.2.2 and above for 6.x.

SETUP THE ARRAY INFORMATION

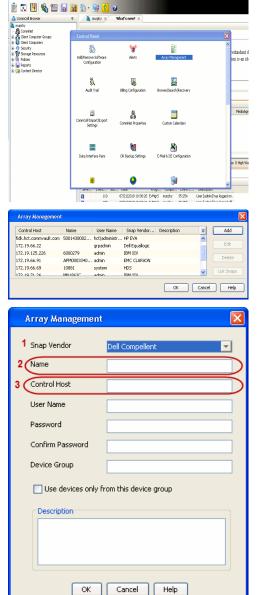
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select **Dell Compellent** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name and Control Host fields.

The Management IP address is also referred as the Storage Center IP address.



For reference purposes, the screenshot on the right shows the Storage Center Management Console of the Dell Compellent storage device displaying the Management IP address.

- DELL Co ent 🔍 Vev 📫 Refresh 🕯 1.6 rties - Storage Cent , Ce rol Storage Data P nim Cate Dok Sparry 245 ary C Type: 19.54 GB 2,000 1,750 1,500 1,250 41.19 Array Management Snap Vendor Dell Compellent Name Control Host User Name 4 Password Confirm Password Device Group 5 Use devices only from this device group Description OK Cancel Help Previous Next >
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- In the Device Group field, type none as this array does not use device groups for snapshot operations.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - Dell EqualLogic

PRE-REQUISTIES

WINDOWS

Microsoft iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

UNIX

iSCSI Initiator to be configured on the client and proxy computers to access the Dell EqualLogic disk array.

FIRMWARE VERSION

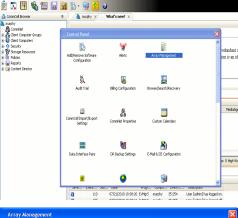
- Ensure that all members in the EqualLogic array are running firmware version 4.2.0 or higher.
- After upgrading the firmware, do either of the following:
 - o Create a new group administration account in the firmware, and set the desired permissions for this account.
 - If you plan to use the existing administration accounts from version prior to 4.2.0, reset the password for these accounts. The password can be the same as the original.

If you do not reset the password, snapshot creation will fail.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next 🕨

Control Host	Name	User Name	Snap Vendor	Description	×	Add
fidk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			Delete
172.19.66.91	APM0003340	admin	EMC CLARIION		_	Delete
172.19.66.69	10881	system	HDS		~	List Snap
172 19 71 26	MN1963C	admin	TRM YTV		×	LISC DITOP

Click Add.

2.

- **3.** Select **Dell Equallogic** from the **Snap Vendor** list.
 - Specify the Management IP address in the Name field.

No entry is required in the **Name** field if there is no Management IP address configured.

• Specify the Group IP address in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Management IP
address and Group IP address for the Dell Equallogic storage device.

- Enter the user access information of the Group Administrator user in the **Username** and **Password** fields.
 - For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones in the **Device Group** field.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the storage pool specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

Array Manageme	nt 🔀
1 Snap Vendor	Dell Equallogic
2 Name	
3 Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	y from this device group
Description	
ОК	Cancel Help
EQUALLOGIC	Account greature Logged in 64131
Comparison C	The and ready that is a set of the set of t
Array Manageme	nt 🔀
Snap Vendor	Dell Equallogic
Name	
Control Host	
User Name	
4 Password	
Confirm Password	
5 Device Group	
6 Use devices only	y from this device group
Description	
ОК	Cancel Help
	Previous Next >

SnapProtect[™] Backup - EMC Clariion, VNX

Previous Next >

PRE-REQUISITES

LICENSES

- Clariion SnapView and AccessLogix licenses for Snap and Clone.
- SYMAPI Feature: BASE/Symmetrix license required to discover Clariion storage systems.

You can use the following command to check the licenses on the host computer:

C:\SYMAPI\Config> type symapi_licenses.dat

ARRAY SOFTWARE

• EMC Solutions Enabler (6.5.1 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and NaviAgent installed on the client and proxy computers.
- If AccessLogix is not enabled, go to the Navisphere GUI, right-click EMC Clariton Storage System and click Properties. From the Data Access tab, select Enable AccessLogix.
- Clariion storage system should have run successfully through the Navisphere Storage-System Initialization Utility prior to running any Navisphere functionality.
- Ensure enough reserved volumes are configured for SnapView/Snap to work properly.

For EMC VNX:

• EMC Solutions Enabler (7.2 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

- Navisphere CLI and Navisphere/Unisphere Host Agent installed on the client and proxy computers.
- VNX storage system should have run successfully through the Unisphere Storage-System Initialization Utility prior to running any Unisphere functionality.

SETUP THE EMC CLARIION

Perform the following steps to provide the required storage for SnapProtect operations:

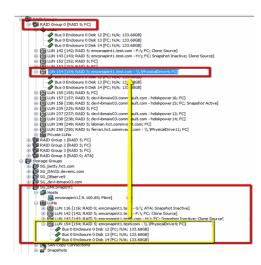
- 1. Create a RAID group
- 2. Bind the LUN
- 3. Create a Storage Group
- 4. Register the client computer (covered by installing NaviAgent)
- 5. Map the LUNs to the client computer where the NaviAgent resides
- 6. Reserved/Clone volumes target properly for SnapView

For example, as shown in the image on the right, the **Clariion ID** of **APM00033400899** has the following configuration:

- a RAID Group 0 provisioned as a RAID-5 group (Fiber Channel drives)
- LUNs are mapped to Storage Group SG_EMCSnapInt1 with LUN ID of #154 present to client computer emcsnapint1.

The example shows the serial number of LUN 154:

- RAID Group: RAID Group 0, containing 3 physical disks
- Storage Group: currently visible to a single client computer
- LUN is shown as a Fiber Channel device
- The devices under LUN 154 reside on RAID Group 0 which has RAID-5 configuration.



AUTHENTICATE CALYPSO USER INFORMATION FOR THE NAVIAGENT

Follow the steps below to specify the authorization information for EMC Solutions Enabler and Navishphere CLI to ensure administrator access to the Navisphere server.

1. To set the authorize information, run the symcfg authorization command for both the storage processors. For example:

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPA IP> -username admin -password password

/opt/emc/SYMCLI/V6.5.3/bin# ./symcfg authorization add -host <clariion SPB IP> -username admin -password password

2. Run the following command to ensure that the Clariion database is successfully loaded.

symcfg discover -clariion -file AsstDiscoFile

where AsstDiscoFile is the fully qualified path of a user-created file containing the host name or IP address of each targeted Clariion array. This file should contain one array per line.

3. Create a Navisphere user account on the storage system. For example:

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPA IP> -Scope 0 -User admin -Password password

/opt/Navisphere/bin# ./naviseccli -AddUserSecurity -Address <clariion SPB IP> -Scope 0 -User admin -Password password

- 4. Restart the NaviAgent service.
- 5. Run snapview command from the command line to ensure that the setup is ready.

On Unix computers, you might need to add the Calypso user to the agent.config file.

Before running any commands ensure that the EMC commands are verified against EMC documentation for a particular product and version.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

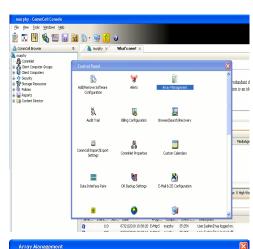
- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- **3.** Select **EMC CLARiiON** from the **Snap Vendor** list for both Clariion and VNX arrays.
 - Specify the serial number of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the serial number for the EMC Clariion storage device.

- Enter the access information of a Navisphere user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.



Control Host	Name	User Name	Snap Vendor	Description	×	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
72.19.66.22		grpadmin	Dell Equalogic			Edit
72.19.125.226	6000279	admin	IBM XIV			
72.19.66.91	APM0003340	admin	EMC CLARIION			Delete
72.19.66.69	10881	system	HDS		~	List Snaps
72 19 71 26	MNURARC	admin	TRM VTV		×	List bridge
					<u> </u>	
				ОК	Cancel	Help

Array Manager	nent 🛛 🔀
1 Snap Vendor	
2 Name	
Control Host	
User Name	
Password	
Confirm Passwor	d
Device Group	
Use devices	only from this device group
Description	
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	orage Hosts Monitors
Assign Expand	Load Demain [172:19:66-91; Logged In] ☐ APPA003300999; CSS0] ⊕ Beserved LUFFool ⊕ Privical ⊕ Priv

Array Manageme	nt 🔀	
Snap Vendor	EMC CLARIION	
Name		
Control Host		
User Name		
3 Password		
Confirm Password		
Device Group		
Use devices only	/ from this device group	
Description		
ОК	Cancel Help	
	< Previous	Next >

SnapProtect[™] Backup - EMC Symmetrix

< Previous) Next >

PRE-REQUISITES

• EMC Solutions Enabler (6.4 or higher) installed on the client and proxy computers.

Client Components (SYMCLI) are required only during the initial one-time configuration. Base Components (with SYMAPI) are necessary and required for all snap operations.

• SYMAPI Feature: BASE /Symmetrix licenses for Snap, Mirror and Clone.

You can use the following command to check the licenses on the host computer:

```
C:\SYMAPI\Config> type symapi_licenses.dat
```

By default, all functionality is already enabled in the EMC Symmetrix hardware layer. However, a Hardware Configuration File (IMPL) must be enabled before
using the array. Contact an EMC Representative to ensure TimeFinder and SRDF functionalities have been configured.

SETUP THE EMC SYMMETRIX

For SnapProtect to function appropriately, LUN Masking records/views must be visible from the host where the backup will take place:

- For DMX, the Masking and Mapping record for vcmdb must be accessible on the host executing the backup.
- For VMAX, the Masking view must be created for the host executing the backup.

CONFIGURE SYMMETRIX GATEKEEPERS

Gatekeepers need to be defined on all MediaAgents in order to allow the Symmetrix API to communicate with the array. Use the following command on each MediaAgent computer:

symgate define -sid <Symmetrix array ID> dev <Symmetrix device name>

where <Symmetrix device name> is a numbered and un-formatted Symmetrix device (e.g., 00C) which has the MPIO policy set as FAILOVER in the MPIO properties of the gatekeeper device.

LOAD THE SYMMETRIX DATABASE

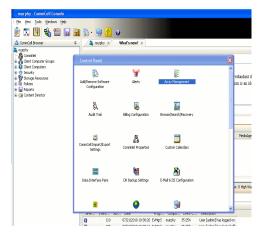
If you have the SYMCLI software installed, it is recommended that you test your local Symmetrix environment by running the following command to ensure that the Symmetrix database is successfully loaded:

symcfg discover

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- 3.
- Select EMC Symmetrix from the Snap Vendor list.
- Specify the **Symm ID** of the array in the **Name** field.

For reference purposes, the screenshot on the right shows the Symmetrix array ID (Symm ID) for the EMC Symmetrix storage device.

4.

- If Symcfg Authorization is enabled on the Symmetrix Management Console, enter the access information for the Symmetrix Management Console in the Username and Password fields.
- In the **Device Group** field, specify the name of the device group created on the client and proxy computer. The use of Group Name Service (GNS) is supported.

If you do not specify a device group, the default device group will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

To understand how the software selects the target devices during SnapProtect operations, click here.

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172.19.125.226 6000279 172.19.66.91 APM0003340	admin IBM XIV	
172.19.66.69 10881	system HDS List Snaps	
	OK Cancel Help	ן
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Array Manageme	m 🔼	
1 Snap Vendor	EMC Symmetrix	
2 Name		
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices onl	y from this device group	
Description		
ОК	Cancel Help	
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SnapProtect[™] Backup - Fujitsu ETERNUS DX

< Previous Next >

PRE-REQUISITES

- Local Copy license for Snap and Clone.
- Thin Provisioning license.
- Ensure that all members in the Fujitsu array are running firmware version V10L22-1000 or higher.
- Enable SMI-S on the storage array.
- Create a Host Affinity group for the proxy computer.
- If using SnapOPC, ensure to create a SDV and SDPV volumes.

CONFIGURE DESTINATION VOLUMES

- Source and destination volumes should be pre-paired before performing any snapshot operation. For EC snapshots (clone), pre-paired sessions should be in active state.
- To pre-pair source and destination volumes, install the ETERNUS SF Express Manager software version 14.2A or higher.
- Forbid Advanced Copy and Encrypted volumes are not supported.
- Depending on the type of snapshot being used, review the following for the creation of destination volumes:

FOR SNAP SNAPSHOTS

If pre-paired sessions are not available, SnapOPC snapshots use any available SDV volumes as their destination volumes. If you need to create a new SDV volume, ensure that the SDV volume is of equal size to the source volume.

FOR CLONE SNAPSHOTS

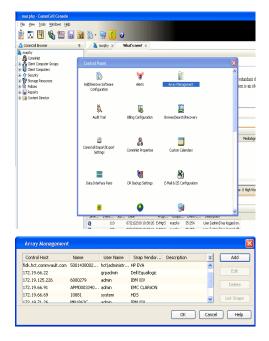
If pre-paired sessions are not available, destination volumes are automatically created for clone snapshots. If a non-existing device group is specified during array configuration in the CommCell Console, a destination volume is created based on the source volume type. However, if a valid device group is specified, the following destination volumes are created depending on the device group type:

- $\circ\,$ A Thin Provisioning volume is created if the device group is a Thin Provisioning pool.
- $\,\circ\,$ A standalone volume is created if the device group is a RAID group.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

- Select Fujitsu ETERNUS from the Snap Vendor list.
 - Specify the CM IP Address of the array in the Name field.

For reference purposes,	the screenshot	on the r	ight shows	the CM I	P Address	for	the
Fujitsu storage device.							

4.

- Enter the CM IP Address of the array in the **Control Host** field.
 - Enter the access information of a user with administrative privileges in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the RAID group or Thin Provisioning group created on the array to be used for clone operations. Device groups are not applicable for Snap snapshots.
 - Select the **Use devices only from this device group** option to use only the snapshot devices available in the device group specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click **OK** to save the information.

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Snap	Vendor	Fujitsu E	TERNUS]•]	
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×

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Array Management

Fujitsu ETERNUS

Use devices only from this device group

OK

Cancel Help

1 Snap Vendor

Control Host User Name Password Confirm Password Device Group

Description

Resid: Firewall

2 Name

SnapProtect[™] Backup - Hitachi Data Systems

PRE-REQUISITES

- Device Manager Server (7.1.1 or higher) installed on any computer.
- RAID Manager (01-25-03/05 or higher) installed on the client and proxy computers.
- Device Manager Agent installed on the client and proxy computers and configured to the Device Manager Server.

The hostname of the proxy computer and the client computer should be visible on the Device Manager Server.

- Appropriate licenses for Shadow Image and COW snapshot.
- For VSP, USP, USP-V and AMS 2000 series, create the following to allow COW operations:

 $\circ~$ COW pools

- $\,\circ\,$ V-VOLs (COW snapshots) that matches the exact block size of P-VOLs devices.
- For HUS, ensure that the source and target devices have the same **Provisioning Attribute** selected. For e.g., if the source is **Full Capacity Mode** then the target device should also be labeled as **Full Capacity Mode**.

ADDITIONAL REQUIREMENTS FOR VMWARE

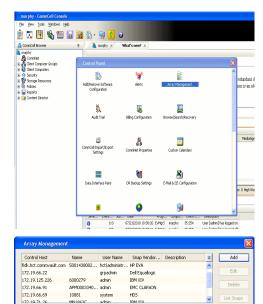
When performing SnapProtect operations on VMware using HDS as the storage array, ensure the following:

- HDS LUNs are exposed to the Virtual Server iDataAgent client and ESX server.
- All HDS pre-requisites are installed and configured on the Virtual Server iDataAgent client computer.
- The Virtual Server client computer is the physical server.
- The Virtual Machine HotAdd feature is not supported.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



< Previous

Next >

2. Click Add.

- **3.** Select **HDS** from the **Snap Vendor** list.
 - Specify the serial number of the array in the Name field.

OK Cancel Help

For reference purposes, the screenshot on the right shows the serial number for the HDS storage device.

4.

- Enter the IP address or host name of the Device Manager Server in the **Control Host** field.
 - Enter the user access information in the **Username** and **Password** fields.
 - In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. The device group should have the following naming convention:

<COW_POOL_ID>-<LABEL> **Or** <LABEL>-<COW_POOL_ID>

where ${\tt COW_POOL_ID}{\tt (for \ COW \ job)}$ should be a number. This parameter is required.

 $<\!\!\! LABEL>$ (for SI job) should not contain special characters, such as hyphens, and should not start with a number. This parameter is optional.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

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N	Jame				
3	Control Host				>
1	Jser Name)
4 ₽	Password				
6	Confirm Password				J
<mark>5</mark> C	evice Group				
6 🤇	Use devices only	from this	s device group		
	Description				
)	
	ОК	Car	ncel Help		
			(< Previou	(au

Array Management

HDS

Use devices only from this device group

OK

Cancel

Help

NAS/Management

1 Snap Vendor

Description

2 Name Control Host User Name Password Confirm Password Device Group

SnapProtect[™] Backup - HP StorageWorks EVA

< Previous Next >

SETUP THE HP SMI-S EVA

HP-EVA requires Snapshot and Clone licenses for the HP Business Copy EVA feature.

The following steps provide the necessary instructions to setup the HP EVA:

- 1. Download the HP SMI-S EVA and the HP Command View EVA software on a supported server from the HP web site.
- 2. Run the Discoverer tool located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\EVAProvider\bin folder to discover the HP-EVA arrays.
- 3. Use the CLIRefreshTool.bat tool to sync with the SMIS server after using the Command View GUI to perform any active management operations (like adding new host group or LUN). This tool is located in the C:\Program Files\Hewlett-Packard\mpxManager\SMI-S\CXWSCimom\bin folder.

SETUP THE ARRAY INFORMATION

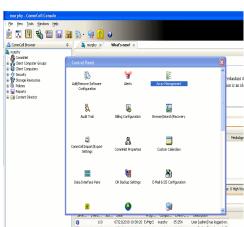
Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



з.

- Select HP EVA from the Snap Vendor list.
 - Specify the World Wide Name of the array node in the Name field.



Control Host	Name	User Name	Snap Vendor	Description	*	Add
idk.hct.commvault.com	5001438002	hct\administr	HP EVA		^	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	admin	EMC CLARIION			Delete
172.19.66.69	10881	system	HDS			List Snaps
172 19 71 26	MN1963C	admin	TRM YTV		~	List briaps

Array Managemer	nt 🔀
1 Snap Vendor	HP EVA
2 Name	
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only	from this device group
Description	
ОК	Cancel Help

The World Wide Name (WWN) is the serial number for the HP EVA storage device. See the screenshot on the right for a WWN example.

The array name must be specified without the dashes used in the WWN e.g., $\tt 50014380025DEB70.$

- 4.
- Enter the name of the management server of the array in the **Control Host** field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

- Enter the user access information in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware disk group created on the array to be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

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	Snap Vendor	HP EVA			×	
	Name					
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3	Control Host)
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-				/		
	Description					

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Cancel

Help

< Previous Next >

SnapProtect[™] Backup - IBM SAN Volume Controller (SVC)

PRE-REQUISITES

- IBM SVC requires the FlashCopy license.
- Ensure that all members in the IBM SVC array are running firmware version 6.1.0.7 or higher.
- Ensure that proxy computers are configured and have access to the storage device by adding a host group with ports and a temporary LUN.

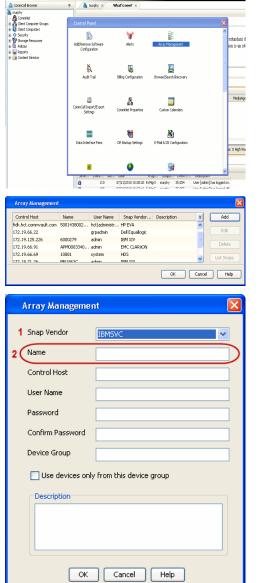
SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBMSVC from the Snap Vendor list.
 - Specify the 16-digit ID of the storage device in the **Name** field.



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The ${\bf ID}$ is the device identification number for the IBM SVC storage device. See the screenshot on the right for reference.

4.

44 • **•** 3.6 TB Co C 52% 🗌 🖸 😧 111 Running Tasks Array Management Snap Vendor Name Control Host 3 User Name Password Confirm Password 5 Device Group Use devices only from this device group 6 Description OK Cancel Help

• Enter the Management IP address or host name of the array in the **Control Host** field.

- Enter the user access information of the local application administrator in the **Username** and **Password** fields.
- In the **Device Group** field, specify the name of the physical storage pools created on the array to be used for snapshot (flash copy) operations.

If you do not specify a device group, the default storage pool will be used for snapshot operations.

- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - IBM XIV

< Previous) Next >

PRE-REQUISITES

- 1. IBM XCLI (2.3 or higher) installed on the client and proxy computers. On Unix computers, XCLI version 2.4.4 should be installed.
- 2. Set the location of XCLI in the environment and system variable path.
- 3. If XCLI is installed on a client or proxy, the client or proxy should be rebooted after appending XCLI location to the system variable path. You can use the XCLI_BINARY_LOCATION registry key to skip rebooting the computer.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

- 3. Select IBM XIV from the Snap Vendor list.
 - Specify the 7-digit serial number for the array in the Name field.



Confirm Password Device Group

Description

Use devices only from this device group

OK

Cancel

Help

The **System ID** (S/N) is the serial number for the IBM XIV storage device. See the screenshot on the right for reference.

4.

System Configuration ×

General
System Name
Parameters
System Version
10.22
System 10 (5/N)
6006633 (\$533
10
10/Hostname 1
10/Hostname 1
10/Hostname 1
10/Hostname 3

Update
Cancel

	Array Managemer	it 🔀
	Snap Vendor Name	
3	Control Host	
	User Name	
4	Password	
1	Confirm Password	
	Device Group	
	Use devices only	from this device group
	Description	
	ОК	Cancel Help
		Previous Next

- Enter the IP address or host name of the array in the **Control Host** field.
- Enter the user access information of the application administrator in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

SnapProtect[™] Backup - LSI

< Previous (Next >

PREREQUISITES

- Ensure that the LSI Storage Management Initiative Specification (SMIS) server has access to the LSI array through TCP/IP network to perform SnapProtect
 operations.
- Ensure that the client has access to:
 - SMIS server through TCP/IP network.
 - $\circ~$ LSI array through iSCSI or Fiber Channel network.
- Ensure that proxy computers are configured and have access to the storage device by adding a temporary LUN to the "host" using the Storage Management Console.

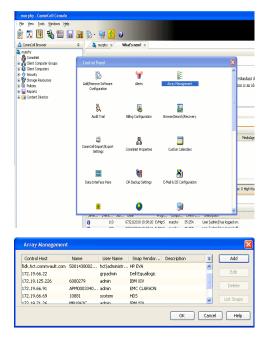
ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using SAN transport mode, ensure that the Client and the ESX Server reside in the same host group configured in the LSI array, as one volume cannot be mapped to multiple host groups.

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



2. Click Add.

з.

- Select LSI from the Snap Vendor list.
 - Specify the serial number for the array in the Name field.

	Control Host
	User Name
	Password
	Confirm Password
	Device Group
	Use devices only from this device group
	Description
	OK Cancel Help
	OK Cancel Help
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Array Management

LSI

1 Snap Vendor

Control Host

User Name

Password

5 Device Group

Confirm Password

Description

6 Use devices only from this device group

OK

Cancel

Help

3

4

2 Name

The ${\bf Storage \ Subsystem \ world-wide \ identifier \ (ID)}$ is the serial number for the LSI storage device.

Use the SANtricity Storage Manager software to obtain the array name by clicking **Storage Subsystem Profile** from the **Summary** tab. See the screenshot on the right for reference.

- Specify the name of the device manager server where the array was configured in the **Control Host** field.
- Enter the user access information using the LSI SMIS server credentials of a local user in the Username and Password fields.
- In the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not have a device group created on the array, specify None.
 - If you specify None in the **Device Group** field but do have a device group created on the array, the default device group will be used for snapshot operations.
- Select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

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SnapProtect[™] Backup - NetApp

< Previous) Next >

PREREQUISITES

LICENSES

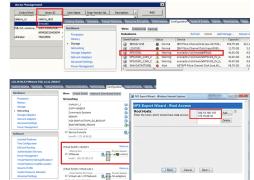
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- FCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ADDITIONAL REQUIREMENTS FOR VMWARE

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.

The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- 3. Select NetApp from the Snap Vendor list.
 - Specify the name of the file server in the **Name** field.
 - You can provide the host name, fully qualified domain

name or TCP/IP address of the file server.

- If the file server has more than one host name due to multiple domains, provide one of the host names based on the network you want to use for administrative purposes.
- Enter the user access information with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

Array Manageme	nt	
Snap Vendor		
Name	NetApp	
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only	/ from this device group	
Description	,	
Description		
ОК	Cancel Help	
		(Previous)

SnapProtect[™] Backup - NetApp SnapVault/SnapMirror

OVERVIEW

SnapVault allows a secondary NetApp filer to store SnapProtect snapshots. Multiple primary NetApp file servers can backup data to this secondary filer. Typically, only the changed blocks are transferred, except for the first time where the complete contents of the source need to be transferred to establish a baseline. After the initial transfer, snapshots of data on the destination volume are taken and can be independently maintained for recovery purposes.

SnapMirror is a replication solution that can be used for disaster recovery purposes, where the complete contents of a volume or qtree is mirrored to a destination volume or qtree.

PREREQUISITES

LICENSES

- The NetApp SnapVault/SnapMirror feature requires the NetApp Snap Management license.
- SnapRestore license for Revert operations (LUNs and NFS shares).
- FlexClone license for backup and restore operations of NFS shares.
- iSCSI Initiator must be configured on the client and proxy computers to access the storage device.

For the Virtual Server Agent, the iSCSI Initiator is required when the agent is configured on a separate physical server and uses iSCSI datastores. The iSCSI Initiator is not required if the agent is using NFS datastores.

- FFCP, ISCSI, CIFS, NFS licenses for features such as Fiber Channel Protocol, iSCSI protocol, CIFS file sharing, and NFS File Sharing. Use the appropriate
 license for the specific data types.
- Protection Manager, Operations Manager, and Provisioning Manager licenses for DataFabric Manager 4.0.2 or later.
- SnapMirror Primary and Secondary Licenses for disaster recovery operations.
- SnapVault Primary and Secondary License for backup and recovery operations.
- HTTP/HTTPS licenses on the NetApp file server to allow communication.

ARRAY SOFTWARE

- DataFabric Manager (DFM) A server running NetApp DataFabric® Manager server software. DataFabric Manager 4.0.2 or later is required.
- SnapMirror NetApp replication technology used for disaster recovery.
- SnapVault NetApp replication technology used for backup and recovery.

SETTING UP SNAPVAULT

Before using SnapVault and SnapMirror, ensure the following conditions are met:

- 1. On your source file server, use the license command to check that the **sv_ontap_pri** and **sv_ontap_sec** licenses are available for the primary and secondary file servers respectively.
- 2. Enable SnapVault on the primary and secondary file servers as shown below:

options snapvault.enable on

- 3. On the primary file server, set the access permissions for the secondary file servers to transfer data from the primary as shown in the example below: options snapvault.access host=secondary_filer1, secondary_filer2
- 4. On the secondary file server, set the access permissions for the primary file servers to restore data from the secondary as shown in the example below: options snapvault.access host=primary filer1, primary filer2

INSTALLING DATAFABRIC MANAGER

- The Data Fabric Manager (DFM) server must be installed. For more information, see Setup the DataFabric Manager Server.
- The following must be configured:
 - Discover storage devices
 - $\,\circ\,$ Add Resource Pools to be used for the Vault/Mirror storage provisioning

CONFIGURATION

Once you have the environment setup for using SnapVault and SnapMirror, you need to configure the following before performing a SnapVault or SnapMirror operation.

CREATE STORAGE POLICY

Use the following steps to create a storage policy.

- 1. From the CommCell Browser, navigate to **Policies.**
 - Right-click the Storage Policies node and click New Storage Policy.

2. Click Next.

- Specify the name of the **Storage Policy** in the **Storage Policy Name** box.
 - Select Provide the DataFabric Manager Server Information.
 - Click Next.

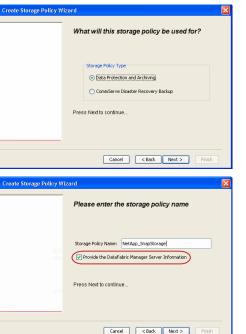
4.

3.

 In the Library list, select the default library to which the Primary Copy should be associated.

It is recommended that the selected disk library uses a LUN from the File server.

• Click Next.



Tools Windows Help

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	Please select a library to be the default library for this primary copy
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100	Press Next to continue
	Cancel <8ack Next > Frish

- 5. Select a MediaAgent from the **MediaAgent** list.
 - Click Next.

6. Click Next.

7. Click Next.

- 8. Verify Name and MediaAgent Name.
 - Click **Browse** to specify location for **Deduplication Store**.
 - Click Next.

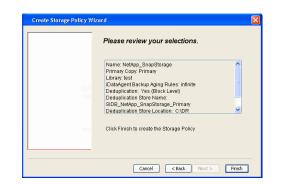
9.	٠	Provide the DataFabric Manager server information	
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- If a DataFabric Manager server exists, click **Select** to choose from the dropdown list.
- $\circ~$ If you want to add a new DataFabric Manager Server, click Add.
- Click Next.

Create Storage Policy Wiz	zard 🔀
	Please select a MediaAgent for this copy
	MediaAgent: dhaval-2008
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard
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	Retain by Jobs 24 -
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	V Infinite/ 365 Days
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	primary copy?
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	Yes Fnable Client Side Deduplication
	No
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	Cancel Sack Next > Finish
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	Deduplication Store
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	Deduplication Store Location:
	MediaAgent Name dhaval-2008
	Location: Browse
	Press Next to continue
	Cancel < Back Next > Finish
Create Storage Policy Wi	zard 🔀
	Please select/add the new DataFabric Manager information?
	DataFabric Manager:
	Select hwinapp02
	Host Name: venus
	Add User Name: admin
	Password:

10. Click Finish.

Cancel < Back Next > Finish

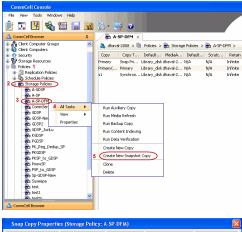


- **11.** The new Storage Policy creates the following:
 - Primary Snap Copy, used for local snapshot storage
 - Primary Classic Copy, used for optional data movement to tape, disk or cloud.

CREATE A SECONDARY SNAPSHOT COPY

After the Storage Policy is created along with the Primary Snap Copy, the Secondary Snap Copy must be created on the new Storage Policy.

- 1. From the CommCell Browser, navigate to **Policies** | **Storage Policies**.
 - Right-click the storage policy and click All Tasks | Create New Snapshot Copy.



- Enter the Copy Name.
 - Select the Library and MediaAgent from the drop-down list.
 - Click Vault/Backup or Mirror protection type based on your needs.

It is recommended that the selected disk library uses a CIFS or NFS share or a LUN on the File server.

Provisioning ciations A Copy Policy Y Ass Retention Copy No SnapVault Test Active Default Inde Library: test dhaval-20 MediaAgent ~ Scratch Pool: Vault/Backup O Mirror OK Cancel Help

- **3.** Click the **Copy Policy** tab.
 - Depending on the topology you want to set up, click **Specify Source for Auxiliary Copy** and select the source copy.

Copies can be created for the topologies listed in the following table:

TOPOLOGY

SOURCE COPY

4.

Primary-Mirror Primary Primary-Mirror-Vault Mirror Primary-Vault Primary Primary-Vault-Mirror Vault Primary-Mirror-Mirror Mirror	Selective Copy Associations Advanced Deduplication Provisioning General Retarition Copy Policy Data Paths Data Path Configuration Backup Selection Backup Selec
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	Al Bashups Backups On and After: Thu 04/07/2011 Source Copy
Primary-Mirror Mirror	Badups On and After: Thu 04/07/2011
	Source Copy
	OK Carrol Heb
Click the Provisioning tab.	Snap Copy Properties (Storage Policy: A-SP-DFM)
Click Refresh to display the DFM entities.	General Retention Copy Policy Data Paths Data Paths Selective Copy Associations Advanced Deduplication Provisioning
Select the Provisioning Policy from the drop-down list.	DataFabric Manager Name: hwinapp02
Select the Resource Pools available from the list.	Refresh DataFabric Manager Entities:
	Provisioning Policy:
Click OK .	3 Resource Pools
The secondary snapshot copy is created.	Available: Selected: iscott-mold Hhu_sascademirry_sarget, M1 Hhu_sascademirry_sarget, M1 Add > Hhu_mary_mark_M6 Add > Hhu_seconderymark_M5 Add Al >> Add Al >> <
	Name: scott-mold Space Status: Normal
	Total Size:2.52 TB Available Size:961.49 GB
	Filer Aggregate Space Status Total Size Available Size V mold dev_n_test Normal 2.52 TB 961.49 GB A

- If you are using a Primary-Mirror-Vault (P-M-V) or Primary-Vault (P-V) topology on 5. ONTAP version higher than 7.3.5 (except ONTAP 8.0 and 8.0.1), perform the following steps:
 - Connect to the storage device associated with the source copy of your topology. You can use SSH or Telnet network protocols to access the storage device.
 - From the command prompt, type the following:
 - options snapvault.snapshot_for_dr_backup named_snapshot_only
 - Close the command prompt window.

It is recommended that you perform this operation on all nodes in the $\ensuremath{\mathsf{P-M-V}}$ topology.

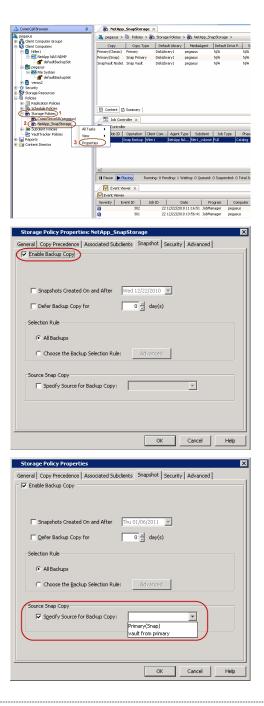
CONFIGURE BACKUP COPY

Follow the steps given below to configure Backup Copy for moving snapshots to media.

- 1. • From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**

~

OK Cancel



• Click the **Snapshot** tab.

- Select Enable Backup Copy option to enable movement of snapshots to media.
- Click OK.

3. • Select Specify Source for Backup Copy.

• From the drop-down list, select the source copy to be used for performing the backup copy operation.

SETUP THE ARRAY INFORMATION

The following steps describe the instructions to set up the primary and secondary arrays.

- From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

2. Click Add.

3. • Select **NetApp** from the **Snap Vendor** list.

• Specify the name of the primary file server in the **Name** field.

The name of primary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address. However, if you plan to create a Vaut/Mirror copy, ensure the IP address of the primary file server resolves to the primary IP of the network interface and not to an alias.
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Array Management

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A

NetApp

Use devices only from this device group

You can provide the host name, fully qualified domain name or TCP/IP address of the file server.

- Enter the user access information in the **Username** and **Password** fields.
- Select File Server, then click Primary for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

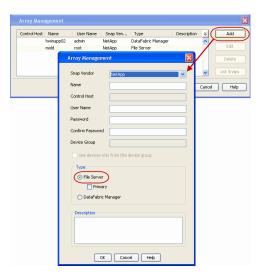
- Click **Add** again to enter the information for the secondary array.
 - Specify the name of the secondary file server in the **Name** field.

The name of secondary file server may be different in the DataFabric Manager, CommServe, MediaAgent and other entities, but it should resolve to the same IP address.

- Enter the user access information in the Username and Password fields.
- Select File Server for the array type.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click OK.

4.

Page 517 of 742	



SEE ALSO

Import Wizard Tool

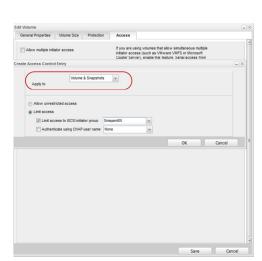
Provides the steps to import the configuration details of the DataFabric Manager server into the Simpana software.

Previous Next >

SnapProtect[™] Backup - Nimble

PREREQUISITES

- From the Nimble storage array console, ensure that the Access Control Entry for the client initiator group is set to Volume and Snapshots.
- In case you are using a proxy computer for SnapProtect operations, add the initiator group for the proxy computer and set the Access Control Entry to Snapshots Only.
- Ensure that a temporary LUN is allocated to all ESX Servers that are used for snapshot operations.



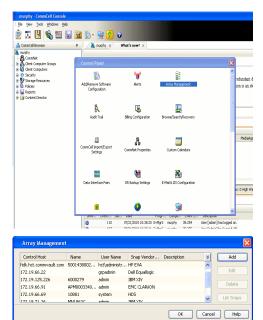
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Next 🕨

SETUP THE ARRAY INFORMATION

Provide the identification information for the array to ensure access. The following section provides step-by-step instructions for setting the array information.

- **1.** From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.



- 2. Click Add.
- **3.** Select **Nimble** from the **Snap Vendor** list.
 - Specify the Data IP Address of the array in the Name field.

If you have more than one Data IP Address configured, you will need to add the array information for each of the configured Data IP addresses.

• Enter the Management IP Address of the array in the **Control Host** field.

For reference purposes, the screenshot on the right shows the Data IP Address and
Management IP for the Nimble storage device.

Array Management	X
1 Snap Vendor	Nimble
2 Name	
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- Enter the access information of a user with administrative privileges in the **Username** and **Password** fields.
- Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
- Click **OK** to save the information.

4.

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Description	
ОК	Cancel Help
	<pre>Previous Next ></pre>

SnapProtect[™] Backup - Data Replicator

< Previous (Next >

PRE-REQUISITES

INSTALLATION

• The use of Data Replicator with the SnapProtect backup requires MediaAgent, File System *i*DataAgent, and ContinuousDataReplicator on the source, destination, and proxy computers.

The use of a proxy server to perform SnapProtect operations is supported when a hardware storage array is used for performing the SnapProtect backup.

• The operating system of the MediaAgent to be used for SnapProtect backup must be either the same or higher version than the source computer.

STORAGE POLICY REQUIREMENTS

The Primary Snap Copy to be used for creating the snapshot copy must be a disk library.

If the Storage Policy or the disk library being used by the subclient is updated, the subclient should be recreated.

SETUP THE ARRAY

- From the CommCell Console, navigate to **<Client>** | **<Agent>**.
 - Right-click the subclient and click **Properties**.
- Click the SnapProtect Operations tab.
 - Ensure **Data Replicator** is selected from the **Available Snap Engine** drop-down list.
 - Click OK.

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Getting Started - Windows File System Backup

PERFORM A BACKUP

Once the storage policy is configured, you are ready to perform your first backup.

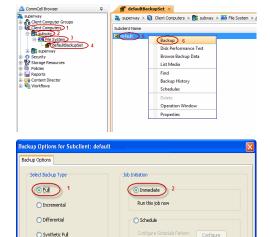
The following section provides step-by-step instructions for performing your first backup:

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | defaultBackupSet.
 - Right-click the default subclient and click **Backup**.
- 2. Click Full as backup type and then click Immediate.
 - Click OK.

- **3.** You can track the progress of the job from the **Job Controller** window of the CommCell console.
- 4. Once the job is complete, view the job details from the **Backup History**. Right-click the **Subclient** and select **Backup History**.

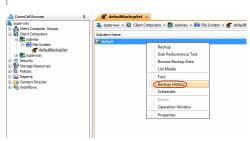
5. Click OK.





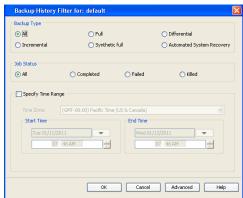
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Next 🕨

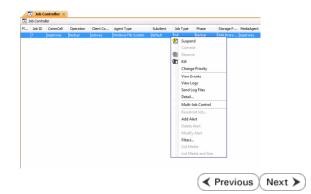


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- Items that failed during the job
- Items that succeeded during the job
- Details of the job
- Events of the job
- Log files of the job
- Media associated with the job



Getting Started - Vault/Mirror Copy

< Previous) Next >

SKIP THIS PAGE IF YOU ARE NOT USING NETAPP WITH SNAPVAULT/SNAPMIRROR.

Click Next > to Continue.

INITIATE VAULT/MIRROR COPY

Follow the steps to initiate a Vault/Mirror copy.

- From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the <storage policy> and click All Tasks | Run Auxiliary Copy.

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- Select the desired options and click the **Job Initiation** tab.
 - Select **Schedule** to configure the schedule pattern and click **Configure**.

- **3.** Enter the schedule name and select the appropriate scheduling options.
 - Click OK.

The SnapProtect software will call any available DataFabric Manager APIs at the start of the Auxiliary Copy job to detect if the topology still maps the configuration.

Once the Vault/Mirror copy of the snapshot is created, you cannot re-copy the same snapshot to the Vault/Mirror destination.

Previous Next >

Getting Started - Snap Movement to Media

< Previous Next >

SKIP THIS PAGE IF YOU ARE NOT USING A TAPE DEVICE.

Click Next > to Continue.

BACKUP COPY OPERATIONS

A backup copy operation provides the capability to copy snapshots of the data to any media. It is useful for creating additional standby copies of data and can be performed during the SnapProtect backup or at a later time.

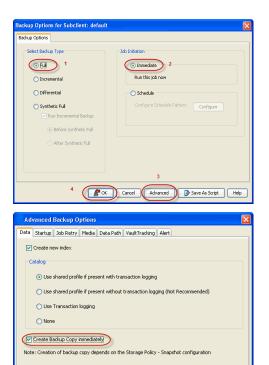
Once a backup copy is performed and the snapshot is copied to media, the same snapshot cannot be re-copied again.

INLINE BACKUP COPY

Backup copy operations performed during the SnapProtect backup job are known as inline backup copy. You can perform inline backup copy operations for primary snapshot copies and not for secondary snapshot copies. If a previously selected snapshot has not been copied to media, the current SnapProtect job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

Depending on the Agent you are using, your screens may look different than the examples shown in the steps below.

- From the CommCell Console, navigate to Client Computers | <Client> | <Agent> | defaultBackupSet.
 - Right click the default subclient and click **Backup.**
 - Select Full as backup type.
 - Click Advanced.



- Select Create Backup Copy immediately to create a backup copy.
 - Click OK.

OFFLINE BACKUP COPY

Backup copy operations performed independent of the SnapProtect backup job are known as offline backup copy.

- 1. From the CommCell Console, navigate to **Policies** | **Storage Policies**.
 - Right-click the **<storage policy>** and click **All Tasks** | **Run Backup Copy**.

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User Guide - SnapProtect

2. Click OK.

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Getting Started - Windows File System Restore

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 Browse the Latest Data

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Backup Disk Performance Test

Browse Backup Data 6 List Media

Operation Windo Properties

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PERFORM A RESTORE

As restoring your backup data is very crucial, it is recommended that you perform a restore operation immediately after your first full backup to understand the process.

The following sections explain the steps for restoring the backup data from copies.

- From the CommCell Console, navigate to Policies | Storage Policies.
 - Right-click the **<storage policy>** and click **Properties.**
 - Click the Copy Precedence tab.
 - By default, the snapshot copy is set to 1 and is used for the operation.

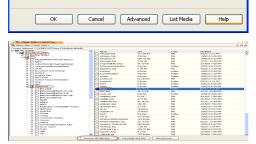
You can also use a different copy for performing the operation. For the copy that you want to use, set the copy precedence as 1.

• Click OK.

1.

- From the CommCell Browser, navigate to Client Computers | <Client> | File System | defaulBackupSet.
 - Right-click the default subclient and then click **Browse Backup Data**.
- 3. Click OK.

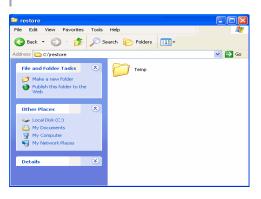
- 4. Expand the **defaultBackupSet** and navigate to **Documents and Settings** folder.
 - Select the Documents and Settings folder.
 - Click Recover All Selected.



- Clear the **Overwrite Files** and **Restore to same folder** options.
 - Specify the destination path by clicking **Browse** button. This will ensure that the existing files are not overwritten.
 - Click OK.

Restore Options for All Selected Items	
General Job Initiation	Browsing for destination folder on
Restore ACLS Only Restore Data Only Restore Both Data and ACLS	Subway Alame Szer T Mod ≚ G C G Documents and Settings G DR
Unconditionally overwrite only if target is a DataArchiver stub	a 💼 gdismcache a 💼 Program Files a MECIVQER
Overwrite if file on media is newer Outconditional Overwrite Restore only if target exists	festors 4 System Volume Information formation formation formation formation
Recreate Mount Points	S OK Close New Folder
Restore Destination	
Destination client subway	
Restore to same folder 2	\sim
Specify destination path	
C:lpestore 6	Browse
Preserve Source Paths	3
Preserve	
Remove 0 keyel from beginning of the source path	
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- 6. You can monitor the progress of the restore job in the **Job Controller** window of the CommCell Console.
- **7.** Once the File System is restored, verify that the restored files/folders are available in the restore destination.



CONGRATULATIONS - YOU HAVE SUCCESSFULLY COMPLETED YOUR FIRST BACKUP AND RESTORE.

If you want to further explore this Agent's features read the Advanced sections of this documentation.

If you want to configure another client, go back to Setup Clients.



Advanced - VMware SnapProtect[™] Backup

TABLE OF CONTENTS

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert Virtual Machine from a Snapshot

Configuring User Accounts

Virtual Center Credentials Permissions for Custom User Accounts

Configuring Auto-Discovery by Datastore Affinity of Virtual Machines

Configuring Subclients through the Command Line

Truncating SQL Database Logs

Verify SnapProtect Backups

Choosing Restore Types

Restore to a Different ESX server

Restoring Files and Folders

Restore Files from a Snapshot (Live Browse)

Restore Data from a Backup Copy

Data Aging for SnapProtect Snapshots

Retention by Number of Jobs

Options not supported for VMware

Using a Separate ESX Server for a Backup Copy

Configuring a Subclient to Use a Separate Proxy Client Specifying Secondary ESX Server for Backup Copy Operations Restoring Virtual Machines from a Snapshot Mounted on the Secondary ESX Server

Disabling VMware Quiesce

Pre/Post Processing using VMware Tools

Additional Options

MANAGING SNAPSHOTS

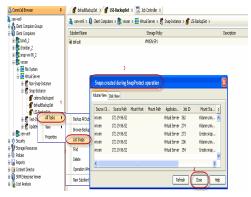
The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, or delete.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to **Client Computers** | **Virtual Server** | <*Instance*>.
- 2. Right-click < backup set > and click All Tasks | List Snaps.
- 3. The **Snaps created during SnapProtect operation** dialog box displays a list of all the snapshots created for the selected subclient. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the Disk View tab to display the snapshot name, e.g. SP 2 79 1286222629.



MOUNT SNAPSHOTS

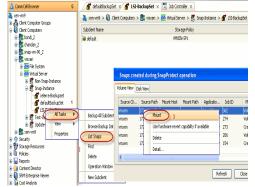
You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

If the niSCSIEnable registry key is configured, SnapProtect backup will always try to mount using iSCSI method. If

this key is not configured, SnapProtect backup will try to mount using the FC method first.

- From the CommCell Browser, navigate to Client Computers | Virtual Server | <Instance>.
- 2. Right-click < backup set > and click All Tasks | List Snaps.
- From the Snaps created during SnapProtect operation dialog box, right-click the snapshot that you wish to mount and select Mount.

You can also open the **Snaps created during SnapProtect operation** dialog box by right clicking the snapshot copy in a storage policy. However, if you open the dialog box by this method, you can only view the list of snapshots and cannot mount the snapshots.



Configure Password

Mount Option

Vorride Default Selection

- From the **Mount Path** dialog box, you can select a different ESX server for mounting the snap by choosing the **Select ESX server for snap mount** option.
 Select the appropriate ESX server from the **Browse for ESX Server** dialog box.
- 5. Click **OK** to close the **Browse for ESX Server** dialog box.
- 6. Click **OK** to close the **Subclient Properties** dialog box.

UNMOUNT SNAPSHOTS

Follow the steps given below to Unmount Snapshots:

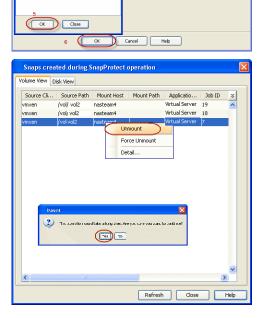
- 1. From the CommCell Browser, navigate to **Client Computers** | **Virtual Server** | <*Instance*>.
- 2. Right-click < backup set > and click All Tasks | List Snaps.
- 3. Right-click the snapshot you wish to unmount and click **Unmount**.
- 4. Click **Yes** when prompted if you want to continue.

If the snapshot does not get unmounted, select the **Force Unmount** option to mark the snapshot as unmounted.

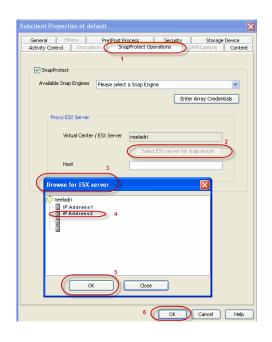
SNAP MOUNT TO A DIFFERENT ESX SERVER

While performing mount operations you can use a temporary ESX server to reduce the load on the production server.

- 1. From the CommCell Console, right-click the subclient for which you wish to perform a SnapProtect backup and click **Properties**.
- 2. Click the SnapProtect Operations tab.
- Select the SnapProtect option to enable SnapProtect backup for the selected subclient.
- 4. You can select a different ESX server for mounting the snap by choosing the **Select ESX server for snap mount** option.
- 5. Select the appropriate ESX server from the Browse for ESX Server dialog box.
- 6. Click **OK** to close the **Browse for ESX Server** dialog box.
- 7. Click OK to close the Subclient Properties dialog box.



By default the snapshot will be exposed to the first Host Bus Adapter (HBA) on the ESX Server. If you want to expose the snapshot to a specific HBA, configure the sPortInfo registry key.



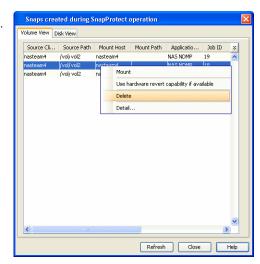
DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to perform data recovery operations from the snapshot copy. However, if a backup copy was created from the snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same **Job ID** are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click **OK**.



REVERT VIRTUAL MACHINE FROM A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created.

Revert operations for a virtual machine are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. Other file servers are not supported. To perform a revert operation, the SnapRestore license is required on the NetApp file server.

Before performing revert operation, ensure that all the disks reside on the NFS data store. If the data does not reside on the NFS data store, you cannot perform the revert operation.

It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.

- 1. From the CommCell Browser, navigate to Client Computers | Virtual Server | <Instance>
- 2. Right-click *<backup set>* and click **All Tasks** | **Browse Backup Data**.
- 3. From the Browse Options dialog box, select Container Restore and click OK.
- 4. Select the virtual machine that you want to revert and click **Recover All Selected**.
- 5. From the Restore Options dialog box, click Advanced.
- 6. Select the **Use hardware revert capability if available** option.
- 7. Click **OK** to confirm the revert operation.
- 8. Click **OK** from the **Advanced Restore Options** dialog box.
- 9. Click **OK** to start the revert.

For NetApp NFS configurations:

- This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
- A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
- If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

CONFIGURING USER ACCOUNTS

The Virtual Server iDataAgent requires user accounts that have sufficient privileges for the software to:

- Access the Virtual Center and ESX Servers
- Access virtual machines
- Access volumes, files, and folders within virtual machines

An administrative account configured with the VCB Role and the following additional privileges can be used:

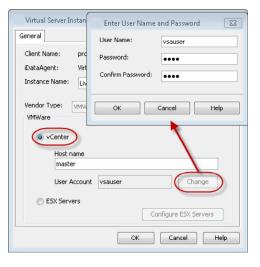
- Virtual Machine
- Resource
- Datastore

User-defined roles can also be created provided the above-mentioned privileges are included in those roles.

The following sections provide the steps necessary to configure user accounts for Virtual Centers and ESX Servers.

VIRTUAL CENTER CREDENTIALS

- 1. Navigate to Client Computers | <Client> | Virtual Server.
- 2. Right-click the instance and click Properties.
- 3. In the VMware | vCenter area, click the Change button.
- 4. Enter the username and password.
 - The password must not contain single-quote (') or double-quote (") characters.
- 5. Click **OK** to save your changes.
- 6. Click **OK**.



PERMISSIONS FOR CUSTOM USER ACCOUNTS

You can create a separate account for backup and restore operations. When you are create a user account, following system privileges are automatically added to account:

Restore Options for All Selected Items	Advanced Restore Options
Seneral Job Initiation	Torrection Job Retry Browse Options ESX Browse Aler
Restore as Virtual Machines O Virtual Machine Files	General Startup Copy Precedence Data Path Pathu/Pitters
Destination client windmade1	Skip errors and continue
vCenter sopp24 Change	Use Erect Index
📝 Restore in place	User Name:
VM and Disk. Rename VM as ESX Server Data Store Add	Password:
Vietual Machine Configuration	Confine Password:
Linconditionally overwrite IM with the same name Dak Proveloring : Annum Transmot Mode: Auto	

CATEGORY	AVAILABLE PERMISSIONS
System	Anonymous
	Read
	View

Ensure that the following permissions are assigned to the user account:

BACKUP PERMISSION REQUIREMENTS

Category	Available Permissions
Datastore	Allocate space
	Browse datastore
	Configure datastore
	Low level file operations
	Remove datastore
	Rename datastore
	Update virtual machine files
Global	Disable methods
	Enable methods
	Licenses
Host - Configuration	Advanced settings
	Connection
	Storage partition configuration
	System Management
Virtual machine - Configuration	Add existing disk
	Add new disk
	Add or remove device
	Change resource
	Disk change tracking
	Disk lease
	Remove disk
	Settings
Virtual machine - Provisioning	Allow read-only disk access
	Allow virtual machine download
	Clone virtual machine
Virtual machine - Snapshot Management ("Virtual machine - State	Create snapshot
in vSphere 4.1)	Remove Snapshot

RESTORE PERMISSION REQUIREMENTS

Category	Available Permissions
Datastore	Allocate space
	Browse datastore
	Configure datastore
	Remove datastore
	Rename datastore
	Update virtual machine files
Host - Configuration	Advanced settings
	Connection
	Storage partition configuration
	System Management
Network	Assign network
Resource	Assign vApp to resource pool
	Assign virtual machine to resource pool
Virtual machine - Configuration	Add existing disk
	Add new disk
	Add or rRemove device
l	

1	1
	Advanced
	Change CPU count
	Change resource
	Disk change tracking
	Disk lease
	Host USB device
	Memory
	Modify device settings
	Raw device
	Reload from path
	Remove disk
	Rename
	Reset guest information
	Settings
	Swapfile placement
	Upgrade virtual machine compatibility ("Upgrade virtual hardware " in vSphere 4.1")
Virtual machine - Interaction	Power Off
	Power On
Virtual machine - Inventory	Create new
	Register
	Remove
	Unregister
Virtual machine - Provisioning	Allow disk access
	Allow read-only disk access
	Allow virtual machine download
	Mark as template (to restore VM template)
Virtual machine - Snapshot	Create snapshot
Management ("Virtual machine - State" in vSphere 4.1)	Remove Snapshot
,	Revert to snapshot

CONFIGURING AUTO-DISCOVERY BY DATASTORE AFFINITY OF VIRTUAL MACHINES

It is recommended to configure automatic discovery of virtual machines by data store affinity if you have a large VMware environment with many virtual machines, ESX servers and datastores.

When configured, new virtual machines found in the datastore are automatically assigned to the desired subclient and backed up when backup operations on the subclient are performed.

- 1. From the CommCell Browser, right-click the backup set for which you want to discover guest hosts and then click **Properties**.
- 2. Select Rule-Based Discovery.
- 3. Click **Discover By** drop-down box and select **DataStore Affinity**.
- 4. Click **Configure**.
- 5. From the Datastore Configuration for Auto Discover dialog box, click Discover Data Stores.
- From the Auto Discover Data Stores dialog box, locate the datastores you wish to configure for auto discovery and select the subclient you wish to associate each with.

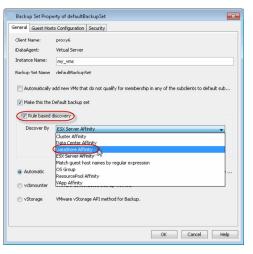
To exclude a select number of datastores from being backed up, choose the $\rm Do~Not~Backup$ option in the $\rm Subclient$ column.

- 7. Click **OK** to save your changes.
- 8. Click **OK** from the **Datastore Configuration for Auto Discover** dialog box.

CONFIGURING SUBCLIENTS THROUGH THE COMMAND LINE

Use the following steps to configure a subclient with SnapProtect properties:

1. Download the update_subclient_add_template.xml file and save it on the computer from where the command will be executed.



2. Select the operation that you want to run from the sections below, and execute the command from the <Software_Installation_Directory>/Base folder after substituting the parameter values.

SET BACKUP TYPE

qoperation execute -af update_subclient_add_template.xml -appName 'Virtual Server' -clientName xxxxx -backupsetName xxxxx -subclientName xxxxx backupType xxxxx

USE PROXY TO PERFORM SNAPPROTECT BACKUPS

qoperation execute -af update_subclient_add_template.xml -appName 'Virtual Server' -clientName xxxxx -backupsetName xxxxx -subclientName xxxxx useProxy/clientName xxxxx

SET THE TRANSPORT MODE FOR VMWARE

qoperation execute -af update_subclient_add_template.xml -appName 'Virtual Server' -clientName xxxxx -backupsetName xxxxx -subclientName xxxxx transportModeForVMWare xxxxx

SET THE PROXY FOR THE ESX HOST

qoperation execute -af update_subclient_add_template.xml -appName 'Virtual Server' -clientName xxxxx -backupsetName xxxxx -subclientName xxxxx - isSnapBackupEnabled true -proxyESXHost xxxxx

ENABLE APPLICATION AWARE BACKUPS AND TRUNCATE EXCHANGE DATABASE LOGS

qoperation execute -af update_subclient_add_template.xml -appName 'Virtual Server' -clientName xxxxx -backupsetName xxxxx -subclientName xxxxx - isSnapBackupEnabled true -backupForGranularRecovery true -truncateExDBLogs true

USE SEPARATE PROXY FOR SNAP TO TAPE OPERATION

qoperation execute -af update_subclient_add_template.xml -appName 'Virtual Server' -clientName xxxxx -backupsetName xxxxx -subclientName xxxxx isSnapBackupEnabled true -useSeparateProxyForSnapToTape true -separateProxyForSnapToTape/clientName xxxxx

SET THE STORAGE ARRAY TYPE

qoperation execute -af update_subclient_add_template.xml -appName 'Virtual Server' -clientName xxxxx -backupsetName xxxxx -subclientName xxxxx - isSnapBackupEnabled true -snapShotEngineName 'xxxxx'

AVAILABLE PARAMETERS FOR SUBCLIENTS

The following table describes the parameters used in the above sections.

PARAMETER	DESCRIPTION OF PARAMETER VALUES
clientName	Name of the client computer.
backupsetname	Name of the backup set. If the backup set name is not specified in the command query, the default backup set is used by default.
appName	Name of the application. In this case it would be 'Virtual Server'.
subclientname	Name of the subclient.
backupType	Option to set the backup level at which the SnapProtect backup should run. Valid values are:
	• FILE_LEVEL
	VOLUME_LEVEL
	• DISK_LEVEL
useProxy/clientName	Name of the client computer that will behave as the proxy. This is useful when you want a different computer to perform the backups.
transportModeForVMWare	Option to set the transport mode of your environment. Valid values are:
	 AUTO, to allow the software to automatically set the transport mode based on your setup.
	• SAN
	• HOT_ADD
	• NAS
	NBD_SSL
	NBD
isSnapBackupEnabled	Option to enable the SnapProtect configuration on the subclient.
	Valid values are true/false.
backupForGranularRecovery	Option to enable the application aware backup operation to allow granular recovery of files. Valid values are true/false.
	When this option is set to true , you can also truncate the Exchange Database logs using the truncateExDBLogs parameter. Valid values for this parameter are true/false.
useSeparateProxyForSnapToTape	Option to enable the use of a proxy computer to perform SnapProtect operations in a different Virtual Server client. Valid values are true/false.
	When this option is set to true , you also need to specify proxy computer using the separateProxyForSnapToTape/clientName parameter.
snapShotEngineName	Name of the storage array to be configured with the subclient. Valid values are:

The name of the storage array should match with the name displayed in the Available Snap Engine list in the subclient properties.
Data Replicator
3PAR Clone
• 3PAR Snap
Dell Compellent Snap
Dell Equallogic Clone
Dell Equallogic Snap
EMC Celerra
EMC CLARiiON SnapView Clone
EMC CLARiiON SnapView Snap
EMC TimeFinder BCV
EMC TimeFinder Clone
EMC TimeFinder Snap
EMC CLARiiON SnapView Snap
Fujitsu ETERNUS DX Clone
Fujitsu ETERNUS DX Snap
HDS Copy on Write Snapshot
HDS Shadow Image
HP EVA Clone
HP EVA Snapshot
• IBM XIV Snap
IBM SVC FlashCopy
• IBM SVC Space-efficient FlashCopy
LSI Snapshot
LSI Volume Copy
NetApp
Nimble Storage CS-Series Snap

TRUNCATING SQL DATABASE LOGS

When you are using Virtual Server iDataAgent to create the snapshot of a SQL server, you can truncate the SQL server database logs before creating the snapshot. Follow the steps given below to truncate the SQL server database logs:

1. Install the Microsoft SQL Server *i*DataAgent for restore only on the virtual machine which has the SQL server. For more information, refer to Installing Restore Only Agents.

Once you install the agent, the CvSQLBackupUtility will be available in the <Base> folder under <Installation Directory> on the virtual machine. This utility will be used to truncate the SQL server database logs.

2. Create batch file with name <post-thaw-script.bat > and type the following command in the batch file. as below

CvSQLBackupUtility.exe -server <SQL Server> -database <databasename> -op <operation>

This command will execute the SQL command to truncate logs.

For example:

<Install Directory>\Base\CvSQLBackupUtility.exe" -server VSA_SQL2 -database ReportServer -op truncatelog

3. Create directory backupScripts.d under C:\Program Files\VMware\VMware Tools and copy the above batch file to this location.

The post-thaw-script location varies based on ESX versions For more information refer to http://kb.vmware.com/selfservice/microsites/search.do? language=en_US&cmd=displayKC&externalId=1006671.

When you perform the SnapProtect backup of the SQL server, the batch file will be executed while creating the snapshot and the SQL database logs will be truncated.

VERIFY SNAPPROTECT BACKUPS

You can verify a backup to ensure that you can restore the virtual machine.

The recovery verification recreates the virtual machine to ensure backed up application and data are available as expected.

MOUNT THE SNAPSHOT

1. From the CommCell Browser, right-click the subclient that contains the virtual machine backup that you want to verify, click **All Tasks | List Snaps**.

- 2. Right-click the snapshot that you wish to verify and select ${\bf Mount}.$
- 3. From the **Mount Path** dialog box, click the **Select ESX server for snap mount** option.
- 4. Select an ESX server from the **Browse for ESX Server** dialog box.

As this ESX server will be used to create the virtual machine, it is recommended that you select a non-production server.

5. Click **OK**.

BROWSE THE DATA

- From the CommCell Browser, right-click the subclient that contains the backup that you want to verify and click All Tasks | Individual files/folders.
- 7. Click **OK**.

BROWSE NEW DATASTORE AND REGISTER THE VIRTUAL MACHINE

 From the VI client, ensure that the new virtual machine from the backup is registered. The virtual machine name will be in the [OriginalVMName]_[BackupJobID] _GX_BACKUP format.

If the virtual machine is not registered, follow the steps given below to browse the new datastore that is created and register the virtual machine.

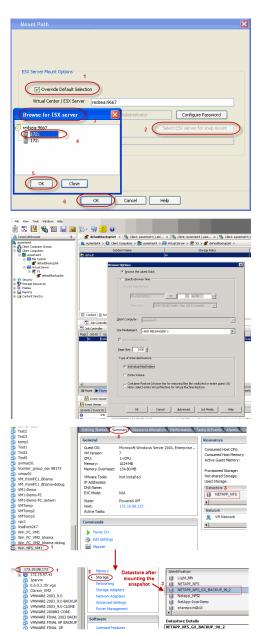
- i. Click the virtual machine you want to register and click the **Summary** tab to see the datastore name.
- ii. Click the ESX server you selected in Step 4, and click the **Storage** option.
- iii. Identify the new datastore created after mounting the snapshot and register the virtual machine. The new datastore will have the following name:

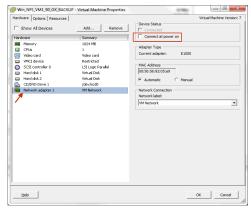
[OriginalDatastoreName]_GX_BACKUP_[BackupJobID]

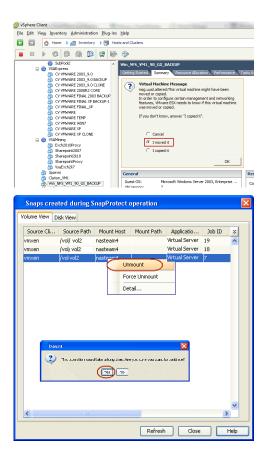
iv. Specify a name for the virtual machine.

VERIFY THE DATA USING VI CLIENT

- 9. Right-click the virtual machine and select **Edit Settings**. Click **Network adapters**.
- 10. Clear the **Connect at power on** checkbox in the **Virtual Machine Properties** dialog box for all the available network adapters.
- 11. Click **OK**.
- 12. Turn on the virtual machine.
- 13. Click the **Summary** tab and select the **I moved it** option.
- 14. Login to the virtual machine and verify the applications and data.
- 15. After verification is complete, power off the virtual machine.
- 16. Right-click the virtual machine and select the **Remove from inventory** option.







UNMOUNT THE SNAPSHOT

- 17. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, click **All Tasks** | **List Snaps**.
- 18. Right-click the snapshot that you wish to unmount and select **Unmount**.

CHOOSING RESTORE TYPES

When restoring VMware data, it is important to consider the backup level that was originally performed. The following table illustrates the types of restores available for each backup level:

BACKUP LEVEL	RESTORE LEVEL FROM SNAP	RESTORE FROM TAPE	NOTES
Disk-Level	Disk-Level (as virtual machine)	Disk-Level (as virtual machine)	
	Disk Level (as VMDK file)	Disk Level (as VMDK file)	
Disk-Level with Enable Granular Recovery enabled	Disk-Level (as virtual machine)	Disk-Level (as virtual machine)	
	Disk-Level (as VMDK file)	Disk-Level (as VMDK file)	
	Volume-Level (as physical volume)	File-Level	
	Volume-Level (as VHD)		
	Volume-Level (as VMDK)		
	File-Level		
Volume-Level	Disk-Level (as virtual machine)	Volume-Level (as physical volume)	Supported only with volumes formatted with the NTFS file system.
	Disk Level (as VMDK file)	Volume-Level (as VHD)	
		Volume-Level (as VMDK)	
Volume-Level with Enable Granular Recovery enabled	Disk-Level (as virtual machine)	Volume-Level (as physical volume)	Supported only on Windows- based VMware virtual servers formatted with the NTFS file system.
	Disk-Level (as VMDK file)	Volume-Level (as VHD)	
	Volume-Level (as physical volume)	Volume-Level (as VMDK)	
	Volume-Level (as VHD)	File-Level	
	Volume-Level (as VMDK)		
	File-Level		
File-Level	File-Level	File-Level	For file level restores, select Enable Granular Recovery option.
	Disk-Level (as virtual machine)		
	Disk-Level (as VMDK file)		
	Volume-Level (as physical volume)		
	Volume-Level (as VHD)		

Volume-Level (as VMDK)

RESTORE TO A DIFFERENT ESX SERVER

You can override the default restore selection by choosing a different Virtual Centre or ESX Server to restore, by following the steps given below:

- 1. From the CommCell Console, right-click the **Subclient** and select **Browse Backup Data**.
- 2. Click **OK** and select the virtual machine under the backupset. Its entire contents will be automatically selected in the right pane. Click **Recover All Selected**.
- 3. Click Advanced from the Restore Options dialog box.
- 4. Select the **ESX Browse** tab.
- 5. The **Default Selection** has the IP address of the ESX Server pre-populated.
- 6. Select **Override Default Selection** to locate a different destination.
- 7. Enter appropriate credentials to logon to the server using **Configure Password** button.
- 8. Click **Browse VirtualCentre/ESX Servers for destination** to provide the ESX Server path to which the virtual machine will be restored.
- 9. Select the appropriate ESX server.
- 10. Click **OK** to close the **Browse for ESX Server** dialog box.
- 11. Click OK to close the Advanced Restore Options dialog box.

RESTORING FILES AND FOLDERS

To restore files and folders to a Windows client, the client must have one of the following components installed:

- Windows File System iDataAgent
- Restore Only Agent for Windows File System.

Consider that the following before restoring files and folders from a virtual machine:

- The virtual machine has the MBR partition. If the virtual machine has GPT partition, you can restore files from a backup copy. For more information, refer to Restore Data from a Backup Copy.
- You must perform the backup using the VMware Storage API method. For more information, refer to Configuring Backups for vSphere VADP Environments.
- You cannot restore any archived files and folders.
- It is recommended to perform the file-level restores from disk or volume-level backups only when you are restoring small files. For example, restoring a 2GB file from a disk-level backup is not recommended.

You can restore files from NTFS file systems with the following limitations:

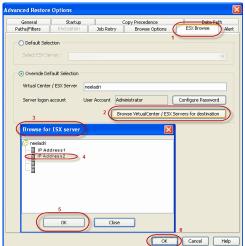
- The formatted cluster size (allocation unit) must be 1024 or greater.
- You cannot restore any archived files and folders.
- You cannot restore any file that has zero bytes, symbolic links, or hard links associated with it.
- You cannot restore files that have been dehydrated by Windows 2012 dedup.
- You cannot restore files from volumes created on Windows Storage Spaces.

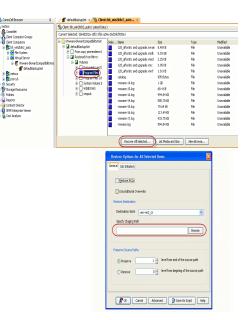
If you cannot restore a file, you can restore the complete virtual machine or the disk that contains the file.

When restoring a file or folder on a virtual machine, the **Enable Granular Recovery** must have been selected when the backup was performed.

- 1. From the CommCell Console, perform a Browse and Restore operation.
- 2. In the Browse Options window, click Individual files/folders.
- 3. Click OK.
- 4. In the **Browse** window, click a file or folder in the right pane, and then click **Recover** All Selected.
- 5. From the **General** tab, specify a **Staging Path**. This is the destination path to which the file will be restored.
- 6. Click **OK**.

The **Preserve Source Path/Remove Source Path** feature is supported for File level restores from File level backup jobs. It is not relevant for Volume Level and Disk Level backups and restores.





RESTORE FILES FROM A SNAPSHOT (LIVE BROWSE)

You can restore files and folders from a snapshot when a backup is performed without enabling the **Enable Granular Recovery** advanced backup option.

Before performing the browse and restore from a snapshot, note the following:

- This feature is available for Windows-based VMware virtual machines but not available for any other operating system.
- This feature is available for the MBR partition. If the virtual machine has GPT partition, you can restore files from a backup copy. For more information, refer to Restore Data from a Backup Copy.
- You must perform the backup using the **VMware Storage API method**. For more information, refer to Configuring Backups for vSphere VADP Environments.

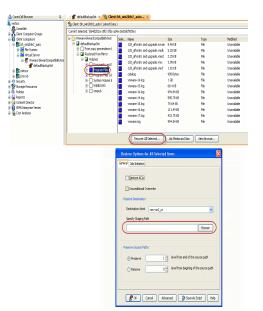
Follow the steps given below to perform the browse and restore from a snapshot:

- 1. From the CommCell Browser, navigate to Client Computers | <*Client*> | Virtual Server | <*Instance*>.
- 2. Right-click the subclient that contains the data that you want to restore and click **Browse Backup Data.**
- 3. In the Browse Options window, click Individual files/folders.
- 4. Click OK.
- Select the virtual machine that contains the files that you wish to restore. Depending on the hardware configuration, it may take some time to mount the snapshot on the ESX server before displaying the files and folders.
- 6. In the **Browse** window, right-click a file or folder in the right pane and click **Recover** All Selected.
- 7. From the **General** tab, specify a **Staging Path**. This is the destination path to which the file will be restored.
- 8. Click **OK**.

RESTORE DATA FROM A BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy precedence number.

- From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks | Browse Backup Data.**
- 3. Click OK.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- 7. In the **Copy Precedence** box, type the copy precedence number for the backup copy.
- 8. Click OK.
- 9. Click OK to close the Restore Options dialog box and start the restore job.



Advanced Restore Options		\mathbf{X}
Startup Roll-Forward Copy Precedence	Log Files Data Path	Redirect Alert Encryption
Do not change the cop browsed the backup d may result in unpredict	ata as changing the	
Copy Precedence:		
	ОК	Cancel Help

DATA AGING FOR SNAPPROTECT SNAPSHOTS

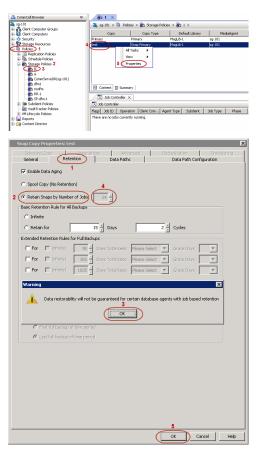
The following procedures describe the available retention configurations for snapshots. For movement to media retention, refer to Data Aging - Getting Started.

RETENTION BY NUMBER OF JOBS

By default, snapshots are pruned based on the number of retention days and cycles specified in the storage policy. You can configure your snapshot copy to retain a defined number of SnapProtect backup jobs. When the total number of jobs goes above the specified retention number, the remaining jobs will be pruned. This configuration is recommended for File System and File System like Agents. This feature is supported for SnapProtect operations performed using the NetApp storage array.

The NetApp Snap Management license is required for retaining snaps by number of jobs.

- From the CommCell Console, navigate to Policies | Storage Policies | < Storage Policy>.
 - Right-click the primary snapshot copy and click Properties.
- Click the **Retention** tab.
 - Click Retain Snaps by Number of Jobs.
 - Click **OK** to the warning dialog box.
 - Specify the number of jobs to be retained for the primary copy.
 - Click OK.



OPTIONS NOT SUPPORTED FOR VMWARE

The following options are not supported for SnapProtect backup for Virtual Server iDataAgent - VMware:

- Physical RDMs.
- Virtual RDMs
- Virtual machines including Local disks.
- Virtual machines should have all disks on the same storage array, e.g. if you are using NetApp as the storage array, then all disks of the virtual machine under backup should reside on the NetApp file server.

USING A SEPARATE ESX SERVER FOR A BACKUP COPY

The backup copy is an additional standby copy of data. It can be created during the SnapProtect backup or at a later time. You can use a separate proxy client and ESX Server to create a backup copy. If you want to reduce the time required for mounting the snapshot, you must use a local Proxy client and ESX server for backup copy operations.

The backup copy can be an inline backup copy, offline backup copy or netapp's vault or mirror copies.

For example: The default proxy client and ESX Server is in location A and you want to use the backup copy of the data from location B. In such scenario, you can use an ESX server in location B for creating backup copy and then restore virtual machines from the backup copy.

CONFIGURING A SUBCLIENT TO USE A SEPARATE PROXY CLIENT

Follow the steps given below to use a separate proxy for creating the backup copy:

- 1. From the CommCell Browser, navigate to **Client Computers** | *<Client>* | **Virtual** Server | *<Instance>.*
- 2. Right-click the subclient and select **Properties**.
- 3. Click the SnapProtect Operations tab.

The Proxy ESX Server section will display the Primary proxy client and Primary ESX Server.

- 4. Click Use Separate Proxy for Snap To Tape check box.
- 5. Select a Proxy client from the **Proxy** list.
- 6. Click **OK**.

The selected Proxy client will be treated as a secondary proxy client. It will be used to perform the Inline Backup copy, Offline Backup copy, NetApp Vault or NetApp Mirror operations.

You can use the default ESX Server to create backup copy or you can specify a secondary ESX Server for the backup copy.

General		Pre/Post Pr		Security	Storage I	Device	
Activity Co	ontrol	Encryption	Shi	apProtect Operations		Content	
🗸 SnapPr	rotect						
Available	e Snap Engin	es NetApp				-	
				Enter Arr	ay Credenti	als	
Pro	oxy ESX Serve	cr					
	Virtual Cer	nter / ESX Server	Proxy1		-		Primary Proxy Clie
			Select	ESX server for snap	mount		
	Host		172.19.9	96.163	-		Primary ESX Serve
	Application	aware backup for	granular re	scovery			
	Truncab	e ExDB Logs					
	ise Separate I	Proxy for Snap to	Таре			\mathbf{x}	
Pro	oxy Proxy	ρ					Secondary
\sim							Proxy Client

SPECIFYING SECONDARY ESX SERVER FOR BACKUP COPY OPERATIONS

Follow the steps given below to specify a secondary ESX Server. The snapshots will be mounted to the specified ESX proxy and not to the Primary proxy.

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right click the Secondary Proxy client and click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name box, type sProxyESX.
- 6. In the Location list, type HKEY_LOCAL_MACHINE\SOFTWARE\CommVault Systems\Galaxy\Instance<xxx>\
- 7. In the **Type** list, select **REG_SZ**.
- 8. In the Value field, type the Host name or IP address of the secondary ESX Server.
- 9. Click OK.

RESTORING VIRTUAL MACHINES FROM A SNAPSHOT MOUNTED ON THE SECONDARY ESX SERVER

Follow the steps given below to perform the browse and restore from a snapshot mounted on the alternate ESX Server:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Virtual Server | <Instance>.
- 2. Right-click the subclient that contains the data that you want to restore and click **Browse Backup Data.**
- 3. Select the **Type of Intended Restore**.

If you haven't selected the **Enable Granular Recovery** option while performing the backup, select the secondary proxy in the **Use MediaAgent** list.

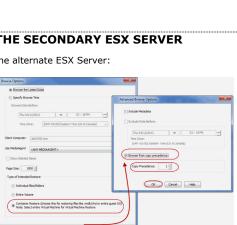
- 4. Click Advanced.
- 5. Select the Browse from copy precedence check box.
- 6. Enter the **Copy Precedence** of the snapshot copy.

You can find out the copy precedence of the snapshot copy from the **Copy Precedence** tab of the **Storage Policy Properties** dialog box.

- 7. Click **OK**.
- 8. Click OK.

The data from the snapshot mounted on the secondary ESX server will be displayed.

- 10. Select the virtual machine that you want to restore and Click Recover All Selected.
- 11. From the **General** tab, click **Advanced**.



OK Cancel Advanced List Media Help

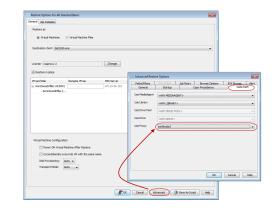
Add Edit

ary ESX

- 12. Click the Data Path tab.
- 13. Select the secondary proxy client from the Use Proxy list.

14. Click OK.

The secondary ESX server will be used to restore the virtual machine.



DISABLING VMWARE QUIESCE

Quiescing indicates pausing or altering the state of running processes on a computer, particularly those that might modify information stored on disk during a backup, to guarantee a consistent and usable backup.

For windows Microsoft VSS inside the guest will be used to quiesce the file system and applications. This ensures that the data consistency of the file system and all VSS supported applications. By default VMware will engage all of the VSS writers that are configured inside the guest. If it is necessary to exclude a writer please refer to http://kb.vmware.com/kb/1031200

For Linux, the vmsync driver will be used to quiesce the file system and applications. This is included with VMware tools. The vmsync driver ensures that the file system is in a consistent state prior to the vmware snapshot being created. The vmsync driver is only supported with vSphere 5.0 and above.

Consider the following before enabling or disabling the quiescing during the backup:

- Hardware Snapshot with Quiescing When you perform the IntelliSnap backup of a subclient, a hardware snapshot of all the virtual machines is created. Before the snapshot creation, the quiescing will be performed automatically for the operating system and applications on all the virtual machines in the subclient.
- Crash consistent hardware snapshot The backup process may slow down because of the quiescing. If you do not want to perform quiescing before the snapshot creation, you can disable the quiescing. If you disable the quiescing, the crash consistent hardware snapshot will be created.

You can disable quiescing to reduce the backup time. If you disable quiescing, you can perform backup of the virtual machines which has .vmdks with same name.

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right click the Proxy client and click Properties.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name box, type VwSkipQuiesceVM.
- In the Location list, type HKEY_LOCAL_MACHINE\SOFTWARE\CommVault Systems\Galaxy\Instance<xxx>\
- 7. In the **Type** list, select **REG_DWORD**.
- 8. In the **Value** field, type 1.
- 9. Click **OK**.



PRE/POST PROCESSING USING VMWARE TOOLS

You can use the VMware tools to perform the any operations before or after the backup. For example: A virtual machine hosts a oracle database and you want to enable the Hot backup of the database before performing the backup, you can run a script using the VMware Tools.

For more information about running scripts on Windows virtual machines, refer to http://kb.vmware.com/kb/1006671

On the Linux virtual machines, the script /usr/sbin/pre-freeze-script will be executed when the software snapshot is created and /user/sbin/post-freeze-script will be executed when the software snapshot is removed. Ensure that these scripts are executable by the VMware tools user.

The following scripts are available to perform the Pre/Post processes using VMware tools:

OPERATION	PROCEDURE	SCRIPTS
The scripts can be used to take snapshot of a VM with DB2 Application. This script allows VMWARE to suspend I/O updates to DB2 database till VMWARE LINUX guest snap shot is completed.	1. On a Linux virtual machine, copy the pre-freeze-script and	pre-freeze-script.sh post-thaw-script.sh

	2.	Copy write_suspend and write_resume scripts to a location where DB2 database can execute it. (Preferably to a directory under DB2 home)	write_resume.sh write_suspend.sh
The scripts can be used to take snapshot of a VM with MAXDB Application. This script allows VMWARE to suspend I/O updates to MAXDB database till VMWARE LINUX guest snap shot is completed.		On a Linux virtual machine, copy the pre-freeze-script and post-thaw-script to /usr/bin directory. Copy suspend_logwriter and resume_logwriter scripts to a location where MAXDB database can execute it. (Preferably to a directory under MAXDB home)	pre-freeze-script.sh post-thaw-script.sh resume_logwriter.sh suspend_logwriter.sh
The scripts can be used to take snapshot of a VM with Oracle Application. This script allows VMWARE to suspend I/O updates to Oracle database till VMWARE LINUX guest snap shot is completed.		On a Linux virtual machine, copy the pre-freeze-script and post-thaw-script to /usr/bin directory. Copy pre-freeze-script.sql and post-thaw-script.sql scripts to a location where Oracle database can execute it. (Preferably to a directory under Oracle home) These scripts change the entire database to backup mode. If the virtual machine has Oracle iDataAgent installed on it, you can also use the consistent-archivelog-backup.rman script as a sample to run archivelog backup. This will get a consistent snap and also all the latest archived logs and current control file.	pre-freeze-script.sh post-thaw-script.sh pre-freeze-script.sql post-thaw-script.sql consistent-archivelog- backup.rman
The scripts can be used to take snapshot of a VM with Sybase Application. This script allows VMWARE to suspend I/O updates to Sybase database till VMWARE LINUX guest snap shot is completed.		On a Linux virtual machine, copy the pre-freeze-script and post-thaw-script to /usr/bin directory. Copy pre-freeze-script.sql and post-thaw-script.sql scripts to a location where Sybase database can execute it. (Preferably to a directory under Sybase home) These scripts execute sybase quiesce commands which will stop updates to databases.	pre-freeze-script.sh post-thaw-script.sh pre-freeze-script.sql post-thaw-script.sql

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup and restore operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
Job Results Directory	Ensure that the full path name for the Job Results Directory, combined with the VMDK file name, is no greater than 255 characters in length.	Refer to Job Management.
	1. From the CommCell Browser, right-click the icon of the client computer whose job results path you want to change, then click Properties .	
	 From the Job Configuration tab of the Client Computer Properties dialog box, click User Name/Password to establish or change the Impersonate User account to access the Job Results Directory. Click OK once you have administered the account. 	
	3. From the Job Configuration tab, type a new job results path in the Job results path field.	
	You can also click Browse to browse to a new job results path from the Browse for Job Result Path dialog box. Click OK .	
	4. Click OK to save your changes.	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it.	For more information on using the Pre/Post commands, see Pre/Post Processes.
	Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.	
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity.	
	1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	 The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client. 	
	3. Right-click the snapshot and click Details to view the snapshot properties.	
Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View	

	Jobs.	
	2. Right-click the job and then click Pick for Backup Copy .	
Disable a Job for Backup Copy	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs .	
	2. Right-click the job and then click Do not Backup Copy .	
Offline Snap Copy Job Summary Report	moving snapshots to media.	See Backup Copy Job Summary Report for more details
Find	Use Find to search and locate files or folders from a SnapProtect backup. If you want to restore a specific file or folder from a backup set or subclient, you can search the file or folder in the backup set or subclient.	See Finding and Restoring for more details.
	Before searching the subclient, ensure that all the files and folders in the subclient are included in the index. The files and folders are included in the index when you perform the File Level backup or Enable Granular Recovery before performing the Volume Level or Disk Level backup.	

Back to Top

Advanced - Microsoft Exchange Database SnapProtect[™] Backup

TABLE OF CONTENTS

Proxy Configuration

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert a Snapshot Snap Reconciliation

Pause Consistency Checks During Backups

Restoring a Database

Restoring VSS-Enabled Backups

Restoring to a Storage Group Restoring to a Different Disk Location

Restoring Data from a Backup Copy

Additional Options

PROXY CONFIGURATION

A proxy configuration interacting with Exchange Databases allows you to execute an ESE Integrity check against the Exchange Database. For the proxy to validate the Microsoft Exchange Database files, follow the steps below:

- 1. Install the proper version of the Microsoft Exchange Management Tools from the Exchange installation media on the proxy computer. This will allow you to select the proxy computer from the **Use Proxy** option when configuring your Exchange subclient.
- 2. When scheduling a SnapProtect backup job, click **Advanced** and ensure the **Perform Consistency Check** option is enabled to perform the integrity check upon snapshot index completion.

MANAGING SNAPSHOTS

The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, delete, or revert.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to **Client Computers** | < **Client**>.
- 2. Right-click Exchange Database and click All Tasks | List Snaps.
- 3. The **Snaps created during SnapProtect operation** dialog box displays a list of all the snapshots created for the Exchange Agent. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the Disk View tab to display the snapshot name, e.g. SP 2 79 1286222629.

MOUNT SNAPSHOTS

You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

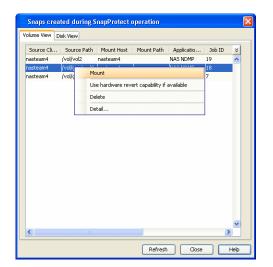
- 1. From the CommCell Browser, navigate to Client Computers | < Client>.
- 2. Right-click Exchange Database and click All Tasks | List Snaps.
- 3. Right-click the snapshot that you wish to mount and click Mount.
- 4. Click Yes.
- In the Mount Path dialog box, specify the destination client and the path on the client in the Destination Client and Destination Path fields.

On a Windows platform, enter a CIFS Share Name for the Agent.

/olume View	Disk View						
Source Client	Source Path	Mount Host	Mount Path	Application Typ	Job ID	Mount Status	Mount Stat 📚
exch5_on	G:\			Exchange Database	1140	Volume unmount finished	12/0/10 2:0
exch5_cn	H:\			Exchange Database	1140	Volume unmount finished	12/8/10 2:0
exch5_cn	I:\			Exchange Database	1140	Volume unmount finished	12/8/10 2:0
exch5_cn	J:\			Exchange Database	1140	Volume unmount finished	12/8/10 2:0
exch5_cn	G:\			Exchange Database	1129	Volume unmount finished	12/8/10 1:4
exch5_cn	H:\			Exchange Database	1129	Volume unmount finished	12/8/10 1:4 =
exch5_cn	I:\			Exchange Database	1129	Volume unmount finished	12/8/10 1:4
exch5_cn	J:\			Exchange Database	1129	Volume unmount finished	12/8/10 1:4
exch5_cn	G:\			Exchange Database	1115	Volume unmount finished	12/8/10 1:2
exch5_cn	H:\			Exchange Database	1115	Volume unmount finished	12/8/10 1:2
exch5_cn	I:\			Exchange Database	1115	Volume unmount finished	12/8/10 1:2
exch5_cn	3:\			Exchange Database	1115	Volume unmount finished	12/8/10 1:2
exch5_cn	G:\			Exchange Database	1108	Volume unmount finished	12/8/10 12:
exch5_cn	H:\			Exchange Database	1108	Volume unmount finished	12/8/10 12:
exch5_cn	I:\			Exchange Database	1108	Volume unmount finished	12/8/10 12:
exch5_cn	J:\			Exchange Database	1108	Volume unmount finished	12/8/10 12:
•							F.

- 6. If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select **Protect Snapshot during mount**.
- 7. Click **OK**.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.

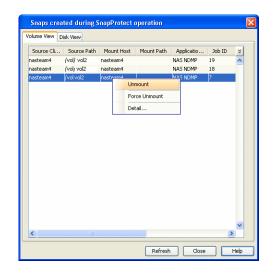


UNMOUNT SNAPSHOTS

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | < **Client**>.
- 2. Right-click Exchange Database and click All Tasks | List Snaps.
- 3. Right-click the snapshot you wish to unmount and click **Unmount**.
- 4. Click **Yes** when prompted if you want to continue.

If the snapshot does not get unmounted, select the **Force Unmount** option to mark the snapshot as unmounted.



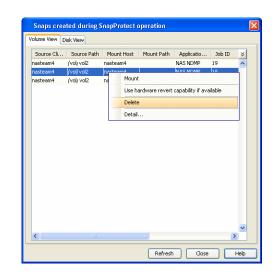
DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to
 perform data recovery operations from the snapshot copy. However, if a backup copy was created from the
 snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- 1. From the CommCell Browser, navigate to **Client Computers** | < **Client**>.
- 2. Right-click **Exchange Database** and click **All Tasks** | **List Snaps**.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same ${\bf Job}\;{\bf ID}$ are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click **OK**.



REVERT A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

Review the following before performing a revert operation:

- Revert operations are not supported on Windows clustered disks.
- All the data stores should be manually dismounted.
- When using HP EVA Clone or Data Replicator for SnapProtect backup, the revert operation is not supported.
 - It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.
 - If you plan to perform a revert operation, you will not be able to use the associated storage policy for further auxiliary copy operations.

PERFORM AN APPLICATION AWARE REVERT

- 1. From the CommCell Browser, right-click the entity that contains the data you want to restore, and click All Tasks | Browse Backup Data.
- 2. From the Browse Options dialog box, click OK.
- 3. Select the data you want to revert and click Recover All Selected.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.
- 7. Click OK from the Advanced Restore Options dialog box.
- 8. Click **OK** to start the revert.
 - An application aware revert operation reverts back all the volumes included in the backup.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the application.
 - $\,\circ\,$ A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you
 are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the
 SnapVault/SnapMirror copy operation no longer works.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to Client Computers | < Client >.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.
- 4. Enter the confirmation text string, confirm.

- 5. Click OK.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

Source Cli	Source Path	Mou	Int Host	Mount Path	Applicatio	Job ID	¥
avocado	/vol/vol2				NAS NDMP	88	^
avocado	/vol/ vol3				NAS NDMP	88	
avocado	/vol/vol2	naste	eam4		NAS NDMP	87	
avocado	/vol vol3	naste	eam4		NAS NDMP	87	
avocado	/vol/vol2	naste	eam4		NAS NDMP	86	
avocado	/vol/ vol3	naste	eam4		NAS NDMP	86	
avocado	/vol/ vol2	naste	team4 NAS NDMP 85		85		
avocado	/vol/vol3	r	Mount				1
avocado	/vol/ vol2	r	Mount				
avocado	/vol/ vol3	r	Use hardware revert capability if available				
avocado	/vol/ vol2	r	r Delete				
avocado	/vol/ vol3	r					-
			Detail	•			
							~

SNAP RECONCILIATION

Snapshots may be deleted from the array due to factors like low disk space on the array, number of snapshots exceeds the threshold etc., and the jobs corresponding to these deleted snapshots can no longer be used for any data recovery or backup copy operations. You can use the nRunSnapRecon registry key to start snap reconciliation to check for missing snapshots once in every 24 hours and marks jobs corresponding to the missing snapshots as invalid.

PAUSE CONSISTENCY CHECKS DURING BACKUPS

Pause points allow Exchange system resources to be made available periodically to other processes (e.g. send and receive e-mail messages) during the following:

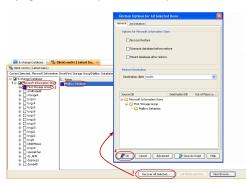
- Prolonged consistency checks of large databases
- High load on the Exchange Server
- 1. From the CommCell Browser, navigate to *Client>* | Exchange Database.
- 2. Right click the *Subclient* and click **Backup**.
- 3. Click Advanced.
- 4. Click the Data tab and select the Perform Consistency Check option.
- Select the Throttle check for 1 second option and enter the number of I/O operations to complete before the throttle check is performed.
- 6. Click OK.

Advanced Backup Options	×
Data Startup Job Retry Media Data Path VaultTrack	ing Alert
Perform Consistency Check Throttle check for 1 second every 20 1 I/O Operations	
Create Backup Copy immediately Note: Creation of backup copy depends on the Storage P	olicy - Snapshot configuration
	OK Cancel Help

RESTORING A DATABASE

By default the database is restored to the same client from which it is backed up. Follow the steps given below to perform the in-place restore:

- 1. Ensure the database is marked for overwrite on the Exchange Server prior to performing the restore.
- 2. From the CommCell Console, navigate to Client Computers | < Client >.
- 3. Right-click Exchange Database and click All Tasks | Browse Backup Data.
- 4. Click OK.
- 4. In the left pane of the Client Browse window, navigate to Exchange Database | Microsoft Information Store | <Storage Group>.
- 5. Select the database to be restored in the right pane and click **Recover All Selected**.
- 6. Click **OK** to start the restore.
- 7. Manually mount the stores after the restore.



RESTORING VSS-ENABLED BACKUPS

Use one of the methods below to restore VSS-Enabled backups for Exchange Server 2007 and 2010. When restoring VSS-enabled backups, the options No Loss Restore and Mount database after restore do not apply.

RESTORING TO A STORAGE GROUP

You can restore the database stores to a different storage group (including Recovery Storage Groups) on the same Exchange Server, or to a different Exchange Server within the same Exchange organization.

- 1. Ensure the database you want to restore is dismounted and marked for overwrite.
- 2. From the CommCell Console, navigate to Client Computers | < Client >.
- 3. Right-click Exchange Database and then click All Tasks | Browse Backup Data.
- 4. Click OK.
- 5. In the left pane of the **Client Browse** window, navigate to **Exchange Database** | **Microsoft Information Store** | **<Storage Group>**.
- 6. Select the database to be restored in the right pane and click Recover All Selected.
- 7. Select the **Destination client**.
- 8. Select the Source DB and double-click in the Destination DB column.
- 9. Click .. and select a **Storage Group**.
- 10. Click OK.
- 11. Click **OK** to start the restore.
- 12. Manually mount the stores after the restore.

RESTORING TO A DIFFERENT DISK LOCATION

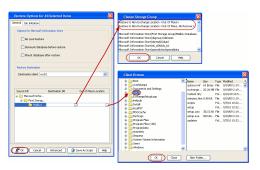
You can restore the database stores to be a physically different location on disk (i.e., non-Exchange location) with a choice of whether or not to replay the logs.

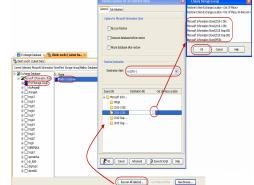
- 1. From the CommCell Console, navigate to **Client Computers | < Client >.**
- 2. Right-click **Exchange Database** and then click **All Tasks | Browse Backup Data**.
- 3. Click OK.
- 4. In the left pane of the Client Browse window, navigate to Exchange Database | Microsoft Information Store | <Storage Group>.
- 5. Select the database to be restored in the right pane and click Recover All Selected.
- 6. Select the Destination client.
- 7. Select the **Source DB** and double-click in the **Destination DB** column.
- 8. Click .. and select one of the following options in the **Storage Group** dialog box:
 - Restore to Non-Exchange Location <Out of Place> The database will be restored to the specified location and the logs will be replayed.
 - Restore to Non-Exchange Location <Out of Place, No Recover> The database will be restored to the specified location and the logs will not be replayed.
- 9. Double click in the **Out of Place Location** column and click .. to specify the fullyqualified destination.
- 10. Select the destination folder from the Destination client.
- 11. Click OK.
- 12. Click **OK** to start the restore.
- 13. Manually mount the stores after the restore.

RESTORING DATA FROM A BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy precedence number

- From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks** | **Browse Backup Data.**
- 3. Click OK.





- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- 7. In the ${\bf Copy\ Precedence\ box,\ type\ the\ copy\ precedence\ number\ for\ the\ backup\ copy.}$
- 8. Click **OK**.
- 9. Click ${\bf OK}$ to close the ${\bf Restore\ Options}$ window and start the restore job.

Advanced Restore Options
Startup Roll-Forward Log Files Redirect Alert Copy Precedence Data Path Encryption
Do not change the copy precedence if you have already browsed the backup data as changing the precedence may result in unpredictable results.
Copy Precedence
OK Cancel Help
OK Cancel Help

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
SCSI Reservation	SCSI reservation can be enabled for SnapProtect backup for all the agents. Use the registry key nSCSIReserveForSnap to enable SCSI reservation. Enabling SCSI Reservation prevents other applications (SCSI3 compliant) from using the reserved SCSI Device (i.e. the mounted snapshot).	For more information on registry keys, Registry keys
	If this option is enabled and the hardware does not support this type of operation, subsequent data protection jobs may fail.	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it.	For more information on using the Pre/Post commands, see Pre/Post Processes.
	Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.	
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity.	
	1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	2. The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client.	
	3. Right-click the snapshot and click Details to view the snapshot properties.	
Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs .	
	2. Right-click the job and then click Pick for Backup Copy .	
Disable a Job for Backup Copy	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs .	
	2. Right-click the job and then click Do not Backup Copy .	
Offline Snap Copy Job Summary Report	Offline Snap Copy Job Summary Report provides job summary details of backup copy jobs for moving snapshots to media.	See Backup Copy Job Summary Report for more details

User Guide - SnapProtect

Back to Top

Advanced - Oracle SnapProtect[™] Backup

TABLE OF CONTENTS

Configuring Offline Backup

Configuring Log Backup

Pruning the Logs After Backup Using RMAN **Configuring Selective Online Full Backup**

Configuring Table Backups

Configuring an ASM Instance

Scheduling a Backup

Disabling Verification of Datafiles During SnapProtect Backup

Configuring SnapProtect Operations Using Command Line

NFS SnapProtect for Oracle

Configuring Oracle RAC Database SnapProtect Operations

Configuring SnapProtect Operations Using a Single Node Configuring Online Backups for SnapProtect Subclients Configuring RMAN Backup Copy for SnapProtect Operations Disabling SP File Backup during Backup Copy Operations

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert a Snapshot Snap Reconciliation

Restoring data From a SnapProtect Backup

Restore Data from Snapshot Using RMAN Restore Data from Snapshot Using a Proxy Computer Restoring and Recovering an Entire Database to the Same Host Reverting an Entire Database to the Same Host Restoring and Recovering an Entire Database to a Previous Point-in-Time Restoring and Recovering an Entire Database to a new host Restoring Individual Datafiles/Tablespaces Restoring Archive Logs Restoring Database Tables to the Source Database Restoring Tables to a Different Database on the Same Host Setting up the Auxiliary Instance Using a User-defined Auxiliary Instance Disabling Clean-up of Auxiliary Instance after Restore Restoring Tables with Non-English Characters Exporting Table Objects Selecting/De-Selecting Dependent/Referenced Tables Including all Dependencies to the Dependent/Referenced Tables Deleting Existing Tables during a Restore Automatically Switching the Database Mode before a Restore Setting the Database Incarnation Enhancing Restore Performance Restoring from a SnapProtect and RMAN Mixed Environment

Backup Copy Operations

File System RMAN

Restoring Data from Backup Copy

Using File System Using RMAN

Oracle Multi Instance Snap Optimization

Configuring Multiple Instances using a Shared Storage On a Client SnapProtect Backup for Multiple Instances Restoring a database or datafiles /table spaces from a database Revert from a SnapProtect Job Backup Copy for Multiple Instances Using a Shared Storage on a Client

Supported Volume Managers

Options not applicable for Oracle SnapProtect

Options not applicable for Oracle Snap Restore

Additional Options

CONFIGURING OFFLINE BACKUP

Offline backups can be performed when the database is in offline or online mode. If the database is online, it shuts down the database, performs the backup and then brings up the database back.

- 1. From the CommCell Browser, navigate to *Client>* | **Oracle.**
- 2. Right-click the **<Instance>** and click **All Tasks** | **New Subclient**.
- 3. In the **Subclient Name** box, type a name.
- 4. Click the **Content** tab.
- 5. Select the **Offline Database** checkbox.
- 6. Click the **Storage Device** tab.
- 7. In the Data Storage Policy box, select a storage policy name.
- 8. Click the SnapProtect Operations tab.
- 9. Click **SnapProtect** to enable SnapProtect backup for the selected subclient.
- 10. Select the storage array from the Available Snap Engine drop-down list.
- 11. From the **Use Proxy** list, select the MediaAgent where SnapProtect and backup copy operations will be performed.

When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.

12. Click OK.

Creating New Subclient			
		: Operations Pre/Post Process	Log Destinations Storage Device
Selective Online Full			
Data			
Backup Mode:	 Online Database Online Subset 	💿 Offline Da	tabase
Current Database View	:		Refresh
GHO SYAP GHO SYAPITS GHO SYAFUN GHO SYSTEM GHO UNDOTESI GHO USERS			
Items in bold are not in	cluded in any Online Subset	subclient.	
Backup Archive Log	Arch	ve Delete	
Backup Control File Protect backup recovery an		i up SP File ile Switch Current Log	,
		ОК	Cancel Help

CONFIGURING LOG BACKUPS

Once you perform a SnapProtect backup, perform a log backup. You will need to create a separate subclient for log backups. By default, the system will use data storage policy for SnapProtect backups and backup copy. If you create a log specific subclient, the log specific storage policy is used for SnapProtect backups and backup copy.

Use the following steps to configure log backups.

- 1. From the CommCell Browser, navigate to <Client> | Oracle.
- 2. Right-click the <Instance> and click All Tasks | New Subclient.
- 3. In the **Subclient Name** box, type a name.
- 4. Click the Content tab.
- 5. Click to clear the **Data** checkbox.
- 6. Select the **Backup Archive Log** checkbox.
- 7. If you have multiple log locations, click Log Destinations tab.
- 8. Select Log Destinations for Backup and click Add.
- 9. Type the path to the log files to be backed up.
- 10. Click OK.

	al Content	ncryption Backup Argu		Pre/Post Process	Log Destinations Storage Device
E Se	ective Online Full				
	Data				
	Backup Mode:		Online Databa	se 💿 Offine D	atabase
		0	Online Subset		
	Current Database V	/iew:			Refresh
	netapp				
	Items in bold are no	ot included in an	IV Online Sub	set subclient.	
	Items in bold are no	ot included in an	ıy Online Sub	set subclient.	
B	Items in bold are no	ot included in an		set subclient. Archive Delete	
-		ot included in an			
B	ackup Archive Log			Archive Delete	29

PRUNING THE LOGS AFTER BACKUP USING RMAN

You can customize the pruning of archive logs after the backup using RMAN Scripts. If applicable, you will also need to specify the connect target string and connect string for a recover catalog for a full RMAN script.

FILE SYSTEM MOVEMENT TO TAPE

RMAN will not know which archive logs have been backed up for file system movement to tape. Hence, we need to prune all the backed up archive logs. Use the following command to prune the logs for file system movement to tape:

connect target sys/****@oracledb connect catalog catuser/****@catalog DELETE NOPROMPT ARCHIVELOG ALL COMPLETED BEFORE `SYSDATE-XX' rman cmdfile</path/to/rman.script>

Example:

connect target sys/syspw@oracledb connect catalog catuser/syspw@catalog DELETE NOPROMPT ARCHIVELOG ALL COMPLETED BEFORE `SYSDATE-2' rman cmdfile</path/to/rman.script>

If you run the command in the above example, RMAN will remove all archive logs on the disk that are older than 2 days.

RMAN MOVEMENT TO TAPE

You can use the same command used for file system movement to tape to prune all archive logs. In addition, you can also use the following command to delete the archive logs that have been backed up multiple times, if you are saving multiple copies of archive logs to optimize your database recovery:

```
connect target sys/****@oracledb
connect catalog catuser/****@catalog
DELETE NOPROMPT ARCHIVELOG ALL BACKED UP XX TIMES TO DEVICE TYPE sbt;
rman cmdfile</path/to/rman.script>
```

Example:

```
connect target sys/****@oracledb
connect catalog catuser/****@catalog
DELETE NOPROMPT ARCHIVELOG ALL BACKED UP 2 TIMES TO DEVICE TYPE sbt;
rman cmdfile</path/to/rman.script>
```

If you run the command in the above example, RMAN will remove all archive logs that have been backed up at least 2 times to device type 'sbt'.

CONFIGURING SELECTIVE ONLINE FULL BACKUP

Selective Online Full backup is a full backup taken when Oracle database is online, and the backup data is copied to a selective copy (during an auxiliary copy operation) from which it can be restored.

- 1. From the CommCell Browser, navigate to <Client> | Oracle.
- 2. Right-click the <Instance> and click All Tasks | New Subclient.
- 3. In the Subclient Name box, type a name.
- 4. Click the **Content** tab.
- 5. Select the Selective Online Full checkbox.
- 6. A message indicating that you need to use a separate Storage Policy for Selective Online Full backups is displayed. Click **OK**.
- 7. Click the **Storage Device** tab.
- 8. In the Data Storage Policy box, select a storage policy name.
- 9. Click the **SnapProtect Operations** tab.
- 10. Click **SnapProtect** to enable SnapProtect backup for the selected subclient.
- 11. Select the storage array from the Available Snap Engine drop-down list.
- From the Use Proxy list, select the MediaAgent where SnapProtect and backup copy operations will be performed.

When performing SnapProtect backup using proxy, ensure that the operating system of the proxy server is either same or higher version than the client computer.

13. Click OK.

CONFIGURING TABLE BACKUPS

When a table backup is performed, all database tables are gathered in order to present the backup data in a table view during a browse operation.

Use the following steps to configure table backups:

1. From the CommCell Browser, navigate to <Client> | Oracle | <Instance>.

Creating New Subcl	ient		×
Activity Control General Content	Encryption Snap Backup Arguments	Protect Operations Pre/Post Process	Log Destinations Storage Device
Selective Online Full			
Data			
Backup Mode:	 Online Dat Online Sub 		tabase
Current Databas	e View:		Refresh
(a) SYSTEM (b) SYSTEM (b) UNDOTE (c) USERS		übset subclient.	
Mackup Archive Log	0	Archive Delete	
Backup Control File Protect backup recov	ery area	Back up SP File	
L		ОК	Cancel Help

- 2. Right-click the subclient and click Properties.
- 3. Click the Backup Arguments | Options tab.
- 4. Click the **Enable Table Browse** option.
- 5. Click **OK**.

After running a SnapProtect backup with table browse enabled on the subclient, you can restore database tables.

Subclient Properties	
	Backup Arguments Pre/Post Process Storage Device
Backup Arguments Offline Ar	rguments Options 2
Auxiliary Arguments	Common Arguments
SKIP READ ONLY	Validate
SKIP OFFLINE	3 Enable Table Browse
SKIP INACCESSIBLE	(This option can only be selected when the "Use Catalog Connect" of the instance level is selected)
	OK Cancel Help

CONFIGURING AN ASM INSTANCE

If Oracle home of ASM instance and RDBMS instance are different, then make sure to separately configure ASM instance on the CommCell Console in additions to RDBMS instance.

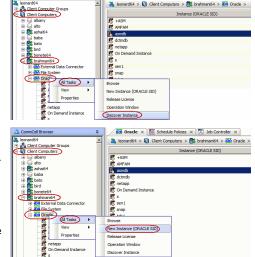
Make sure that the kfed utility resides under <Oracle ASM Home>/bin location. If the kfed utility do not exist, then build the kfed utility as shown in the following example:

- cd <Oracle ASM Home>/rdbms/lib
- make –f ins_rdbms.mk ikfed

Ensure that the ASM disk string is not empty. Use the following steps to configure the ASM instance:

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client***>**.
- 2. Right-click Oracle, point to All Tasks and then click Discover Instance.
- 3. Click Yes.

If your +ASM instance and RDBMS instance is not discovered automatically, you may have to manually add the instance.



🚾 Oracle 🗙 🎬 Schedule Policies 🗙 🔂 Job Cont

- 4. From the CommCell Browser, navigate to **Client Computers** |< Client >.
- 5. Right-click Oracle, point to All Tasks, and then click New Instance (ORACLE SID).
- 6. In the **Instance** (**ORACLE SID**) box, type the Instance name.
- 7. In the User Account box, type the login credentials to access the Oracle client.
- 8. In the **ORACLE HOME** box, type the Oracle application install path.
- 9. In the **Storage Policy used for the data of default subclient** box, select a storage policy name.
- 10. Click the **Storage Device** tab.
- 11. In the **Storage Policy used for user command backup of data** box, select a storage policy.
- 12. Click the Log Backup tab.
- 13. In the **Storage Policy used for all Archive Log backups** box, select a storage policy name.
- 14. Click OK.

Creating New Instance (ORACLE SID)
General Details Storage Device Encryption
Client Name: sdr2k8
iDataAgent: Oracle
Instance (ORACLE SID): ORCL4
User Account: Domain\Administrator Change
ORACLE HOME: Administrator\product\11.2.0\dbhome_1 Browse
Storage Policy used for the data of default subclient:
Storg_Plcy1
OK Cancel Help
Creating New Instance (ORACLE SID)
Creating New Instance (ORACLE SID)
General Details Storage Device Encryption
General Details Storage Device Encryption Connect String: Use Catalog Connect:
General Details Storage Device Encryption
General Details Storage Device Encryption Connect String: Use Catalog Connect:
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required):
General Details Storage Device Encryption Connect String: Sys Orcl4 Use Catalog Connect: TNS_ADMIN Folder (not required): Browse
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check Ctrl File Autobackup: Not configure
General Details Storage Device Encryption Connect String: Sys Orcl4 Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check Ctrl File Autobackup: Not configure
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check Ctrl File Autobackup: Not configure
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check Ctrl File Autobackup: Not configure
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check Ctrl File Autobackup: Not configure
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check Ctrl File Autobackup: Not configure
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check Ctrl File Autobackup: Not configure
General Details Storage Device Encryption Connect String: Use Catalog Connect: TNS_ADMIN Folder (not required): Browse Disable RMAN cross check Ctrl File Autobackup: Not configure

15. Click the **Details** tab.

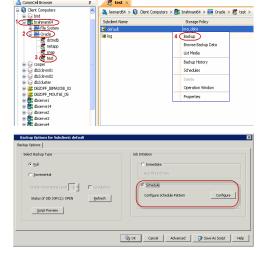
- In the Connect String box, type the credentials to access the Oracle database. For example, sys/pwdl2@orcl4.
- 17. Click the Storage Device tab.
- 18. In the **Storage Policy used for user command backup of data** box, select a storage policy.
- 19. In the **Storage Policy used for all Archive Log backups** box, select a storage policy name.
- 20. Click **OK**. You can now create a subclient and perform SnapProtect jobs.

If the ASM disks are from persistent snap engine, then you need to disable the snap integrity. Refer Disabling Verification of Datafiles during SnapProtect Backup for more information.

SCHEDULING A BACKUP

Use the following steps to schedule a backup. When scheduling backups, ensure that you schedule the log backups soon after a SnapProtect backup.

- 1. From the CommCell Console, navigate to *Client* | **Oracle** | *Instance*.
 - Right-click the **Subclient** and click **Backup**.



- Select the **Backup type**.
 - Click **Schedule** to schedule the backup for a specific time.
 - Click **Configure** to set the schedule for the backup job. The Schedule Details dialog displays.

- 3. Select the appropriate scheduling options. For example:
 - Click Weekly.
 - Check the days you want the run the backup job.
 - Change the Start Time to 9:00 PM.
 - Click **OK** to close the Schedule Details dialog.
 - Click **OK** to close the Backup Options dialog.

The backup job will execute as per the schedule.

Schedule Details				×
Schedule Name				
C One Time	Start Time	9 : 00 PM	-	
C Daily				
Weekly				
C Monthly				
C Yearly				
	On these days		— • •	E
	On these days		▼ Tuesday	
			🕅 Eriday	Saturday
		🔽 Sunday		
			-	
	ОК	Cancel	Help	Options≥>

DISABLING VERIFICATION OF DATAFILES DURING SNAPPROTECT BACKUP

The following steps are performed automatically when you perform a SnapProtect backup:

- 1. The database is placed in a quiesced state.
- 2. A snapshot is created for data volumes.
- 3. The database is placed in a unquiesced state.
- 4. The snapshot is mounted on source and cataloging of datafiles is performed from mounted snapshot.
- 5. The snapshot is created for log volumes
- 6. The snapshot is mounted on source and cataloging is performed for mounted log files.

Cataloging is performed to verify whether all the datafiles are properly captured during a SnapProtect backup. RMAN catalog datafilecopy will check the datafile header and verify its authenticity before cataloging it.

Use the following steps to disable the cataloging operation:

- 1. From the CommCell Browser, navigate to **Client Computers**.
- 2. Right-click the *<Client>*, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name box, type sNOSNAPINTEGRITYCHECK.
- 6. In the Location box, select or type OracleAgent from the list.
- 7. In the **Type** box, select **Value**.
- 8. In the Value box, type **Y**, and then click **OK**.
- 8. Click **OK**.

	roperties for doc_lini				<u>×</u>
General Version 1 Job Configuration	Security Activity Cont Advanced Conte	rol Groups Firewa nt Indexing Regis		twork Throttling P Client Side Deduplica	
Name	Location	Туре	Value	Enabled	'
					-
					-81
	Add Registry Key on	Unix Client doc linu:	×	×	
		INTEGRITYCHECK			
	porto or the r	INTEGRITYCHECK		1	
	ocation OracleAgent			~	
т	ype VALUE			-	
	alue 🕅			—	
	uuc m				
		ОК	Cancel H	elp	
					•
	(A	dd Edit D	elete		
			ОК	Cancel H	ielp

CONFIGURING SNAPPROTECT OPERATIONS USING COMMAND LINE

ENABLING SNAPPROTECT BACKUP

1. Download the update_sc.xml file and save it on the computer from where the command will be executed.

2. Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameter values.

qoperation execute -af update_sc.xml -clientName <clientname> -instanceName <oraclesid> -subclientName <subclientname>
-storagePolicyName <storagepolicyname> -isSnapBackupEnabled true

SELECTING SNAP ENGINE

- 1. Download the update_sc.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameter values.

qoperation execute -af update_sc.xml -clientName <clientname> -instanceName <oraclesid> -subclientName <subclientname>
-storagePolicyName <storagepolicyname> -isSnapBackupEnabled true -snapShotEngineName <Snapshot engine>

SELECTING A PROXY CLIENT FOR MOVEMENT TO TAPE:

- 1. Download the update_sc.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameter values.

qoperation execute -af update_sc.xml -clientName <clientname> -instanceName <oraclesid> -subclientName <subclientname>
-storagePolicyName <storagepolicyname> -isSnapBackupEnabled true -snapShotEngineName <Snapshot engine> snapToTapeProxyToUse/clientName <proxy client>

SELECTING RMAN BACKUP COPY

- 1. Download the update_sc.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameter values.

If you select RMAN for backup copy, you should install the Oracle *i*DataAgent and the oracle instance configured in CommCell browser should be identical to the instance in the source computer.

qoperation execute -af update_sc.xml -clientName <clientname> -instanceName <oraclesid> -subclientName <subclientname>
-storagePolicyName <storagepolicyname> -isSnapBackupEnabled true -snapShotEngineName <Snapshot engine> snapToTapeProxyToUse/clientName <proxy client> -isRMANEnableForTapeMovement true

DISABLING SNAPPROTECT BACKUP

- 1. Download the update_sc.xml file and save it on the computer from where the command will be executed.
- 2. Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameter values.

You must perform a full backup job after enabling/disabling SnapProtect backup.

qoperation execute -af update_sc.xml -clientName <clientname> -instanceName <oraclesid> -subclientName <subclientname>
-storagePolicyName <storagepolicyname> -isSnapBackupEnabled false

AVAILABLE PARAMETERS FOR SNAPPROTECT OPERATIONS

The following table displays all the parameters you can use with the commands mentioned in the above sections. To add a parameter to your command, use the following syntax: (A example is provided at the end of the table.)

qoperation execute -af <template XML file> -<parameter name> <value>

r	
PARAMETER	DESCRIPTION OF PARAMETER VALUES
clientName	Name of the client computer, as displayed in the CommCell Browser
instanceName	Name of the oracle instance
subclientName	Name of the Subclient used for SnapProtect operations
storagePolicyName	Name of the storage policy used for SnapProtect operations
isSnapBackupEnabled (true/false)	To enable/disable a SnapProtect backup
snapShotEngineName	To define the engine to be used for a SnapProtect backup
snapToTapeProxyToUseSource (true/false)	To enable/disable using source if proxy is unreachable
snapToTapeProxyToUse clientName="client_name"	To define proxy client to be used of backup copy operations.
isRMANEnableForTapeMovement (true/false)	To enable/disable using RMAN for backup copy

EXAMPLES

The following example shows how to add a parameter for a command:

Enabling SnapProtect Backup	Enable SnapProtect backup for instance name under client brahmani64.
	./qoperation execute -af update_sc.xml -clientName brahmani64 -instanceName dctmdb - subclientName command_test1 -storagePolicyName 9815 -isSnapBackupEnabled true
Selecting Snap Engine	Select a Snap engine for instance name <i>dctmdb</i> under client brahmani64 and subclient name command_test1.
	<pre>./qoperation execute -af update_sc.xml -clientName brahmani64 -instanceName dctmdb - subclientName command_test1 -storagePolicyName 9815 -isSnapBackupEnabled true - snapShotEngineName <snapshot engine=""></snapshot></pre>
Selecting A Proxy Client For	Select a proxy client for brahmani64 for movement to tape.
Movement To Tape	./qoperation execute -af update_sc.xml -clientName brahmani64 -instanceName dctmdb - subclientName command_test1 -storagePolicyName 9815 -isSnapBackupEnabled true - snapShotEngineName <snapshot engine=""> -snapToTapeProxyToUse/clientName <proxy client=""></proxy></snapshot>
Selecting RMAN Backup Copy	Select a Snap engine for instance name <i>dctmdb</i> under client brahmani64 and subclient name command_test1.
	<pre>./qoperation execute -af update_sc.xml -clientName brahmani64 -instanceName dctmdb - subclientName command_test1 -storagePolicyName 9815 -isSnapBackupEnabled true - snapShotEngineName <snapshot engine=""> -snapToTapeProxyToUse/clientName <proxy client=""> - isRMANEnableForTapeMovement true</proxy></snapshot></pre>
Disabling SnapProtect Backup	Disable SnapProtect operation for instance name <i>dctmdb</i> under client brahmani64.
	./qoperation execute -af update_sc.xml -clientName brahmani64 -instanceName dctmdb - subclientName command_test1 -storagePolicyName 9815 -isSnapBackupEnabled false

NFS SNAPPROTECT FOR ORACLE

You can perform a SnapProtect backup for Oracle when the database is on a NFS Volume. However, you will require a root access in the storage device's NFS configuration to be able to read and write on the accessible Oracle files i.e., the host on which the NFS Volume is mounted.

You can also perform SnapProtect backups for Oracle if the database resides on a Direct NFS volume. SnapProtect backups supports volumes using the Oracle Direct NFS (dNFS) protocol.

File level reverts can also be performed when the database is on a NFS volume by using the sUSE_FILE_LEVEL_REVERT registry key. Do not perform the file level revert when the database resides on a NFS with regular LUNs.

Consider the following while performing a SnapProtect backup for data or databases that reside on a NFS Volume:

• The export name on the storage device should be the same as the storage path on the storage device.

E.g., if the storage path of the storage device is /vol/Volume/Qtree, use /vol/Volume/Qtree as the export name and not an alias such as /ExportName.

- You can use the exports both at the root of a NetApp volume and at subdirectory levels below the root of the volume.
- Make sure that the storage device is accessible from the source and proxy machine (even if they exist in different domains) using the storage device's short name while mounting NFS exports from the storage device. Make sure to enter the storage device credentials using its short name. Do not use an IP address or the fully qualified domain name.

E.g., use a short name for the server such as server1 or server2.

CONFIGURING ORACLE RAC DATABASE SNAPPROTECT OPERATIONS

You can perform SnapProtect operations for a single node Oracle RAC setup. When configuring the Oracle RAC components for a SnapProtect backup, ensure the following:

- The Oracle instance should be configured on one of the physical nodes for the Oracle RAC Agent.
- If the data and archive logs do not reside on a shared location, create a user-defined subclient for the archive logs and run a backup using RMAN. The original subclient should only include the data volume in order to perform a SnapProtect backup.
- The Use RMAN for Tape Movement option is selected during the subclient configuration if you plan to backup the archive logs.
- The ASM Oracle Database should be located on a ASM disk group, and the underlying disks should be snap-able.

CONFIGURING SNAPPROTECT OPERATIONS USING A SINGLE NODE

You must select a physical client and a RAC instance under such physical client for scheduling SnapProtect operations. It is recommended to configure the RMAN catalog prior to performing a SnapProtect backup.

Use the following steps to configure a RAC instance for SnapProtect operations using a single node:

- 1. From the CommCell Browser, navigate to Client Computers | <RAC Physical Client>.
- 2. Right-click the <Oracle Agent>, point to All Tasks and then click New Instance (Oracle SID).
 - $\circ~$ In the Instance (ORACLE SID) box, type the RAC Instance name.
 - o In the ORACLE USER box, type the user account name for RAC Instance.
 - In the ORACLE HOME box, type the Oracle home path for RAC instance. Alternatively, you can click **Browse** to select the location.

o Select the Storage Policy for the data of a default subclient from the list.

- 3. Click the **Details** Tab.
- In the Connect String box, type the Connect String (SYS login): <sys>/<syspassword>@<Oracle service> Example: sys/password1@racdb1
- 5. In the TNS_ADMIN Folder box, type the TNS ADMIN folder name. Alternatively, click Browse to select the location.
- 6. Click the Storage Device tab.
- 7. In the Storage Policy used for user command backup of data box, select a storage policy.
- 8. Click the Log Backup tab.
- 9. In the Storage Policy used for all Archive Log backups box, select a storage policy name.
- 10. Click **OK**.

Make sure that the kfed utility resides under the following location:

<Oracle ASM Home>/bin

If the kfed utility do not exist, build the kfed utility as shown in the example:

cd <Oracle ASM Home>/rdbms/lib

make -f ins rdbms.mk ikfed

You must configure an ASM instance since Oracle RAC SnapProtect operations support only ASM instances (In case of a first node, it is +ASM1).

CONFIGURING ONLINE BACKUPS FOR SNAPPROTECT SUBCLIENTS

When you perform a SnapProtect backup for online databases, ensure you also backup the archive logs. The archive log destination should be shared among all RAC instances. If the log destination is not shared among all RAC instances, you need to separately schedule the archive log backups using a user-defined subclient.

When you backup archive logs, you can specify the location (archive log destinations) from where log backups should be performed. Oracle RAC database will be distributed across many physical clients. These physical clients may or may not share archive log destinations for all instances.

Use the following steps to configure backups for online databases if the archive log destination is shared among all RAC instances:

- 1. From the CommCell Browser, navigate to <Client> | Oracle | Instance.
- 2. Right-click the *Subclient>* and click **Properties**.
- 3. Click the **Content** tab.
- 4. Select the **Backup Archive Log** checkbox. If you want the archive log files to be deleted after they are backed up, select the **Archive Delete** checkbox.
- 5. If you have multiple log locations, click Log Destinations tab.
- 6. Select Log Destinations for Backup and click Add.
- 7. Type the path to the log files to be backed up.
- 8. Select Log Destinations for Delete and click Add.
- 9. Type the path to the log files to be deleted.
- 10. Click OK.

	Storage Device	Activity Control	Encryption	
General	Content		Backup Argu	ments
5elective Online Full				
Data				
Backup Mode:		nline Database	Offline Dat	abase
	0	nline Subset		
Current Databa	se View:			Refresh
Items in bold an	e not included in an:	y Online Subset subc	lient.	
Backup Archive Log Backup Control File Protect backup recov	very area	Back up		
		(ок	ancel Help

CONFIGURING RMAN BACKUP COPY FOR SNAPPROTECT OPERATIONS

You can use RMAN for copying the data to the media in an Oracle RAC setup. When the data is moved to media, the RMAN backup interface is used for block level backup operations. Also, these backup operations are recorded on the RMAN catalog.

RMAN is required in the case of Automatic Storage Management (ASM) Oracle Databases, since ASM data is not available on the file system.

Prior to using RMAN for copying the data to the media, ensure the following:

- The Oracle (non RAC) instance on the proxy computer should have the same name as that in the source computer.
- For backups involving ASM instances, both ASM and the RDBMS instances have to be configured on the proxy computer.
- You must configure the Oracle instance and corresponding ASM instances under the proxy client.
- The Oracle user id/group id on the on the proxy computer should be identical to the user id/group id on the source computer
- The catalog user and the catalog database must be the accessible by the source and the proxy Oracle instances. Catalog is mandatory for RMAN backups on proxy computer.
- The Oracle database installed on the proxy and source machine should be compatible.
- The proxy and source computer should have the same directory structure e.g. dump, diagnostic and data directories.
- Oracle database requires the ASM to be registered with Oracle Cluster Registry (OCR). It will ensure the RMAN to successfully mount the disk group.
- If multiple source client database instances are configured to run RMAN backup copy on the same proxy MediaAgent, the backup copy may fail due to instance and database name conflicts. The conflicting database and instances need to be moved to a different proxy MediaAgent in such cases.
- By default, during RMAN backup copy the data snaps are mounted in the same location as source on proxy MediaAgents. In case of ASM databases, the ASM Disk Groups are not renamed during RMAN backup copy. This is to facilitate incremental RMAN backup copy where the datafile paths need to be in the same path as source.

However, if you use the same proxy MediaAgent for multiple databases RMAN backup copy may fail if the file system mount points or ASM Disk Group names of different Oracle instances conflict with each other. In such cases, set the SRMANDATAFILECOPY registry key to make the data snaps to be mounted on a different path or in case of ASM databases, to rename the ASM Disk Groups uniquely.

If you plan to use RMAN for copying the data to the media on the proxy computer, copy the Oracle parameter file (pfile) from the client to the proxy computer's \$ORACLE_HOME/dbs/ directory, and remove any parameter containing Oracle RAC related entries.

For example:

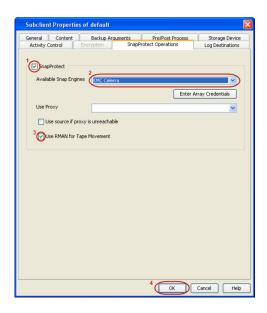
- cluster_database_instances
- cluster_database
- <RAC Instance name>.thread
- <RAC Instance name>.local_listener
- <RAC Instance name>.instance number

Use the following steps to configure the RMAN backup copy for Oracle RAC setup:

- 1. From the CommCell Console, navigate to Client Computers | <*Client*> | Oracle RAC | <*Instance*>.
- 2. Right-click the subclient and click Properties.
- 3. Click the **SnapProtect Operations** tab.
- 4. Click SnapProtect.
- 5. Select the storage array from the Available Snap Engine drop-down list.
- 6. Click Use RMAN for Tape Movement.

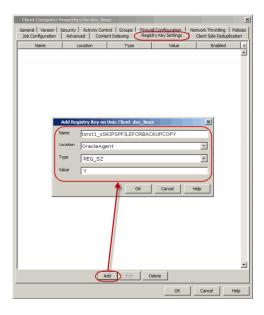
The **Use RMAN for Tape Movement** option is not supported for software snapshots.

7. Click OK.



DISABLING SP FILE BACKUP DURING BACKUP COPY OPERATIONS

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <*Client*>, and then click Properties.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- In the Name box, type <ORACLE_SID>_SSKIPSPFILEFORBACKUPCOPY.
 For example, tsrst1_sSKIPSPFILEFORBACKUPCOPY.
- 6. In the Location box, select or type OracleAgent from the list.
- 7. In the **Type** box, select **Value**.
- 8. In the Value box, type Y and then click OK.



MANAGING SNAPSHOTS

The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, delete, or revert.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the subclient and click List Snaps.
- 3. The **Snaps created during SnapProtect operation** dialog box displays a list of all the snapshots created for the selected subclient. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the **Disk View** tab to display the snapshot name, e.g. SP_2_79_1286222629.

You can also browse snapshots at the instance level of the Oracle Agent.

Source Client	s	Mount Host	Mount Path	Application	Job ID	Mol \$
dbserve9	K:\	winsap		Oracle Data	299	Unm 🔺
dbserve9	K:\			Oracle Data	282	Succ
dbserve9	H:\			Oracle Data	282	Succ =
dbserve9	I:\			Oracle Data	282	Succ
dbserve9	J:\			Oracle Data	282	Succ
dbserve9	K:\			Oracle Data	216	Succ
dbserve9	н:\			Oracle Data	216	Succ
dbserve9	I:\			Oracle Data	216	Succ
dbserve9	J:\			Oracle Data	216	Succ
dbserve9	K:\			Oracle Data	211	Succ
dbserve9	H:\			Oracle Data	211	Succ
dbserve9	I:\			Oracle Data	211	Succ
dbserve9	J:\			Oracle Data	211	Succ
dbserve9	K:\			Oracle Data	207	Succ
dbserve9	H:\			Oracle Data	207	Succ
dbserve9	I:\			Oracle Data	207	Succ
dbserve9	J:\			Oracle Data	207	Succ
dbserve9	K:\			Oracle Data	188	Succ
dbserve9	H:\			Oracle Data	188	Succ
dbserve9	I:\			Oracle Data	188	Succ *
•						F

MOUNT SNAPSHOTS

You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click **List Snaps**.
- 3. Right-click the snapshot that you wish to mount and click Mount.
- 4. Click Yes.
- 5. In the **Mount Path** dialog box, specify the destination client and the path on the client in the **Destination Client** and **Destination Path** fields.

On a Windows platform, enter a CIFS Share Name for the Agent.

- 6. If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select **Protect Snapshot during mount**.
- 7. Click OK.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.

olume View	Disk Vie	ew				
Source Client	s	Mount Host	Mount Path	Application	Job ID	Mol 🛠
dbserve9	K:\	winsap		Oracle Data	299	Unm 🔺
dbserve9	K:\			Oracle Data	282	Succ
dbserve9	10.1	<u> </u>		Orado Data	hop	Succ ≡
dbserve9	(Mount			2	Succ
dbserve9		Unmount			2	Succ
dbserve9		Force Unmour			-	Succ
dbserve9		Force Unmou	nt		_	Succ
dbserve9		Use hardware	revert capabilit	y if available		Succ
dbserve9		Delete				Succ
dbserve9					-	Succ
dbserve9		Detail				Succ
dbserve9	I:\			Oracle Data	211	Succ
dbserve9	J:\			Oracle Data	211	Succ
dbserve9	K:\			Oracle Data	207	Succ
dbserve9	H:\			Oracle Data	207	Succ
dbserve9	I:\			Oracle Data	207	Succ
dbserve9	J:\			Oracle Data	207	Succ
dbserve9	K:\			Oracle Data	188	Succ
dbserve9	H:\			Oracle Data	188	Succ
dbserve9	I:\			Oracle Data	188	Succ 🔻
4						•

UNMOUNT SNAPSHOTS

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click **List Snaps**.
- Right-click the snapshot you wish to unmount and click **Unmount**.
 Click **Yes** when prompted if you want to continue.

If the snapshot does not get unmounted, select the **Force Unmount** option to mark the snapshot as unmounted.

olume View	Disk Vie	W				
Source Client	s	Mount Host	Mount Path	Application	Job ID	Mol 💝
dbserve9	К:\	winsap		Oracle Data	299	Unm 🔺
dbserve9	K:\			Oracle Data	282	Succ
dbserve9	11.	ount			82	Succ ≡
dbserve9	м	ount			82	Succ
dbserve9	U	nmount			82	Succ
dbserve9	Fo	arce Unmount			16	Succ
bserve9	1.1					Succ
dbserve9	Us	e hardware re	vert capability	if available	16	Succ
dbserve9	De	elete			16	Succ
dbserve9		tail			11	Succ
bserve9	De	21.011			11	Succ
lbserve9	I:\			Oracle Data	211	Succ
dbserve9]:/			Oracle Data	211	Succ
dbserve9	K:\			Oracle Data		Succ
dbserve9	H:\			Oracle Data	207	Succ
dbserve9	I:\			Oracle Data		Succ
bserve9]:/			Oracle Data	207	Succ
dbserve9	K:\			Oracle Data		Succ
dbserve9	H:\			Oracle Data		Succ
dbserve9	I:\			Oracle Data	188	Succ *
•	_	m				•

DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to
 perform data recovery operations from the snapshot copy. However, if a backup copy was created from the
 snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same **Job ID** are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click OK.

olume View D	isk View			
Source Client	S Mount Host	Mount Path App	lication Job ID	Mol 🛠
dbserve9	K:\ winsap	Orac	le Data 299	Unm 🔺
dbserve9	к:\	Orac	le Data 282	Succ
dbserve9	H:\	Ora	le Data 282	Succ E
dbserve9	Mount		282	Succ
dbserve9	Unmount		282	Succ
dbserve9			216	Succ
dbserve9	Force Unmount		216	Succ
dbserve9	Use hardware revert capability if available 216			Succ
dbserve9 🏹	Delete		216	Succ
dbserves 🔨			211	Succ
dbserve9	Detail		211	Succ
dbserve9	I:\	Orac	le Data 211	Succ
dbserve9	J:\	Orac	le Data 211	Succ
dbserve9	к:\	Orac	le Data 207	Succ
dbserve9	H:\	Orac	le Data 207	Succ
dbserve9	I:\	Orac	le Data 207	Succ
dbserve9	J:\	Orac	le Data 207	Succ
dbserve9	к:\	Orac	le Data 188	Succ
dbserve9	H:\	Orac	le Data 188	Succ
dbserve9	I:\	Orac	le Data 188	Succ T
•	m			F.

REVERT A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

Review the following before performing a revert operation:

- It is recommended to perform an application aware revert operation to prevent a possible loss of data.
- Log revert is not supported.
- When using HP EVA Clone or Data Replicator for SnapProtect backup, the revert operation is not supported.
- On Unix clusters, use pre/post scripts to freeze and unfreeze the cluster for revert operations. For example, on Red Hat Linux cluster, use the following command in the pre/post scripts:

clusvcadm -Z <group> to freeze the cluster

clusvcadm -U <group> to unfreeze the cluster

This is required because, during revert the application is shut down and corresponding volumes are unmounted. In that case, the cluster will automatically failover to another node thus preventing the revert operation.

- It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.
- If you plan to perform a revert operation, you will not be able to use the associated storage policy for further auxiliary copy operations.

PERFORM AN APPLICATION AWARE REVERT

- 1. From the CommCell Browser, right-click the entity that contains the data you want to restore, and click All Tasks | Browse Backup Data.
- 2. From the Browse Options dialog box, click OK.
- 3. Select the data you want to revert and click Recover All Selected.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.
- 7. Click **OK** from the **Advanced Restore Options** dialog box.
- 8. Click **OK** to start the revert.
 - An application aware revert operation reverts back all the volumes included in the backup.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the application.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you
 are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the
 SnapVault/SnapMirror copy operation no longer works.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to **Client Computers** | < **Client**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.
- 4. Enter the confirmation text string, confirm.
- 5. Click **OK**.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

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avocado	/vol vol3	naste	eam4		NAS NDMP	87	
avocado	/vol/vol2	naste	eam4		NAS NDMP	86	
avocado	/vol/ vol3	naste	am4		NAS NDMP	86	
avocado	/vol/ vol2	naste	eam4		NAS NDMP	85	
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SNAP RECONCILIATION

Snapshots may be deleted from the array due to factors like low disk space on the array, number of snapshots exceeds the threshold etc., and the jobs corresponding to these deleted snapshots can no longer be used for any data recovery or backup copy operations. You can use the nRunSnapRecon registry key to start snap reconciliation to check for missing snapshots once in every 24 hours and marks jobs corresponding to the missing snapshots as invalid.

RESTORING DATA FROM A SNAPPROTECT BACKUP

When restoring data from a snapshot, note the following:

- If the selected backup (latest or point-in-time) was a SnapProtect backup, the subsequent restore will be a SnapProtect restore.
- During Snapshot restore operations, the database is shutdown first and then the snapshots are restored. Once restored, the database is changed to mount mode for the recover operation.

Snapshots are mounted on the destination client where the restore is performed. Hence, destination client should have access to the storage array/filer where snapshot was taken. If the destination client does not have access to storage device, then you should restore the data from snapshot using proxy computer. You can restore an oracle database on a ASM disk group using RMAN.

RESTORE DATA FROM SNAPSHOT USING RMAN

Use the following steps to restore data from a snapshot using RMAN scripts:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks | Browse Backup Data.**

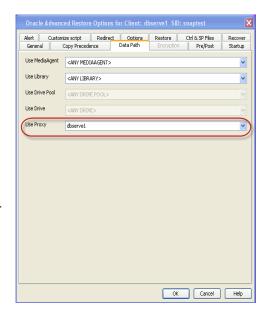
Restoring log data using RMAN is not supported.

- 3. Click OK.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the **Restore Options for All Selected Items** window, select the **Use Snap Restore** checkbox.
- 6. Click Advanced.
- 7. Select the Use RMAN Restore checkbox.
- 8. Click **OK** to save the settings and close the **Advanced Restore Options** window.
- 9. Click OK to close the Restore Options window and initiate the restore job.

Oracle A	dvanced Restor	e Options f	or Client: d	bserve1 SID:	catalog	X
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General	Copy Preced	ence	Data Path	Encryption	Pre/Post	Startup
SNAP Re	ardware revert capab store Options se Rman Restore se FileSystem Restor					

RESTORE DATA FROM SNAPSHOT USING A PROXY COMPUTER

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **| Oracle**.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks | Browse Backup Data.**
- 3. Click OK.
- From the Browse window, select the data you want to restore in the right pane and click Recover All Selected.
- 5. From the **Restore Options for All Selected Items** window, select the **Use Snap Restore** checkbox.
- 6. Click Advanced.
- 7. Click the Data Path tab.
- From the Use Proxy box, select the server that you want to use as proxy.
 The oracle restore will use the file system restore from snap if this option is selected.
- 9. Click **OK** to save the settings and close the **Advanced Restore Options** window.
- 10. Click OK to close the Restore Options window and initiate the restore job.



RESTORING AND RECOVERING AN ENTIRE DATABASE TO THE SAME HOST

When the database is corrupted or lost, you can restore and recover it from the latest offline or online full backup (depending on how the subclient was configured for backups).

By default, the database is restored to the same location from where it was backed up. Once the database is restored, it is recovered to the current time.

Use the following steps to restore and recover a database to the same host:

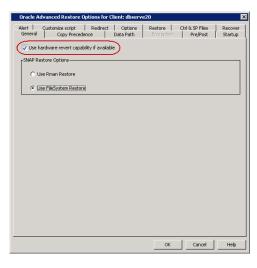
- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **| Oracle**.
- 2. Right-click the <**Instance**>, point to **All Tasks** and then click **Restore**.
- 3. Verify that the **Restore Data** and **Recover** options are selected.
- 4. Select the Restore Control File check box.
- 5. Click OK.

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REVERTING AN ENTIRE DATABASE TO THE SAME HOST

You can use the revert operation to bring the oracle database back to the point in time when the SnapProtect backup was taken. However, the log volume will not be reverted. Hence, you can use either the file system or RMAN to revert the logs after reverting the data volume.

- 1. From the CommCell Browser, navigate to **Client Computers** | *<Client>* | **Oracle**.
- 2. Right-click the **<Instance>**, point to All Tasks and select **Browse Backup Data**.
- 3. From the **Browse** window, navigate and select the database to be restored and click **Recover All Selected**.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.



RESTORING AND RECOVERING AN ENTIRE DATABASE TO A PREVIOUS POINT-IN-TIME

The point-in-time restore is useful in the following scenarios:

- If any undesired transaction occurs in the database, you can revert the database to a state just before the transaction.
- If a database fails, you can restore to the state just before the point of failure.

When you restore and recover an entire database to a previous point-in-time from an online backup or offline backup (depending on how the subclient was configured for backups) to the original host, it is recommended to use the control files.

When you perform a point-in-time restore for a database, the next scheduled backup for that database will automatically convert to a full backup.

Use the following steps to restore and recover a database to a previous point-in-time:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the <Instance>, point to All Tasks and then click Restore.
- 3. Select Restore Control File check box, if you want to restore the control file(s).
- 4. Click Advanced.

- 5. Click the **Restore** tab.
- 6. Click To Point-In-Time and select the data and time.

- 7. Click the **Recover** tab.
- 8. Click the **Point-In-Time** and select the data and time.

× Oracle Restore Options dbserve9 SID: GSAT General Job Initiation Destination Client: dbserve9

Number of streams to use for restore: 1 Catalog Connect: gsat 1 @ ora11gr2 🕅 Restore Control File 🛛 🕅 Restore Archive Log 👘 Restore SP File Restore Data Recover Duplicate DB NO CATALOG Use Snap Restore The latest Databas 🔀 GSAT Status: OPEN Refresh New Browse Script Preview OK Cancel Advanced 🕑 Save As Script Help Oracle Advanced Restore Options for Client: sdr2k8 SID: orcl2
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- 9. Click **Ctrl&SP Files** Tab, if you have selected to restore the control file(s).
- 10. Select Restore From check box.

Click the **Point-In-Time** and select the data and time.
 You must restore the control files to a point-in-time later than or equal to the point-in-time set in the **Restore** tab.

12. Click **OK**.

OK Cancel Help

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RESTORING AND RECOVERING AN ENTIRE DATABASE TO A NEW HOST

If the computer on which you hosted a database is damaged or destroyed, you can restore and recover the lost database with the same directory structure on to a new host.

By default, the database is restored in the ARCHIVELOG mode, You can also choose to restore the db in NOARCHIVELOG mode.

Use the following steps to restore and recover a database to a new host with the same directory structure:

PREREQUISITES

- 1. Verify the following in both the source and destination computers:
- The connection specifications (host, service name, port) in the tnsnames.ora file on both the source and destination computers should be different.
- The *<username>* you use for the destination computer is different than the username for the source computer.
- Sufficient disk space is available on the destination computer to accommodate the restored database.
- Both the source and destination computers should have the following similar features:
 - Operating systems
 - Oracle version
 - ORACLE_SID
 - O init <SID>.ora file
 - Processor (32-bit or 64-bit)
 - Datafile directory structures

SETTING UP THE SOURCE AND DESTINATION HOSTS

 Create a new user account with recovery catalog owner permission within the Recovery Catalog for the destination computer. Use a different *<username>*

Example:

SQL>create user <username> identified by <password> 2>temporary tablespace <temp_tablespace_name> 3>default tablespace <default_tablespace_name> 4>quota unlimited on <default_tablespace_name>;

Statement processed.

SQL>grant connect, resource, recovery_catalog_owner to
<username>;

Statement processed.

- Manually transfer the Oracle password file orapw<Oracle SID name> from the source computer to the destination computer. Usually, this file resides in ORACLE_HOME/dbs.
- 4. Export the recovery catalog data for the catalog user.

For example, if the user ID for the recovery catalog owner is **user1**, you need to export the database backup information for **user1**.

5. Import the recovery catalog data to the new user account for the destination computer.

Example using IMPORT CATALOG Command:

RMAN>IMPORT CATALOG user1/user1@src;

- 6. Copy the recovery catalog's connect string entry in the tnsnames.ora file from the source host to the destination host.
- 7. Make sure that the ORACLE_SID and ORACLE_HOME are appropriately configured on the destination computer.
- 8. Install the Oracle iDataAgent and configure it as client in the same CommServe in which the source computer resides.
- Create and configure a new Oracle instance, similar to the one existing in the source 9. computer on the destination computer. Ensure that this instance is in NOMOUNT mode.

RESTORING THE DATABASE

- 10. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 11. Right-click the <Instance> point to All Tasks and then click Restore.
- 12. Select the name of the client computer from the Destination Client list.
- 13. Select Restore Control File check box.
- 14. Click Advanced.

Oracle Restore Options dbserve9 SID: GSAT	×
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ОК Cancel

- 15. Click the **Options** tab.
- 16. If the database is in NOARCHIVELOG mode, then select No Redo Logs.
- 17. Click OK.

RESTORING INDIVIDUAL DATAFILES/TABLESPACES

In addition to restoring a database, you can also restore specific tablespaces or datafiles that were lost due to an error or corruption. By default, the selected tablespaces/datafiles are restored to the original location from the latest online backup.

Use the following steps to restore the datafile(s) or tablespace(s):

1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.

<service name> = (DESCRIPTION = (ADDRESS = (PROTOCOL = <protocol>) (HOST = <host>) (PORT = <##>)) (CONNECT_DATA = (SID = <Recovery Catalog database>)))

Example: For Unix:

#export ORACLE SID= <target database SID> #export ORACLE HOME= <Oracle home directory>

For Windows:

C:\set ORACLE SID= <target database SID> C:\set ORACLE HOME= <Oracle home directory> Right-click the <*Instance*>, point to All Tasks and then click Browse Backup Data.

4. In the right pane of the Browse window, select the datafiles or tablespaces you want

to restore and click Recover All Selected.

3. Click **OK**.

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5. Click **OK**.

RESTORING ARCHIVE LOGS

Archive logs can be restored separately or along with the database. If there is a database failure and you need to recover the database to the recent state, you will be able to restore all the logs along with the database.

Use the following steps to restore all the archived logs (note that this is the default option):

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **| Oracle**.
- 2. Right-click the <*Instance*>, point to **All Tasks** and then click **Restore**.
- 3. Select the **Restore Archive Log** check box.
- 4. Click Advanced.

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- 5. In the Snap Restore Options, select the $\ensuremath{\textbf{Use FileSystem Restore}}$ Check box
- 6. Click **OK**.

RESTORING DATABASE TABLES

Database tables can be restored from a SnapProtect backup using RMAN. In order to restore database tables, you need to perform a SnapProtect backup with table browse enabled.

Use the following steps to restore database tables:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the <Instance> and click All Tasks | Browse Backup Data.
- 3. Select the **Table View** checkbox.
- 4. Click **OK**.
- 5. In the **Browse** window, select the tables that you want to restore and click **Recover** All Selected.
- 6. Click the Table Restore tab.
- 7. Select the **Auxiliary Instance** checkbox if you want to specify an auxiliary instance for the restore.

When specifying the auxiliary instance, ensure that the database is in NOMOUNT mode.

- 8. In the Database Name text box, type the auxiliary database name.
- 9. In the **PFile** textbox, type the path to the PFile. Alternatively, click **Browse** to locate the PFile.
- 10. In the Database Client box, select the client for the auxiliary instance.

When you provide an auxiliary instance, make sure that the <code>temp.dbf</code> file is removed from the operating system in the specified auxiliary instance datafile location.

Oracle Table F	estore Options for Cli	ents brahmani64 S	iD: netapp	
General Job Initiat	n Table Restore Advan	ed Options		
Table Restore Opti	ns			
Users/Tables sel	cted for restore:			
/netapp				
🗹 Auxiliary Inst]		
Database Name:	aux	Database Client:	brahmani64	~
PFile:				Browse
Staging Path:				Browse
Cleanup Auxi	ary			
Scrip	Preview CK	Cancel Advar	nced 🕑 Save As	Script Help

11. Click OK.

RESTORING TABLES TO THE SOURCE DATABASE

If some of the tables in the database are lost or corrupted, you can restore those tables back to the same database using the following steps:

- 1. From the CommCell Browser, navigate to **Client Computers** | *<Client>* | **Oracle**.
- 2. Right-click the *<Instance>*, point to **All Tasks** and select **Browse Backup Data**.
- 3. Select the Table View check box and click OK.
- 4. From the **Browse** window, navigate and select the tables to be restored and click **Recover All Selected**.

Browse Options
Browse the Latest Data
O Specify Browse Time
Browse Data Before:
Wed 06/08/2011
Time Zone: (GMT-08:00) Pacific Time (US & Canada)
Client Computer: sdr2i8
Use MediaAgent <any mediaagent=""></any>
Show Deleted Items
Page Size: 1000 x
Table View
OK Cancel Advanced List Media Help

- 5. Click the **Table Restore** tab.
- 6. In the **Staging Path** box, click **Browse** and select the location where the auxiliary instance will be created.
- 7. Click the Advanced Options tab.

- 8. Select Import to Source DB.
- 9. Click **OK**.

Oracle Table Rest	ore Options for (Clients dbserve9 SID: GSAT	
General Job Initiatio	n Table Restore	Advanced Options	٦
Table Restore Option	IS		
Users/Tables selec	ted for restore:		
IGSAT/SNAP	ice		
Database Name:		Database Client: dbserve9	
PFile:		Browse	
Staging Path:		Browse	
☑ Cleanup Auxilia	ry		
Script	Preview	Cancel Advanced Draw As Script Help	

Oracle Table Restore Options for Clients sdr2k8 SID: orcl2
Seneral Job Initiation Table Restore Advanced Options
Export Options
Use DataPump if available
V Include triggers
✓ Include constraints
✓ Include indexes
✓ Include grants
Include stored procedures
Use additional export parameters
Import Options
O Do not Import
Import to Source DB
O Import to a different DB
Enter Import Oracle instance :
Select a Client: doc_linux
Drop Table for Import
Script Preview Cancel Advanced By Save As Script Help

RESTORING TABLES TO A DIFFERENT DATABASE ON THE SAME HOST

Use the following steps to restore tables to a different database on the same host:

- 1. Add the destination instance name in the Listener.ora and Tnsnames.ora files.
- 2. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 3. Right-click the *Instance*, point to All Tasks and select **Browse Backup Data**.
- 4. Select the Table View check box and click OK.
- 5. From the **Browse** window, navigate and select the tables to be restored and click **Recover All Selected**.
- 6. Click the Table Restore tab.
- 7. In the Staging Path box, type the location where the tables will be restored.
- 8. Click the Advanced Options tab.
- 9. Select Import to a Different DB.
- 10. In the **Enter Import Oracle Instance:** box, type the destination instance name.
- 11. In the Select a Client box, select the source client.
- 12. Click OK.

Oracle Table Restore Options for	or Clients sdr2k8 SID: orc12
General Job Initiation Table Restore	Advanced Options
Export Options	
Use DataPump if available	
 Include triggers 	
 Include constraints 	
✓ Include indexes	
☑ Include grants	
Include stored procedures	
Use additional export parameters	
Import Options	
O Do not Import	
O Import to Source DB	
• Import to a different DB	
Enter Import Oracle instance :	ord
Select a Client:	sdr2k8
Drop Table for Import	
Script Preview	Cancel Advanced 🚱 Save As Script Help

SETTING UP THE AUXILIARY INSTANCE

By default, when you restore database tables to a target instance, the system automatically duplicates the source database to an auxiliary instance in a temporary staging location specified during the restore operation. The database will be automatically imported from this auxiliary instance after the restore.

Use the following steps to set up a specific database as an auxiliary instance. This is useful when you want to restore a table to a specific failure point.

- 1. Copy the init<SID>.ora file from the source database to the auxiliary database instance.
- Update the database name and the database file locations in the init<SID>.ora file for the auxiliary database instance.
- Add the DB_FILE_NAME_CONVERT and LOG_FILE_NAME_CONVERT parameters in the init<SID>.ora file. These parameters will redirect the datafiles, temp files, and log files to the auxiliary instance.

Windows Clients:

```
DB_FILE_NAME_CONVERT=
('source_of_df_path/','dup_of_df_path/','source_of_temp_path/','dup_of_temp_path/',...)
LOG_FILE_NAME_CONVERT=('source_of_log_path/redo','dup_of_log_path/redo')
```

Unix Clients:

```
DB_FILE_NAME_CONVERT=
(source_of_df_path/,dup_of_df_path/,source_of_temp_path/,dup_of_temp_path/,...)
LOG_FILE_NAME_CONVERT=(source_of_log_path/redo,dup_of_log_path/redo)
```

- Add the log_archive_dest_1 parameter is added to the init<SID>.ora file on the auxiliary instance.
- 5. Restart the Oracle Services, if using Windows clients.

6. Add the destination instance name in the Listener.ora and Tnsnames.ora files. If using a different host, add the duplicate database instance name in the Listener.ora file on the destination host and Tnsnames.ora files on the destination and source hosts. Also, add the original database name in the Tnsnames.ora file on the destination host. DUPDB = (DESCRIPTION =
(ADDRESS = (PROTOCOL = TCP)(HOST = powerpc02)(PORT = 1521))
(CONNECT_DATA = (SERVER = DEDICATED)
(SERVICE_NAME = dupdb) (UR=A)))
\$lsnrctl reload

7. Restart the Listener.

mode.

8. Ensure that the auxiliary instance is in NOMOUNT sql> startup nomount;

RESTORING TABLES USING A USER-DEFINED AUXILIARY INSTANCE

By default, when you restore database tables to a target instance, the system automatically duplicates the source database to an auxiliary instance in the specified temporary staging location. Once the database is duplicated, you can import the tables to the target instance.

However, if required, you can also use an user-defined auxiliary instance for the restore operation. This is used when you want to restore a table to a specific

failure point.

When restoring tables to a different host, if a user-defined auxiliary instance option is selected for the restore, you need to recover the database to a specified point-in-time or SCN number. You cannot recover the database to the current time using an user-defined auxiliary instance.

SETTING UP THE AUXILIARY INSTANCE

- Copy the init<SID>.ora file from the source database to the auxiliary database instance.
- 2. Update the database name and the database file locations in the init<SID>.ora file for the auxiliary database instance.
- Add the DB_FILE_NAME_CONVERT and LOG_FILE_NAME_CONVERT parameters in the init<SID>.ora file. These parameters will redirect the datafiles, temp files, and log files to the auxiliary instance.

Windows Clients:

sql> startup nomount;

DB_FILE_NAME_CONVERT= ('sourcE_of_df_path/','dup_of_df_path/','source_of_temp_path/','dup_of_temp_path/',...) LOG_FILE_NAME_CONVERT=('source_of_log_path/redo','dup_of_log_path/redo')

Unix Clients:

DB_FILE_NAME_CONVERT= (source_of_df_path/,dup_of_df_path/,source_of_temp_path/,dup_of_temp_path/,...) LOG_FILE_NAME_CONVERT=(source_of_log_path/redo,dup_of_log_path/redo)

- Add the log_archive_dest_1 parameter is added to the init<SID>.ora file on the auxiliary instance.
- 5. Restart the Oracle Services, if using Windows clients.
- 6. Add the destination instance name in the Listener.ora and Tnsnames.ora files. If using a different host, add the duplicate database instance name in the Listener.ora file on the destination host and Tnsnames.ora files on the destination and source hosts. Also, add the original database name in the Tnsnames.ora file on the destination host.
- DUPDB = (DESCRIPTION =
 (ADDRESS = (PROTOCOL = TCP)(HOST = powerpc02)(PORT = 1521))
 (CONNECT_DATA = (SERVER = DEDICATED)
 (SERVICE_NAME = dupdb) (UR=A)))
 \$lsnrctl reload

Include constraints
 Include indexes
 Include grants
 Include stored procedures
 Use additional export parameter

Import Options

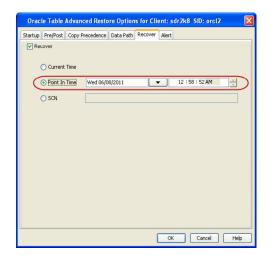
- 7. Restart the Listener.
- **8.** Ensure that the auxiliary instance is in NOMOUNT mode.

RESTORING THE TABLES USING THE AUXILIARY INSTANCE

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the **<Instance>**, point to All Tasks and select **Browse Backup Data**.
- 3. Select the Table View check box and click OK.
- 4. From the **Browse** window, navigate and select the tables to be restored and click **Recover All Selected**.
- 5. Click the Table Restore tab.
- 6. Select the Auxiliary Instance checkbox.
- 7. In the **Database Instance** box, type the auxiliary instance name.
- 8. In the **Database Client** box, select the destination client for the auxiliary instance.
- 9. In the **PFile** box, type the path to the PFile of the auxiliary instance. Alternatively, click **Browse** to select the path.
- 10. In the **Staging Path** box, type the location where the auxiliary instance will be created. Alternatively, click **Browse** to select the path.
- 11. Click the Advanced Options tab.
- 12. Select Import to a Different DB.
- 13. In the Enter Import Oracle Instance: box, type the destination instance name.
- 14. In the Select a Client box, select the destination client.
- 15. Click Advanced.

Oracle Table Restore Options for Clients dbserve9 SID: GSAT	x
General Job Initiation Table Restore Advanced Options	
Table Restore Options	
Users/Tables selected for restore:	
JCSAT/SHAP	
Auxiliary Instance Database Client: diserve9	
Database Cient: Ubserves	
PFile: Browse	
Staging Path: Browse	
🕐 Cleanup Auxiliary	
Script Preview BOK Cancel Advanced Brave As Script Help	
Oracle Table Restore Options for Clients sdr2k8 SID: orcl2	×
General Job Initiation Table Restore Advanced Options	_
Export Options	-
Use DataPump if available	
✓ Include triggers	

- 16. Select the **Recover** tab.
- 17. Select **Point-In-Time** checkbox and specify the time range to which the the database need to be recovered.
- 18. Click OK.



DISABLING CLEAN-UP OF AUXILIARY INSTANCE AFTER RESTORE

By default, the system generated auxiliary instance is deleted automatically once the tables are imported to the destination instance.

Use the following steps to disable the clean-up of auxiliary instance after the restore:

- 1. From the CommCell Browser, navigate to **Client Computers** | **<***Client***>** | **Oracle**.
- 2. Right-click the *Instance*, point to All Tasks and select **Browse Backup Data**.
- 3. Select the Table View check box and click OK.
- 4. From the **Browse** window, navigate and select the tables to be restored and click **Recover All Selected**.
- 5. Click the Table Restore tab.
- 6. In the Staging Path box, type the location where the tables will be restored.
- 7. Clear the Cleanup Auxiliary checkbox.
- 8. Click OK.

Oracle Table Restore Options for Clients sdr2k8 SID: orcl2	X
General Job Initiation Table Restore Advanced Options	
Table Restore Options	
Users/Tables selected for restore:	
(erd2)SC0TT(BONUS	
Auxiliary Instance	
Database Name: Database Client: sdr2k8	
PFie: Browse	
Staging Path: Browse	
Ceano Audiary	
Script Preview Cancel Advanced Save As Script He	þ

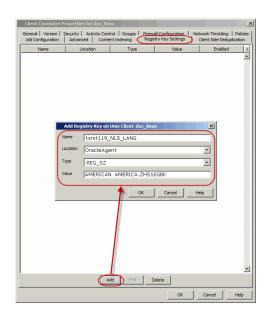
RESTORING TABLES WITH NON-ENGLISH CHARACTERS

By default, you can restore the tables with English characters. Use the following steps to restore the non-English characters in the tables:

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <*Client*>, and then click Properties.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- In the Name box, type <ORACLE_SID>_NLS_LANG. For example, tsrst119_NLS_LANG
- 6. In the Location box, select or type OracleAgent from the list.
- 7. In the **Type** box, select **Value**.
- 8. In the Value box, set the database's character set as per your database's character set and then click **OK**.

For example, if the database's nls character set value is ZHS16GBK, you can set NLS_LANG registry key to AMERICAN_AMERICA.ZHS16GBK. By default this value is set to AMERICAN_AMERICA.US7ASCII.

8. Click OK.



EXPORTING TABLE OBJECTS

During table restores, the tables are exported from the auxiliary instance to the destination client and later imported to the target database. By default, the following data objects are exported along with the tables:

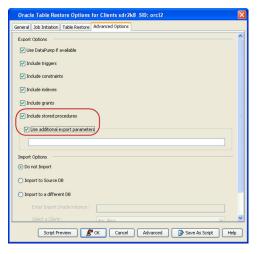
- Triggers
- Constraints
- Indexes
- Grants

However, the stored procedures associated with the selected tables are not exported by default. Use the following steps to export the stored procedures and additional export parameters, such as (COMPRESS or PARALLEL):

Stored procedures are restored from the Schema level. Schema is the collection of data objects created by the user to contain or reference their data. Hence, if one of the table within the schema is selected for restore, all the stored procedures for that schema will also get restored.

When exporting the tables, the datapump export utility is used if it is supported by the Oracle application. The datapump utility facilitates the export of stored procedures. In oracle versions that do not support datapump export utility, you will not be able to include stored procedures during export.

- 1. From the CommCell Browser, navigate to **Client Computers** | *<Client>* | **Oracle**.
- 2. Right-click the <Instance>, point to All Tasks and select Browse Backup Data.
- 3. Select the Table View check box and click OK.
- 4. From the **Browse** window, navigate and select the tables to be restored and click **Recover All Selected**.
- 5. Click the Table Restore tab.
- 6. In the **Staging Path** box, type the location where the auxiliary instance will be restored.
- 7. Click the Advanced Options tab.
- 8. Select the Include Stored Procedures checkbox.
- 9. Select **Use additional export parameters** checkbox and type the parameters to be exported.
- 10. Click OK.



SELECTING/DE-SELECTING DEPENDENT/REFERENCED TABLES

When you browse using the table view, you can also view the dependent and referenced tables associated with the tables selected for the restore.

Dependent tables are the parent tables (containing the primary key) that the selected table (containing the foreign key) depends upon. Similarly, Referenced tables are the child tables (containing the foreign key) that references the selected table (containing the primary key).

By default, all the dependent and referenced tables will be included in the restore operation. Use the following steps to exclude the dependent/referenced tables:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client>** | **Oracle**.
- 2. Right-click the *Instance*, point to All Tasks and select **Browse Backup Data**.
- 3. Select the Table View check box and click OK.
- 4. From the **Browse** window, navigate to the table to be restored.
- Right-click the and click Select/Deselect All Dependent Tables to exclude all the dependent tables.

Similarly, click **Deselect All Referenced Tables** to exclude all the referenced tables.

- 6. Click Restore All Selected.
- 7. Click the Table Restore tab.
- 8. In the **Staging Path** box, type the location where the auxiliary instance will be restored.
- 9. Click OK.

INCLUDING ALL DEPENDENCIES TO THE DEPENDENT/REFERENCED TABLES

When restoring tables, you can include recursive dependency relationship of all the dependent/referenced tables.

Use the following steps to include all the dependent/referenced tables recursively:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the **<Instance>**, point to All Tasks and select **Browse Backup Data**.
- 3. Select the Table View check box and click OK.
- 4. From the **Browse** window, navigate to the table to be restored.
- Right-click the and click Select All Dependent Tables Recursively to include recursive dependency of dependent tables.

Similarly, click **Deselect All Referenced Tables Recursively** to to include recursive dependency of referenced tables.

- 6. Click Restore All Selected.
- 7. Click the Table Restore tab.
- In the Staging Path box, type the location where the auxiliary instance will be restored.
- 9. Click OK.

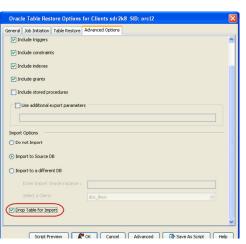
DELETING EXISTING TABLES DURING A RESTORE

By default, the restore operation will overwrite the existing tables in the destination database during the restore. You can also configure the restore operation to delete the existing tables before performing the restore.

Manually drop/delete the existing tables at the destination instance and then import the tables.

Use the following steps to automatically delete existing tables on the destination instance during restore. Note that you can also manually drop/delete the existing tables at the destination instance and perform the restore without enabling this option.

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the **<Instance>**, point to All Tasks and select **Browse Backup Data**.
- 3. Select the Table View check box and click OK.
- 4. From the **Browse** window, navigate and select the tables to be restored and click **Recover All Selected**.
- 5. Click the Table Restore tab.
- 6. In the Staging Path box, type the location where the tables will be restored.
- 7. Click the **Advanced Options** tab.
- 8. Select Import to Source DB.
- 9. Click Drop Table for Import checkbox.
- 10. Click **OK**.







AUTOMATICALLY SWITCHING THE DATABASE MODE BEFORE A RESTORE

In order to perform a restore operation, the database should be in the MOUNT mode. If the database is not in mounted state, you are prompted to switch the database to the mounted state and then perform the restore.

Use the following steps to automatically switch the database to mount mode prior to restore:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the <Instance>, point to All Tasks and then click Restore.
- 3. Click Advanced.

- 4. Click the **Options** tab.
- 5. Select Switch Database mode for Restore.
- 6. Click **OK**.

General Job Initiation	ns dbserve9 SID: GSAT		
Destination Client:	▼	Number of str	reams to use for restore:
Catalog Connect:	gsat /	0	ora11gr2
Restore Control			
Restore Data	Recover	Duplic	ate DB
NO CATALOG	Use Snap Restore)	
GSAT	view:		
Status: OPEN	Refresh	New Br	rowse
Script Preview	Cancel	Advanced	Save As Script Help
Oracle Advanced Res	ore Options for Client: dbse	rve9 SID: GSA	AT E
	tore Options for Client: dbse		
Oracle Advanced Res General Pre/Post Startup	Copy Precedence	Data	
General Pre/Post Startup	Copy Precedence	Data Restore	Path Encryption
General Pre/Post Startup Time Zone: (GMT	Copy Precedence Alert Options	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Startup Time Zone: (GMT	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Startup Time Zone: (GM Reset Database Reset Logs	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open DB Yes V No Re-do L	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Startup Time Zone: (GMT	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca I Open DB Yes I No Re-do L de for Restore)	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Startup Time Zone: (GMI Reset Database Reset Logs Validate	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restors Disable Oracle Channel Re	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Startup Time Zone: (GMI Reset Database Reset Logs (V Switch Database mo Valdate Set DBID	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restors Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Startup Time Zone: (GMI Reset Database Reset Logs Validate	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restore Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Starbup Time Zone: (GM Reset Database Reset Logs () Switch Database m Valdate Set DBID Max Open Files:	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restors Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Starbup Time Zone: (GM Reset Database Reset Logs () Switch Database m Valdate Set DBID Max Open Files:	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restore Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Starbup Time Zone: (GM Reset Database Reset Logs () Switch Database m Valdate Set DBID Max Open Files:	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restore Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Starbup Time Zone: (GM Reset Database Reset Logs () Switch Database m Valdate Set DBID Max Open Files:	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restore Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Starbup Time Zone: (GM Reset Database Reset Logs () Switch Database m Valdate Set DBID Max Open Files:	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restore Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Starbup Time Zone: (GM Reset Database Reset Logs () Switch Database m Valdate Set DBID Max Open Files:	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restore Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover
General Pre/Post Starbup Time Zone: (GM Reset Database Reset Logs () Switch Database m Valdate Set DBID Max Open Files:	Copy Precedence Alert Options -05:00) Eastern Time (US & Ca V Open D8 Yes v No Re-do L de for Restore Deable Oracle Channel Re Mount Database	Data Restore	Path Encryption Ctrl & SP Files Recover

SETTING THE DATABASE INCARNATION

When you perform a point-in-time recovery of an Oracle database with RESETLOGS, a new incarnation of the database is created. All archive log files generated after resetting the logs will be associated to the new incarnation. However, in order to perform a point-in-time recovery from a backup of a previous incarnation, you need to reset the current incarnation to the previous incarnation value. Use the following steps to set the incarnation value:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the <*Instance*>, point to **All Tasks** and then click **Restore**.
- 3. Click Advanced.

Oracle Restore Options dbserve9 SID: GSAT	×
General Job Initiation	
Destination Client: dbserve9 Vumber of streams to use for restores	1 -
Catalog Connect: gsat / @ oraligr2	
Restore Control File Restore Archive Log Restore SP File	
Restore Data	
NO CATALOG	
The latest Database View:	
Status: OPEN Refresh New Browse	
Script Preview Cancel Advanced Save As Script	Help
Dracks Advanced Pastore Ontions for Client: sdr2k8_SD: arcl2	
Oracle Advanced Restore Options for Client: sdr2k8_SID: ord2 General Copy Rescence Data Path Encryption PrejRost Allert Custombe sorpt Redirect Options Restore Cril & SP Files	Startup Recover
General Copy Precedence Data Path Encryption Pre/Post	Startup
General Copy Precedence Duta Path Encryption Pre/Post Alert Custonice script Redirect Options Restore Cort & SP Files Time Zone: (CM1-08:00) Pacific Time (US & Canada)	Startup Recover
General Copy Precedence Data Path Encryption Pre/Post Alet Customice script Redirect Options Restore Cort & SP Files Time Zone: (CMT-08:00) Pacific Time (US & Canada)	Startup Recover
General Copy Precedence Duta Path Encryption PrepPost Alert Customice script Redirect Options Restore Conta SP Files Time Zone: (C911-08:00) Pacific Time (US & Canada) Reset Database <u>Open D8</u>	Startup Recover
General Copy Precedence Data Path Encryption Pre/Post Alert Customice sort Redirect Options Restore Colt & SP Files Time Zone: (C417-08:00) Pacific Time (US & Canada) Encryption Pre/Post Restore Cont & SP Files Reset: Database Epen DB Reset: Langa No Re-do Logs No Re-do Logs	Startup Recover
General Copy Precedence Data Path Encryption Pre/Post Alert Customice script Redirect Options Restore Colt & SP Files Time Zone: (CMT-08:00) Pacific Time (US & Canada) Reset Database Denn Eig Reset Database Denn Eig No Re-do Logs Switch Database mode for Restore Switch Database Dosable Oracle Channel Restore Failover Validate Dosable Oracle Channel Restore Failover	Startup Recover
General Copy Precedence Data Path Encryption Pre/Post Alert Customice script Redirect Options Restore Cut & SP Files Time Zone: (C411-08:00) Pacific Time (US & Canada) Reset Database Open Eig Reset Longs Reset Database Open Eig No Re-do Logs Switch Database mode for Restore Switch Database mode for Restore	Startup Recover
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4. Click **Options** tab.

- 5. Select the database incarnation value from **Set DB Incarnation** list.
- 6. Click **OK**.

ENHANCING RESTORE PERFORMANCE

You can perform a restore operation faster when you set a maximum number of concurrent open datafiles for RMAN to read simultaneously. Use the following steps to enhance your restore operation:

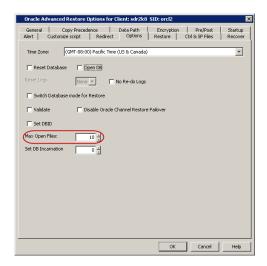
- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- 2. Right-click the *<Instance*>, point to **All Tasks** and then click **Restore**.
- 3. Click Advanced.

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Destina	tion Client:	dbserve9	-	Number of st	reams to use for restore:	1 :
Ca	talog Connect:	gsat	/	¢	ora11gr2	
_	Restore Contr Restore Data	ol File	Restore Archive		re SP File	
	NO CATALOG	(Use Snap Restor		ate Do	
	GSAT	ie view.				
Sta	tus: OPEN		Refresh	New B	rowse	
60	ript Preview	Ск	Cancel	Advanced	Save As Script	Help

4. Click **Options** tab.

5. Select the number of open files from Max Open Files list.

- 6. Click **OK**.
- 7. Click **OK** to start the restore.



RESTORING FROM A SNAPPROTECT AND RMAN MIXED ENVIRONMENT

When restoring from a SnapProtect and RMAN mixed environment, the data can be restored from a SnapProtect or RMAN backup jobs depending on the browse time and whether the database full backup is a SnapProtect or RMAN backup job.

Consider the following scenarios:

Scenario 1

The backup jobs are performed in the following sequence:

- 1. Full SnapProtect backup job
- 2. RMAN archive log job

In this scenario, when you restore a control file, SP file from autobackup or backup piece, the restore is always performed from the full SnapProtect backup job.

Similarly, when restoring only the archive logs, the logs are restored from the SnapProtect backup job instead of the latest archive log backup.

Scenario 2

The backup jobs are performed in the following sequence:

- 1. Full SnapProtect backup job
- 2. Full RMAN backup job
- 3. RMAN archive log job

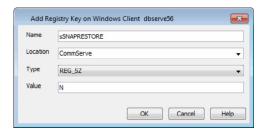
In this scenario, the restores are performed from the latest backup job (SnapProtect or RMAN) depending on the specified time.

If the SnapProtect full backup job and RMAN full backup job were executed in parallel, by default, the SnapProtect full backup job is used for the restore operation.

ENABLING RESTORES FROM RMAN BACKUPS

In a SnapProtect and RMAN mixed environment, you can configure to restore certain database components, such as control file, SP file, or archive logs from RMAN backup jobs by creating the sSNAPRESTORE registry key on the CommServe using the following steps. Once the restore is complete, make sure to delete this key to enable restores from SnapProtect backups.

- From the CommCell Browser, right-click the <CommServe>, and then click Properties.
- 2. Click the Registry Key Settings tab.
- 3. Click Add.
- 4. In the Name box, type **SSNAPRESTORE**.
- 5. In the Location box, type or select CommServe from the list.
- In the Type box, select REG_SZ.
 On Unix clients, select Value.
- 7. In the Value box, type **N** and then click **OK**.



RESTORE AND RECOVER THE DATABASE TO A POINT IN TIME

In a mixed mode environment, you can restore and recover the database to a point in time using the following steps:

- 1. Enable restores from RMAN backup by creating the SSNAPRESTORE registry key on the CommServe.
- 2. Restore the Control File from Autobackup/Backup Piece or point in time
- 3. Enable restores from SnapProtect backups by deleting the **sSNAPRESTORE** registry key.
- 4. Restore and recover the database to a point in time from SnapProtect backup.

BACKUP COPY OPERATIONS

The following sections describe the additional modes of Backup Copy Operations:

FILE SYSTEM

By default, the system will use the File System for copying the data to the media. The system will scan the file, generate and read the collect file, extract the file list and copies the data on to the tape using MediaAgent's data mover.

In order to perform the file system snap to tape copy on a proxy computer, ensure that the MediaAgent and File System iDataAgent are installed on the proxy computer.

- 1. From the CommCell Console, navigate to **Client Computers** | *Client>* | **Oracle** | *cInstance>***.**
- 2. Right-click the subclient and click Properties.
- 3. Click SnapProtect Operations.
- 4. Select SnapProtect.
- 5. Click Available Snap Engines drop-down box and select the storage array.
- 6. Click OK.

Subclient Properties of	dofault		
General Content	Backup Arguments	Pre/Post Process	Storage Device Log Destinations
SnapProtect			
Available Snap Engines	IBM XIV Snap	Enter A	rray Credentials
Use Proxy	lbmaix08		~
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			×
Use source if proxy i	s unreachable		
Use RMAN for Tape	Movement		
		ОК	Cancel Help

RMAN

You can also use RMAN for copying the data to the media.

When data is moved from snap to media, the RMAN backup interface is used for block level backup operations. Also, these backup operations are recorded on the RMAN catalog. RMAN is required in the case of Automatic Storage Management (ASM) Oracle Databases, since ASM data is not available on the file system. You can also run RMAN restores/reports from these backups.

Prior to using RMAN for copying the data to the media, ensure the following:

- The Oracle iDataAgent must be installed on the proxy computer.
- The Oracle instance on the proxy computer should have the same name as that in the source computer.
- The Oracle database installed on the proxy and source computers should be compatible.
- For backups involving ASM instances, both ASM and the RDBMS instances have to be configured on the proxy computer.
- The catalog user and the catalog database must be the accessible by the source and the proxy Oracle instances.
- The proxy and source computer should have the same directory structure e.g. dump, diagnostic and data directories.
- Oracle database requires the ASM to be registered with Oracle Cluster Registry (OCR), since the ASM instance is a resource in CRS repository. It will ensure the RMAN to successfully mount the disk group.
- If multiple source client database instances are configured to run RMAN backup copy on the same proxy MediaAgent, the backup copy may fail due to instance and database name conflicts. The conflicting database and instances need to be moved to a different proxy MediaAgent in such cases.
- 1. From the CommCell Console, navigate to **Client Computers** | *Client* | **Oracle** | *Instance*.
- 2. Right-click the subclient and click Properties.

- 3. Click SnapProtect Operations.
- 4. Select SnapProtect.
- 5. Select the storage array from the Available Snap Engine drop-down list.
- 6. Select Use RMAN for Tape Movement.
 - The **Use RMAN for Tape Movement** option is not supported for software snapshots.
- 7. Click **OK**.

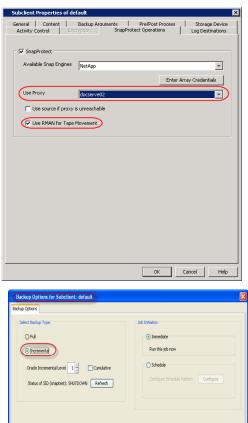
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1 Impervoted Available Snap Engines	
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Use source if proxy is unreachable	
4	
4 OK Cancel Help	

RMAN INCREMENTAL BACKUP COPY

Oracle RMAN incremental backup copy can be performed on a proxy server.

Prior to performing the RMAN incremental backup copy, ensure the following:

- The database physical schema is the same in both the snap and the current backup (i.e. no addition or deletion of tablespaces between time of snap and current backup).
- The Oracle user ID/group ID on source and proxy should be the same otherwise the RMAN backup copy will fail due to permission issues.
- 1. Copy the Oracle parameter file (pfile) and password file from the source to the proxy computer's \$ORACLE_HOME/dbs/ directory.
- 2. Create the bdump, udump, adump, cdump and diagnostic_dest directories. Ensure that the directories are in the same location as the source.
- Create the DB_CREATE_FILE_DEST and LOG_ARCHIVE_DEST directories. If there are multiple archive destinations, then create the directories for each of the archivelog destinations.
- 4. Copy the catalog connection information from the source to the proxy in the tnsnames.ora.
- 5. Startup the proxy instance in NOMOUNT mode.
- 6. Configure the proxy Oracle Instance on the CommCell Console.
- 7. Click **Use Proxy** drop-down box and select the configured proxy from the dropdown list.
- 8. Select Use RMAN for Tape Movement and click OK.
- 9. The Incremental option is now available for backup.



🖉 OK Cancel Advanced 🦻 Save As Script Help

PREVENTING RMAN BACKUP COPY FAILURES DUE TO MOUNT POINT/ ASM DISK GROUP NAME CONFLICTS ON A PROXY MEDIAAGENT

By default, during RMAN backup copy the data snaps are mounted in the same location as source on proxy MediaAgents. In case of ASM databases, the ASM

Disk Groups are not renamed during RMAN backup copy. This is to facilitate incremental RMAN backup copy where the datafile paths need to be in the same path as source.

However, if you use the same proxy MediaAgent for multiple databases RMAN backup copy may fail if the file system mount points or ASM Disk Group names of different Oracle instances conflict with each other.

In such cases, use the following steps to make the data snaps to be mounted on a different path or in case of ASM databases, to rename the ASM Disk Groups uniquely:

- 1. From the CommCell Browser, navigate to **Storage Resources | MediaAgents**.
- 2. Right-click the <**Proxy MediaAgent**>, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name box, type srmandatafilecopy.
- 6. In the Location box, type or select OracleAgent from the list.
- 7. In the **Type** box, select **REG_SZ**.
- On Unix clients, select Value.
- 8. In the Value box, type **Y** and then click **OK**.

RMAN incremental backups will not be possible if we set this registry key as we use BACKUP DATAFILECOPY syntax in this case.

	rties					
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RESTORING DATA FROM BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy precedence number. Use the following steps to restore the data from backup copy using the File System backup:

RESTORE DATA FROM BACKUP COPY USING FILE SYSTEM

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **|** <*Agent>*.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks | Browse Backup Data.**
- 3. Click OK.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- 7. In the **Copy Precedence** box, type the copy precedence number for the backup copy.
- 8. Select the General tab.
- 9. Select the Use File System Restore checkbox.
- 10. Click OK.

Advanced Restore Options	
Startup Roll-Forward Log Files Re Copy Precedence Data Path	edirect Alert Encryption
Do not change the copy precedence if you have browsed the backup data as changing the prece- may result in unpredictable results.	
Copy Precedence	
ОК Са	ncel Help

RESTORE DATA FROM BACKUP COPY USING RMAN

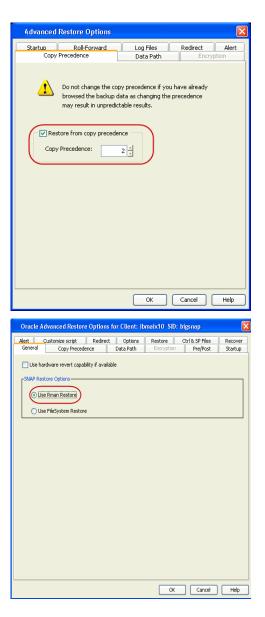
Use the following steps to restore the data from backup copy using RMAN. Refer Advanced Restore - Oracle iDataAgent for regular restore operations.

 From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.

User Guide - SnapProtect

- 2. Right-click the entity that contains the snapshots you want to restore, and point to All Tasks | Browse Backup Data.
- 3. Click **OK**.
- From the Browse window, select the data you want to restore in the right pane and click Recover All Selected.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- 7. In the **Copy Precedence** box, type the copy precedence number for the backup copy.

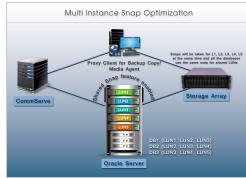
- 8. Click the General tab.
- 9. Select the Use RMAN Restore checkbox.
- 10. Click **OK**.



ORACLE MULTI INSTANCE SNAP OPTIMIZATION

During a SnapProtect backup, snapshots will be created for each LUN associated with a database. Snapshots will be created even when multiple database instances share one or more LUNs. In such a case, the shared LUNs will be backed up multiple times - once as part of every instance using the LUN. When you enable the optimization and group all instances that share a set of LUNs into a single schedule policy, each shared LUN will be backed up only once. This will reduce the number of snapshots on the storage, thus saving time and storage resources.

Since multiple databases use one set of snapshots for backup, you can revert all the LUNs and databases in a single revert job. Without this optimization, reverting one database may corrupt data files of another database that shares the LUN(s).



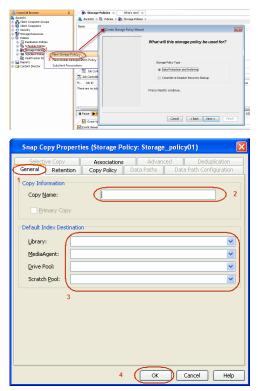
CONFIGURING MULTIPLE INSTANCES USING A SHARED STORAGE ON A CLIENT

Follow the steps given below to configure multiple instances using a shared storage on a client:

1. Ensure that you have installed the Oracle *i*DataAgent and MediaAgent on all the source and proxy clients. See Oracle *i*DataAgent and MediaAgent deployment for

step-by-step procedure on how to install the oracle iDataAgent and MediaAgent.

- 2. Configure the client and instance using the steps described in Getting Started Oracle Configuration. Ensure that you perform a manual discovery of instances.
- 3. Create a storage policy to perform SnapProtect operations. See Create a Storage Policy for step-by-step instructions for creating a storage policy. See Create a Snapshot Copy to enable a snapshot on the copy.



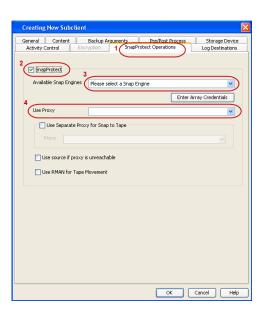
- 4. Create a schedule policy to perform SnapProtect operations. See Creating an Agent-Specific Data Protection Schedule Policy for step-by-step instructions.
- 5. Create and configure a new subclient manually as follows:
 - From the CommCell Browser, navigate to **Client Computers** | <*Client>*| **Oracle**.
 - Right-click the *<Instance>*, point to **All Tasks**, and then click **New Subclient**.
 - $\circ~$ In the Subclient name box, type the subclient name.
 - Click the SnapProtect Operations tab.
 - Click SnapProtect option to enable SnapProtect backup for the selected subclient.
 - Select the storage array from the Available Snap Engine drop-down list.
 - By default, the system will perform a File System backup copy. Select Use RMAN Movement to Tape if you want to use RMAN backup copy.

If you are using NoArchiveLog mode Database, do not select Use RMAN Movement to Tape.

• Select the proxy client from the **Use Proxy** drop-down list.

See Configuring Proxy for RMAN Backup Copy, if you want to use a proxy for RMAN backup copy.

- Select the storage policy from the storage device tab of the subclient created for snaps.
 - From the CommCell Browser, navigate to Client Computers |
 Client>| Oracle | <Instance>.
 - $\circ~$ Right-click the subclient created for snaps and then click $\mbox{Properties}$
 - Click the **Storage Device** tab.
 - o In the Data Storage Policy list, select a Storage Policy name.
 - $\circ~$ Click ${\bf OK}$ to convert the next backup as a full backup.



- O Click OK.
- You must create and configure a subclient as shown in step-5 for all the instances included in the shared storage on a client.

Once the subclients for snaps are created for other instances, you must assign a storage policy as shown in step-6 to them.

Add all the subclients that are included in this shared storage environment to the schedule policy.

See Automatic Subclient Creation and Configuration to automatically create and configure subclients using the qscripts.

- 9. Ensure that all the following additional requirements are satisfied on all the clients for successful snap or clone operations in a shared LUN environment:
 - All the subclients of a client in the same schedule policy should use the same storage policy.
 - $\circ\;$ All the subclients of a client in the same schedule policy should use the same proxy client.
 - Use the sMULTIAPPCONSISTENTSNAP registry key set to Y on all the clients to perform a snap for multiple databases in the same job.
 - Configure the nDECLUSTER_LVM registry key on all the nodes and Proxy machine if cluster is configured and set it to 1.
 - If the storage array is EMC clariton or EMC Symmetrix, use the SYMAPI_HOME_DIR registry key to the directory where the Symmetrix SYMAPI library is present on all the clients and restart the Calypso services. In case of EMC Symmetrix, all the source devices should be in the same device group for consistency.
 - Enable the bConsistentActivate registry key on all the clients , if the array is EMC clariion or EMC Symmetrix. For Symmetrix storage array, you can enable the bSymmSmartClone, if you do not want to wait till the background copy completes for clone.
 - REDO Log for No archive log database should be on the volume for which snap should be supported.
 - Data and log volumes should not be shared and each database should have unique paths on the volumes like /data/db1, /data/db2, /log/db1, /log/db2 etc.
 - Execute the following Qscript to enable the multi instance snap optimization:
 qoperation execscript -sn SetKeyIntoGlobalParamTbl.sql -si

EnableOracleMultiInstanceSnap -si y -si 1

For clone operations, perform the following in addition to the above configuration:

- While creating a new subclient, select the clone engine from the Available Snap Engine drop-down list in the SnapProtect Operations tab.
- Create a separate schedule policy for clone operations.

AUTOMATIC SUBCLIENT CREATION AND CONFIGURATION

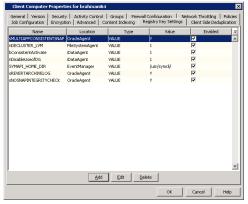
• Once the instances are created or discovered, execute the following QScript to create and configure the subclients:

qoperation execscript -sn OraMultiDBCGSnapConfig -si <ClientComputerGroup> -si <hourly/snap schedule policy> -si <daily/clone schedule policy> -si <y/n> (FullScan)

ARGUMENTS

Client Computer Group	Create one client group and add all the clients for which snap/clone jobs will be performed
Hourly/snap schedule policy	Create hourly schedule policy which will be used to run snap jobs for every hour

Hourly-Snap-Schedule
General Associations Alert
View Edit
□ ✓ aratmani64 ▲ □ ✓ oracle Database ● □ +ASM □ AMFAM ⊕ ○ on Demand Instance ⊕ ○ on Demand Instance
Select All Clear All
OK Cancel Help



Daily/clone schedule policy	Create daily schedule policy which will be used to run clone jobs once for daily.
	If the value is "n", then it is incremental scan and as part of incremental scan it will check only newly created/discovered instances. subclients will be created for them only. Otherwise it will check all the instances in that client group and create subclients if any instance do not have the required subclients.

When you execute the script, the system will check all the instances in that client group and perform the following steps:

1. If the subclients are not already created, it will create the following two subclients for snap and clone correspondingly:

```
<instancename>_snap
```

<instancename>_clone

- 2. It will assign EMC TimeFinder Snap Snap Engine to <instancename>_snap subclient and EMC TimeFInder Clone to <Instancename>_clone subclient. See Modify Snap Engine for a subclient section to change the Snap Engine.
- 3. By default, the system will perform a File System backup copy. Use RMAN Movement to Tape is also selected for these subclients.

If you are using NoArchiveLog mode Database, disable Use RMAN Movement to Tape.

It will add all the snap subclients(<instancename>_snap) to hourly schedule policy and all clone subclients(<instancename>_clone) to daily schedule policy.

If you want to exclude instances from creating subclients and associating them to shared schedule policy, update the instance description with **exclude with cvsnap schedule**. Then the above script will not create subclients for those instances. See **Update instance description** to change the instance description using command line.

Once you execute the script, assign the storage policy and proxy client to all the subclients using the CommCell Console or command line.

Example:

Executing configuration script:

[root@brahmani64 Base]# ./qoperation execscript -sn OraMultiDBCGSnapConfig -si CVLT -si hourly -si daily -si n
QScript[OraMultiDBCGSnapConfig] CS[leonard64] DB[CommServ] Source[SQL File]

Qscript Output:

```
Changed database context to 'CommServ'.
Created snap subclients for:
Client [brahmani64] Instance [par1]
Client [brahmani64] Instance [par2]
OraMultiDBCGSnapConfig completed at Aug 8 2012 11:48PM. ErrorCode (0).
Oscript Execution Succeeded!
```

MODIFY SUBCLIENT USING COMMAND LINE

Download the update_subclient_template.xml file and save it on the computer from where the command will be executed.

ASSIGN A STORAGE POLICY TO A SUBCLIENT

Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameters and attributes.

qoperation execute -af update_subclient_template.xml -clientName brahmani64 -instanceName par1 -subclientName par1_snap storagePolicyName snapSP

ASSIGN A PROXY TO A SUBCLIENT

Make sure that the proxy is configured correctly before assigning a proxy to a subclient.

- Refer Configuring Proxy for RMAN Movement to Tape.
- Install the File System and MediaAgent for FS Movement to tape.

Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameters and attributes.

qoperation execute -af update_subclient_template.xml -clientName brahmani64 -instanceName par1 -subclientName par1_snap storagePolicyName snapSP -snapToTapeProxyToUse/clientName dbcs

DISABLE USE RMAN MOVEMENT TO TAPE

You must disable Use RMAN movement to tape for NOARCHIVELOG databases.

Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameters and attributes.

qoperation execute -af update_subclient_template.xml -clientName brahmani64 -instanceName par1 -subclientName par1_snap storagePolicyName snapSP -snapToTapeProxyToUse/clientName dbcs -isRMANEnableForTapeMovement false

MODIFY SNAP ENGINE FOR A SUBCLIENT

Download the update_snapengine_template.xml file and save it on the computer from where the command will be executed.

Execute the following command from the <Software_Installation_Directory>/Base folder after substituting the parameters and attributes.

qoperation execute -af update_snapengine_template.xml -clientName brahmani64 -instanceName par1 -subclientName par1_snap storagePolicyName snapSP - snapShotEngineName "EMC CLARiiON Snapview Snap"

UPDATE INSTANCE DESCRIPTION

Execute the following command to change the instance description after substituting the parameters and attributes:

[root@brahmani64 Base]#./qoperation execscript -sn SetOracleInstanceProperties.sql -si brahmani64 -si 'Q_ORACLE' -si par1
-si 'User Description' -si 'exclude from cvsnap schedule' -si 1

CONFIGURING PROXY FOR RMAN BACKUP COPY

When you configure a proxy for RMAN backup copy, make sure to satisfy the following requirements:

- Make sure that the data, log, diag, FRA and all the dump directories on the proxy are identical to the source.
- Oracle gid and uid should match the source computer's oracle user.
- Oracle instances on the proxy should be configured similar to those at source and should be in started mode. You need to configure the instances on the CommCell console.
- You can also use sRMANDATAFILECOPY registry key for RMAN backup copy. See RMAN Backup Copy Operationsns for more information.

SNAPPROTECT BACKUP FOR MULTIPLE INSTANCES

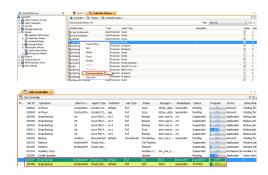
A snap or clone operation is performed for all the instances at the same time in a shared LUN environment using the schedule policy created specifically for this purpose. You can perform a snap or clone operation immediately or at a scheduled time.

When you perform a SnapProtect backup or a clone operation, the system performs the following:

- A single job among multiple jobs will be selected and this job becomes the master job.
- Master job will collect all the data mount points for all the databases which are included in the schedule policy and performs the following:
 - If the database is in archive log mode and open, it will be change it to a hot backup mode. This will be performed for all the archive log databases.
 - If the database is in noarchive log mode and open, it will completely depend on consistent option provided by snap engine and will also take a snap for REDO log location.
 - $\,\circ\,$ If the database is noarchive log DB, it will not change the database to a hot backup mode..
 - $\circ~$ If one of the databases is down or in started mode, it will skip that database for snap operation.
- SnapProtect will be performed for all the data mount points at the same time. After Snap operation, the databases are changed from hot backup mode.
- Master job switches the log for archive log DB and will take the backup of controlfile to archive log location or data file location for archive log DB and No
 archive log DB correspondingly.
- Similar to data, all the mount points for log will be collected and snaps will be performed.
- Once archive indexing is completed, the master job is marked as complete.
- Once the master job is completed, all the other jobs will continue and verify whether the snaps are already taken. If they know that the snaps are already taken, they just clone the archive files, perform archive index and completes the job.

Use the following steps to perform a SnapProtect backup:

- 1. From the CommCell Browser, navigate to Policies | Schedule Policies.
- 2. Right-click the <Schedule Policy> in the right pane and click Run Immediately.
- You can track the progress of the job from the Job Controller window of the CommCell console.



 Once the job is complete, view the job details from the Backup History. Right-click the Schedule Policy and select View Jobs. 5. Click **OK**.

- 6. Right-click the job to:
 - Browse the databases that were backed up.
 - List Snaps
 - View RMAN Logs.
 - Resubmit the job.
 - View job details.
 - View media associated with the job.
 - View events associated with the job.
 - View or send the log file that is associated with the job.

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SCHEDULING A SNAPPROTECT BACKUP FOR ALL THE INSTANCES IN A SHARED LUN ENVIRONMENT

Use the following steps to schedule a SnapProtect backup for all the instances in a shared LUN environment:

- From the CommCell Browser, navigate to Policies | Schedule Policies.
 - Right-click the <**Schedule Policy**> in the right pane and click **Edit**.

🛐 symm1 🗙 🎆 Schedule	Policies 🗙 🔮	Backup Jol	b History of Vie \times
👗 leonard64 > 🕕 Policies > 🎼	Schedule Policies	; >	
Total Schedule Policies: 48			
Schedule Policy	Туре	Agent Typ	e
🚯 3par_brahmani64	Data Protection	Oracle	
AdvancedDelete	Data Protection	Oracle	
🚯 AMFAM	Data Protection		
🚯 BOL-demo	Data Protection		1
🚯 brahmani	Create Policy	'	
🚯 brahmani64_AMFAM	Edit		
🚯 brahmani_regular	Delete		
🎼 brhmani_log	Clone		
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db2	Enable		Unix
•	Decouple		
Job Controller ×	Run Immedia	ately	
Job Controller	View Jobs		

2. Click Add button.

1.

3.

- Click the Backup Options tab.
 - Click Full.

Select the appropriate scheduling options. 4.

For example:

- Click Daily.
- Check the days you want to run the SnapProtect backup job.
- Change the Start Time to 9:00 PM.
- Click Options.

Name BOL-demo Туре Data Protection Agent Type Oracle Description Tasks Schedule N... Job Type Pattern Time Zone Every week on Sunday at 9:... (UTC-05:00) ... Full Add Edit Delete Cancel Help OK Backup Task Options Schedule Pattern Backup Options Select Backup Type Full Incremental Orade Incremental Level 1 2 Cumulative

BOL-demo

General Associations Alert

OK Cancel Advanced Help

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Backup Task Option	5				83
Schedule Pattern Back	up Options				
Schedule Name					
One Time					
	Start Time	9:00 PM			
Daly					
Weekly					
Monthly					
Yearly					
	On these days	Monday	Tuesday	Vednesday	
		Thursday	Friday	Saturday	
		Sunday			
				Options>>	1
					-
			OK	Cancel Advanced I	Help

5. Select the appropriate advanced schedule options.

For example:

- Click Start date.
- Select the end dates or times after which you want the stop the scheduled job.
- Change the Repeat Times.
- Specify the **Time Zone** for the schedule.
- Click OK.

Advanced Schedule Options
Range of recurrence
Start Wed 07/11/2012
Never End
C End By Fri 08/10/2012
C End After 05 time(s)
Repeat
Every 1 × Day(s)
Repeat every
Time Zone: (UTC-05:00) Eastern Time (US & Canada)
OK Cancel Help

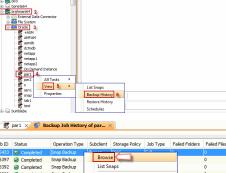
- Click **OK** to close the **Backup Task Options** dialog box.
 - Click **OK** to close the **Scheduled Policy** dialog box.
 The SnapProtect backup job for instances in a shared storage will execute as per
 - the schedule.

RESTORING A DATABASE OR DATAFILES /TABLE SPACES FROM A DATABASE

You can restore each database or some of the datafiles/table spaces from one database on a client.

Use the following steps to restore a database:

- 1. From the CommCell Browser, navigate to **Client Computers |** *Client>* **| Oracle**.
- 2. Right-click the <*Instance*>, point to View and then click Backup History.
- 3. In the Backup History Filter for <Instance> dialog box, click **OK**.



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- 4. Right-click the SnapProtect job you want to restore and click **Browse**.
- 5. In the Browse Options dialog box, click OK.

Job ID	Status	Operation Type	Subdient	Storage Policy	Job Type	Failed Folders	Failed Files
106433	Completed	Snap Backup			le a	10 M	0
106397	Completed	Snap Backup	Brows	ie			0
106392	Completed	Snap Backup	List Sr	naps			0
106390	Completed	Snap Backup	Find				0
106372	Completed	Snap Backup	Manual	RMAN Log			0
106353	Completed	Snap Backup					0
106349	Completed	Snap Backup	Resub	mit Job			0
106345	Completed	Snap Backup	View.	lob Details			0
106341	🎯 Killed	Snap Backup	View	Media			0
106339	Completed	Snap Backup	View	Events			0
106334	Completed	Snap Backup		Content Index			0
106306	Completed	Snap Backup			,		0
106284	🥝 Failed to Star	t Backup	View	Backup Copy fil	e listing		0
106264	Completed	Snap Backup	View	Logs			0
106227	Completed	Snap Backup	View	Stub file list			0
106225	Completed	Snap Backup		Data Verification	Panaut		0
106169	😵 Failed	Snap Backup			ritepoit		0
106114	Completed	Snap Backup	Send	Logs			0
106082	Completed	Snap Backup	dbsnap	9815	Full	0	0
106046	Completed	Snap Backup	dbsnap	9815	Full	0	0
105005	Completed	Snan Rackun	dhsnan	9815 III	Incremental	0	0

 In the right pane of the Browse window, select an entire instance or the datafiles or tablespaces you want to restore and click **Recover All Selected**.

urrent Selected: SID: par 1 (Subdier	-		
Orade	SName		Type
AMFAM	SYSALX		Tablespace
⊕ asmdb	SYSTEM UNDOTBS1		Tablespace Tablespace
dctmdb			
Inetapp	USERS		Tablespace
⊕- □ netapp1 ⊕- □ netapp2			
netapp2			
On Demand Instance Sec 1			
H- SYSALD			
E- SYSTEM			
Image: Contract of the second seco			
USERS Jar2			
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⊕-□ sen1			
⊕- □ sen1 ⊕- □ snap			
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Oracle Advanced Resto	re Options for Client: brahmani	64 SID: par1	-×
	ecedence Data Path	Encryption Pre/Post	Startup
Alert Customize scrip	t Redirect Options	Restore Ctrl & SP Files	Recover
Time Zone: (UTC-	05:00) Eastern Time (US & Canada	2	•
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Reset Logs	No Re-do Logs		
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(D)

- 7. In the Restore Options dialog box, click Advanced.
- 8. Click the **Options** tab.
- 9. Select **None** from the **Reset Logs** list.

For No archive log database, select **Yes** from the **Reset Logs** list as the restore will always be Point-in-time restore and REDO logs which were existing in snap/clone will only be applied. You should perform a full database restore for no archive log database.

- 10. Select Switch Database mode for Restore check box.
- 11. Click OK.

REVERT FROM A SNAPPROTECT JOB

If you perform a revert from a SnapProtect job from a schedule policy, it will revert all the databases which were snapped in that SnapProtect backup job to the same point-in-time. Ensure that you have performed a SnapProtect backup for all the databases which share the same LUNs.

Ensure that both the data and log volumes are reverted for successful revert operation. By default, the data volumes only are reverted. Perform the following to revert the log volumes also in addition to data volumes:

- 1. From the CommCell console, navigate to Client Computers | <Client>
- 2. Right-click the <*client*>, and then click Properties.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name box, type sREVERTARCHIVELOG.
- 6. In the Location box, type or select OracleAgent from the list.
- 7. In the Type box, select Value.
- 8. In the Value box, type Y and then click OK.

Use the following steps to revert a SnapProtect job:

- 1. From the CommCell Browser, navigate to Client Computers | <Client> | Oracle.
- Right-click the <Instance>, point to All Tasks and then click Browse Backup Data.
- 3. From the Browse Options dialog box, click OK.
- 4. Select the data you want to revert and click Recover All Selected.

Even if you select one instance, it will revert all the databases that are included in the SnapProtect job.

- 5. From the Restore Options dialog box, select Restore Control File.
- 6. Click Advanced.



7. Select the Use hardware revert capability if available option.

A warning message displaying that the oracle multi instance snap optimization feature is enabled and selecting hardware revert option will result in restoring all the instances which are included in the shared snapprotect backup. The message informs you that the hardware revert can only be performed in-place and it will be automatically selected. The message will also warn you that the selection of revert option will overwrite the entire disk and all the existing data will be lost. Select **Yes** if you still want to continue. Select **No** if you do not want to continue.

estination Client: brahm	ni64 💌 Numb	er of streams to use for restore:
Catalog Connect: sna	p /	@ test
Restore Control File	☐ Restore Archive Log ☐	Restore SP File
🔽 Restore Data	Recover	Duplicate DB
NO CATALOG	🖵 Use Snap Restore	
The latest Database View par1		
Status: OPEN	Refresh	New Browse

Alert Gene	
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9	Use Rman Restore
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Warr	ning ×
Walt	Oracle Multi Instance Snap Optimization feature is enabled.
•	Selecting Hardware Revert option will result in restoring all the instances part of Shared Snap Backup. Hardware revert will overwrite the entire disk. All existing data will be lost be you really want to continue Yess No
	OK Cancel Help
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8. Click **Options** tab.

- 9. Select Yes from the Reset Logs list.
- 10. Select Switch Database mode for Restore.
- 11. Click **OK** to confirm the revert operation.
- 12. Click **OK** from the **Advanced Restore Options** dialog box.
- 13. Click **Script Preview** to verify the instances that are being reverted in the current revert operation.
- 14. Click **OK** to start the revert operation.

if the database is in mount mode while taking a SnapProtect backup, then the same status is preserved even after the revert operation.

Once a revert is completed, resync the catalog using RMAN to register the new incarnation.

Example:

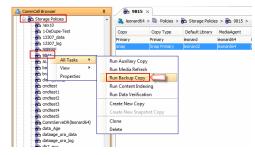
[oracle@brahmani64 ~]\$ export ORACLE_SID=par2 [oracle@brahmani64 ~]\$ rman target / catalog snap/snap@test Recovery Manager: Release 10.2.0.4.0 - Production on Fri Jul 13 10:04:19 2012 Copyright (c) 1982, 2007, Oracle. All rights reserved. connected to target database: PAR2 (DBID=1259990815)

```
connected to recovery catalog database
RMAN> resync catalog;
starting full resync of recovery catalog
full resync complete
RMAN>
```

BACKUP COPY FOR MULTIPLE INSTANCES USING A SHARED STORAGE ON A CLIENT

Once the SnapProtect jobs are completed, you can perform or schedule backup copy jobs. You can run parallel backup copy for all the SnapProtect jobs which are performed using a schedule policy in one operation. In case of parallel backup copy, mount all the snaps in the first backup copy job itself. The other jobs will use these mount points and backup their corresponding databases.

- 1. From the CommCell Browser, navigate to Policies | Storage Policies.
- Right-click the <*Storage Policy*> in the right pane, point to All Tasks and click Run Backup Copy.
- 3. Select Number of simultaneous jobs to run from the list.
- 4. Click Job Initiation tab.
- Select Immediate to perform the backup copy job. You can also click Schedule to perform the job at a scheduled time.
- 6. Click OK.



Backup Copy For 9815
Backup Copy Options Job Initiation
Select a Storage Policy 9815 v
No of Jobs to Run :
No of Simultaneous Jobs to run
C Allow Maximum
Media
Start New Media
Mark Media Full On Success
Cancel Advanced 🕑 Save As Script Help

See Backup Copy Operations and Restoring Data from Backup Copy for more information on backup copy operations.

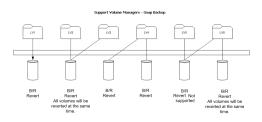
SUPPORTED VOLUME MANAGERS

- Logical Volume Manager
 - $\circ~$ All versions supported on AIX and Linux
 - Versions 1.0 and 2.x supported on HP-UX
- VERITAS Volume Manager (VxVM) 5.0 for AIX, Linux and Solaris
- Solaris ZFS Mirror
- Solaris Volume Manager

When using the Solaris Volume Manager, ensure that a complete disk is used for a metaset. Also, ensure that the metaset is owned by single host and the ownership of the metaset is attained before performing the SnapProtect backup operations.

Supported Configurations:

- One Physical Volume containing one Logical Volume
- One Physical Volume containing one or more Logical Volumes
- Multiple Physical Volumes containing one Logical Volume



• Multiple Physical Volumes containing one or more Logical Volume

The adjacent diagram summarizes the Volume Manager support for SnapProtect backup.

OPTIONS NOT APPLICABLE FOR ORACLE SNAPPROTECT

The following options do not apply to SnapProtect backup for Oracle *i*DataAgent:

DIALOG BOX	TABS/OPTIONS NOT APPLICABLE
Advanced Backup Options	Delete Archive Logs tab
dialog box	Custom RMAN Script tab
	Customize Script
Subclient Properties dialog box	Archive Delete option in Content tab
	Log Destinations tab
	 Select ArchiveLog Destinations for Delete
	Backup Arguments tab (applicable for RMAN backup copy)

OPTIONS NOT APPLICABLE FOR ORACLE SNAP RESTORE

The following options do not apply to snap restore for Oracle *i*DataAgent:

DIALOG BOX	TABS/OPTIONS NOT APPLICABLE
Oracle Restore Options dialog	General tab
box	• Duplicate DB
	Script Preview
Advanced Restore Options	Customize Script tab
dialog box	Redirect tab
	Restore tab
	 Restore Archive Log By Log Time
	 Restore Archive Log By Log Serial Number
	 Restore Archive Log to Target Directory
	Options tab
	o Set DBID
	 Max Open Files (applicable for RMAN backup copy)
	o Validate
	 Disable Oracle Channel restore Failover

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
SCSI Reservation	SCSI reservation can be enabled for SnapProtect backup for all the agents. Use the registry key nSCSIReserveForSnap to enable SCSI reservation. Enabling SCSI Reservation prevents other applications (SCSI3 compliant) from using the reserved SCSI Device (i.e. the mounted snapshot).	For more information on registry keys, Registry keys
	If this option is enabled and the hardware does not support this type of operation, subsequent data protection jobs may fail.	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it. Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.	For more information on using the Pre/Post commands, see Pre/Post Processes.
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity. 1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	 The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client. 	

Select a Job for Backup Copy	3. Right-click the snapshot and click Details to view the snapshot properties. You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs .	
	2. Right-click the job and then click Pick for Backup Copy .	
Сору	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs .	
	2. Right-click the job and then click Do not Backup Copy .	
Offline Snap Copy Job Summary Report	moving snapshots to media.	See Backup Copy Job Summary Report for more details

Back to Top

Advanced - Microsoft SQL Server SnapProtect[™] Backup

TABLE OF CONTENTS

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert a Snapshot Snap Reconciliation

Restoring Data from a Backup Copy

Additional Options

MANAGING SNAPSHOTS

The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, delete, or revert.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- From the CommCell Browser, navigate to Client Computers | <Client> | SQL Server.
- 2. Right-click *<Instance>* and click **All Tasks** | **List Snaps**.
- The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the SQL Agent. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.
 - Click the **Disk View** tab to display the snapshot name, e.g. SP_2_79_1286222629.

Source Cli Source Path Mount Host Mount Path Applicatio Job ID hasteam4 /vol/ vol2 nasteam4 NAS NDMP 19 nasteam4 /vol/ vol2 nasteam4 NAS NDMP 7		Disk View					
nasteam4 /vol/ vol2 nasteam4 NAS NDMP 18	Source Cli	Source Path	Mount Host	Mount Path	Applicatio	Job ID	¥
	nasteam4	/vol/ vol2	nasteam4		NAS NDMP	19	^
asteam4 (vol/vol2 nasteam4 NASNDMP 7	nasteam4	/vol/ vol2	nasteam4		NAS NDMP	18	
	nasteam4	/vol/vol2	nasteam4		NAS NDMP	7	

MOUNT SNAPSHOTS

You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | **SQL** Server.
- 2. Right-click < Instance> and click All Tasks | List Snaps.
- 3. Right-click the snapshot that you wish to mount and click Mount.
- 4. Click Yes.
- 5. In the **Mount Path** dialog box, specify the destination client and the path on the client in the **Destination Client** and **Destination Path** fields.

On a Windows platform, enter a CIFS Share Name for the Agent.

- If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select Protect Snapshot during mount.
- 7. Click **OK**.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.

	/vol/vol2	nas			Applicatio	Job ID	¥
nasteam4	1.11.1.1		team4		NAS NDMP	19	^
	/vol/c	Mount	•	1	hurren	18	
nasteam4	/vol/g					7	
		Use ha	dware rev	ert capability if	available		
		Delete					
		Detail					

UNMOUNT SNAPSHOTS

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | **SQL** Server.
- 2. Right-click < Instance> and click All Tasks | List Snaps.
- 3. Right-click the snapshot you wish to unmount and click **Unmount**.
- 4. Click **Yes** when prompted if you want to continue.

If the snapshot does not get unmounted, select the **Force Unmount** option to mark the snapshot as unmounted.

Source Cli	Source Path	Mou	int Host	Mount Path	Applicatio	Job ID	¥
asteam4	/vol/ vol2	naste	eam4		NAS NDMP	19	^
asteam4	/vol; vol2	naste	eam4		NAS NDMP	18	
asteam4	/vol vol2	naste			MAS NDMP	7	
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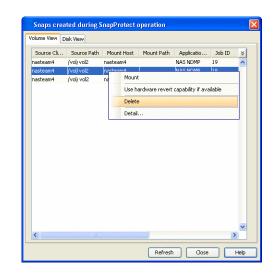
DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to perform data recovery operations from the snapshot copy. However, if a backup copy was created from the snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- From the CommCell Browser, navigate to Client Computers | <Client> | SQL Server.
- 2. Right-click < *Instance* > and click All Tasks | List Snaps.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same **Job ID** are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click OK.



REVERT A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

Review the following before performing a revert operation:

- RevertSnapVolume has been set to 1.
- Ensure that the archived redo log files and their mirror log files reside on the same array volume.
- When using HP EVA Clone or Data Replicator for SnapProtect backup, the revert operation is not supported.
- Revert operations are not supported on Windows clustered disks.
- All the databases on a volume must be backed up using SnapProtect backup, failing which the revert operation will make the data inconsistent.

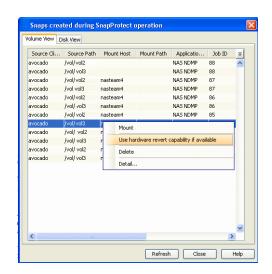
- All the databases on a volume must be selected for the revert operation. Also, the databases must be backed up using a single SnapProtect backup job.
- Ensure that the **Unconditionally Overwrite** restore option is selected for SQL Server *i*DataAgent. If this option is not selected, restores of SnapProtect backup data will fail.
- After performing a revert operation, you must restart the SQL Server service so that the databases are re-linked to the data files.
 - It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.
 - If you plan to perform a revert operation, you will not be able to use the associated storage policy for further auxiliary copy operations.

PERFORM AN APPLICATION AWARE REVERT

- 1. From the CommCell Browser, right-click the entity that contains the data you want to restore, and click All Tasks | Browse Backup Data.
- 2. From the Browse Options dialog box, click OK.
- 3. Select the data you want to revert and click Recover All Selected.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.
- 7. Click OK from the Advanced Restore Options dialog box.
- 8. Click **OK** to start the revert.
 - An application aware revert operation reverts back all the volumes included in the backup.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the application.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you
 are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the
 SnapVault/SnapMirror copy operation no longer works.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to Client Computers | < Client >.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.
- 4. Enter the confirmation text string, confirm.
- 5. Click **OK**.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.



SNAP RECONCILIATION

Snapshots may be deleted from the array due to factors like low disk space on the array, number of snapshots exceeds the threshold etc., and the jobs corresponding to these deleted snapshots can no longer be used for any data recovery or backup copy operations. You can use the nRunSnapRecon registry key to start snap reconciliation to check for missing snapshots once in every 24 hours and marks jobs corresponding to the missing snapshots as invalid.

RESTORING DATA FROM A BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy

precedence number.

- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **|** *Agent>***.**
- 2. Right-click the entity that contains the snapshots you want to restore, and point to All Tasks | Browse Backup Data.
- 3. Click **OK**.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- 7. In the ${\bf Copy\ Precedence\ box,\ type\ the\ copy\ precedence\ number\ for\ the\ backup\ copy.}$
- 8. Click **OK**.
- 9. Click **OK** to close the **Restore Options** window and start the restore job.

Advanced Restore Options			×			
Startup Roll-Forward	Log Files	Redirect	Alert			
Copy Precedence	Data Path	Encry	ption			
Do not change the copy precedence if you have already browsed the backup data as changing the precedence may result in unpredictable results.						
Copy Precedence:						
	ОК	Cancel	Help			

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
SCSI Reservation	SCSI reservation can be enabled for SnapProtect backup for all the agents. Use the registry key nSCSIReserveForSnap to enable SCSI reservation. Enabling SCSI Reservation prevents other applications (SCSI3 compliant) from using the reserved SCSI Device (i.e. the mounted snapshot).	For more information on registry keys, Registry keys
	If this option is enabled and the hardware does not support this type of operation, subsequent data protection jobs may fail.	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it.	For more information on using the Pre/Post commands, see Pre/Post Processes.
	Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.	
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity.	
	1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	2. The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client.	
	3. Right-click the snapshot and click Details to view the snapshot properties.	
Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs .	
	2. Right-click the job and then click Pick for Backup Copy .	
Disable a Job for Backup Copy	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs .	
	2. Right-click the job and then click Do not Backup Copy .	
Offline Snap Copy Job Summary Report	Offline Snap Copy Job Summary Report provides job summary details of backup copy jobs for moving snapshots to media.	See Backup Copy Job Summary Report for more details

User Guide - SnapProtect

Back to Top

Advanced - NAS SnapProtect[™] Backup

TABLE OF CONTENTS

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert Snapshots

Restoring Data from a Backup Copy

Restricting the Number of Backup Jobs Running on a File Server

Enabling for all Clients Enabling for A Specific Client Additional Operations

Data Aging for SnapProtect Snapshots

Retention by Number of Jobs Retention using Spool Copy

Additional Options

MANAGING SNAPSHOTS

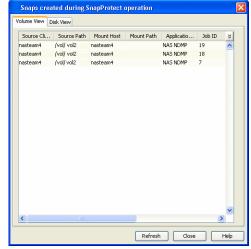
The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, delete or revert.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected subclient. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the Disk View tab to display the snapshot name, e.g. SP 2 79 1286222629.

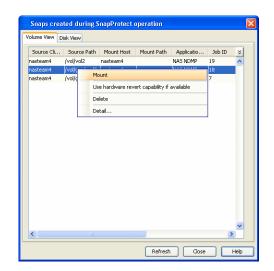


MOUNT SNAPSHOTS

You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to mount and click Mount.
- 4. Click Yes.
- 5. Specify the destination client and the path on the client in **Destination Client** field.
- 6. Enter a CIFS Share Name.
- 7. Click OK.
- 8. Click OK to close the Subclient Properties dialog box.

The mounting of snapshots is supported for Unix MediaAgents if NetApp volume security model is a Unix type.



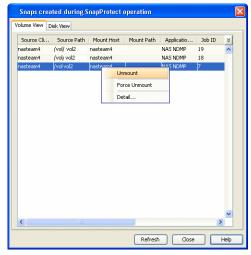
UNMOUNT SNAPSHOTS

3.

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click **List Snaps**.
- Click Yes when prompted if you want to continue.
 If the snapshot does not get unmounted, select the Force Unmount option to mark the snapshot as unmounted.

Right-click the snapshot you wish to unmount and click **Unmount**.



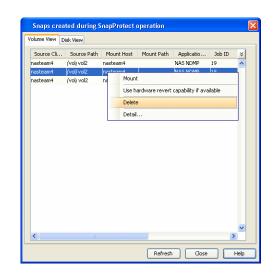
DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to
 perform data recovery operations from the snapshot copy. However, if a backup copy was created from the
 snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- 1. From the CommCell Browser, navigate to Client Computers | < Client> | < Agent>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same **Job ID** are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click OK.



REVERT SNAPSHOTS

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

- It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.
- If you plan to perform a revert operation, you will not be able to use the associated storage policy for further auxiliary copy operations.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to Client Computers | < Client >.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.
- 4. Enter the confirmation text string, confirm.
- 5. Click OK.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

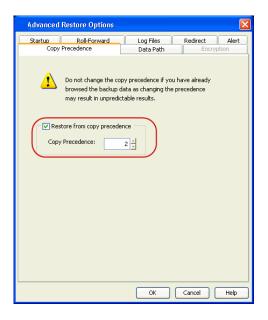
RESTORING DATA FROM A BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy precedence number.

- From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to All Tasks | Browse Backup Data.
- 3. Click OK.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.

Source Cli	Source Path	Mount	Host	Mount Path	Applicatio	Job ID	¥
avocado	/vol/vol2				NAS NDMP	88	^
avocado	/vol/ vol3				NAS NDMP	88	
avocado	/vol/vol2	nasteam	4		NAS NDMP	87	
avocado	/vol vol3	nasteam	4		NAS NDMP	87	
avocado	/vol/vol2	nasteam	4		NAS NDMP	86	
avocado	/vol/ vol3	nasteam	4		NAS NDMP	86	
avocado	/vol/ vol2	nasteam	4		NAS NDMP	85	
avocado	/vol/vol3		1ount			1	
avocado	/vol/ vol2	r .					
avocado	/vol/ vol3	r l	Jse har	dware revert	apability if avai	lable	
avocado	/vol/ vol2	r c	Delete				
avocado	/vol/vol3	r :					-
		L	Detail	•			
							~

- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- In the Copy Precedence box, type the copy precedence number for the backup copy.
- 8. Click **OK**.
- 9. Click ${\bf OK}$ to close the ${\bf Restore\ Options}$ window and start the restore job.



RESTRICTING THE NUMBER OF BACKUP JOBS RUNNING ON A FILE SERVER

You can restrict the number of backup jobs that can run on the file server. The jobs exceeding the number specified will be queued and will be processed as soon as any running job completes.

ENABLING FOR ALL CLIENTS

Use the following command line operations to enable/disable this feature for all clients:

1. To run command line operations, you must first login to the CommServe.

From Command prompt, navigate to <Software_Installation_Directory>/Base and run the following command:

qlogin -cs <commserve name> -u <user name>

For example, to log on to CommServe 'server1' with username 'user1':

qlogin -cs server1 -u user1

2. To enable the restriction of number of backups on a file server.

qoperation execscript -sn SetKeyIntoGlobalParamTbl.sql -si ThrottleJobsFeature -si y -si 1

3. To set the limit the number of backup jobs that can run on a client.

If you want to limit the number of jobs to 5, then <number of jobs> should be replaced by 5 in the command.

qoperation execscript -sn SetLimitRunningJobs.sql -si 'myclient' -si 'DataCount' -si <number of jobs>

ENABLING FOR A SPECIFIC CLIENT

Use the following command line operations to enable/disable this feature for a specific client:

1. To run command line operations, you must first login to the CommServe.

From Command prompt, navigate to <Software_Installation_Directory>/Base and run the following command:

qlogin -cs <commserve name> -u <user name>

For example, to log on to CommServe 'server1' with username 'user1':

qlogin -cs server1 -u user1

- 2. To enable the option to restrict the number of running jobs for a specific client. qoperation execscript -sn SetLimitRunningJobs.sql -si 'myclient' -si 'LimitJobs' -si 1
- 3. To set the limit the number of backup jobs that can run on a client.

If you want to limit the number of jobs to 5, then <number of jobs> should be replaced by 5 in the command. qoperation execscript -sn SetLimitRunningJobs.sql -si 'myclient' -si 'DataCount' -si <number of jobs>

ADDITIONAL OPERATIONS

After logging in to the CommServer, you can perform different operations.

OPERATIONS	COMMAND
Disabling for all Clients	qoperation execscript -sn SetKeyIntoGlobalParamTbl.sql -si ThrottleJobsFeature -si n
Disabling for a Specific Client	qoperation execscript -sn SetLimitRunningJobs.sql -si 'myclient' -si 'LimitJobs' -si O
Enabling the Exclusion of Running Jobs for a Specific Client	qoperation execscript -sn SetLimitRunningJobs.sql -si 'myclient' -si 'Exclude' -si l
Disabling the Exclusion of Running Jobs for a Specific Client	qoperation execscript -sn SetLimitRunningJobs.sql -si 'myclient' -si 'Exclude' -si O
Viewing the Current Setting on a Specific Client	qoperation execscript -sn SetLimitRunningJobs.sql -si 'myclient' -si 'View

DATA AGING FOR SNAPPROTECT SNAPSHOTS

The following procedures describe the available retention configurations for snapshots. For movement to media retention, refer to Data Aging - Getting Started.

RETENTION BY NUMBER OF JOBS

By default, snapshots are pruned based on the number of retention days and cycles specified in the storage policy. You can configure your snapshot copy to retain a defined number of SnapProtect backup jobs. When the total number of jobs goes above the specified retention number, the remaining jobs will be pruned. This configuration is recommended for File System and File System like Agents. This feature is supported for SnapProtect operations performed using the NetApp storage array.

The NetApp Snap Management license is required for retaining snaps by number of jobs.

- From the CommCell Console, navigate to Policies | Storage Policies | < Storage Policy>.
 - Right-click the primary snapshot copy and click **Properties**.

💁 CommCell Browser 🛛 🔍	1 ×			
sg-101		Policies > 💼 Storage Polic	in a line a s	
Glent Computer Groups Glent Computers				1 Hodebook
E Ó Security	Copy Primary	Copy Type Primary	Default Library MagLib-1	MediaAgent sg-101
🗄 💱 Storage Resources 🛛 🔒 🛔	test	Snap Primary	MagLib-1	sg-101
Policies 1		All Tasks 🕨		
Replication Policies Schedule Policies		View >		
Rorage Policies 2 B 1 3	50	Properties		
6				
CommServeDR(sg-101)				
nodfm	🗄 Content 🔂 Sur	nmary		
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VaultTracker Policies Wh Lifecycle Policies		eration Client Com Ag	ent Type Subclient	Job Type Phase
E- G Reports	There are no jobs cur	rently running.		
E Content Director				
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2 💽 Retain Snaps by Number of Jobs				
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C Retain for	15 Days	2	Cycles	
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C Last full backup of time pe				
			5	
		ſ	OK Cano	el Help

Click Retain Snaps by Number of Jobs.

• Click the **Retention** tab.

- Click **OK** to the warning dialog box.
- Specify the number of jobs to be retained for the primary copy.
- Click OK.

1.

2.

RETENTION USING SPOOL COPY

By default, snapshots are aged based on the retention criteria specified in the storage policy. If you do not want the snapshot copy to retain your snapshot data, you can use a spool copy to temporarily retain the snapshots on the primary copy. Once the snapshot data is copied to an active synchronous copy, the

data on the primary copy is aged.

By default, a spool copy has a retention rule of 0 days and 0 cycles. For NAS snapshots, this copy has a retention rule of 0 days and 1 cycle.

- 1. From the CommCell Console, navigate to **Policies | Storage Policies |** *Storage Policy>*.
 - Right-click the primary snapshot copy and click **Properties**.
- Click the **Retention** tab.
 - Click Spool Copy (No Retention).
 - Click OK.

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🛛 💱 Storage Resources 🛛 🔒 🛔	test	Snap Primary	MagLib-1	sg-101	
Policies 1		All Tasks 🕨			
E Schedule Policies		Vew +			
Storage Policies 2	5	Properties			
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Whitecycle Policies		Operation Client Com	Agent Type Subc	lient Job Type	Phase
- Feborts	There are no jobs o	urrently running.			
- 🙀 Content Director					
					100
Snap Copy Properties: Snap Copy	,				×
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General Retention	Data P	Paths	Data Path O	Configuration	
🔽 Enable Data Aging					
(Spool Copy (No Retention)					
	a				
C Retain Snaps by Number of Jobs	24 -				
Basic Retention Rule for All Backups					
C Infinite					
C Retain for	2 Days		2 Cycles		
CRecarrior	2 I Days	J.	2 Cycles		
Extended Retention Rules for Full Ba	ackups				
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For Monthly Full Rule the Month sta	arts on: 1		-		
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For all rules keep the:					
C First ful backup of time pe					
C First ful backup of time pe					
 First full backup of time pe Last full backup of time per 					
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	nod				
	nod		ок	Cancel	Наф

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
Skip Catalog Phase for Snap Backup	This option allows you to accelerate backup jobs by skipping the indexing of snapshot data. When enabled, browse and restore operations should be performed from the backup copy. If other copies are used, the browse and restore operation will not work.	
	You can still mount or revert the snapshot after enabling this option.	
	If you want to perform a browse and restore using a different copy, follow the steps below.	
	1. From the CommCell Browser, navigate to <i>Client></i> NAS NDMP .	
	2. Right click the subclient and click Backup .	
	3. From the Backup Options dialog box, click Advanced .	
	4. Clear the Skip Catalog Phase for Snap Backup checkbox.	
	5. Click OK .	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it.	For more information on using the Pre/Post commands, see Pre/Post Processes.
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity.	
	1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	 The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client. 	
	3. Right-click the snapshot and click Details to view the snapshot properties.	

Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs .	
	2. Right-click the job and then click Pick for Backup Copy .	
Disable a Job for Backup Copy	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs .	
	2. Right-click the job and then click Do not Backup Copy .	
Offline Snap Copy Job Summary Report	Offline Snap Copy Job Summary Report provides job summary details of backup copy jobs for moving snapshots to media.	See Backup Copy Job Summary Report for more details

Back to Top

Advanced - Microsoft Hyper-V SnapProtect[™]Backup

TABLE OF CONTENTS

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert a Snapshot Snap Reconciliation

Restoring Data from a Backup Copy

Data Aging for SnapProtect Snapshots Retention by Number of Jobs

Additional Options

MANAGING SNAPSHOTS

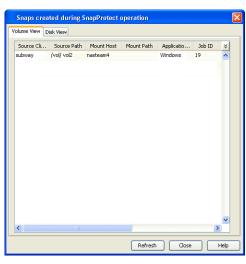
The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, delete, or revert.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to Client Computers | < Client > | < Agent >.
- 2. Right-click the subclient and click List Snaps.
- 3. The **Snaps created during SnapProtect operation** dialog box displays a list of all the snapshots created for the selected subclient. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the **Disk View** tab to display the snapshot name, e.g. SP_2_79_1286222629.



MOUNT SNAPSHOTS

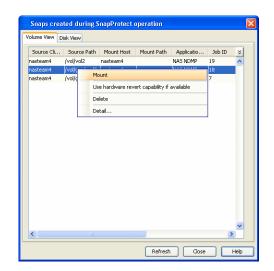
You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to mount and click **Mount**.
- 4. Click Yes.
- 5. In the **Mount Path** dialog box, specify the destination client and the path on the client in the **Destination Client** and **Destination Path** fields.

On a Windows platform, enter a CIFS Share Name for the Agent.

- 6. If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select **Protect Snapshot during mount**.
- 7. Click OK.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.



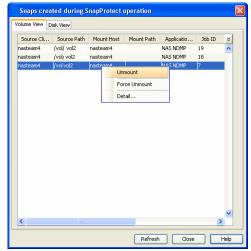
UNMOUNT SNAPSHOTS

3.

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click **List Snaps**.
- Click Yes when prompted if you want to continue.
 If the snapshot does not get unmounted, select the Force Unmount option to mark the snapshot as unmounted.

Right-click the snapshot you wish to unmount and click **Unmount**.



DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to
 perform data recovery operations from the snapshot copy. However, if a backup copy was created from the
 snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.

REVERT A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

Review the following before performing a revert operation:

- Revert operations are not supported on Windows clustered disks.
- When using HP EVA Clone or Data Replicator for SnapProtect backup, the revert operation is not supported.
 - It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.
 - If you plan to perform a revert operation, you will not be able to use the associated storage policy for further auxiliary copy operations.

PERFORM AN APPLICATION AWARE REVERT

- 1. From the CommCell Browser, right-click the entity that contains the data you want to restore, and click All Tasks | Browse Backup Data.
- 2. From the Browse Options dialog box, click OK.
- 3. Select the data you want to revert and click Recover All Selected.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.
- 7. Click OK from the Advanced Restore Options dialog box.
- 8. Click **OK** to start the revert.
 - An application aware revert operation reverts back all the volumes included in the backup.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the
 application.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you
 are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the
 SnapVault/SnapMirror copy operation no longer works.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to Client Computers | < Client >.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.
- 4. Enter the confirmation text string, confirm.
- 5. Click OK.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

Source Cli	Source Path	Mou	nt Host	Mount Path	Applicatio	Job ID	×
avocado	/vol/vol2				NAS NDMP	88	^
avocado	/vol/ vol3				NAS NDMP	88	
avocado	/vol/vol2	naste	am4		NAS NDMP	87	
avocado	/vol vol3	naste	am4		NAS NDMP	87	
avocado	/vol/vol2	naste	am4		NAS NDMP	86	
avocado	/vol/ vol3	naste	am4		NAS NDMP	86	
avocado	/vol/ vol2	naste	am4		NAS NDMP	85	
avocado	/vol/vol3	r	Mount				1
avocado	/vol/ vol2	r					
avocado	/vol/ vol3	r	Use ha	rdware revert	capability if avai	lable	
avocado	/vol/ vol2	г	Delete				-
avocado	/vol/ vol3	r	Detail.				-

SNAP RECONCILIATION

Snapshots may be deleted from the array due to factors like low disk space on the array, number of snapshots exceeds the threshold etc., and the jobs corresponding to these deleted snapshots can no longer be used for any data recovery or backup copy operations. You can use the nRunSnapRecon registry key to start snap reconciliation to check for missing snapshots once in every 24 hours and marks jobs corresponding to the missing snapshots as invalid.

RESTORING DATA FROM A BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy precedence number.

- From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks | Browse Backup Data.**
- 3. Click OK.
- From the Browse window, select the data you want to restore in the right pane and click Recover All Selected.

- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- In the Copy Precedence box, type the copy precedence number for the backup copy.
- 8. Click **OK**.
- 9. Click **OK** to close the **Restore Options** window and start the restore job.

Advanced Restore Options	X
Startup Roll-Forward Copy Precedence	Log Files Redirect Alert Data Path Encryption
	y precedence if you have already ita as changing the precedence able results.
Copy Precedence:	ce 2 -
	OK Cancel Help

DATA AGING FOR SNAPPROTECT SNAPSHOTS

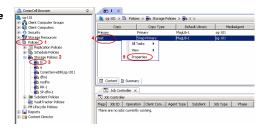
The following procedures describe the available retention configurations for snapshots. For movement to media retention, refer to Data Aging - Getting Started.

RETENTION BY NUMBER OF JOBS

By default, snapshots are pruned based on the number of retention days and cycles specified in the storage policy. You can configure your snapshot copy to retain a defined number of SnapProtect backup jobs. When the total number of jobs goes above the specified retention number, the remaining jobs will be pruned. This configuration is recommended for File System and File System like Agents. This feature is supported for SnapProtect operations performed using the NetApp storage array.

The NetApp Snap Management license is required for retaining snaps by number of jobs.

- From the CommCell Console, navigate to Policies | Storage Policies | <Storage Policy>.
 - Right-click the primary snapshot copy and click **Properties**.



- Click the Retention tab.
 - Click Retain Snaps by Number of Jobs.
 - Click **OK** to the warning dialog box.
 - Specify the number of jobs to be retained for the primary copy.
 - Click OK.

Snap Copy Properties: test	x
Selective Copy descriptions Advanced Deduplication Provisioning General Retention Data Paths Data Path Configuration	-
🔽 Enable Data Aging 1	
C Spool Copy (No Retention) 4	
2 Retain Snaps by Number of Jobs 24	
Basic Retention Rule for All Backups	
C Infinite	
C Retain for 15 T Days 2 T Cycles	
Extended Retention Rules for Full Backups	
For Infinite/ 90 Days Total Keep Please Select 💌 Grace Days 💌	
For Infinite/ 365 Days Total Keep Please Select 💌 Grace Days 💌	
For Infinite/ 1825 # Days Total Keep Please Select 💌 Grace Days 💌	
Warning	
Data restorability will not be guaranteed for certain database agents with job based retention	
Data restorability will not be guaranteed for certain database agents with job based retention	
C First full backup of time period	
Cast full backup of time period	
5	
OK Cancel Help	۲
	_

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
Job Results Directory	Ensure that the full path name for the Job Results Directory, combined with the VMDK file name, is no greater than 255 characters in length.	Refer to Job Management.
	1. From the CommCell Browser, right-click the icon of the client computer whose job results path you want to change, then click Properties .	
	 From the Job Configuration tab of the Client Computer Properties dialog box, click User Name/Password to establish or change the Impersonate User account to access the Job Results Directory. Click OK once you have administered the account. 	
	 From the Job Configuration tab, type a new job results path in the Job results path field. You can also click Browse to browse to a new job results path from the Browse for Job Result Path dialog box. Click OK. 	
	4. Click OK to save your changes.	
SCSI Reservation	SCSI reservation can be enabled for SnapProtect backup for all the agents. Use the registry key nSCSIReserveForSnap to enable SCSI reservation. Enabling SCSI Reservation prevents other applications (SCSI3 compliant) from using the reserved SCSI Device (i.e. the mounted snapshot).	For more information on registry keys, Registry keys
	If this option is enabled and the hardware does not support this type of operation, subsequent data protection jobs may fail.	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it.	For more information on using the Pre/Post commands, see Pre/Post Processes.
	Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.	
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity.	
	1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	 The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client. 	
	3. Right-click the snapshot and click Details to view the snapshot properties.	
Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will	

	move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs .	
	2. Right-click the job and then click Pick for Backup Copy .	
Disable a Job for Backup Copy	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs .	
	2. Right-click the job and then click Do not Backup Copy .	
Offline Snap Copy Job Summary Report	Offline Snap Copy Job Summary Report provides job summary details of backup copy jobs for moving snapshots to media.	See Backup Copy Job Summary Report for more details

Back to Top

Advanced - SAP for Oracle SnapProtect[™] Backup

TABLE OF CONTENTS

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert a Snapshot Snap Reconciliation

Restoring Data from a Backup Copy

SnapProtect Backup Using SAP Command Line

NFS SnapProtect for SAP for Oracle

Enabling Volume Level Reverts on NFS Volumes

Supported Volume Managers

Options not applicable for SAP for Oracle

Additional Options

MANAGING SNAPSHOTS

The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, delete, or revert.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected subclient. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the **Disk View** tab to display the snapshot name, e.g. SP 2 79 1286222629.

You can also browse snapshots at the instance level of the SAP for Oracle Agent.

MOUNT SNAPSHOTS

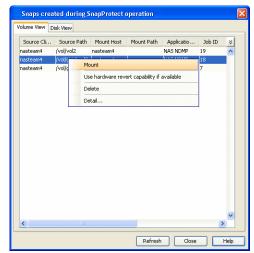
You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | *<Client>* | *<Agent>.*
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to mount and click Mount.
- 4. Click Yes.
- 5. In the **Mount Path** dialog box, specify the destination client and the path on the client in the **Destination Client** and **Destination Path** fields.

On a Windows platform, enter a CIFS Share Name for the Agent.

- If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select Protect Snapshot during mount.
- 7. Click OK.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.



Volume View	Disk View								
Source Clie	nt Source Path	Mount Host	Mount Path	Application	Job	Mount Status	Mount Stat	Creation Ti	¢.
ernie_CN	/database/orac			SAP for Oracle	179	Volume unm	1/12/11 3:2	1/12/11 3:2	si
ernie_CN	/database/orac			SAP for Oracle	179	Volume unm	1/12/11 3:2	1/12/11 3:2	51
ernie_CN	/database/orac			SAP for Oracle	179	Volume unm	1/12/11 3:2	1/12/11 3:2	51
ernie_CN	/database/orac			SAP for Oracle	179	Volume unm	1/12/11 3:2	1/12/11 3:2	51
ernie_CN	/database/orac			SAP for Oracle	179	Volume unm	1/12/11 3:2	1/12/11 3:2	51
ernie_CN	/database/orac			SAP for Oracle	179	Volume unm	1/12/11 3:2	1/12/11 3:2	51
ernie_CN	/database/orac			SAP for Oracle	179	Volume unm	1/12/11 3:2	1/12/11 3:2	51
ernie CN	/database/orac			SAP for Oracle	179	Volume unm	1/12/11 3:2	1/12/11 3:2	51

UNMOUNT SNAPSHOTS

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot you wish to unmount and click Unmount.
- 4. Click **Yes** when prompted if you want to continue.

If the snapshot does not get unmounted, select the **Force Unmount** option to mark the snapshot as unmounted.

Source Cli	Source Path	Mount Ho	ost Mount Path	Applicatio	Job ID	×
nasteam4	/vol/ vol2	nasteam4		NAS NDMP	19	~
nasteam4	/vol/ vol2	nasteam4		NAS NDMP	18	
nasteam4	/vol vol2	nasteemd		MAS NDMP	7	
			Unmount			
			Force Unmount			
			Detail			

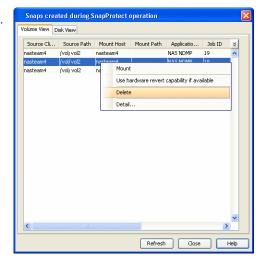
DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to perform data recovery operations from the snapshot copy. However, if a backup copy was created from the snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- 1. From the CommCell Browser, navigate to Client Computers | < Client > | < Agent > .
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same **Job ID** are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click OK.



REVERT A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

Review the following before performing a revert operation:

- As only the data volumes can be reverted, ensure that the database and other SAP data volumes reside on separate LUNs or drives. For example, sapdata (1-#) volumes and other volumes like sapbackup, saparch, sapreorg, dbs should reside on separate LUNs or drives.
- On Unix clusters, use pre/post scripts to freeze and unfreeze the cluster for revert operations. For example, on Red Hat Linux cluster, use the following command in the pre/post scripts:

clusvcadm -Z <group> to freeze the cluster

clusvcadm -U <group> to unfreeze the cluster

This is required because, during revert the application is shut down and corresponding volumes are unmounted. In that case, the cluster will automatically failover to another node thus preventing the revert operation.

PERFORM A SAP ORACLE REVERT RESTORE OPERATION USING THE COMMAND LINE INTERFACE

Review the following before performing a revert operation:

• Set RevertSnapVolume to 1 at the following location:

\$ORACLE_HOME/dbs/init<SID>.utl

- Ensure that the archived redo log files and their mirror log files reside on the same array as data.
- Run the following to perform Revert Restore of Database:

./brrestore -d util_file -m all -b last

• After a successful revert restore operation, you must also run the following command to restore control files:

./brrestore -d util file -b last -m 0

- After the data and Cntrl File restore, perform recover as "recover database using backup controlfile until cancel" or recover using brrecover tool.
- When using HP EVA Clone or Data Replicator for SnapProtect backup, the revert operation is not supported.

It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.

PERFORM SAP ORACLE REVERT RESTORE USING COMMCELL CONSOLE

- 1. From the CommCell Browser, right-click the entity that contains the data you want to restore, and click All Tasks | Browse Backup Data.
- 2. From the Browse Options dialog box, click OK.
- 3. Select the data you want to revert and click Recover All Selected.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.
- 7. Click OK from the Advanced Restore Options dialog box.
- 8. Click **OK** to start the revert.

An application aware revert operation reverts back all the volumes included in the backup.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to Client Computers | < Client >.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.
- 4. Enter the confirmation text string, confirm.
- 5. Click **OK**.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

Source Cli	Source Path	Mount	Host	Mount Path	Applicatio	Job ID	¥
avocado	/vol/vol2				NAS NDMP	88	^
avocado	/vol/ vol3				NAS NDMP	88	
avocado	/vol/vol2	nasteam	4		NAS NDMP	87	
avocado	/vol vol3	nasteam	4		NAS NDMP	87	
avocado	/vol/vol2	nasteam	4		NAS NDMP	86	
avocado	/vol/ vol3	nasteam	4		NAS NDMP	86	
avocado	/vol/ vol2	nasteam	4		NAS NDMP	85	
avocado	/vol/vol3	· .	Vount		-		1
avocado	/vol/ vol2	r					
avocado	/vol/ vol3	r L	Jse har	dware revert	apability if avai	lable	
avocado	/vol/ vol2	r (Delete				-
avocado	/vol/ vol3	r -					-
		L	Detail				
							~

SNAP RECONCILIATION

Snapshots may be deleted from the array due to factors like low disk space on the array, number of snapshots exceeds the threshold etc., and the jobs corresponding to these deleted snapshots can no longer be used for any data recovery or backup copy operations. You can use the nRunSnapRecon registry key to start snap reconciliation to check for missing snapshots once in every 24 hours and marks jobs corresponding to the missing snapshots as invalid.

RESTORING DATA FROM A BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy precedence number.

- From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks | Browse Backup Data.**
- 3. Click OK.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- In the Copy Precedence box, type the copy precedence number for the backup copy.
- 8. Click **OK**.
- 9. Click OK to close the Restore Options window and start the restore job.

Advanced Restore Options	X
Startup Roll-Forward Log Files Redirect Ale Copy Precedence Data Path Encryption	t
Do not change the copy precedence if you have already browsed the backup data as changing the precedence may result in unpredictable results.	
Copy Precedence Copy Precedence:	
ок Салсе Нер	

SNAPPROTECT BACKUP USING SAP COMMAND LINE

In addition to CommCell Console, you can perform SnapProtect backups from the Command Line Interface using the BRBACKUP command.

brbackup -t offline/online -d util_file/rman_util/util_file_online -m full/incr

where the BRBACKUP command can backup control files and data files within one or more table spaces, and (if necessary) log files. BRBACKUP can backup all of these file types with the database either online or offline. Also, BRBACKUP saves the profiles and logs relevant to the backup.

PARAMETER FILE

Before you run backups from the SAP command line, ensure that the appropriate parameter file containing information regarding the instance and the client is in place. Be sure to include at least the CVIIstanceName parameter name followed by the name of the instance and also the CVClientName parameter name followed by the name of the client.

- For SAP for Oracle on Unix include this information in the init.utl file under the <code>\$ORACLE_HOME/dbs</code> directory.
- For any SAP for Oracle version, if your backups and restores will be using the SAP utility files, be sure to modify the init<SID>.utl file by adding values for the following parameters. Note that some parameters are optional.
- snapBackup, which specifies that the SnapProtect backup is enabled. Default value is 0.
- RestoreSnapToTape, which specifies the source copy for restore. Default value is 0, which means that media will be used for restores.
- RevertSnapVolume, which specifies that the revert operation is enabled. Default value is 0, which means that revert is disabled.

It is recommended, that after reverting the data volumes, control file restores, log restores, and recovery you should reset the value of RevertSnapVolume to 0 to ensure that a revert operation is not unintentionally performed.

NFS SNAPPROTECT FOR SAP FOR ORACLE

You can perform a SnapProtect backup for SAP for Oracle when the database is on a NFS Volume. However, you will require a root access in the storage device's NFS configuration to be able to read and write on the accessible SAP for Oracle files i.e., the host on which the NFS Volume is mounted.

File level revert is performed by default when revert restore is run on NFS volumes. For Volume Level revert on NFS volumes, use the sUSE_FILE_LEVEL_REVERT registry key. File level revert cannot be performed when the database resides on regular SAN Volumes (LUNs).

Consider the following while performing a SnapProtect backup for data or databases that reside on a NFS Volume:

• The export name on the storage device should be the same as the storage path on the storage device.

E.g., if the storage path of the storage device is /vol/Volume/Qtree, use /vol/Volume/Qtree as the export name and not an alias such as /ExportName.

- You can use the exports both at the root of a NetApp volume and at subdirectory levels below the root of the volume.
- Make sure that the storage device is accessible from the source and proxy machine (even if they exist in different domains) using the storage device's short name while mounting NFS exports from the storage device. Make sure to enter the storage device credentials using its short name. Do not use an IP address or the fully qualified domain name.

E.g., use a short name for the server such as server1 or server2.

ENABLING VOLUME LEVEL REVERTS ON NFS VOLUMES

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <Client>, and then click Properties.
- 3. Click Advanced and then click Additional Settings tab.
- 4. Click Add.
- 5. In the Name field, type suse_file_level_revert.

The Category and Type fields are populated automatically.

- 6. In the **Value** field, type N.
- 7. Click **OK**.

Add Additional Settings on Unix Client Name alose_FILE_LEVE_REVERT Category OracleSauloent Type STRING Value N Brable Value Details Categories: CracleSapAgent, OracleSapAgent, SAP Default Value: Y

SUPPORTED VOLUME MANAGERS

- Logical Volume Manager
 All versions supported on AIX and Linux
 - Versions 1.0 and 2.x supported on HP-UX
- VERITAS Volume Manager (VxVM) 5.0 for AIX, Linux and Solaris
- Solaris ZFS Mirror
- Solaris Volume Manager
 - When using the Solaris Volume Manager, ensure that a complete disk is used for a metaset. Also, ensure that the metaset is owned by single host and the ownership of the metaset is attained before performing the SnapProtect backup operations.

Supported Configurations:

- One Physical Volume containing one Logical Volume
- One Physical Volume containing one or more Logical Volumes
- Multiple Physical Volumes containing one Logical Volume
- Multiple Physical Volumes containing one or more Logical Volume

The adjacent diagram summarizes the Volume Manager support for SnapProtect backup.

OPTIONS NOT APPLICABLE FOR SAP FOR ORACLE

The following options do not apply to SnapProtect backup for SAP for Oracle *i*DataAgent:

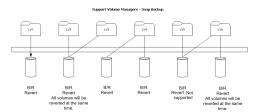
Backup Options dialog box

Save as a Script

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
	SCSI reservation can be enabled for SnapProtect backup for all the agents. Use the registry key nSCSIReserveForSnap to enable SCSI reservation. Enabling SCSI Reservation prevents other applications (SCSI3 compliant) from using the reserved SCSI Device (i.e. the mounted snapshot). If this option is enabled and the hardware does not support this type of operation, subsequent data protection jobs may fail.	For more information on registry keys, Registry keys
Pre/Post Commands		For more information on using the Pre/Post commands, see



	box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post Processes. Pre/Post commands for the agents that support it. Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity. 1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .
	 The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client.
	3. Right-click the snapshot and click Details to view the snapshot properties.
Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs .
	2. Right-click the job and then click Pick for Backup Copy .
Disable a Job for Backup Copy	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs .
	2. Right-click the job and then click Do not Backup Copy .

Back to Top

Advanced - DB2 SnapProtect Backup

TABLE OF CONTENTS

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert a Snapshot Snap Reconciliation Excluding the Online Log Volumes During SnapProtect Backup Restoring Database from a Point in Time Restoring Data from a Backup Copy NFS SnapProtect for DB2 Supported Volume Managers Options not applicable for DB2 Additional Options

MANAGING SNAPSHOTS

The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, delete, or revert.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected subclient. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the **Disk View** tab to display the snapshot name, e.g. SP 2 79 1286222629.

You can also browse snapshots at the instance level of the DB2 Agent.

Source Cli	Source Path	Mount Host	Mount Path	Applicatio	Job ID	¥
nasteam4	/vol/ vol2	nasteam4		NAS NDMP	19	^
nasteam4	/vol/ vol2	nasteam4		NAS NDMP	18	
nasteam4	/vol/vol2	nasteam4		NAS NDMP	7	
<						~

MOUNT SNAPSHOTS

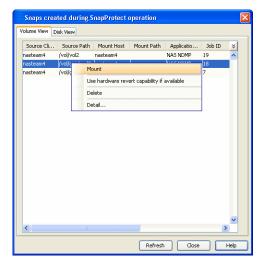
You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to mount and click Mount.
- 4. Click Yes.
- 5. In the **Mount Path** dialog box, specify the destination client and the path on the client in the **Destination Client** and **Destination Path** fields.

On a Windows platform, enter a CIFS Share Name for the Agent.

- 6. If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select **Protect Snapshot during mount**.
- 7. Click OK.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.



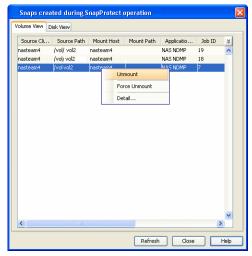
UNMOUNT SNAPSHOTS

3.

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click **List Snaps**.
- Click Yes when prompted if you want to continue.
 If the snapshot does not get unmounted, select the Force Unmount option to mark the snapshot as unmounted.

Right-click the snapshot you wish to unmount and click **Unmount**.



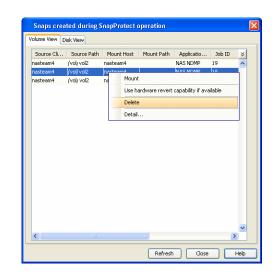
DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to
 perform data recovery operations from the snapshot copy. However, if a backup copy was created from the
 snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same **Job ID** are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click OK.



REVERT A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

Review the following before performing a revert operation:

- RevertSnapVolume has been set to 1.
- Ensure that the archived redo log files and their mirror log files reside on the same array volume.
- After a revert or restore operation is completed successfully, you must also run the ./brrestore -d util_file -b last -m 0 job to restore control files.
- When using HP EVA Clone or Data Replicator for SnapProtect backup, the revert operation is not supported.
- On Unix clusters, use pre/post scripts to freeze and unfreeze the cluster for revert operations. For example, on Red Hat Linux cluster, use the following
 command in the pre/post scripts:

clusvcadm -Z <group> to freeze the cluster

clusvcadm -U <group> to unfreeze the cluster

This is required because, during revert the application is shut down and corresponding volumes are unmounted. In that case, the cluster will automatically failover to another node thus preventing the revert operation.

- It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.
- If you plan to perform a revert operation, you will not be able to use the associated storage policy for further auxiliary copy operations.

PERFORM AN APPLICATION AWARE REVERT

- 1. From the CommCell Browser, right-click the entity that contains the data you want to restore, and click All Tasks | Browse Backup Data.
- 2. From the Browse Options dialog box, click OK.
- 3. Select the data you want to revert and click Recover All Selected.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.
- 7. Click OK from the Advanced Restore Options dialog box.
- 8. Click **OK** to start the revert.
 - An application aware revert operation reverts back all the volumes included in the backup.
 - For NetApp NFS configurations:
 - $\circ\;$ This operation reverts all data on the file server volume, not just the data that is associated with the application.
 - $\,\circ\,$ A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the

SnapVault/SnapMirror copy operation no longer works.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to Client Computers | < Client >.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.
- 4. Enter the confirmation text string, confirm.
- 5. Click **OK**.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

Source Cli	Source Path	Mour	nt Host	Mount Path	Applicatio	Job ID	×
avocado	/vol/vol2				NAS NDMP	88	^
avocado	/vol/vol3				NAS NDMP	88	
avocado	/vol/vol2	naste	am4		NAS NDMP	87	
avocado	/vol vol3	naste	am4		NAS NDMP	87	
avocado	/vol/vol2	naste	am4		NAS NDMP	86	
avocado	/vol/ vol3	naste	am4		NAS NDMP	86	
avocado	/vol/ vol2	naste	am4		NAS NDMP	85	
avocado	/vol/vol3	r	Mount			1	
avocado	/vol/ vol2	r					
avocado	/vol/ vol3	r	 Use hardware revert capability if available 				
avocado	/vol/ vol2	г	Delete				
avocado	/vol/ vol3	r	r				
			Detail	•			
<						3	*

SNAP RECONCILIATION

Snapshots may be deleted from the array due to factors like low disk space on the array, number of snapshots exceeds the threshold etc., and the jobs corresponding to these deleted snapshots can no longer be used for any data recovery or backup copy operations. You can use the nRunSnapRecon registry key to start snap reconciliation to check for missing snapshots once in every 24 hours and marks jobs corresponding to the missing snapshots as invalid.

EXCLUDING THE ONLINE LOG VOLUMES DURING SNAPPROTECT BACKUP

Use sSKIPONLINELOGSNAP registry key to exclude the online logs during the snap backup if the log volumes are separated from data volumes in DB2 database.

- 1. From the CommCell Browser, navigate to the Client Computers.
- 2. Right-click the <Client>, and then click Properties.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name box, type sSKIPONLINELOGSNAP.
- 6. In the Location box, select or type DB2 Agent from the list.
- 7. In the **Type** box, select String as value.
- 8. In the **Value** box, type y or Y and then click **OK**.

RESTORING DATABASE FROM A POINT IN TIME

You can restore a database from a point in time. This is useful if you want to restore certain configurations/contents in the database that are not reflected in the latest backup. For example, you can use this option to restore a SnapProtect backup if your latest backup was a traditional backup.

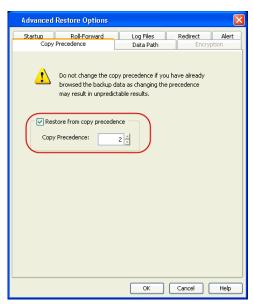
- 1. From the CommCell Browser, navigate to **Client Computers | <***Client>* **| DB2**.
- 2. Right-click the backup set and then click All Tasks | Restore.
- 3. Click the **Recover Database** tab.
- 4. Select To a point in Time.
- 5. Select the date and time of the backup you want to restore.
- 6. Click OK.

DB2 Restore Options
General Job Initiation Restore Arguments Recover Database
Recover DB
O To the End of the logs
1 O To a Point in Time
2 Wed 07/20/2011
Overflow Directory:
Browse
History File Path Browse
Use hardware revert capability if available
🖉 OK Cancel Advanced 📴 Save As Script Help
Cancer Advanced Stave As Script Hep

RESTORING DATA FROM A BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy precedence number.

- From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks | Browse Backup Data.**
- 3. Click OK.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- 6. Click the **Copy Precedence** tab and select the **Restore from Copy Precedence** checkbox.
- In the Copy Precedence box, type the copy precedence number for the backup copy.
- 8. Click **OK**.
- 9. Click **OK** to close the **Restore Options** window and start the restore job.



NFS SNAPPROTECT FOR DB2

You can perform a SnapProtect backup for DB2 when the database is on a NFS Volume. However, you will require a root access in the storage device's NFS configuration to be able to read and write on the accessible DB2 files i.e., the host on which the NFS Volume is mounted.

Consider the following while performing a SnapProtect backup for data or databases that reside on a NFS Volume:

- The export name on the storage device should be the same as the storage path on the storage device.
- E.g., if the storage path of the storage device is /vol/Volume/Qtree, use /vol/Volume/Qtree as the export name and not an alias such as /ExportName.
- You can use the exports both at the root of a NetApp volume and at subdirectory levels below the root of the volume.
- Make sure that the storage device is accessible from the source and proxy machine (even if they exist in different domains) using the storage device's short
 name while mounting NFS exports from the storage device. Make sure to enter the storage device credentials using its short name. Do not use an IP address
 or the fully qualified domain name.

E.g., use a short name for the server such as server1 or server2.

SUPPORTED VOLUME MANAGERS

- Logical Volume Manager
 All versions supported on A
 - o All versions supported on AIX and Linuxo Versions 1.0 and 2.x supported on HP-UX
- VERITAS Volume Manager (VxVM) 5.0 for AIX, Linux and Solaris
- Solaris ZFS Mirror
- Solaris Volume Manager

When using the Solaris Volume Manager, ensure that a complete disk is used for a metaset. Also, ensure that the metaset is owned by single host and the ownership of the metaset is attained before performing the SnapProtect backup operations.

Supported Configurations:

- One Physical Volume containing one Logical Volume
- One Physical Volume containing one or more Logical Volumes
- Multiple Physical Volumes containing one Logical Volume
- Multiple Physical Volumes containing one or more Logical Volume

The adjacent diagram summarizes the Volume Manager support for SnapProtect backup.

OPTIONS NOT APPLICABLE FOR DB2

The following options do not apply to snap restore for the DB2 iDataAgent:

DB2 Restore Options dialog box

- General tab
 - Database Subset (for partial restore)
- Recover Database tab
 - History File Path

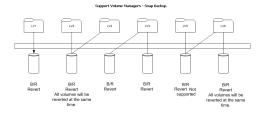
DB2 Advanced Restore Options dialog box

- Redirect tab
- Roll-Forward tab

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
SCSI Reservation	SCSI reservation can be enabled for SnapProtect backup for all the agents. Use the registry key nSCSIReserveForSnap to enable SCSI reservation. Enabling SCSI Reservation prevents other applications (SCSI3 compliant) from using the reserved SCSI Device (i.e. the mounted snapshot).	For more information on registry keys, Registry keys
	If this option is enabled and the hardware does not support this type of operation, subsequent data protection jobs may fail.	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it.	For more information on using the Pre/Post commands, see Pre/Post Processes.
	Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.	
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity.	
	1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	2. The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client.	
	3. Right-click the snapshot and click Details to view the snapshot properties.	
Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).	



	 Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs. 	
	2. Right-click the job and then click Pick for Backup Copy .	
Disable a Job for Backup Copy	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	 Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs. Right-click the job and then click Do not Backup Copy. 	
Offline Snap Copy Job Summary Report	Offline Snap Copy Job Summary Report provides job summary details of backup copy jobs for	See Backup Copy Job Summary Report for more details

Back to Top

Advanced - Unix File System Agents SnapProtect[™] Backup

TABLE OF CONTENTS

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert a Snapshot Snap Reconciliation

Enabling Backups on Linux Clusters

Reducing Snapshot Creation Time On Unix

Restoring Data from a Backup Copy

Data Aging for SnapProtect Snapshots

Retention by Number of Jobs

NFS SnapProtect for Unix

Supported Volume Managers

Additional Options

MANAGING SNAPSHOTS

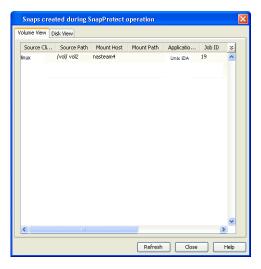
The snapshots of the data created by the SnapProtect backup are also available for various other operations like list, mount, unmount, delete, or revert.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to Client Computers | < Client > | < Agent >.
- 2. Right-click the subclient and click List Snaps.
- The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected subclient. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the **Disk View** tab to display the snapshot name, e.g. SP 2 79 1286222629.

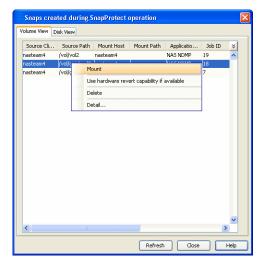


MOUNT SNAPSHOTS

You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to mount and click Mount.
- 4. Click Yes.
- 5. In the **Mount Path** dialog box, specify the destination client and the path on the client in the **Destination Client** and **Destination Path** fields.
- On a Windows platform, enter a CIFS Share Name for the Agent.
- If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select Protect Snapshot during mount.
- 7. Click **OK**.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.



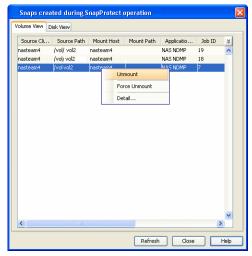
UNMOUNT SNAPSHOTS

3.

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click **List Snaps**.
- Click Yes when prompted if you want to continue.
 If the snapshot does not get unmounted, select the Force Unmount option to mark the snapshot as unmounted.

Right-click the snapshot you wish to unmount and click **Unmount**.



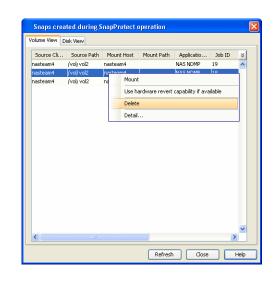
DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to
 perform data recovery operations from the snapshot copy. However, if a backup copy was created from the
 snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same **Job ID** are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click OK.



REVERT A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

Review the following before performing a revert operation:

- When using HP EVA Clone or Data Replicator for SnapProtect backup, the revert operation is not supported.
- Prior to performing a revert operation for ZFS LVM, consider the following:
 - The source Zpool should contain the same set of disks that were available during SnapProtect backup.
 - $\circ\;$ The entire Zpool will be reverted.
- Revert operation is not supported for mirrored volumes.
- Volumes to be reverted should not be monitored using DC. In case of LVM volumes, all the volumes in the volume group where the source volume resides should not be monitored using DC.
- On Unix clusters, use pre/post scripts to freeze and unfreeze the cluster for revert operations. For example, on Red Hat Linux cluster, use the following command in the pre/post scripts:

<code>clusvcadm -Z <group></code> to freeze the cluster

```
clusvcadm -U <group> to unfreeze the cluster
```

This is required because, during revert the application is shut down and corresponding volumes are unmounted. In that case, the cluster will automatically failover to another node thus preventing the revert operation.

- It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.
- If you plan to perform a revert operation, you will not be able to use the associated storage policy for further auxiliary copy operations.

PERFORM AN APPLICATION AWARE REVERT

- 1. From the CommCell Browser, right-click the entity that contains the data you want to restore, and click All Tasks | Browse Backup Data.
- 2. From the Browse Options dialog box, click OK.
- 3. Select the data you want to revert and click Recover All Selected.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.
- 7. Click OK from the Advanced Restore Options dialog box.
- 8. Click **OK** to start the revert.
 - An application aware revert operation reverts back all the volumes included in the backup.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the application.

- $\,\circ\,$ A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
- If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you
 are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the
 SnapVault/SnapMirror copy operation no longer works.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to Client Computers | < Client >.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.
- 4. Enter the confirmation text string, confirm.
- 5. Click **OK**.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

Source Cli	Source Path	Mou	nt Host	Mount Path	Applicatio	Job ID	¥	
avocado	/vol/vol2				NAS NDMP	88	^	
avocado	/vol/vol3				NAS NDMP	88		
avocado	/vol/vol2	naste	am4		NAS NDMP	87		
avocado	/vol vol3	naste	am4		NAS NDMP	87		
avocado	/vol/vol2	naste	am4		NAS NDMP	86		
avocado	/vol/ vol3	naste	am4		NAS NDMP	86		
avocado	/vol/ vol2	naste	am4		NAS NDMP	85		
avocado	/vol/vol3		Mount		1	1	1	
avocado	/vol/ vol2	r						
avocado	/vol/ vol3	г	r Use hardware revert capability if available					
avocado	/vol/ vol2	г	r Delete					
avocado	/vol/ vol3	r	Detail				-	
			Docum					
							*	

SNAP RECONCILIATION

Snapshots may be deleted from the array due to factors like low disk space on the array, number of snapshots exceeds the threshold etc., and the jobs corresponding to these deleted snapshots can no longer be used for any data recovery or backup copy operations. You can use the nRunSnapRecon registry key to start snap reconciliation to check for missing snapshots once in every 24 hours and marks jobs corresponding to the missing snapshots as invalid.

ENABLING BACKUPS ON LINUX CLUSTERS

Use the following steps to enable SnapProtect backups on Linux cluster nodes:

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <*Client*>, and then click Properties.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name box, type nDECLUSTER_LVM.
- 6. In the Location box, select or type iDataAgent from the list.
- 7. In the Type box, select REG_SZ.
- 8. In the Value box, type **Y**, and then click **OK**.
- 9. Click **OK**.

General Version Job Configuration	Security A Encryption	Activity Control Groups F Advanced Content Indexing	Registry Key Settings	Network Throttling Polici Client Side Deduplication
lame	Location	Туре	Value	Enabled
	Add Reg Name Location Type Value	jistry Key on Windows Client ad dDECLUSTER_LVM DataAgent REG_SZ Y OK	restore_2	
		Add Edit	Delete	

REDUCING SNAPSHOT CREATION TIME ON UNIX

The snapshot creation time on Unix platform can be reduced by enabling the CVHDS_ENABLE_UNIX_HORCM_CMD registry key which enables the usage of Command Control Interface instead of XML API.

Use the following steps to reduce the Snapshot creation time on Unix:

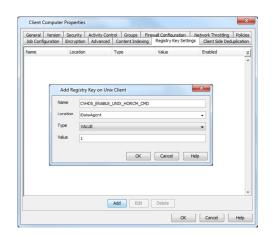
1. From the CommCell Browser, navigate to Client Computers.

- 2. Right-click the *<Client*>, and then click **Properties**.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name box, type CVHDS_ENABLE_UNIX_HORCM_CMD.
- 6. In the **Location** box, select or type iDataAgent from the list.
- 7. In the Type box, select Value.
- 8. In the Value box, type **1**.
- 9. Click **OK**.

RESTORING	DATA	FROM	Α	Васкир	Сору
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You can perform a restore from the backup copy by setting the appropriate copy precedence number.

- From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to All Tasks | Browse Backup Data.
- 3. Click OK.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- Click the Copy Precedence tab and select the Restore from Copy Precedence checkbox.
- In the Copy Precedence box, type the copy precedence number for the backup copy.
- 8. Click OK.
- 9. Click **OK** to close the **Restore Options** window and start the restore job.



Advanced Restore Options
Startup Roll-Forward Log Files Redirect Alert Copy Precedence Data Path Encryption
Do not change the copy precedence if you have already browsed the backup data as changing the precedence may result in unpredictable results.
V Restore from copy precedence Copy Precedence: 2
OK Cancel Help

DATA AGING FOR SNAPPROTECT SNAPSHOTS

The following procedures describe the available retention configurations for snapshots. For movement to media retention, refer to Data Aging - Getting Started.

RETENTION BY NUMBER OF JOBS

By default, snapshots are pruned based on the number of retention days and cycles specified in the storage policy. You can configure your snapshot copy to retain a defined number of SnapProtect backup jobs. When the total number of jobs goes above the specified retention number, the remaining jobs will be pruned. This configuration is recommended for File System and File System like Agents. This feature is supported for SnapProtect operations performed using the NetApp storage array.

The NetApp Snap Management license is required for retaining snaps by number of jobs.

- From the CommCell Console, navigate to Policies | Storage Policies | < Storage Policy>.
 - Right-click the primary snapshot copy and click **Properties**.



- Click the **Retention** tab.
 - Click Retain Snaps by Number of Jobs.
 - Click **OK** to the warning dialog box.

- Specify the number of jobs to be retained for the primary copy.
- Click OK.

Snap Copy	Properties: t	est					×
Selective General		ention	Advan Data Paths	ced	Deduplication Data Pa	Provisioning th Configuration	
🔽 Enable	Data Aging	1					
C Spool C	Copy (No Reten	tion) 4	_				
2 📀 Retain	Snaps by Numb	er of Jobs 24	H)				
	ntion Rule for A	ll Backups					
C Infini							
C Retai	n for	15 📩	Days		2 Cycles		
Extended	Retention Rules	for Full Backups					
For	🗖 Infinite/	90 + Days	Total Keep	Please Select	🔻 Grace ()Bys	
For	🗖 Infinite/	365 × Days	Total Keep	Please Select	💌 Grace ()Bys	
For	🗖 Infinite/	1825 × Days	Total Keep	Please Select	🔻 Grace (lays 🖉	
Warning						×	
-	Data restorat	olity will not be guar	anteed for cer	tain database	agents with joi	based retention	
		(C OK	D			
0	First full backup	of time period					
e	ast full backup.	of time period					
					5		
				(ок	Cancel Help	

NFS SNAPPROTECT FOR UNIX

You can perform a SnapProtect backup for Unix when the database is on a NFS Volume. However, you will require a root access in the storage device's NFS configuration to be able to read and write on the accessible Unix files i.e., the host on which the NFS Volume is mounted.

Consider the following while performing a SnapProtect backup for data or databases that reside on a NFS Volume:

• The export name on the storage device should be the same as the storage path on the storage device.

E.g., if the storage path of the storage device is /vol/Volume/Qtree, use /vol/Volume/Qtree as the export name and not an alias such as /ExportName.

- You can use the exports both at the root of a NetApp volume and at subdirectory levels below the root of the volume.
- Make sure that the storage device is accessible from the source and proxy machine (even if they exist in different domains) using the storage device's short
 name while mounting NFS exports from the storage device. Make sure to enter the storage device credentials using its short name. Do not use an IP address
 or the fully qualified domain name.

E.g., use a short name for the server such as server1 or server2.

SUPPORTED VOLUME MANAGERS

- Logical Volume Manager
 - All versions supported on AIX and Linux
 - Versions 1.0 and 2.x supported on HP-UX
- VERITAS Volume Manager (VxVM) 5.0 for AIX, Linux and Solaris
- Solaris ZFS Mirror
- Solaris Volume Manager

When using the Solaris Volume Manager, ensure that a complete disk is used for a metaset. Also, ensure that the metaset is owned by single host and the ownership of the metaset is attained before performing the SnapProtect backup operations.

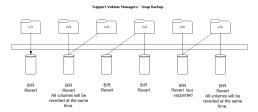
Supported Configurations:

- One Physical Volume containing one Logical Volume
- One Physical Volume containing one or more Logical Volumes
- Multiple Physical Volumes containing one Logical Volume
- Multiple Physical Volumes containing one or more Logical Volume

The adjacent diagram summarizes the Volume Manager support for SnapProtect backup.

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:



OPTION	DESCRIPTION	RELATED TOPICS
SCSI Reservation	SCSI reservation can be enabled for SnapProtect backup for all the agents. Use the registry key nSCSIReserveForSnap to enable SCSI reservation. Enabling SCSI Reservation prevents other applications (SCSI3 compliant) from using the reserved SCSI Device (i.e. the mounted snapshot).	For more information on registry keys
	If this option is enabled and the hardware does not support this type of operation, subsequent data protection jobs may fail.	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it.	For more information on using the Pre/Post commands, see Pre/Post Processes.
	Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.	
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity.	
	1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	2. The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client.	
	3. Right-click the snapshot and click Details to view the snapshot properties.	
Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs .	
	2. Right-click the job and then click Pick for Backup Copy .	
Disable a Job for Backup Copy	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs.	
	2. Right-click the job and then click Do not Backup Copy .	
Offline Snap Copy Job Summary Report	Offline Snap Copy Job Summary Report provides job summary details of backup copy jobs for moving snapshots to media.	See Backup Copy Job Summary Report for more details

Back to Top

Advanced - Windows File System SnapProtect[™] Backup

TABLE OF CONTENTS

Managing Snapshots

List Snapshots Mount Snapshots Delete Snapshots Revert a Snapshot Snap Reconciliation

Restoring Data from a Backup Copy

Data Aging for SnapProtect Snapshots Retention by Number of Jobs

Additional Options

MANAGING SNAPSHOTS

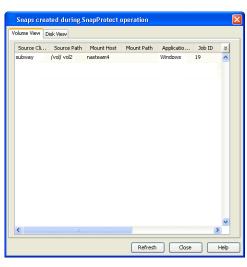
The following sections provide step-by-step instructions on all operations that can be performed on the snapshots created.

LIST SNAPSHOTS

The browse operation provides the capability to see the snapshots created for an agent, job, or a snapshot copy. The list of the snapshots displayed is corresponding to the entity selected for the browse operation, for e.g., browsing the snapshots for an agent will display all the snapshots created for the selected agent. You can view volume or disk related information for the snapshots. Follow the steps given below to browse snapshots.

- 1. From the CommCell Browser, navigate to Client Computers | < Client > | < Agent >.
- 2. Right-click the subclient and click List Snaps.
- 3. The **Snaps created during SnapProtect operation** dialog box displays a list of all the snapshots created for the selected subclient. It also displays important information about each snapshot, including the source month path, snap mount path, the storage array, and the source client.

Click the **Disk View** tab to display the snapshot name, e.g. SP_2_79_1286222629.



MOUNT SNAPSHOTS

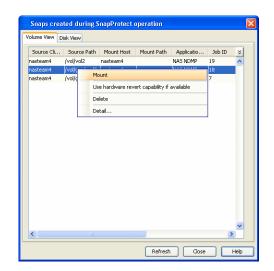
You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to mount and click **Mount**.
- 4. Click Yes.
- 5. In the **Mount Path** dialog box, specify the destination client and the path on the client in the **Destination Client** and **Destination Path** fields.

On a Windows platform, enter a CIFS Share Name for the Agent.

- 6. If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select **Protect Snapshot during mount**.
- 7. Click OK.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.



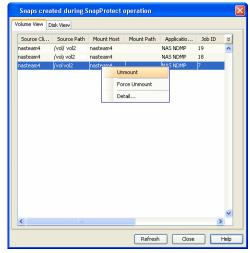
UNMOUNT SNAPSHOTS

3.

Follow the steps given below to unmount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click **List Snaps**.
- Click Yes when prompted if you want to continue.
 If the snapshot does not get unmounted, select the Force Unmount option to mark the snapshot as unmounted.

Right-click the snapshot you wish to unmount and click **Unmount**.



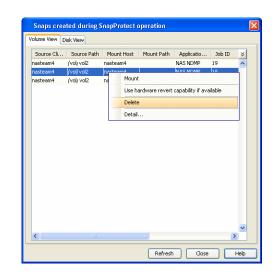
DELETE SNAPSHOTS

Snapshots can either be deleted using job-based pruning or from the list of displayed snapshots when browsing snapshots. Data Aging can also be used to define the retention rules and pruning of snapshots. Follow the steps given below to delete snapshots:

- Manual deletion of snapshots is not recommended. When a snapshot is deleted, it is no longer possible to
 perform data recovery operations from the snapshot copy. However, if a backup copy was created from the
 snapshot, data recovery operations can be performed from the backup copy.
- Ensure that the snapshot to be deleted is not mounted.
- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | <**Agent**>.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot you wish to delete.

Ensure all snapshots with the same **Job ID** are selected for a successful deletion operation.

- 4. Click Delete.
- 5. Enter the confirmation text string, erase snapshots.
- 6. Click OK.



REVERT A SNAPSHOT

You can use the revert operation to bring the data back to the point-in-time when the snapshot was taken. This operation overwrites any modifications to the data since the time when the snapshot was created. This option is available if the storage arrays that you are using supports revert. Revert operations are supported on NetApp File Servers but not from SnapVault or SnapMirror snapshots. You can either perform an application aware revert or a hardware specific revert.

Review the following before performing a revert operation:

- Revert operations are not supported on Windows clustered disks.
- For Full System SnapProtect backup, the revert operation is not supported.
- When using HP EVA Clone or Data Replicator for SnapProtect backup, the revert operation is not supported.
- Revert operations are not supported when using Nimble storage array.
 - It is recommended to verify the contents of the backup and ensure that you want to perform a revert operation as it is an irreversible operation.
 - If you plan to perform a revert operation, you will not be able to use the associated storage policy for further auxiliary copy operations.

PERFORM AN APPLICATION AWARE REVERT

- 1. From the CommCell Browser, right-click the entity that contains the data you want to restore, and click All Tasks | Browse Backup Data.
- 2. From the Browse Options dialog box, click OK.
- 3. Select the data you want to revert and click Recover All Selected.
- 4. From the Restore Options dialog box, click Advanced.
- 5. Select the Use hardware revert capability if available option.
- 6. Click **OK** to confirm the revert operation.
- 7. Click OK from the Advanced Restore Options dialog box.
- 8. Click **OK** to start the revert.
 - An application aware revert operation reverts back all the volumes included in the backup.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the
 application.
 - $\,\circ\,$ A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you
 are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the
 SnapVault/SnapMirror copy operation no longer works.

PERFORM A HARDWARE SPECIFIC REVERT

- 1. From the CommCell Console, navigate to Client Computers | < Client >.
- 2. Right-click the subclient and click List Snaps.
- 3. Right-click the snapshot that you wish to delete and click **Use hardware revert** capability if available.

- 4. Enter the confirmation text string, confirm.
- 5. Click **OK**.
 - A hardware specific revert operation reverts back the volume included in the snapshot.
 - For NetApp NFS configurations:
 - This operation reverts all data on the file server volume, not just the data that is associated with the snapshot.
 - A volume revert deletes all snapshots that were created after the snapshot to which you are reverting.
 - If you perform a volume revert on the source for a SnapVault/SnapMirror copy, and the snapshot to which you are reverting was created before the most recent snap moved to the SnapVault/SnapMirror copy, then the SnapVault/SnapMirror copy operation no longer works.

Source Cli	Source Path	Mou	unt Host	Mount Path	Applicatio	Job ID	¥
avocado	/vol/vol2				NAS NDMP	88	^
avocado	/vol/ vol3				NAS NDMP	88	
avocado	/vol/vol2	naste	am4		NAS NDMP	87	
avocado	/vol vol3	naste	am4		NAS NDMP	87	
avocado	/vol/vol2	naste	eam4		NAS NDMP	86	
avocado	/vol/ vol3	naste	am4		NAS NDMP	86	
avocado	/vol/ vol2	naste	eam4		NAS NDMP	85	
avocado	/vol/vol3	r	Mount	1		-	1
avocado	/vol/ vol2	r					-
avocado	/vol/ vol3	r	Use hardware revert capability if available				
avocado	/vol/ vol2	r	r Delete				
avocado	/vol/ vol3	r					-
			Detail	•			

SNAP RECONCILIATION

Snapshots may be deleted from the array due to factors like low disk space on the array, number of snapshots exceeds the threshold etc., and the jobs corresponding to these deleted snapshots can no longer be used for any data recovery or backup copy operations. You can use the nRunSnapRecon registry key to start snap reconciliation to check for missing snapshots once in every 24 hours and marks jobs corresponding to the missing snapshots as invalid.

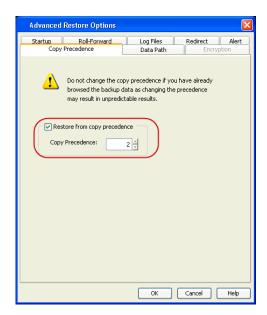
RESTORING DATA FROM A BACKUP COPY

You can perform a restore from the backup copy by setting the appropriate copy precedence number.

- From the CommCell Browser, navigate to Client Computers | <Client> | <Agent>.
- 2. Right-click the entity that contains the snapshots you want to restore, and point to **All Tasks | Browse Backup Data.**
- 3. Click OK.
- 4. From the **Browse** window, select the data you want to restore in the right pane and click **Recover All Selected**.
- 5. From the Restore Options for All Selected Items window, click Advanced.
- Click the Copy Precedence tab and select the Restore from Copy Precedence checkbox.
- 7. In the **Copy Precedence** box, type the copy precedence number for the backup copy.
- 8. Click **OK**.

1.

9. Click OK to close the Restore Options window and start the restore job.



DATA AGING FOR SNAPPROTECT SNAPSHOTS

The following procedures describe the available retention configurations for snapshots. For movement to media retention, refer to Data Aging - Getting Started.

RETENTION BY NUMBER OF JOBS

By default, snapshots are pruned based on the number of retention days and cycles specified in the storage policy. You can configure your snapshot copy to retain a defined number of SnapProtect backup jobs. When the total number of jobs goes above the specified retention number, the remaining jobs will be pruned. This configuration is recommended for File System and File System like Agents. This feature is supported for SnapProtect operations performed using the NetApp storage array.

The NetApp Snap Management license is required for retaining snaps by number of jobs.

- From the CommCell Console, navigate to Policies | Storage Policies | <Storage Policy>.
 - Right-click the primary snapshot copy and click Properties.

3 sg-101	🚴 sg-101 > 🛄	Policies > 💼 Storage Poli	cies > 💼 1 >	
Gent Computer Groups Gent Computers	Сору	Copy Type	Default Library	MediaAgent
B Security	Primary	Primary	MagLib-1	sg-101
+ Storage Resources 4	test	Snap Primary	MagUb-1	sg-101
Policies 1		All Tasks 🕨		
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• Click the **Retention** tab.

- Click Retain Snaps by Number of Jobs.
- Click **OK** to the warning dialog box.
- Specify the number of jobs to be retained for the primary copy.
- Click OK.

ADDITIONAL OPTIONS

Several additional options are available to further refine your backup operations. The following table describes the additional options:

OPTION	DESCRIPTION	RELATED TOPICS
SCSI Reservation	SCSI reservation can be enabled for SnapProtect backup for all the agents. Use the registry key nSCSIReserveForSnap to enable SCSI reservation. Enabling SCSI Reservation prevents other applications (SCSI3 compliant) from using the reserved SCSI Device (i.e. the mounted snapshot).	For more information on registry keys
	If this option is enabled and the hardware does not support this type of operation, subsequent data protection jobs may fail.	
Pre/Post Commands	The Pre/Post commands for SnapProtect backup can either be executed on the proxy or the source computer. You can use the Pre/Post Process tab of the Subclient Properties dialog box to select where you wish to execute the Pre/Post commands. SnapProtect backup supports Pre/Post commands for the agents that support it.	For more information on using the Pre/Post commands, see Pre/Post Processes.
	Use of Pre/Post Snap commands is not supported when using Data Replicator as the storage array.	
View Snapshot Details	You can view the details of a snapshot for an agent, job, or a snapshot copy. When you right- click any of these entities, you will be able to browse all the snapshots corresponding to the selected entity.	
	1. From the CommCell Browser, right-click the entity that contains the snapshots you want to browse, and click All Tasks List Snaps .	
	 The Snaps created during SnapProtect operation dialog box displays a list of all the snapshots created for the selected entity and displays important information about each snapshot, including the source mount path, snap mount path, the storage array, and the source client. 	
	3. Right-click the snapshot and click Details to view the snapshot properties.	
Select a Job for Backup Copy	You can select a specific job for creating backup copy. Once selected, the Move Snap to Tape field for the specific job will be changed to Picked (i.e., the next backup copy operation will move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs, and then click View Jobs .	

	2. Right-click the job and then click Pick for Backup Copy .	
Сору	You can prevent a job from being moved to media. You can apply this option to those jobs that were previously selected for moving to media. On selecting this option, the Move Snap to Tape field for the specific job will be changed to Not Picked (i.e., the next backup copy operation will not move this job to media).	
	1. Right-click a storage policy containing SnapProtect backup jobs and then click View Jobs .	
	2. Right-click the job and then click Do not Backup Copy .	
Offline Snap Copy Job Summary Report	moving snapshots to media.	See Backup Copy Job Summary Report for more details

Back to Top

Advanced - 3PAR

TROUBLESHOOTING

SNAPPROTECT BACKUP OPERATIONS ARE FAILING

Review the following scenarios to troubleshoot snapshot failures:

CIM Service is down on the 3PAR array	To verify if the service is up and running, try the following telnet command:			
	telnet <3PAR Service IP> 5988			
	If the telnet command gives you a time-out error, check the network connectivity between the 3PAR array and the client. However, if you get a connection-refused error, perform the following steps:			
	1. Perform an ssh connection with the array service IP:			
	ssh <3PAR Service IP>			
	2. Run the showcim command to check the service status. An example of the output you may get is shown below:			
	-Service -State -SLP -SLPPort -HTTPPort -HTTPS -HTTPSPort -PGVer -CIMVer			
	Disabled Active Enabled Enabled 5988 Enabled 5989 2.9.1 3.1.1			
	3. Run the following command to start the service:			
	<3PAR Array IP or Hostname> cli% startcim			
	The CIM server will start in 90 seconds.			
Virtual volumes were created using the 3PAR Management Console	When creating a virtual volume using the 3PAR Management console, ensure that a Common Provisioning Group (CPG) is selected for copy space. This space will store copies of all changes to the user data since the last snapshot of the volume.			
A Thin Provision clone was created for a subclient	If you created a Thin Provision clone for a subclient with Fully Provisioned physical disk, ensure that you specify a device group for the array to prevent the 3PAR clone from failing.			

FAQ

CAN I SELECT THE OPTION TO PROTECT A SNAPSHOT DURING MOUNT?

No. The **Protect Snapshot during mount** option is not applicable for 3PAR snapshots. These snapshots are considered non-persistent because any modifications made to the snapshots cannot be saved during mount. However, for 3PAR clones, you can use this option to ensure that the changes made to the snapshot during mount are not retained when the snapshot is unmounted.

BEST PRACTICES

- iSCSI Initiator must be configured on the client and proxy computers to access the storage array.
- In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

Advanced - Dell Compellent

TABLE OF CONTENTS

Troubleshooting Best Practices

TROUBLESHOOTING

SNAPSHOT CREATION FAILS WITH DEVICE ERROR

If snapshot creation returns the following error, your Compellent array may not be properly defined in Array Management:

<device_name> is not a Compellent Device

Review the following workarounds to resolve this issue:

- Check the User Name specified for the array in Array Management. Remember that this field is case-sensitive.
- Ensure the IP of your Compellent array matches the Management IP Address. From the Management Console, right-click the **Storage Center** node and then click **Properties** to verify the Management IP.

MEDIA AGENT CRASHES

Media agent crashes if the Simpana array list contains a Storage Center that is unreachable due to a network error.

Resolution

The CVSE was modified to handle the situation.

CVSE PREVIOUSLY CREATED PERSISTENT SNAPSHOTS FOR ALL SNAPSHOT TYPES

CVSE previously created persistent snapshots for all snapshot types. These persistent snapshots were backed up by a view volume which consumes resources on the Storage Center.

Resolution

Now all snapshots are non-persistent.

MANUALLY DELETING SNAPSHOTS FOR MULTIPLE VOLUMES RESULTS IN AN ERROR BEING DISPLAYED IN THE GUI

The error resulted when snaps were deleted that could not be found on the Storage Center.

Resolution

Deletion logic now returns success message if the snapshot cannot be found.

BEST PRACTICES

- Use Boot from SAN volumes for supported server operating systems. However, it is recommended to avoid saving application data (such as Exchange or SQL Server data) on Boot from SAN volumes.
- SnapProtect backups should be performed on data volumes that are mapped to the server.
- Use Storage Center replication for supported server operating systems.
- In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

BACKING UP VMWARE ESXI 5.0 ENVIRONMENTS

- Datastores should be created on non-Boot from SAN volumes.
- It is recommended to create a single subclient for each VMware datastore as Calypso processes each subclient as its own job. This will allow jobs to run in parallel when backing up many subclients, providing higher performance.
- The proxy server must be connected to the Storage Center where the VMware datastore volumes reside. A corresponding server object must also exist in the Storage Center for the proxy server.
- You can increase the speed of proxy mounting by having a low number of LUNs connected to the ESX proxy server.
- It is recommended to spread virtual machines over multiple datastores to improve backup performance. For heavily used virtual machines, ensure there are fewer virtual machines per datastore.

BACKING UP SQL SERVERS

To perform a SnapProtect backup of SQL virtual instances running ESX(i), it is recommended that:

- Dell Compellent volumes are present in the virtual machine as physical Raw Device Mappings (RDMs) from the ESX(i) host.
- SQL databases are installed on Dell Compellent volumes.

BACKING UP EXCHANGE SERVERS

To perform a SnapProtect backup of Exchange virtual instances running ESX(i), it is recommended that:

- Dell Compellent volumes are present in the virtual machine as physical Raw Device Mappings (RDMs) from the ESX(i) host.
- Exchange databases are installed on Dell Compellent volumes.

BACKING UP A WINDOWS FILE SYSTEM

When performing SnapProtect backups of file system data, you must use the Microsoft Volume Shadow Copy Service (VSS) or the operation will fail.

Advanced - Dell EqualLogic

TROUBLESHOOTING

THE RESERVED SNAPSHOT VOLUME IS FULL AND THE OLDER SNAPSHOTS ARE GETTING DELETED

The Snapshot space recovery policy on the Dell EqualLogic array is by default set to delete the older snapshots when the reserved snapshot volume is out of disk space. You can change this option and select to set the volume and its snapshots offline when the reserved snapshot volume exceeds the allotted disk space.

FAQ

SHOULD I SELECT THE OPTION TO PROTECT A SNAPSHOT DURING MOUNT?

Yes, you should use the **Protect Snapshot during mount** option to ensure that the changes made to the snapshot during mount are not retained when the snapshot is unmounted. By default, the changes made to the mounted snapshots are retained when the snapshot is unmounted.

BEST PRACTICES

- Ensure that enough disk space is available for snapshot operations and the disk space used by snapshots is monitored. The space requirement for snapshots created during SnapProtect backup can vary based on your environment. The space utilization is dependent on the number of snapshots created and the retention period defined for the snapshots.
- If you have SELinux enabled on the client computer, run the following commands as a root user before performing any snap operations:

O chcon -t texrel_shlib_t /opt/<software installation directory>/Base/libManageEquallogic.so

O chcon -t texrel_shlib_t /opt/<software installation directory>/Base/libpsapi.so.4

 In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

Advanced - EMC Clariion, VNX

TABLE OF CONTENTS

Troubleshooting FAQ Best Practices

TROUBLESHOOTING

SNAPSHOTS ARE NOT BEING CREATED

It is recommended that multiple SnapProtect backups using the same host must be run one after the other. Multiple SnapProtect backups running at the same time may cause the snapshot creation to fail due to the database lock.

UNABLE TO PERFORM CLONING OPERATION

For clone operations, ensure that Clone Private LUN (CPL) is created for each storage processor prior to performing the snapshot operations.

CLARIION DISCOVERY COMMAND FAILS WITH ERROR

The symcfg discover -clariion command fails with the following error:

Invalid certificate encountered - End-of-chain encountered without finding a trusted certificate

The discovery command fails because there is no LUN coming from the Clariion array to the proxy computer. To solve this issue, consider the following scenario:

If you have two storage arrays (Clariion 1 and Clariion 2) and a proxy computer, where the proxy has access to the LUN in Clariion 2 and your source LUN comes from Clariion 1. Clariion 1 does not have any LUN on the proxy. For the discovery operation to be successful, you must add a LUN to Clariion 1 and mount it to the proxy computer to allow connectivity. It is recommended to perform this workaround instead of using the Clariion discovery command.

FAQ

WHAT SHOULD BE THE SIZE OF FREE LUN?

Free LUN should be of the same size as the clone source and this LUN should not be a part of any storage group.

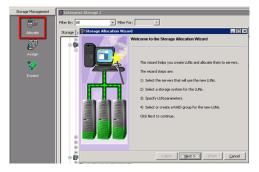
HOW TO ASSIGN A NEW LUN TO A SPECIFIC HOST?

Before you proceed to assign a new LUN, ensure the following:

- Proper hardware zoning has been completed for the Hot Bus Adaptors (HBAs) of the server to provide visibility to a storage processor.
- The NaviAgent is installed to allow connectivity to the Navisphere Server.

Follow the steps below:

1. Allocate a new LUN.



2. Select the Clariion system and host to be configured. You can either create a new RAID Group or use an existing one.

Select a specific LUN parameter. You can also use the option for automatic 3. configuration of the LUN ID to the host.

Verify your selections and click Finish. 4.

> Check that the specified LUN has been created under the correct Storage Group for the host.

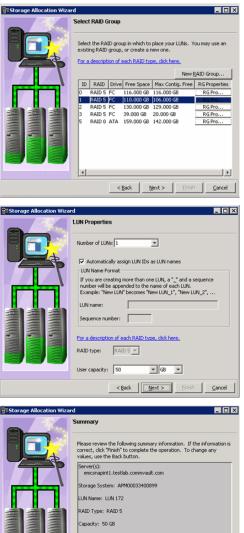
HOW TO VERIFY THAT A LUN IS MAPPED TO A HOST THAT REQUIRES PROTECTION ?

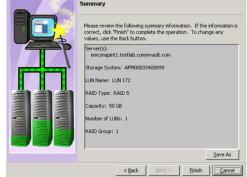
To check if the LUN is already assigned to the server, check the following under Navisphere:

The LUN that was created based on the RAID Group must be present to the Host 1. through Access Logix Storage Groups.

Enterprise St	vrage 1 Fiker For:
Storage Hosts	
E - SI L	nowned LUNs
E Store	
	G_betty.hct.com
	G DAVIS.devemc.com
🖻 🎒 s	G_D8serve9
	G_devl-bmaix03.com
÷ 🛍 s	G. EMCSpanInt1
Ð-	Hosts
	emcsnapint1.test.com [172.19.100.85; Fibre]
	TONS
1	UIN 116 [116; RAID 0; emcsnapint1.test.com - G:\; ATA; Snapshot Inactive]
	EUN 142 [142; RAID 5; emcsnapint1.test.com - F:\; FC; Clone Source]
	Bull 154 [154; RAID 5; emcsnapint1.test.com - \\.\PhysicalDrive4; FC; Clone Source]
	 By Con 170 [170; KALD 5; emcshaping1:testiab.commvauk.com; PC; Clone Source] By UNU29, Close 1 [12]; DAD Exercised by Last server 50, Close 5 and resized by Last server 50, Close 5 and rest server 50, Close 5 and resized by La
	UIN 170_Clone_1 [171; RAID 5; emcsnapint1.test.com; FC; Clone Synchronized]

From the Clariion Storage Group configuration, you should be able to see the LUN. 2. For example, LUN 154 is based on RAID Group-0, which has RAID-5 configuration.









HOW DOES SNAPPROTECT WORK WITH SNAPVIEW/CLONE?

Calypso always runs a synchronization process to Clone target columns. The example on the right shows where the Clone SnapProtect job ran from Job ID #2748 from Navisphere. The example on the right also shows that the Clone is:

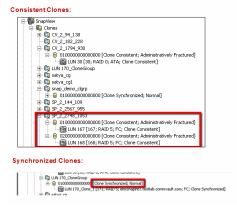
- Consistent: Synchronization was completed.
- Fractured: Clone is avialable to be mounted to the host (production or proxy computer).

Calypso uses the following naming convention for the SnapProtect jobs:

SP_<commcell id as per the CSDB>_<Job_ID>_XXX

When a SnapProtect job is running, you will notice that a synchronization is required for SnapView/Clone before the Clone can be fractured as shown in the example.

You must have enough space on the Clone target RAID group or enough Clone Private LUN for SnapProtect operations to run successfully.



HOW DOES SNAPPROTECT WORK WITH SNAPVIEW/SNAP?

Unlike Clones, SnapView/Snap does not need synchronization as it will copy any blocks that have been modified based on the Copy-On-Write model. Once a snapshot has been taken, you can see in Navisphere that a new snapshot was created as shown in the example on the right.

Calypso uses the following naming convention for the SnapProtect jobs:

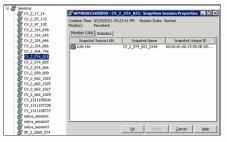
SP <commcell id as per the CSDB> <Job ID> XXX <Original LUN ID>

You will also notice that a Sessions that starts when the snapshot is created as seen in the image. Sessions are created based on the snapshot to allow:

- Tracking on which snapshot the session is present and on which reserved or source volume.
- Tracking of blocks that have been modified.



SnapView Session:



Once a snapshot has been activated to the host computer, it is available for the host that is specified with the Storage Group as shown in the example on the right.

Also, once the snapshots have been defined, they will remain inactive until they are activated again to run the SnapView session.



- Ensure that the client and proxy computers are configured and have access to the array.
- Ensure that sufficient number of Save Area devices are configured to meet your retention requirements.
- Ensure that enough disk space is available for snapshot operations and the disk space used by snapshots is monitored. The space requirement for snapshots created during SnapProtect backup can vary based on your environment. The space utilization is dependent on the number of snapshots created and the retention period defined for the snapshots.
- For any EMC Clariton operations to work, the SYMAPI_HOME_DIR registry key must be set to the directory where the Symmetrix SYMAPI library is located.
- In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

Advanced - EMC Symmetrix

TABLE OF CONTENTS

BCV Devices Requirement Troubleshooting FAQ Best Practices

BCV DEVICES REQUIREMENT

Use the following matrix to calculate the number of target devices required for performing SnapProtect operations.

AGENT	TARGET DEVICE REQUIREMENTS (BUSINESS	NOTES		
DB2 Exchange Database Microsoft SQL Serve	IMAGE VOLUMES)			
	FULL BACKUP	INCREMENTAL	DIFFERENTIAL	
		ВАСКИР	ВАСКИР	
DB2	[Number of devices where data resides] + [Number of devices where the online log resides] + [Number of devices where the 'LOCAL_DB_DIRECTORY' resides] + [Number of devices where the 'DBPATH' resides]	N/A	N/A	
Exchange Database	[Number of devices where data resides] + [Number of devices where the log resides]		[Number of devices where the log resides]	For example, if your data resides on 2 devices, logs reside on 1 devices. Full backup will require 3(2+1) target devices, Incremental/Differential backup will require 1 target devices.
Microsoft SQL Server	[Number of devices where data resides] + [Number of devices where the log resides]		[Number of devices where data resides] + [Number of devices where the log resides]	For example, if your file system data resides on 3 devices you will require 3 target devices.
				SQL log backup does not require any target device.
Microsoft Windows File System	Number of devices on which the file system data resides	Number of devices on which the file system data resides	Number of devices on which the file system data resides	
NAS NDMP	Number of devices on which the file system data resides			
Oracle	[Number of devices where data resides] + [Number of devices where the log resides]		N/A	
Oracle – Data and logs residing on the same devices	2x[Number of devices where data and logs reside]		N/A	For example, if your data and logs reside on 3 devices, you will require 6 target devices.
Applications running on JFS	[Number of devices where application data resides] + [Number of devices where JFS logs reside] + [No. of devices on which logs reside]		N/A	For example, if your application data resides on 2 devices, logs reside on 1 devices, data and logs share one device, and JFS logs resid on 1 device, you will require 6 (2+1+2+1) target devices
SAP for Oracle - Data and logs	[Number of devices where data resides] + [Devise where the 'sapbackup' directory resides] + [Number of devices where the log resides] + [Device where the 'saparch' directory resides] + 2 x [Device where the 'dbs' directory resides]	N/A	N/A	
Unix File System	[Number of devices where data resides] + [Number of devices where the log resides]			
Unix File System on JFS	[Number of devices on which the file system data resides] + [No. of devices on which file system logs reside]			For example, if your file system data resides on 2 devices and file system log resides on 1 device, you will require 3 target devices.
VMware	Number of luns on which the datastore for the VM resides	Number of luns on which the datastore for the VM resides	N/A	
Microsoft Hyper-V	Number of luns on which vhd and configuration files of VM reside	Number of luns on which vhd and	N/A	

configuration files of VM reside

TROUBLESHOOTING

SNAPSHOTS ARE NOT BEING CREATED

It is recommended that multiple SnapProtect backups using the same host must be run one after the other. Multiple SnapProtect backups running at the same time may cause the snapshot creation to fail due to the database lock.

SNAPPROTECT BACKUP FAILED

SnapProtect backup may fail when EMC Solutions Enabler software does not clean the SYMAPI database locks during abnormal termination of any process using SYMAPI. Additionally, this also causes the subsequent snapshot operations to hang indefinitely. As a workaround for this issue, reset the SYMAPI database locks using the EMC utilities or any other procedures provided by EMC.

DEVICE DISCOVERY FAILED WITH ERROR 7143

If you run the symcfg discover command the Symmetrix CLI and completes with the following error in the MediaAgent log file, then the Symmetrix database was not successfully loaded:

CVSYMAPI::Discover() - SYMAPI - SymDiscover() failed with error (7143)

In the Symmetrix logs, you will also find the following error message:

Gatekeeper for the Symmetrix (Symm ArrayID) cannot be opened by the base daemon

As a workaround, ensure the Symmetrix gatekeeper is assigned from the array specified in the above error message. If the gatekeeper is assigned to the correct array ID, then set the MPIO policy as FAILOVER in the MPIO properties of the gatekeeper devices.

If you have multiple Symmetrix arrays, then a gatekeeper should be assigned for each array.

FAQ

HOW MANY LUNS CAN BE ASSIGNED TO A SINGLE PORT?

Ensure that there are not be more than 255 LUNs assigned to any single port, especially for Windows.

WHAT ARE DEVICE GROUPS?

Device Groups are a technique for grouping specific BCV and VDEV devices for clone or snapshot use. An example of Device Groups with a single BCV is shown on the right.

Device groups that are local to every client should have the following configuration:

- The Device Group name must be the same for every client as during the array configuration you cannot specify more than one Device Group.
- The source LUN and the BCV/VDEV devices must be part of the same Device Group.

C:\> symdg show tes	t			
Group Name: test				
Group Type Valid Symmetrix ID Group Creation Tim Vendor ID Application ID Number of STD Dev Number of Locally-3 Standard (STD) Dev	e : Ti : Comm : Galax rices in Group associated BCV's	187880546 hu May 19 23		1
LdevName	Sym PdevName	Cap Dev Att. :	Sts (MB)	
DEV001	\\\PHYSICALDRIVE	E22 006C	- RW 1-	4400
BCV Devices Local	y-associated (1):			
LdevName	Sym PdevName	Cap Dev Att. :	Sts (MB)	
SP_2_453_292	II. IPHYSICALDF	NVE23 00	8B RW	14400

CAN I USE MULTIPLE DEVICE GROUPS?

When you configure an array using the CommCell Console, the Calypso software allows you to use one Device Group name. You can use multiple device groups by enabling the nDisableUseOfDG or nDisableDGChange registry key. Based on your environment, use the following configuration scenarios to use multiple device groups:

When using the registry keys, source and target devices will not be moved from the groups where they reside. Also, no new device groups will be created.

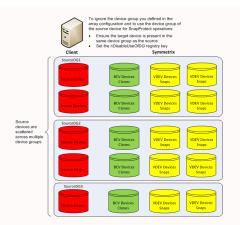
CONFIGURATION 1: USE THE DEVICE GROUP OF THE SOURCE DEVICE

Enable the nDisableDGChange registry key to ignore the device group you defined in the CommCell Console and to use the device group of the source device for SnapProtect operations. Before using this key, ensure the target device is present in the same device

group as the source device.

This key is useful in the following scenarios:

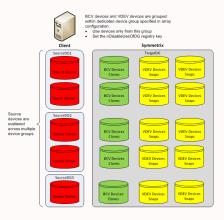
- You have device groups named differently on each client computer.
- You have multiple device groups on the client computer. Each device group has sourcetarget device pairs.



CONFIGURATION 2: USE TARGET DEVICE FROM DIFFERENT DEVICE GROUP

Enable the nDisableUseOfDG registry key to use a target device from a different device group other than the source device group. The name of the devices group containing the target devices should be specified in Array Management.

This key is useful when you have all target devices in one device group and the source devices are scattered across multiple device groups.



HOW DOES THE BCV DEVICE SELECTION HAPPEN?

Calypso requires BCV and VDEV devices of the same block size to be created before performing SnapProtect operations. The BCV device selection occurs based on the following precedence:

- Currently established BCVs
- Masked BCV's to a proxy or source that are currently established
- Split source BCVs
- Split source BCVs masked to a proxy or source
- Non-established BCVs

HOW TO VERIFY THAT A LUN IS MAPPED TO A HOST THAT REQUIRES PROTECTION?

To check if the LUN is already assigned to the server, run the following command on the server:

C:\> symdev -sid <symm ID>

The physical device name may be displayed as "Not Visible" even if everything has been configured correctly (see image on the right). This may happen if you have multiple hosts that are doing the device management or if the SYMAPI DB has not been refreshed. You can try the following:

- Check the Device Manager and Kernel Messages to ensure the disk is visible.
- Refresh the SYMAPI DB using the following command:

If you still do not see the device properly, then you may need to configure/map the LUNs to the Host Adapter to make it visible to the Production Host.

Group Name: test Group Type REGULAR : Yes : 000187880546 : Thu May 19 23:48:22 2011 Valid Symmetrix ID Group Creation Time Vendor ID Application ID CommVault Galaxy_Ent_2000 Number of STD Devices in Group Number of Locally-associated BCV's Standard (STD) Devices (1): Cap Dev Att. Sts (MB) Sym PdevName LdevName DEV001 ILIPHYSICALDRIVE22 006C RW 14400 BCV Devices Locally-associated (1) Sym PdevName Cap Dev Att. Sts (MB) LdevName SP 2 453 292 WPHYSICALDRIVE23 008B RW 14400

C:\> symdg show test

HOW TO ASSIGN A NEW LUN TO A FIBER CHANNEL DIRECTOR?

C:\> symcfg discover

4.

Before you proceed to assign a new LUN, ensure that proper hardware zoning has been completed for the Hot Bus Adaptors (HBAs) of the server to provide visibility to a Host Adapter.

The following example assumes that you are zoning the required HBA with Fiber Channel Director 10a / Port 1. Use the steps below to assign Symmetrix VOL 94 to LUN 0x31 - 49 (decimal) on FA-10a/Port 1:

Check if the device is unassigned or if it shows as "Not Visible": 1.

C:\> symdev -sid 0546 list

- 2. Create a text file (e.g., test.txt) with the following content: map dev 0094 to dir 10A:1 lun=31
- 3. Verify that the format of the text file has the correct syntax: C: >> symconfigure -sid 0546 -f test.txt preview

Device Marrie	Directors	Dev	lice		
Sym Physical	SA :P DA :IT	Ca Config		Sts (N	1B)
0094 Not Visible	???:? 06C:D	2 2-Way Mir	Grp'd	RW	2048
C:\> symconfigure -	sid 0546 -f test.	txt preview			
Execute a symconfig	ure operation fo	r symmetrix'	0001878	80546'()	//[n])?y
A Configuration Char	nge operation is	in progress.	Please w	ait	

C:\> symdev -sid 0546 list

Devile No.

Symmetrix ID: 000187880546

Establishing a configuration change sess	sionEstablished.
Processing symmetrix 000187880546	
Performing Access checks	Allowed.
Checking Device Reservations	Allowed.
Submitting configuration changes	Submitted
Locking devices	Locked.
Validating configuration changes	Validated.
Closing configuration change request	Closed.
Terminating the configuration change se	ssionDone.

The configuration change session has completed successfully.

A Configuration Change operation is in progress. Please wait...

C:\> symconfigure -sid 0546 -f test.txt prepare

Execute a symconfigure operation for symmetrix '000187880546' (y/[n]) ? y

C:\> symconfigure -sid 0546 -f test.txt prepare

E	Commit the configuration changes	

C:\> symconfigure -sid 0546 -f test.txt commit

During the configuration change, a script runs on Symmetrix to load the new Configuration Files (IMPL) and allow device #0094 to be mapped to FA-10a / Port 1.

Prepare Symmetrix for the configuration change. Check if there any locks (usually not

for LUN mappings) to avoid making multiple configuration changes at the same time:

Confirm that device #0094 has been mapped to Host Adapter FA-10a / Port 1 as LUN 6. 0x31 (49):

C:\> symdev -sid 000187880546 list

Initiating FREPARE of configuration changes. Que PREPARE requesting requirersources. Obta Step 004 of 017 steps. Executing. Step 013 of 017 steps. Executing. Step 014 of 017 steps. Executing. Step 014 of 017 steps. Executing. Step 016 of 017 steps. Executing. Closing configuration change request. Closed. Terminating the configuration change session. Don .Obtained Done The configuration change session has completed successfully. C:\> symconfigure -sid 0546 -f test.txt commit Execute a symconfigure operation for symmetrix '000187880546' (y/[n]) ? y A Configuration Change operation is in progress. Please wait...

Establishing a configuration change session	nEstablished.
Processing symmetrix 000187880546	
Performing Access checks	Allowed.
Checking Device Reservations	Allowed
Submitting configuration changes	
Locking devicesLo	
Validating configuration changes	Validated
Initiating PREPARE of configuration change	
PREPARE requesting required resources	
Step 004 of 017 steps	
Step 011 of 017 steps	
Step 013 of 017 steps	
Step 015 of 017 steps	
Local: PREPARE	
Initiating COMMIT of configuration changes	
COMMIT requesting required resources	
Step 003 of 079 steps	
Step 046 of 079 steps	Executing.
Step 061 of 116 steps	Executing.
Step 108 of 116 steps	Executing.
Step 112 of 116 steps	Executing.
Local: COMMIT	
Terminating the configuration change sessi	

C:\> symdey -sid 000187880546 list

Symmetrix ID: 000187880546	

Device Name	Directors	Device		
 Dhusiaal	CAUD DAUT	Cap	<u></u>	

Sym Physical	SA :P DA :IT	Config	Sts (MB)	
0094 Not Visible	10A:1 06C:D		RW 204	18

C:\> symdev -sid 0546 list -SA 10A -p 1

Symmetrix ID: 000187880546

Device Name Directors Device

Cap SA :P DA :IT Config Attribute Sts (MB) Sym Physical

0000\\\PHYSICALDRIVE20 10A:1 01C:C2 2-Way Mir N/Grp'd VCM WD 23 0094 Not Visible 10A:1 06C:D2 2-Way Mir Grp'd RW 2048

Make LUN mask device #0094 visible to HBA and assign it to WWN 7. 21:00:00:E0:8B:07:A0:BC:

C:\> symmask -sid 0546 -wwn 210000E08B07A0BC -dir 10a -p 1 add devs 0094

Refresh the SYMAPI DB and verify the device is displayed properly as shown in the example.

C:\> symmask -sid 0546 -wwn 210000E08B07A0BC -dir 10a -p 1 add devs 0094

C:\> symmask -sid 0546 refresh

Refresh Symmetrix FA/SE directors with contents of SymMask database 000187880546 (y/[n]) ? y

Symmetrix FA/SE directors updated with contents of SymMask Database 000187880546

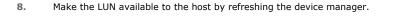
C1> symmaskdb-sid 0546 list database -dir 10a -p 1 SymmetrixID : 000187880546

Database Type : Type4 Last updated at : 08:50:34 AM on Fri May 20,2011

Director Identification : FA-10A Director Port : 1

 User-generated
 Port Name
 Devices

 210000e08b07a0bc
 Fibre 210000e08b07a0bc
 Door 210000e08b07a0bc
 0066C:006D





SYMCLI shows you the correct Operating System level disk

C:\> syminq							
Device		Produ	ct	Device			
Name	Туре	Vendor	ID	Rev Ser N	um Cap (KB)		
WPHYSICALD	RIVE1	EM	c	SYMMETRIX	5671460009400	0 2096640	

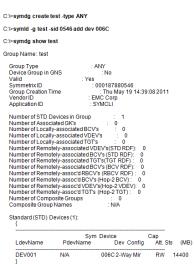
HOW DOES SNAPPROTECT WORK WITH TIMEFINDER/MIRROR?

Calypso always runs an Incremental Establish on BCV volumes. If there has been no prior TimeFinder operations on the BCV, then the Incremental automatically converts into a Full. See the following SYMAPI logs snippet which shows an Incremental Establish:

05/24/2011 05:21:15.056	7160	1436 STARTING a BCV 'INCREMENTAL ESTABLISH' operation for 1 [SRC-TGT] Pair:	.
05/24/2011 05:21:15.181	7160	1436 Symm 000187880546 Number of Pairs: 1 Operation Flags: MultiEstablish	
05/24/2011 05:21:15.196	7160	1436 Source-Target Devices: [006C-008B]	
05/24/2011 05:21:15.462	7160	1436 The BCV 'INCREMENTAL ESTABLISH' operation SUCCEEDED.	
			-

Assuming that device #006C is used as the Primary LUN to the production host, the following steps describe how to create a new TimeFinder/Mirror relationship with SnapProtect:

1. Create a new Device Group "test" to be used for SnapProtect.



C:\> symbcv -g test associate dev xxxx

2. Assign the BCV volumes to the "test" device group.

Using the CommCell Console, create a new subclient for the LUN:

- During the subclient configuration, ensure to select **EMC TimeFinder BCV** as the storage array.
- Run a Full/Incremental backup job.

3.

4.

Source		
Computer:	watkinsglen	
Program:	VssSwProvider	
Job ID:	453	
Description:		
	volume [5:\] - id [292] backup job [453] n] array [000187880546] snap engine BCV].	0
D:\> symdg show test Group Name: test		
Group Type Device Group in GNS Valid Symmetrix ID Group Creation Time Vendor ID Application ID	: REGULAR : Yes : 000187880546 : Thu May 19 23:48:22 2011 : Gorann Zaur, Ent 2000	
Number of Remotely-a Number of Remotely-a Number of Remotely-a	GK's : 0 ociated BCV's : 1 ociated VDEV's : 0	

Cap Dev Att. Sts (MB)

Cap Dev Att. Sts (MB)

W.VPHYSICALDRIVE23 008B RW 14400

ILIPHYSICALDRIVE22 006C RW 14400

During the SnapProtect backup job, the "test" device group gets created, and during the snapshot creation, a synchronization is performed.

A BCV device cannot split until the synchronization completes. You can if the device is ready to split using the following command:

C:\> symmir -g test split

5.	Once the synchronization completes, the "split" operation is automatically issued by
	the Calypso software.

Standard Device		ВС	CV Device	State
Inv. Logical Sym Tracks		icks Logical	lnv. Sym	Tracks STD <=> BCV
DEV001	006C	0 BCV001	008	B* 329805 SyncinProg
Total Track(s) MB(s)	0 0.0		32980 10306	
C:\> symm	ir -g test q	uery		
	: Af netrix ID	VY : 0001878805		
Standar	dDevice	BCV	Device	State
Logical	Inv. Sym Trac	ks Logical	lnv. Sym	Tracks STD <=> BCV
DEV001	006C	0 BCV001	008B*	0 Synchronized
Total Track(s) MB(s)	0 0.0		 0.0	
Legend:				
(*): The pai	red BCV de	evice is associ	ated with this	group.
C:≫ symmir -g test query				
Device Group (DG) Name: test DG's Type : REGULAR DG's SymmetrixID : 000187880546				
Standar	dDevice	BCV	/ Device	State

Standard (STD) Devices (1):

BCV Devices Locally-associated (1):

LdevName DEV001

LdevName SP_2_453_292

C:\> symmir -g test query

Device Group (DG) Name:test DG's Type : ANY DG's Symmetrix ID : 000187880546

Sym PdevName

Sym PdevName

	Inv.	Inv.	
Logical	Sym Tracks Logical	Sym	Tracks STD <=> BCV

DEV001	006C	0 SP_2_453_292	008B *	0 Split
Total Track(s) MB(s)	 0.0		0 .0	

Legend:

(*): The paired BCV device is associated with this group.

During the cataloging phase, the host LUN mapping is adjusted for the BCV device 6. #008D.

-	-
Symmetrix I	: 000187880546
Database Tj Last update	e : Type4 at : 08:50:34 AM on Fri May 20,2011
Director Ider Director Por	fication : FA-10A : 1
Identifier	User-generated Type Node Name Port Name Devices
210000e08	7a0bc Fibre 210000e08b07a0bc210000e08b07a0bc 006C:006D 008B
	inaps created during SinapProtect operation
	una teau 104 Yean Jogeptat L.; Conditient Step Statu Step Sourc.; Step Sourc.; Step Sourc.; Step Sourc.; Step Steau

C:\> symmaskdb-sid 0546 list database -dir 10a -p 1

7. The BCV device is "un-masked". From the CommCell Console, you can see the snapshots created during the the SnapProtect job.



Device Group (DG) Name: test DG's Type : REGULAR DG's Symmetrix ID : 000187880546			
Standa	rd Device	BCV Device State	
Logical	Inv. Sym Tra	Inv. sks Logical Sym Tracks STD <=> Bo	
DEV001	006C	0 SP_2_453_292 008B * 0 Split	
Total Track(s) MB(s)	 0.0	0 0.0	
Legend:			
(*): The pa	ired BCV d	evice is associated with this group.	

HOW DOES SNAPPROTECT WORK WITH TIMEFINDER/SNAP?

Similar to TimeFinder/Mirror, Calypso always require a new or recycled VDEV relationship to a single Production volume for each SnapProtect job. However, TimeFinder/Snap allows the LUN to be available to the production host by using the Copy-On-Write mechanism.

Assuming that device #0094 is used as the Primary LUN to the production host, the following steps describe how to create a new TimeFinder/Snap relationship with SnapProtect:

- 1. Create a new Device Group "test" to be used for SnapProtect.
- You must have a SAVE pool for VDEV volumes. You may use the $\ensuremath{\mathsf{DEFAULT_POOL}}$. 2.

In the example shown on the right, you can see that the $\ensuremath{\mathsf{DEFAULT_POOL}}$ has few devices and plenty of space. If you require further SAVE devices, you can create a text file (e.g., new_save_pool.txt) with the following content:

add dev 81:82 to pool DEFAULT_POOL, type=savedev, member_state=enable;

After creating the text file, run the following commands to add the extra devices to the SAVE:

C:\> symconfigure -sid 0546 -f c:\new_save_pool.txt -v -nop commit

C:\> symdey -sid 0546 list -savedey

metrix ID: 000187880546

Symmetrix ID: 000107000340					
Device Name	Directors	Dev	ice		
Sym Physical	SA :P DA :IT	Ca Config A	p Attribute	- Sts (MB)
0079 Not Visible	???:? 02D:C	2 2-Way Mir	N/A	(SV) RW	14400
007A Not Visible	???:? 15A:C	2 2-Way Mir	N/A	(SV) RW	14400
007B Not Visible	???:? 12D:0	2 2-Way Mir	N/A	(SV) RW	14400
007C Not Visible	???:? 05A:C	2 2-Way Mir	N/A	(SV) RW	14400
007D Not Visible	???:? 02B:C	2 2-Way Mir	N/A	(SV) RW	14400
007E Not Visible	???:? 15C:C	2 2-Way Mir	N/A	(SV) RW	14400
007F Not Visible	???:? 01A:C	2 2-Way Mir	N/A	(SV) RW	14400
0080 Not Visible	???:? 16D:C	2 2 Way Mir	N/A	(SV) RW	14400
0081 Not Visible		2 2-Way Mir	N/A	(SV) RW	14400
0082 Not Visible	???:? 06B:C	2 2-Way Mir	N/A	(SV) RW	14400

C:\> symsnap list -svp DEFAULT_POOL -savedevs 30546 Sym

metrix ID: 00	018788
---------------	--------

S	NAP SAVE DE	VICES			
	SaveDevice Tota ion Pool Name T		Free acks Tra	Full acks (%)	
0079 FBA 007B FBA 007C FBA 007E FBA 007F FBA 007F FBA	DEFAULT_POOL DEFAULT_POOL DEFAULT_POOL DEFAULT_POOL DEFAULT_POOL DEFAULT_POOL	460800 460800 460800 460800 460800 460800	21076 19835 20130 20326 20499 20965	439724 440965 440670 440474 440301 439835	4 4 4 4 4
Total Tracks MB(s)	2764800	122831 2 3838.5 82		4	

Assign a VDEV volume to be used for TimeFinder/Snap. 3.

4.

5.

	C:\⊳ symld –g test –sid 0546 add dev 009E–vdev
	C∴≻ symdg show test
	Group Name: test
	Group Type : REGULAR Device Group in GNS : No Valid : Yes Symmetrix ID : 000187880546 Group Creation Time : Mon May 23 07:01:30 2011 VendorID : EMC Corp ApplicationID : SYMCLI
	Number of STD Devices in Group 1 Number of Locally-associated BCVS 0 Number of Locally-associated BCVS 0 Number of Locally-associated BCVS 1 Number of Locally-associated BCVS 1 Number of Locally-associated VDEVS 1 Number of Remotely-associated VDEVS (STD RDF): 0 Number of Remotely-associated GVCV (STD RDF): 0 Number of Remotely-associated GVCV (STD RDF): 0 Number of Remotely-associated GVCV (SCD RDF): 0 Number of Remotely-associated GVCV (SCD RDF): 0 Number of Remotely-associated GVCV (SCD RDF): 0 Number of Remotely-associated GVCV (RCV RDF): 0
	Standard (STD) Devices (1): {
	Sym Cap LdevName PdevName Dev Att. Sts (MB)
	DEV001 \\\PHYSICALDRIVE12 0094 RW 2048 }
	VDEV Devices Locally-associated (1): {
	LdevName PdevName Dev Att. Sts (MB)
Using the CommCell Console, create a new subclient for the LUN:	Event Details
• During the subclient configuration, ensure to select EMC TimeFinder Snap as the storage array.	Event
Run a Full/Incremental backup job.	Event
	Event ID: 3,741 Seventy: Information Date: 05/23/2011 07:56:29 Event Code: 32:373
	Source Computer: watkinsglen
	Program: VssSwProvider
	Job ID: 469
	Description:
	Snap created for volume [T:\] - id [296] backup job [469] client [watkinsglen] array [000187880546] snap engine [EMC TimeFinder Snap].
During the snapshot creation, Copy-On-Write operations are performed.	C:> symsnap-g test_snap query
Once the snapshot is created, the snapshot will be mounted and cataloged, and the VDEV device will be "un-masked".	Device Group (DG) Name test DG's Type : REGULAR DG's Symmetrix ID : 000187880546
	Source Device Target Device State Copy
	Protected Changed Logical Sym Tracks Logical Sym G Tracks SRC <=> TGT (%)
	DEV001 0094 65520 SP_2_469_296 009E X 0 CopyOnWrite 0
	Total Track(s) 65520 0 MB(s) 2047.5 0.0
	Legend:
	(G): X = The Target device is associated with this group, .= The Target device is not associated with this group.

WHAT ARE THE SYMCLI ENVIRONMENT VARIABLES I CAN USE?

There are many environment variables that may aid in troubleshooting and potentially change some of the SnapProtect behavior. Please use these variables with caution. Consult with your EMC Storage Consultant if you are unsure of the impact these variable may cause.

Use the following command to retrieve the list of SYMCLI variables:

C:\> symcli -env

IF I HAVE RDF DEVICES THAT ARE NOT PAIRED, HOW CAN I USE THEM FOR SNAPPROTECT BACKUP?

To use the RDF devices that are not paired, follow the steps given below:

- 1. Create a RDF device group.
- 2. Ensure that the source RDF device is a part of the device group created on the same machine.
- 3. Add the Target VDEV/BCV to the same device group. Use the symdg add with -tgt option to add the target devices to the RDF device group.

HOW DO I BACK UP ALL OF THE DEVICES THAT BELONG TO A PARTICULAR APPLICATION?

Enable the bConsistentActivate registry key to create a consistent point-in-time image of the devices distributed across multiple sites. The key is used during

activate operation for TimeFinder/Snap and TimeFinder/Clone and during Split operation for TimeFinder/Mirror. This is helpful while backing up all of the devices that belong to a particular application or backing up multiple devices distributed across multiple sites.

CAN I USE A DIFFERENT SAVE DEVICE POOL FOR TIMEFINDER/SNAP?

By default, TimeFinder Snap uses DEFAULT_POOL as the SAVE Device Pool for saving changed tracks from the source device.

Enable the sSaveDevicePool registry key to change the default SAVE Device Pool and use a different pool. The specified SAVE Device Pool Name is used with - svp option to TimeFinder/Snap create command.

- Ensure that masking is configured.
- We recommend that all the VDEV and BCV devices are mapped to all the available ports.
- Ensure that gatekeepers are configured for each host connected to the Symmetrix array.
- Ensure that enough disk space is available for snapshot operations and the disk space used by snapshots is monitored. The space requirement for snapshots created during SnapProtect backup can vary based on your environment. The space utilization is dependent on the number of snapshots created and the retention period defined for the snapshots.
- SnapProtect backup uses any available previously synchronized BCVs.
- For any EMC Symmetrix operations to work, the SYMAPI_HOME_DIR registry key must be set to the directory where the Symmetrix SYMAPI library is located.
- In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

Advanced - Fujitsu Eternus DX

BEST PRACTICES

- It is important not to perform any configurations on the ETERNUS Console while running snapshot operations in the CommCell Console.
- For SnapOPC snapshots, the SDV volume should be pre-paired with the source before performing snapshot operations.
- For EC (clone) snapshots, the destination volume should be pre-paired with the source before performing snapshot operations. After pre-pairing, the destination volume should not be left in a suspended state.
- In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

FAQ

WHAT ARE THE TARGET VOLUME SELECTION RULES?

The target volume selection rules for Clone and Snap Snapshots are discussed below:

FOR CLONE SNAPSHOTS

- 1. The first priority is given to pre-paired sessions in the following order:
 - If special name is set by the registry key ETERNUS_USE_VOLUME_LABEL, then pre-paired session with target volume having special name will be given preference. If no such pre-paired session found, any existing pre-paired session will be picked.
 - If the registry key ETERNUS_USE_VOLUME_LABEL is not set, pre-paired sessions with volumes named as iSnapR_<xyz> will be given preference. If no such pre-paired session found, any existing pre-paired session will be picked.
- If pre-paired sessions are not available, preference is given to target volumes with a special name set by the registry key ETERNUS_USE_VOLUME_LABEL. If there are no suitable volumes with the special name, the backup job will fail. If there are more than one volumes with the special name, preference will be based on the source volume type. If source volume is a standard volume, preference will be given to standard volumes otherwise thin provisioning volume.
- 3. If no target volumes are available, a volume will be created using the specified destination pool.

FOR SNAP SNAPSHOTS

- 1. The first priority is given to pre-paired sessions in the following order:
 - If special name is set by the registry key ETERNUS_USE_VOLUME_LABEL, then pre-paired session with target volume having special name will be given preference. If no such pre-paired session found, any existing pre-paired session will be picked.
 - If the registry key ETERNUS_USE_VOLUME_LABEL is not set, pre-paired sessions with volumes named as iSnapR_<xyz> will be given preference. If no such pre-paired session found, any existing pre-paired session will be picked.
- 2. If pre-paired sessions are not available, preference is given to target volumes with a special name set by the registry key ETERNUS_USE_VOLUME_LABEL. If there are no suitable volumes with the special name, the backup job will fail.
- 3. If no target volumes are available, the job will fail.

Advanced - Hitachi Data Systems

TABLE OF CONTENTS

BCV Devices Requirement Troubleshooting FAQ Best Practices

BCV DEVICES REQUIREMENT

Use the following matrix to calculate the number of target devices required for performing SnapProtect operations.

AGENT	TARGET DEVICE REQUIREMENTS (BUSINESS	CONTINUANCE VOL	UMES/ SHADOW	NOTES
	IMAGE VOLUMES)			
	FULL BACKUP	INCREMENTAL	DIFFERENTIAL	
		ВАСКИР	ВАСКИР	
DB2	[Number of devices where data resides] + [Number of devices where the online log resides] + [Number of devices where the 'LOCAL_DB_DIRECTORY' resides] + [Number of devices where the 'DBPATH' resides]	N/A	N/A	
Exchange Database	[Number of devices where data resides] + [Number of devices where the log resides]	[Number of devices where the log resides]	[Number of devices where the log resides]	For example, if your data resides on 2 devices, logs reside on 1 devices. Full backup will require 3(2+1) target devices, Incremental/Differential backup will require 1 target devices.
Microsoft SQL Server	[Number of devices where data resides] + [Number of devices where the log resides]		[Number of devices where data resides] + [Number of devices where the log resides]	For example, if your file system data resides on 3 devices you will require 3 target devices.
				SQL log backup does not require any target device.
Microsoft Windows File System	Number of devices on which the file system data resides	Number of devices on which the file system data resides	Number of devices on which the file system data resides	
NAS NDMP	Number of devices on which the file system data resides			
Oracle	[Number of devices where data resides] + [Number of devices where the log resides]		N/A	
Oracle – Data and logs residing on the same devices	2x[Number of devices where data and logs reside]		N/A	For example, if your data and logs reside on 3 devices, you will require 6 target devices.
Applications running on JFS	[Number of devices where application data resides] + [Number of devices where JFS logs reside] + [No. of devices on which logs reside]		N/A	For example, if your application data resides on 2 devices, logs reside on 1 devices, data and logs share one device, and JFS logs resid on 1 device, you will require 6 (2+1+2+1) target devices
SAP for Oracle - Data and logs	[Number of devices where data resides] + [Devise where the 'sapbackup' directory resides] + [Number of devices where the log resides] + [Device where the 'saparch' directory resides] + 2 x [Device where the 'dbs' directory resides]	N/A	N/A	
Unix File System	[Number of devices where data resides] + [Number of devices where the log resides]			
Unix File System on JFS	[Number of devices on which the file system data resides] + [No. of devices on which file system logs reside]			For example, if your file system data resides on 2 devices and file system log resides on 1 device, you will require 3 target devices.
VMware	Number of luns on which the datastore for the VM resides	Number of luns on which the datastore for the VM resides	N/A	
Microsoft Hyper-V	Number of luns on which vhd and configuration files of VM reside	Number of luns on which vhd and	N/A	

configuration files of VM reside

TROUBLESHOOTING

HARDWARE REVERT OF VSP VOLUMES FAILS

Hardware specific revert operations of VSP volumes may fail if system MODE 80 and MODE 87 options are set to ON in the array. It is recommended to have these modes always OFF for hardware reverts to succeed.

Please note that by default MODE 80 and MODE 87 are set to OFF. After installing the storage array software, all system modes are set to their default values by default. System modes can only be changed by a Hitachi Data Systems representative.

MODE 80

- If set to ON, normal restore and/or reverse copy is performed.
- If set to OFF, quick restore is performed.

MODE 87

- If set to ON, quick resynchronization is performed.
- If set to OFF, normal copy is created.

FAQ

CAN I SWITCH BETWEEN HDS SNAP AND HDS CLONE ON THE SAME DISK?

You cannot switch between HDS Snap and HDS Clone on the same disk; even after deleting the existing snaps.

WHAT IS THE MAXIMUM NUMBER OF SNAPSHOTS CREATED FOR USP VOLUMES?

The maximum number of snapshots created for a USP volume is 3.

CAN I REUSE A DELETED SHADOW IMAGE?

Yes, you can reuse a deleted Shadow Image by creating the CVHDS USE DELETED SHADOWIMAGE registry key if you encounter one of the following scenarios:

- When the expected changes to the source volume are less than 50% between the old and new Shadow Image.
- When you decide to use a spool copy.

HOW IS THE DEVICE POOL FOR COW ON HUS SELECTED?

For P-VOL, the first COW pair creation determines the device pool selection. The pool-id specified during the first COW pair is used for all the remaining COW pairs created using the same P_VOL. If you specify another pool-id during the creation it will be ignored and the pool-id specified during the first COW pair creation will be used.

- Ensure that the client and proxy computers are configured and have access to the array.
- The V-VOL (COW snapshot) should be created prior to performing the SnapProtect backup operations.
- Same size unallocated P-VOL (Primary Volume) will be chosen to be converted into an S-VOL while doing a shadow image operation for a P-VOL.
- Ensure that sufficient number of V-VOL (COW snapshot) and destination P-VOL (S-VOL Shadow Image) devices are configured to meet your retention requirements.
- Ensure that command devices are configured for each host connected to the HDS array.
- After mapping a device and adding a drive letter, you should perform a Host refresh on the Device Manager Server.
- Ensure that enough disk space is available for snapshot operations and the disk space used by snapshots is monitored. The space requirement for snapshots created during SnapProtect backup can vary based on your environment. The space utilization is dependent on the number of snapshots created and the retention period defined for the snapshots.
- In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

Advanced - HP StorageWorks EVA

TROUBLESHOOTING

SNAPSHOTS ARE NOT BEING CREATED

Snapshots cannot be created when the source disk is:

- a snapshot
- is in the process of normalizing (clone in progress) or being deleted

CLONES ARE NOT BEING CREATED

Clones cannot be created when the source disk is:

- a snapshot
- a disk that has a snapshot
- in the process of normalizing (clone in progress) or being deleted

SNAPPROTECT BACKUP IS FAILING FOR HP-UX

Ensure that the kernel tunable (MAXVGS) value are set based on the number of volume groups on the client computer.

- Snapshots/clones are included in the maximum number of virtual disks per array.
- The maximum number of snapshots per source varies based on the array controller software version. For more information, see the HP StorageWorks Enterprise Virtual Array compatibility reference.
- Ensure that the client and proxy computers are configured and have access to the array.
- Ensure that enough disk space is available for snapshot operations and the disk space used by snapshots is monitored. The space requirement for snapshots created during SnapProtect backup can vary based on your environment. The space utilization is dependent on the number of snapshots created and the retention period defined for the snapshots.
- By default, SnapProtect backup uses the first FC adapter that it detects. To use a different FC adapter, use the sSNAP_UseINITIATOR registry key.

Advanced - IBM SAN Volume Controller (SVC)

- Prior to performing a revert operation for a Flash Copy, ensure that:
 - $\circ~$ you do not have any Space-Efficient Flash Copies created on the volume prior to creating the Flash Copy.
 - $\circ\;$ copy operations for the Flash Copy have completed.
- In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

Advanced - IBM XIV

- For Fibre Channel, by default, SnapProtect backup uses the first FC adapter that it detects. To use a different FC adapter, use the sSNAP_UseINITIATOR registry key.
- If a fiber channel adapter is found on the Windows or UNIX client, then by default, the fiber channel will be attempted for mounting snapshots. Set the sSNAP_IsISCSI registry key to use iSCSI even when a fiber channel adapter is detected.

Advanced - LSI

TROUBLESHOOTING

SNAPPROTECT BACKUP IS FAILING

If multiple paths are available and multipath is not configured properly SnapProtect backup job may fail due to intermittent path failures. In case of improper multipath configuration, the SnapProtect backup chooses preferred path while performing mapping but preferred path may change due to failovers. Verify if the array you are using supports multi paths.

UNABLE TO CONFIGURE LSI ARRAY FROM OEM VENDORS

If you are unable to configure LSI array from OEM vendors, such as Dell, IBM, etc., make sure to set the LSI_VENDOR_NAME and LSI_PRODUCT_ID registry keys on the source and proxies if available.

FAQ

WHAT IS THE MAXIMUM NUMBER OF SNAPSHOTS THAT CAN BE CREATED?

The maximum number of snapshot created for each source volume is 4.

HOW CAN I AUTHENTICATE LSI ARRAY PASSWORD WITH SMIS SERVER PASSWORD?

You can authenticate the LSI array password with SMIS (Storage Management Initiative Specification) server using CVSMISTOOL for successful snap creation.

Use the following steps to set the password:

- 1. From the command prompt, navigate to <Software Installation Directory>\Base folder.
- 2. Type CvSMISTool.exe.
- 3. Type 2 to set the password.

```
1) Test SMIS Server
2) Set LSI Array Password
```

Select option 1 or 2, for Quit, default [1]: 2

4. Specify host name or IP address of the device manager where the array is configured.

Enter SMIS server HostName or IP : <Server_Name>

5. Specify the user name of the SMIS server.

Enter SMIS server User Name : <User Name>

6. Specify password for SMIS server.

Enter SMIS server Password : <Password>

7. Specify the number corresponding to the array that you wish to select and press Enter.

```
1) Array Name : iscsi-lsi-l
Array UUID : ******1A2X
```

2) Array Name : san_nas_lsi Array UUID : *******26B4 Select option : [1 - 2] to quit, default [1]: 1

8. Specify password of LSI Array.

Enter LSI Array Password: Re-enter LSI Array Password: Password modified successfully

- Ensure that enough disk space is available for snapshot operations and the disk space used by snapshots is monitored. The space requirement for snapshots created during SnapProtect backup can vary based on your environment. The space utilization is dependent on the number of snapshots created and the retention period defined for the snapshots.
- While Volume Copy operation is in progress, read-write to the source volume should be frozen until volume copy operation completes.

• In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

Advanced - NetApp

TABLE OF CONTENTS

Troubleshooting FAQ Best Practices

TROUBLESHOOTING

ERROR MESSAGE: NO SUCH SNAPSHOT

PROBLEM

You may get this error message when mounting a snapshot from a Vault Copy for a destination volume that has Deduplication enabled.

SOLUTION

To resolve the issue, setup the following registry keys on the Client computer:

- For LUN mount operation, create the sNETAPPCLONELUNBYSNAPTIMESTAMP registry key
- For NFS mount operation, create the sNETAPPREVERTVOLUMEBYSNAPTIMESTAMP registry key

SNAP CREATION FAILS WITH A BUSY LUN ERROR

A snapshot enters a busy state in the following scenarios:

- When there are LUN clones backed up in the snapshot
- When snapshots are mounted manually outside of the SnapProtect backup, through the CommCell Console, or for SnapProtect backup operations such as backup copy creation

Busy snapshots may cause SnapProtect backups to go pending. If you have busy snapshots, consider the following:

- Delete the snapshots in the reverse order they were created in.
- Do not mount a volume and create another SnapProtect backup for the volume.

The SnapProtect backup software will detect busy snapshots and will not allow an additional snapshot to be created until there are no busy snaps. To avoid this snapshot dependency, do not manually create a snapshot of a volume while you have a snapshot mounted.

• If you have a situation where the busy snapshot is no longer mounted but still shows as busy, proceed to delete all the additional snaps that were created while the busy snap was mounted. The snapshot will no longer be busy.

To avoid the snap dependency for NetApp ONTAP version 7.3, use the snapshot_clone_dependency volume option to enable the system to lock the backup of snapshot copies for the active LUN clone. You will be able to delete the base Snapshot copy without having to first delete all of the more recent backing Snapshot copies.

If you are using any other applications on the LUN, review the documentation for impacts caused by using the snapshot_clone_dependency volume option. If you delete the snapshot cloned by the LUN with the volume option enabled, you will not be able to restore the clone from one of the later snaps. The SnapProtect backup will detect if the dependency option is enabled and will allow additional snapshots to be created, even if the snapshot is mounted.

FAQ

WHAT IS THE MAXIMUM NUMBER OF SNAPSHOTS CREATED FOR EACH VOLUME?

The maximum number of snapshot created for each volume is 255.

CAN I CREATE ADDITIONAL PROVISIONING POLICIES FOR SECONDARY COPIES AND USE THEM FOR SNAPPROTECT?

Additional provisioning policies for secondary copies can be added to the DataFabric Manager. Any provisioning policy with a name starting with "SnapProtect_" (case in-sensitive) will be displayed in the SnapProtect GUI for use in storage policy copies.

CAN I USE A NON ROOT USER TO CONFIGURE AN ARRAY OR NDMP?

You can use a Non-Root user for the Array configuration and NDMP configurations.

To configure the array with a non-root user, execute the following commands:

NetAppl> useradmin role add snapprotectrole -c "[SnapProtect Management Role]" -a login-ndmp,login-http-admin,api-*

NetAppl> useradmin group add snapprotectgroup -c "[SnapProtect Management Group]" -r snapprotectrole

NetApp1> useradmin user add snapprotectuser -c "[SnapProtect Management Account]" -n "S Admin" -g snapprotectgroup

For example:

```
NetApp1> useradmin role add snapprotectrole -c "SP Mgmt Role" -a login-ndmp,login-http-admin,api-*
NetApp1> useradmin group add snapprotectgroup -c "SP Mgmt Group" -r snapprotectrole
NetApp1> useradmin user add snapprotectuser -c "SP Mgmt Account" -n "S Admin" -g snapprotectgroup
```

The first command creates the SnapProtect Role with the proper rights; the second command adds this role to a newly created SnapProtect group; and the third command creates the user to for the Array credential field in the Calypso Control Panel.

USE THE SAME CREDENTIALS FOR NDMP

You can use the same credentials for NDMP that you use for the array.

To configure NDMP with the same credentials, enter the encrypted password in the following command, and then execute it:

NetApp1> ndmpd [password] snapprotectsuser

For example:

NetApp1> ndmpd pswd1 snapprotectsuser

×

HOW DO I VERIFY THAT THE DESTINATION FILER HAS SNAPMIRROR ACCESS TO THE SOURCE FILER?

To ensure that SnapMirror jobs run, the destination filer must have SnapMirror access to the source filer. If the name or IP address of the SnapMirror filer appears in "/etc/snapmirror.allow", then the destination filer has access.

To add entries to "/etc/snapmirror.allow" execute the following command:

```
source-filer> wrfile /etc/snapmirror.allow
destination-filer
<Ctrl+C>
source-filer> rdfile /etc/snapmirror.allow
destination-filer
```

Alternatively, you can go into each of the hosts in DataFabric Manager and configure the the proper security rights for source and destination in the Fabric-Attached Storage settings.

HOW DOES THE SNAPMIRROR PROCESS WORK?

1. To get the full, detailed Snap Management plan so that SnapMirror/SnapVault can run, NetApp runs a conformation check during the first auxiliary copy job.

On NetApp

10 *	 Overall Status 	V Protection Policy V	Primary Provisi 🔍	Storage Service
CommCell-main_StorageService-208_Subclient-9	🖌 Normal	SnapProtect Mirror		CommCell-main_S
		-		
		Status		
		Protection:	C initializing	
		Conformance:	🖉 In Progress	
		Resource:	 Normal 	
		Space:	 Normal 	
_		Primary data		
— <i>i</i> #i —		Physical resources:	na735-prt/vol1/cifs	
		Exports:	na735-pri/vol/vol1, line	
rimary data Mirror		Resource pools:	SnapProtectDummyRes	
		Local backup schedule		
		Backup versions:		
		Dataset properties		

On Calypso

- 2. During each SnapMirror auxiliary copy job, SnapMirror creates a "BackupVersion," which is a new Snapshot of the entire volume that requires replication.
- 3. Once a new Snapshot for SnapMirror is available, the Snapshot is listed under the volume on the Primary Filer.

Job ID:	19
Operation:	Auxiliary Copy
Storage Policy:	SP_Main
Storage Policy Copy:	Snap_to_Mirror
Source MediaAgent:	main.cv.lab
Destination MediaAgent:	main.cv.lab
Size of Application:	0 Bytes
Total Data to Process:	0 Bytes
Percent complete:	0%
Start Time:	31/05/11 3:07 PM
Estimated Completion Time:	N/A
Priority:	266
Status:	Running
Last Job Update Time:	31/05/11 3:07 PM
Job Started By:	admin
Job Started From:	Interactive
Description	
Reason for job delay:	
Error Code: [25:37] Description: Conforma	ance check for Dataset id [211] is in progress inside DataFabric Manager.

LC LC	too onepanon			
	View Volume View Snapshots View Space Usag	Val1 • All Snapshots • Pe • View]	
	hots of volume <u>vol1</u> . Name		Date	Status
	SP 2 18 8 1306818360		May 31 05:08	normal
—	na735-sec(0099927622) SP mirror na735	pri volt 2.2	May 31 05:11	snapmirror
	SP 2 20 10 1306818965		May 31 05:16	normal
Select All - Unse	lect All			Dele
Calculate D	oclaimable cize of colocted chanchete: 0.K	n a		

nt SnapMirror session. SnapMirror Properties ®

Manage Snapmirror

Source (FilenLocation):	na735-pri.vol1
Destination (Filer:Location):	na735-sec:SP_mirror_na735_pri_vol1_2
Maximum Transfer Rate (kb/s):	
Restart Mode:	Schedule Priority
Schedule:	
Base Snapshot:	na735-sec(0099927622)_SP_mirror_na735_pri_vol1
Base Timestamp:	Tue May 31 05:11:46 GMT 2011
ag Time (hhmm:ss):	00:06:03
Status:	idie
State:	source
Content State:	
Current Transfer Size (Kb):	0
Current Transfer Type:	
.ast Transfer Size (Kb):	1456
ast Transfer Duration (secs):	4
ast Transfer Type:	

 Add Sapashol

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4. The new Snapshot also appears in the current SnapMirror session.

 On the destination filer site, the same Snapshot appears. In addition, if there were any previous SnapMirror on-demand jobs run, only the very last one remains on the target box.

NetApp calls this a "Swizzling Process". That is, the primary Fabric-Attached Storage (FAS) creates a delta set between the original snapshot used from the previous SnapMirror job and the new snapshot created for the current SnapMirror job. Only the details of the snapshot and the deltas are sent to the destination FAS, and refer to the previous snapshot, which was formerly the target SnapMirror session. The volume is updated to match what is in the primary FAS. The previous snapshot is not deleted because the entire process is a background job.

HOW DOES DATA AGING WORK WITH SNAPMIRROR?

 Once a job has been Data-Aged or manually deleted, the job no longer appears in the SnapMirror target either. SnapVault is not affected by this process.

BEFORE DELETION ON CALYPSO

Source Client	Source Path	Mount Host	Mount Path	Application		Job ID	~~
na735-pri.c	/vol/vol1/cifs			NAS NDMP	24		
na735-pri.c	/vol/vol1/cifs			NAS NDMP	22		
na735-pri.c	/vol/vol1/cifs			NAS NDMP	20		
na735-pri.c	/vol/vol1/cifs	Mount		MAS NDMD	18		
		Use hardv	vare revert cap	bability if availabl	e		
		Delete				Ĩ	
		Detail					

BEFORE DELETION ON SNAPMIRROR

Manage Snap Volumes -> Snapshol			
(Add	d Snapshot]		
	View Volume vol1 •		
	View Snapshots All Snapshots •		
	View Space Usage 🗆 View	1	
Showing snapsho			
-	Name SP 2 18 8 1306818360	Date May 31 05:06	Status
	5P 2 20 10 130501000	May 31 05:16	normal
E	SP 2 22 12 1306819700	May 31 05:28	normal
	SP 2 22 12 1306819700 SP 2 24 14 1306820556	May 31 05:28 May 31 05:43	normal
с Г С			

AFTER DELETION ON PRIMARY FAS

Ļ	Add Snapshot]				
		View Volume	vol1 •		
		View Snapshots	All Snapshots 💌		
		View Space Usag	e 🗆 View		
		SP 2 20 10 1306818965		May 31 05:16	normal
		Name		Date May 31 05:16	Status
		0F 2 20 10 1000010000			
-		5P 2 22 12 1305519700		May 31 05:28	normal
3				May 31 05:28 May 31 05:43	normal normal
		SP 2 22 12 1306819700	pri volti 2.5		

AFTER DELETION ON CALYPSO



AFTER DELETION ON THE SECONDARY FAS

[Add Snaps]	hot]			
	View Volume	SP_mirror_na735_pri_vol1_2		
	View Snapshots	All Snapshots 💌		
	View Space Usa	ge 🗆 View		
	Name		Date	
	SP 2 18 8 130681836		Date May 31 05:06 May 31 05:16	-
			May 31 05:06	
	<u>SP 2 18 8 136681838</u>	2	May 31 05:06 May 31 05:16	
	<u>SP 2 18 8 13068183</u> SP <u>2 22 12 13068197</u>	00 735 pri volt 2.4	May 31 05:06 May 31 05:16 May 31 05:28	
	<u>SP 2 18 8 130601830</u> SP 2 22 12 130601830 SP 2 22 12 13060197 ra735-sect00999276221 SP mirror na	20 735 pri volt 2.4 26	May 31 05:06 May 31 05:16 May 31 05:28 May 31 05:21 May 31 05:31	
	<u>SP 2 18 8 10681838</u> <u>32 2 32 10 10 1008183</u> <u>SP 2 22 12 1008197</u> mi735-mic(0009927022) SP mirror na <u>SP 2 24 14 10088005</u>	20 735 pri volt 2.4 26	May 31 05:06 May 31 05:16 May 31 05:28 May 31 05:21 May 31 05:43	

2. The DataAging process does not remove this snapshot either. Only the next auxiliary copy job deletes this snapshot. After a new job runs, AuxCopy reports that there is no

new data to move.

The primary FAS shows that a new snapshot is used for SnapMirror.

	View Volume vol1 •		
	View Snapshots All Snapshots 💌		
	View Space Usage View		
howing snap	ishots of volume <u>vol1</u> .		
	Name	Date	Status
	SP 2 20 10 1306010965	May 31 05:16	normal
	SP 2 28 10 1368816985 SP 2 22 12 1388819700	May 31 05:16 May 31 05:28	normal
	SP 2 22 12 1306819700	May 31 65:28	normal
	8P 2: 22: 12: 1386819709 5P 2: 24: 14: 1386520588	May 31 05:28 May 31 05:43	normal

Refresh

New Service

 The secondary FAS shows the new snapshot here, but the process has not removed the volume snapshot that pertained to Job 18.

Now the job has been deleted from Calypso. This won't affect the SnapMirror relationship until the next job runs and another auxiliary copy job runs. The latest SnapMirror snapshot that was synchronized to the secondary FAS is responsible for deleting the snapshot on the destination FAS box.

[Add Snapshot]	
View Volume	SP_mirror_na735_pri_vol1_2 💌
View Snapshots	All Snapshots
View Space Usa	ge 🗆 View
ng snapshots of volume <u>SP mirror na735 pri vo</u>	
Name	Date
SP 2 20 10 13068189	65 May 31 05:16
SP 2 22 12 13060197	00 May 31 05/20

	5P 2 22 12 1306019700	May 31 05:28	normal
	SP 2 24 14 1306820586	May 31 05:43	normal
E	na735-sec(0099927622) SP mirror na735 pri vol1 2.5	May 31 05:46	normal
	SP 2 27 16 1306821665	May 31 06:01	normal
E	na735-sec(0099927522) SP mirror na735 pri volt 2.6	May 31 06:03	normal
Select All - Unselect All			Delete
Calculate Reclaimable rive of colorted councilete: 0 KR			

Calculate Reclaimable size of selected snapshots: 0

- For any ONTAP version, it is recommended to provide the host name or IP address of a data port (e.g., e0A, e0B) during the NAS client or storage array configuration instead of using the management port (e.g., e0M). If you are using the management port, you must reassign the host name or IP address of the management port to a data port on the file server.
- It is recommended that you do not use the system volume (typically vol0) for user data.
- Ensure that enough disk space is available for snapshot operations and the disk space used by snapshots is monitored. The space requirement for snapshots created during SnapProtect backup can vary based on your environment. The space utilization is dependent on the number of snapshots created and the retention period defined for the snapshots.
- It is recommended that you do not install the CommServe and DataFabric Manager on the same computer.
- To perform snapshots and backup to tape operations in parallel for the same data, use two backupsets.
- When planning for Snapshots, group LUNs according to their rate of change. For example, group LUNs with a high rate of change in the same volume and group LUNs with a low rate of change in another, separate volume. When calculating the size of volumes, use the rate of change to determine the amount of space necessary for Snapshots.
- SnapProtect provides the full suite of capabilities for recovery regardless of the Volume to LUN relationship and ratio. However, a 1 to 1, Volume to LUN, relationship might simplify storage and application management. It is also best to ensure that each LUN resides within a Qtree in SnapMirror and SnapVault configurations. Thin Provisioned Volumes with LUNS make your storage provisioning and snapshot management flexible.
- Disable the native NetApp schedule for snapshots on volumes that Calypso manages. This ensures snapshot retention and storage use is in line with the
 policies defined within Calypso. Using the default setting for internal snapshot scheduling might cause contention problems if multiple calls to create
 snapshots occur at the same time. To change the default setting, you can clear the Scheduled checkbox for the volume from Filer View or System Manager.
- In order to use a specific initiator for accessing snapshots during SnapProtect backup set the sSNAP_UseINITIATOR registry key to the desired initiator address.

Advanced - Data Replicator

TABLE OF CONTENTS

Overview

How it Works

Use a Different Replication Process

Use Hardware snapshot

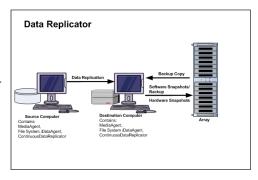
Enable Use of Hardware Snapshot Setup the Array Information

OVERVIEW

Data Replicator provides the snapshot functionality without the need for any specialized hardware.

The use of Data Replicator with SnapProtect backup provides the following key capabilities:

- Identify precise changes to the data protected on the source computer and transfer only the modified data during backup. This reduces the amount of data transferred over the network enabling faster backup cycles.
- Protect application data in a consistent state and restore to a point-in-time upon recovery.
- Protect highly dynamic application data environments without compromising system performance. An effective way to backup live data is to temporarily quiesce it, take a snapshot, and then resume live operations.
- Compression and encryption of source data during backup for network efficiency and data security.
- Move backup data on the destination to secondary storage and also restore back data from the secondary storage to the source computer when required.
- The flexibility to engage hardware or software storage arrays for performing backup operations. Use hardware or software storage arrays to perform SnapProtect backup. For e.g., you can use a hardware array like NetApp or a software storage array like Data Replicator to perform the data protection operations.



HOW IT WORKS

When you select data replicator as a storage array, the data on the source computer is replicated to the destination computer. A snapshot of the replicated data is created and used for various data protection and recovery operations. After an initial data replication of data from source to destination computer, only the new or changed data on the source computer will be replicated to the destination computer.

You can either use the hardware or the software storage arrays to create snapshots of the replicated data to be used for various data protection operations.

USE A DIFFERENT REPLICATION PROCESS

There are other replication methods you can select from while configuring a subclient to use the Data Replicator storage array.

By default, the data on the source will be compared with the replicated data on the destination computer in order to transfer new or changed data to the destination for replication.

Follow the steps below to use a different replication method:

- 1. From the CommCell Console, navigate to *Client* | *Agent*.
- 2. Right-click the subclient and click Properties.
- 3. Click the SnapProtect Operations tab.
- 4. Click **Use Journaling** if you want to continuously track any change made on the source computer since the last SnapProtect backup. All the changes will be stored in the database and will be transferred for replication to the destination computer once the next backup starts.
- Click Use snapshot on the source to replicate data if you want the snapshot of the replicated data to be created on the source computer. This method will follow the default replication process. However, snapshots may not be supported on the source computer e.g., root volumes.
- 6. Click OK.

Subclient Properties of
General Content Pre/Post Process Storage Device Activity Control Encryption SnapProtect Operations
V SnapProtect Available Snap Engines Data Replicator Enter Array Credentials Use Proxy V
Use Separate Proxy for Snap to Tape
Proxy
Use Journaling
Minimum size of file for using hash comparisons: 256 🛓 KB
Block size to use for hashing: 64 🚆 KB
OK Cancel Help

USE HARDWARE SNAPSHOT

You can choose to use hardware storage arrays to perform SnapProtect operation of the replicated data on the destination computer. The following section provides the steps to be performed for using hardware storage arrays for the SnapProtect operations.

ENABLE USE OF HARDWARE SNAPSHOT

When using a hardware snapshot engine for performing SnapProtect operations, use the steps given below to configure use of hardware storage array.

- From the CommCell Browser, right-click the snapshot copy that you wish to use for SnapProtect operations and select **Properties.**
- 2. From the **Data Path Configuration** tab, select the **Use Hardware Snapshot** option to use a hardware storage array to perform SnapProtect backup of the replicated data.
- 4. Click OK.

SETUP THE ARRAY INFORMATION

When using a hardware storage array for performing SnapProtect operations, you need to provide the identification information for the array to ensure access to the array. The following section provides step-by-step instructions for setting the array information.

- 1. From the CommCell Console, navigate to **Tools | Control Panel**.
 - Click Array Management.

A CommCell Browser	e 3	murphy × W	What's new? ×			
- A Committee						-
Gient Computer Groups Gient Computers	Control	Panel	Construction of the state of the	and the state of the second second	Contractory of Contractory of Contractory	×
Security Storage Resources		5	191 I.	1		redun
Policies	Add/Remo Codi	we Software ouration	Alarts	Array Nanagement		ton is
🖶 📊 Reports 🖶 🌍 Content Director		puration				
		ă,		100		
		81 It Trai	58 Dilling Configuration	Browse(Search(Recovery		
				_		-
		mport/Export	6 b			
		ttings	Committee Properties	Oustom Calendars		
		See.	Q.	8		
	Date Intr	erface Pairs	DR Backup Settings	E-Mel & IIS Configuration		-
						IS: 0 P
		•		1		
	2010/			OW COLOR	pesopon	~
	0	110	07/21/2010 10:38:20 Ev	MgrS murphy 35:254	User [admin] has lo	
				the Parate	The Period	
Array Managemen	1					
Control Host	Name	User Name	Snap Vendor	Description	× -	Add
fidk.hct.commvault.com	5001438002	hct\administr.	HP EVA		~	
172.19.66.22		grpadmin	Dell Equalogic			Edit
172.19.125.226	6000279	admin	IBM XIV			
172.19.66.91	APM0003340	. admin	EMC CLARIION			Delete
172.19.66.69	10881	system	HDS			

172 10 71 2

2. Click Add.

List Sn

OK Cancel Help

5.

3. Select the hardware storage array from the list of **Snap Vendor** list.

Array Managemer	nt	×
Snap Vendor	·	D
Name		
Control Host		
User Name		
Password		
Confirm Password		
Device Group		
Use devices only from this device group		
Description		
ОК	Cancel Help	

- 4. Specify the identification information for the array in the Name field. The identification information for the array will be based on the storage array that you are using. For example:
 - Dell EqualLogic: Specify the Management IP address of the array in this field.
 - EMC Symmetrix/EMC Clariion/IBM XIV/HDS/LSI: Specify the array's serial number in this and the **Control Host** fields.
 - HP EVA: Specify the storage array WWN (for e.g., 50014380025DEB70) in this field.
 - NetApp: Specify the hostname of the array in this field.

Ensure that you provide the host name and not the fully qualified domain name or TCP/IP address of the host.

Array Management	×
Snap Vendor	•
Name	\mathbf{D}
Control Host	
User Name	
Password	
Confirm Password	
Device Group	
Use devices only from this device group	
Description	
OK Cancel Help	

- If applicable, specify the name of the device manager server where the array was configured in the **Control Host** field.
 - Enter the user access information in the Username and Password fields.
 - If applicable, in the **Device Group** field, specify the name of the hardware device group created on the array to be used for snapshot operations. If you do not specify a device group, the default device group will be used for snapshot operations.

For Dell EqualLogic Clone, specify the name of the Storage Pool where you wish to create the clones.

Array Managemen	t 🛛 🔀
Snap Vendor Name Control Host 1 User Name 2 Password Confirm Password Device Group 3	t
ОК	Cancel Help

- If applicable, select the **Use devices only from this device group** option to use only the snapshots devices available in the device group specified above.
 - Use the **Description** field to enter a description about the entity. This description can include information about the entity's content, cautionary notes, etc.
 - Click OK.

6.

Array Managemer	t 🛛 🔀		
Snap Vendor	×		
Name			
Control Host			
User Name			
Password			
Confirm Password			
Device Group			
Use devices only from this device group			
2 Description			
3 OK Cancel Help			

Advanced - Nimble

FAQ

CAN I REVERT A SNAPSHOT?

No. When using Nimble storage array, you cannot revert a snapshot.

SnapProtect[™] Backup - Snaptest Tool

TABLE OF CONTENT

Overview

Usage

Setup Array Configuration Exercise Vendor Snap Engine Detect Snap Engine Type Show HBA/iSCSI Address Send SCSI inquiry to mount point Mount Snapshot on Proxy

OVERVIEW

The SnapTest tool is used to test the basic snap engine operations like creating, deleting, mounting snapshots etc. It can also be used as a diagnostic tool to verify the host and array connections. The SnapTest tool is capable of working with multiple mount points for each operation and supports an interactive and command line mode.

USAGE

You can use the SnapTest tool to derive the HBA/iSCSI, the vendor, product, and version details for an array. You can also use the Snaptest tool to:

- create, mount, unmount, delete, revert snapshots for an array.
- test proxy computers by mounting snapshots.

SETUP ARRAY CONFIGURATION

Follow the steps given below to setup array information:

- 1. Navigate to <installed_directory>\Base and double-click SnapTest.exe.
- 2. Press Enter.

This tool helps to perform operations such as...

- -> Automatic Snap Tests
- -> Individual Snap Tests
- -> Hardware Snapshot Engine Detection
- -> SCSI Inquiry
- -> Scan HBA/IQN Adapters

NOTE: Please make sure that the mount points used for this test are not being used by any other application. If they are in use, it may cause data corruption or data loss. Please refer to our online documentation for list of supported Operating systems, Hardware Snapshot engines and File systems.

Press <ENTER> to continue...

SnapTest Version Main Menu

Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of Snap related operations on them. In order to perform these snap opertions, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen.

1. Automatic Snap Tests

2. Advanced Operations

0. Exit

Choose your option [1]:

SnapTest Version Advanced Operations

From this screen you can launch Array Configuration screen or Miscellaneous tasks screen.

4. Type 2 and press Enter.

Type 2 press Enter.

3.

⁻⁻⁻⁻⁻

5. Press Enter to add a new array.

6. Specify the number corresponding to the snap engine vendor that you wish to add and press **Enter**.

7. Specify the following information for the detected array:

- Array ID
- Control host name/ip
- User name
- Password
- Reenter password
- Device group
- Use only devices belonging to the above device group [y/n]

3. Miscellaneous Tasks 0. Exit Choose your option [1]: SnapTest Version Configure Arrays _____ _____ All snap operations require array information such as Array ID, User Name and Password etc... Without this information, Snap operations will fail. Configuration changes performed in this screen can be saved to disk so that it is available when the tool is restarted. Password will be encrypted before writiing to disk. 1. Add New Array 2. Delete Array 3. Show Existing Arrays 4. Save configuration (If not saved, changes will be lost.) 0. Exit Choose your option [1]: SnapTest Version Add Arrav -----Choose the vendor of your array 1. CommVault 2. Dell Equallogic 3. EMC CLARiiON 4. EMC Celerra 5. EMC Symmetrix 6. HDS 7. HP EVA 8. IBM XIV 9 L.S.T 10. Native 11. NetApp 0. Exit Enter Vendor Number [1]: SnapTest Add Arrav

1. Perform Individual Snap Operations

2. Array Configuration

```
-----
```

```
Vendor : XXX
Enter array ID :
Enter control host name/ip :
Enter user name :
```

- Enter password :
- Enter password again :
- Enter device group :

EXERCISE VENDOR SNAP ENGINE

Use the following steps to create, mount, unmount, delete, revert snapshots for an array.

1. Navigate to <installed_directory>\Base and double-click SnapTest.exe.

2. Press Enter.

This tool helps to perform operations such as...

.....

- -> Automatic Snap Tests
- -> Individual Snap Tests

3. Type 2 and press Enter.

4. Press Enter.

5. Specify the number corresponding to the snap engine that you wish to select and press **Enter**.

-> Hardware Snapshot Engine Detection

-> SCSI Inquiry

-> Scan HBA/IQN Adapters

NOTE: Please make sure that the mount points used for this test are not being used by any other application. If they are in use, it may cause data corruption or data loss. Please refer to our online documentation for list of supported Operating systems, Hardware Snapshot engines and File systems.

Press <ENTER> to continue...

SnapTest Version Main Menu

Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of Snap related operations on them. In order to perform these snap opertions, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen.

1. Automatic Snap Tests

2. Advanced Operations

0. Exit

Choose your option [1]:2

SnapTest Version Advanced Operations

From this screen you can launch Array Configuration screen or Miscellaneous tasks screen.

1. Perform Individual Snap Operations

2. Array Configuration

3. Miscellaneous Tasks

0. Exit

Choose your option [1]:

SnapTest Version Snap Engine Test

Choose the snap engine you would like to exercise. All the snap tests will use this engine till you choose a different one. If you do not know what engine to choose, choose 'Detect Engine' to find out what engine to choose.

- 1. Native
- 2. HDS Shadow Image
- 3. NetApp
- 4. EMC TimeFinder BCV
- 5. EMC TimeFinder Snap
- 6. EMC CLARIION Snapview Snap
- 7. EMC CLARiiON Snapview Clone
- 8. HDS Copy on Write Snapshot
- 9. Dell Equallogic Snap
- 10. Data Replicator
- 11. Data Replicator
- 12. HP EVA Snapshot
- 13. HP EVA Clone
- 14. IBM XIV SNAP
- 15. Data Replicator
- 16. LSI Snapshot

19. EMC Celerra 20. IBMSVC Space-efficient FlashCopy 21. IBMSVC FlashCopy 22. 3PAR SNAP 23. 3PAR CLONE 24. LSI IBM Snap 25. LSI IBM Clone 26. LSI Dell Snap 27. LSI Dell Clone 28. LSI SGI Snap 29. LSI SGI Clone 30. LSI Sun Snap 31. LSI Sun Clone 32. Detect Engine 0. Exit Enter Engine Number [32]: SnapTest Version Snap Engine Test _____ From this screen, you can launch individual snap operations to exercise the snap engine selected in the previous screen. Exit from this screen to choose a different engine. 1. Create Snap 2. Delete Snap 3. Mount Snap 4. Unmount Snap 5. Revert to Snap 6. Save Snaps List 7. Load Snaps List 0. Exit Choose your option [1]:

17. LSI Volume Copy
 18. Dell Equallogic Clone

Specify the operation that you wish to perform. For e.g., specify 1 if you wish to create a snapshot and press Enter.

DETECT SNAP ENGINE TYPE

Use the following procedure to detect the type of storage array in your environment:

- 1. Navigate to <installed_directory>\Base and double-click SnapTest.exe.
- 2. Press Enter.

This tool helps to perform operations such as...

- -> Automatic Snap Tests
- -> Individual Snap Tests
- -> Hardware Snapshot Engine Detection
- -> SCSI Inquiry

-> Scan HBA/IQN Adapters

NOTE: Please make sure that the mount points used for this test are not being used by any other application. If they are in use, it may cause data corruption or data loss. Please refer to our online documentation for list of supported Operating systems, Hardware Snapshot engines and File systems.

SnapTest Version Main Menu

Press <ENTER> to continue...

Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of

3. Type 2 and press Enter.

4. Type **3** and press **Enter**.

5. Press Enter.

6. Specify the source mount path or the device path and press Enter. The mount path should be specified as <drive>:\\. For example, f:\\.

7. The snap engine type configured for the mount or device path is displayed.

Snap related operations on them. In order to perform these snap opertions, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen.

1. Automatic Snap Tests

2. Advanced Operations

0. Exit

Choose your option [1]:2

SnapTest Version Advanced Operations

From this screen you can launch Array Configuration screen or Miscellaneous tasks screen.

1. Perform Individual Snap Operations

2. Array Configuration

3. Miscellaneous Tasks

0. Exit

Choose your option [1]:

SnapTest Version Miscellaneous Tasks

From this screen you can launch various miscellaneous tasks that you might need to do while setting up snap feature. For example, you might need to find out HBA adapter address. Or you might need to scan for new devices upon zoning your client with your array. Such tasks can be performed from here.

1. Detect Snap Engine Type

2. Show HBA/iSCSI address

- 3. Send SCSI inquiry to mount point
- 4. Rescan Adapters

5. Delete Devices

0. Exit

Choose your option [1]:

SnapTest Version Snap Engine Detection

Enter source mount path or device path :

SnapTest Version Snap Engine Detection

Mount Path : f:\\

Underlying Devices : \\.\PhysicalDrive1 Snap Engine for \\.\PhysicalDrive1 : HP EVA Snapshot Press <ENTER> to continue...

SHOW HBA/ISCSI ADDRESS

Follow the steps gives below to derive the HBA/iSCSI information for an array:

- 1. Navigate to <installed_directory>\Base and double-click SnapTest.exe.
- 2. Press Enter.

This tool helps to perform operations such as...

- -> Automatic Snap Tests
- -> Individual Snap Tests
- -> Hardware Snapshot Engine Detection
- -> SCSI Inquiry
- -> Scan HBA/IQN Adapters

NOTE: Please make sure that the mount points used for this test are not being used by any other

```
3. Type 2 and press Enter.
```

4. Type **3** and press **Enter**.

5. Type 2 and press Enter.

6. Press **Enter** to list adapters for a specific array.

7. Enter the name of the snap engine.

8. The HBA/iSCSI information including the WWPN number for the fiber card is displayed.

SEND SCSI INQUIRY TO MOUNT POINT

Follow the steps given below to derive the vendor information for an array:

application. If they are in use, it may cause data corruption or data loss. Please refer to our online documentation for list of supported Operating systems, Hardware Snapshot engines and File systems.

Press <ENTER> to continue...

SnapTest Version Main Menu

Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of Snap related operations on them. In order to perform these snap opertions, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen.

1. Automatic Snap Tests

2. Advanced Operations

0. Exit

Choose your option [1]:2

SnapTest Version Advanced Operations

From this screen you can launch Array Configuration screen or Miscellaneous tasks screen.

1. Perform Individual Snap Operations

2. Array Configuration

3. Miscellaneous Tasks

0. Exit

Choose your option [1]:

```
SnapTest Version Miscellaneous Tasks
```

```
_____
```

From this screen you can launch various miscellaneous tasks that you might need to do while setting up snap feature. For example, you might need to find out HBA adapter address. Or you might need to scan for new devices upon zoning your client with your array. Such tasks can be performed from here.

1. Detect Snap Engine Type

2. Show HBA/iSCSI address

- 3. Send SCSI inquiry to mount point
- 4. Rescan Adapters
- 5. Delete Devices
- 0. Exit

Choose your option [1]:

```
SnapTest Version List Adapters
```

Do you need adapters specific to an Array? [Y/N] [Y] :

SnapTest Version List Adapters

```
_____
```

Do you need adapters specific to an Array? $[\rm Y/N]$

[Y] : Y

Enter Array name :

- 1. Navigate to <installed_directory>\Base and double-click SnapTest.exe.
- 2. Press Enter.

3.

4.

5.

6.

Type 2 and press Enter.

Type 3 and press Enter.

Type 3 and press Enter.

This tool helps to perform operations such as...

-> Automatic Snap Tests

- -> Individual Snap Tests
- -> Hardware Snapshot Engine Detection
- -> SCSI Inquiry
- -> Scan HBA/IQN Adapters

NOTE: Please make sure that the mount points used for this test are not being used by any other application. If they are in use, it may cause data corruption or data loss. Please refer to our online documentation for list of supported Operating systems, Hardware Snapshot engines and File systems.

Press <ENTER> to continue...

SnapTest Version Main Menu

Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of Snap related operations on them. In order to perform these snap opertions, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen.

1. Automatic Snap Tests

2. Advanced Operations

0. Exit

Choose your option [1]:2

SnapTest Version Advanced Operations

From this screen you can launch Array Configuration screen or Miscellaneous tasks screen.

1. Perform Individual Snap Operations

- 2. Array Configuration
- 3. Miscellaneous Tasks

0. Exit

Choose your option [1]:

SnapTest Version Miscellaneous Tasks

From this screen you can launch various

miscellaneous tasks that you might need to do while setting up snap feature. For example, you might need to find out HBA adapter address. Or you might need to scan for new devices upon zoning your client with your array. Such tasks can be performed from here.

- 1. Detect Snap Engine Type
- 2. Show HBA/iSCSI address
- 3. Send SCSI inquiry to mount point
- 4. Rescan Adapters
- 5. Delete Devices
- 0. Exit

Choose your option [1]:

SnapTest Version Send SCSI Inquiry

Enter Mount Point to send SCSI Inquiry :

7. The vendor information, source path, and the mount path details are displayed.

Specify the drive letter of mount directory and press Enter.

MOUNT SNAPSHOT ON PROXY

Follow the steps below to create a snapshot on your source computer and mount it to a proxy computer:

 On your source computer, navigate to <installed_directory>\Base and doubleclick SnapTest.exe.

2. Press Enter.

This tool helps to perform operations such as...

- -> Automatic Snap Tests
- -> Individual Snap Tests
- -> Hardware Snapshot Engine Detection
- -> SCSI Inquiry
- -> Scan HBA/IQN Adapters

NOTE: Please make sure that the mount points used for this test are not being used by any other application. If they are in use, it may cause data corruption or data loss. Please refer to our online documentation for list of supported Operating systems, Hardware Snapshot engines and File systems.

Press <ENTER> to continue...

SnapTest Version Main Menu

Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of Snap related operations on them. In order to perform these snap opertions, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen.

1. Automatic Snap Tests

2. Advanced Operations

0. Exit

Choose your option [1]: 2

SnapTest	Main	Operations

- From this screen you can perform individual snap

operations or miscellaneous tasks.

1. Perform Individual Snap Operations

2. Miscellaneous Tasks

0. Exit

Choose your option [1]:

SnapTest Snap Engine Test

Choose the snap engine you would like to exercise. All the snap tests will use this engine till you choose a different one. If you do not know what engine to choose, choose 'Detect Engine' to find out what engine to choose.

- 1. Native
- 2. HDS Shadow Image

3. NetApp

- 4. EMC TimeFinder BCV
- 5. EMC TimeFinder Snap
- 6. EMC CLARiiON Snapview Snap
- 7. EMC CLARIION Snapview Clone
- 8. HDS Copy on Write Snapshot
- 9. Dell Equallogic Snap
- 10. Data Replicator
- 11. Data Replicator

3. Type 2 and press Enter.

4. Press Enter.

 Specify the number corresponding to the storage that you wish to select and press Enter.

14. IBM XIV SNAP 15. Data Replicator 16. LSI Snapshot 17. LSI Volume Copy 18. Dell Equallogic Clone 19. EMC Celerra 20. IBMSVC Space-efficient FlashCopy 21. IBMSVC FlashCopy 22. Dell Compellent Snap 23. 3PAR SNAP 24. 3PAR CLONE 25. LSI IBM Snap 26. LSI IBM Clone 27. LSI Dell Snap 28. LSI Dell Clone 29. LSI SGI Snap 30. LSI SGI Clone 31. LSI Sun Snap 32. LSI Sun Clone 33. Detect Engine 0. Exit Enter Engine Number [33]: Specify the drive letter of mount directory and press Enter. Mount points to snap (separate by commas, if more than one): E:\\ Enter all the mount points that you want to test. Ensure to specify two "\" after the drive letter e.g., $E: \setminus \setminus$. Press Enter. SnapTest Create Snap _____ Mount points to snap (separate by commas, if more than one): E:\\ Creating snapshot... SUCCESS Press <ENTER> to continue...

HP EVA Snapshot
 HP EVA Clone

8. Type **0** and press **Enter** until you exit the tool.

- 9. Navigate to <installed_directory>\Base and copy the SnapTestSnapInfo.xml file to a temporary location on the proxy computer.
- **10.** Connect to the proxy computer and do the following:
 - Rename the current SnapTestSnapInfo file to SnapTestSnapInfo old.
 - Copy the new SnapTestSnapInfo.xml file to the *<installed_directory*>\Base folder.
 - Double-click **SnapTest.exe** to start the tool.
- 11. Press Enter.

6.

7.

This tool helps to perform operations such as...

- -> Automatic Snap Tests
- -> Individual Snap Tests
- -> Hardware Snapshot Engine Detection
- -> SCSI Inquiry
- -> Scan HBA/IQN Adapters

NOTE: Please make sure that the mount points used for this test are not being used by any other application. If they are in use, it may cause data corruption or data loss. Please refer to our online documentation for list of supported Operating systems, Hardware Snapshot engines and File systems.

Press <ENTER> to continue...

12. Type 2 and press Enter.

13. Press Enter.

14. Specify the number corresponding to the storage that you wish to select and press **Enter**.

SnapTest Version Main Menu

Perform automatic snap tests or launch Advanced Operations such as Array Configuration, Snapshot Engine Detection etc. Automatic snap tests take one or more source mounts to snap and performs series of Snap related operations on them. In order to perform these snap opertions, array configuration such as array id, control host and user credentials is required. If no array configuration is found, Automatic Snaptests takes you to Array Configuration screen.

1. Automatic Snap Tests

2. Advanced Operations

0. Exit

Choose your option [1]: 2

SnapTest Main Operations

From this screen you can perform individual snap operations or miscellaneous tasks.

- 1. Perform Individual Snap Operations
- 2. Miscellaneous Tasks

0. Exit

Choose your option [1]:

SnapTest Snap Engine Test

Choose the snap engine you would like to exercise. All the snap tests will use this engine till you choose a different one. If you do not know what engine to choose, choose 'Detect Engine' to find out what engine to choose.

- 1. Native
- 2. HDS Shadow Image
- 3. NetApp
- 4. EMC TimeFinder BCV
- 5. EMC TimeFinder Snap
- 6. EMC CLARiiON Snapview Snap
- 7. EMC CLARiiON Snapview Clone
- 8. HDS Copy on Write Snapshot
- 9. Dell Equallogic Snap
- 10. Data Replicator
- 11. Data Replicator
- 12. HP EVA Snapshot
- 13. HP EVA Clone
- 14. IBM XIV SNAP
- 15. Data Replicator
- 16. LSI Snapshot
- 17. LSI Volume Copy
- 18. Dell Equallogic Clone
- 19. EMC Celerra
- 20. IBMSVC Space-efficient FlashCopy
- 21. IBMSVC FlashCopy
- 22. Dell Compellent Snap
- 23. 3PAR SNAP
- 24. 3PAR CLONE
- 25. LSI IBM Snap
- 26. LSI IBM Clone

15.	Туре	3	and	press	Enter.
-----	------	---	-----	-------	--------

LSI Dell Snap
 LSI Dell Clone
 LSI SGI Snap
 LSI SGI Clone
 LSI Sun Snap
 LSI Sun Clone
 Detect Engine
 Exit

Enter Engine Number [33]:

SnapTest Snap Engine Test

From this screen, you can launch individual snap operations to exercise the snap engine selected in the previous screen. Exit from this screen to choose a different engine.

- 1. Create Snap
- 2. Delete Snap
- 3. Mount Snap
- 4. Unmount Snap
- 5. Revert to Snap
- 6. Save Snaps List
- 7. Load Snaps List
- 0. Exit

Choose your option [1]: 3

16. Type the number corresponding to the snapshot you want to mount and press Enter. Snap numbers to mount (Separate by commas, if more than one): 1

17. Specify the destination path for the snapshot to be mounted and press **Enter**.

18. Press Enter.

The snapshot is successfully mounted on the proxy computer.

Enter Mount point for snapshot 1: c:\mylocation SnapTest Mount Snap

Snap numbers to mount (Separate by commas, if more than one): $\ensuremath{\mathbbm 1}$

Enter Mount point for snapshot 1: c:\mylocation

Mounting snapshot... SUCCESS

Press <ENTER> to continue...

19. Do the following to remove the snapshot after perform the test:

- Type **0** and press **Enter** until you exit the tool.
- Navigate to <installed_directory>\Base and remove the SnapTestSnapInfo.xml file you copied.
- Rename the SnapTestSnapInfo_old file to SnapTestSnapInfo.

Back to Top

Best Practices - SnapProtect[™] Backup

VIRTUAL SERVER (VMWARE)

- A separate initiator group must be used for the client, and proxy computers and LUNs should be added to both.
- In case the Virtual Server *i*DataAgent is no longer required to run data protection operations, it is recommended to release the Virtual Server *i*DataAgent's license instead of uninstalling it. If the *i*DataAgent is uninstalled then you will not be able to do the following:

o Perform Live-Browse.

- Unmount any Virtual Server *i*DataAgent mounted snapshots.
- It is recommended that the Virtual Server iDataAgent and MediaAgent be installed on a physical computer in environments leveraging fiber channel storage (required for HDS).
- Storage for iSCSI and NFS must be entered in array management in the same format that it is presented to the ESX servers. (i.e. should storage be connected by IP on the ESX it must entered by IP in Array Management.)
- When leveraging NFS storage an entry for each IP used will need to be entered into the array management. Entering only a single IP for a management interface is not sufficient.
- The Virtual Server *i*DataAgent proxy must have access to the storage network. If you have an isolated network, an additional network connection must be added to the proxy.
- It is recommended to use a short name for an NFS datastore. When you perform the SnapProtect backup of an NFS datastore, Calypso can append up to 20 characters with the name of NFS datastore to create the volume label. The ESX server supports a volume label of 42 characters.
- If you have configured datastore affinity for a subclient and if the datastore contains some virtual machines with large disks, the SnapProtect backup of the subclient may take considerably longer time. Also, deleting the snapshots created by the subclient may take long time. In such scenario it is recommended to exclude these virtual machines from the subclient configured with the datastore affinity. To exclude any virtual machine, select the **Do Not Backup** option from the **Guest Host Configuration** dialog box.

You can create a separate subclient under a different backupset to backup these virtual machines.

• It is recommended to create multiple backupsets for the same ESX server or vCenter when using Virtual Server *i*DataAgent with hardware snapshots. You can configure multiple backupsets as follows:

BackupSet 1 - Use this backupset only for snapshots and not for backup copies. This backupset will provide multiple recovery points and fast recovery from any point-in-time.

BackupSet2 - Use this backupset for regular backups. After performing the first full backup, you can keep on performing incremental backups. You can enable the DASH copy option while creating the secondary copy. The VMware's Change Block Tracking feature is used internally during regular backups. The Change Block Tracking and DASH copy enable faster backups.

This configuration has following advantages:

- $\circ\,$ A dedicated ESX proxy is not required for creating the backup copy.
- $\circ~$ ESX proxy is required only for restoring data from the snapshots.
- You can perform the regular incremental backups and still you will get all benefits of a SnapProtect backup.
- No additional impact on production server or storage.

ORACLE

- SnapProtect backup for Oracle databases will fail if the mount points are created as symbolic links; so ensure that a mount point is a directory created on the client computer and not a symbolic link.
- Consider the following for ASM based SnapProtect backups:
 - $\circ\;$ Movement to media is always performed using RMAN.
 - For ASM based SnapProtect backup or movement to media operations, when SnapProtect backup is enabled for RDBMS instance for a subclient, the Use RMAN for Tape Movement option is not selected by default. As a work around for this issue, refresh the Client properties or select the Use RMAN for Tape Movement option before saving the subclient properties.
 - o Before executing any ASM based Snapshot or Movement to media jobs, run the following commands:

cd \$ORACLE_HOME/rdbms/lib

gmake -f ins rdbms.mk ikfed; ensure that kfed is specified in the path.

- Perform an inline backup copy operation prior to modifying the Oracle database schema. This will avoid any backup copy failures due to changes in Oracle database schema.
- If you want to use cross machine auxiliary instance for table level restores from snapshot, make sure that you do not have the database whose name is the same as the source database.
- It is recommended to select both data and log, if you select table browse option in a subclient.

- When you perform a SnapProtect backup, make sure to disable the SSKIPBACKUPBROWSE Registry key.
- When you perform a SnapProtect backup, do not use the same mount point or same LUN for data and logs.
- Static listener must be configured for snap backups, if connect string uses static listener.
- It is recommended to have the control files and redo log locations on a separate volume that is not included in the snap backups for data and logs. As a result, these files are not modified during revert operations thus enabling full complete recovery.

MICROSOFT SQL SERVER

When performing SnapProtect backup for a SQL on cluster, a proxy server must be used for performing backup and restore operations.

UNIX FILE SYSTEM

If you have SELinux enabled on the client computer, run the following commands as a root user before performing a SnapProtect backup:

chcon -t texrel_shlib_t /opt/<software installation directory>/Base/libIndexing.so

setsebool -P allow_execheap=1

WINDOWS FILE SYSTEM

- When performing a SnapProtect backup, you can use Data Classification or Classic File Scan as the scan method. When using Data Classification, consider the following:
 - o If you are using a Snap Proxy, the proxy must have Data Classification Enabler installed.
 - If the DC database is moved to another location, Data Classification will no longer be used as the scan method.
 - $\circ\;$ Data classification database must reside on the volume being backed up.
- When performing SnapProtect backup for a Windows Cluster, a proxy server must be used for performing backup and restore operations.
- When performing a full system SnapProtect backup for a Windows Server 2008 computer, even though the subclient content does not include any local
 drive, you should exclude any local drive containing system protected files by creating filters for the subclient. On Windows Server 2008, some of the
 software installation files are considered as system protected files and therefore the local drive where the software is installed must be excluded from the
 subclient content.

Frequently Asked Questions - SnapProtect[™] Backup

TABLE OF CONTENTS

General
Virtual Server (VMware)
Microsoft Hyper-V
Oracle
Microsoft SQL Server
NAS
SAP for Oracle
DB2 (Unix)
Unix File System
Windows File System

GENERAL

HOW DOES THE SNAPPROTECT BACKUP OPERATION WORK?

When you run a SnapProtect backup operation, the Calypso software performs the operations listed below in the following sequence of events:

CREATE SNAPSHOT ON THE SOURCE

This event includes the following operations:

1. Device detection based on subclient content.

This operation gathers information from local volume managers, multipath devices and physical disks (including partitions). For example, information on UUIDs is retrieved from a local volume manager.

2. Take snapshot of detected devices

This operation invokes the snapshot functions from the file server and creates the snapshot. Once created, Calypso records the snapshot in the CommServe database along with metadata, which includes information about local volume managers, multipaths and physical disks.

MOUNT SNAPSHOT ON PROXY

This event includes the following operations:

1. Map LUNs to the MediaAgent

This operation invokes the file server functions to map clone devices to the proxy MediaAgent.

2. Recreate Storage Hierarchy

Based on the metadata collected during device detection and snapshot creation, Calypso recreates the storage hierarchy as follows:

- o Devices are rescanned at the operating system level in order to allow the proxy to see the snapshot LUNs.
- For each device detected on the source, Calypso checks the partitions to determine if the device is accessible or if it is a multipath device. If it is a multipath device, then the operation fails as partitions on multipath are not supported. However, if it is not a multipath device, then the software will keep parsing the device name to retrieve the partition information.

When a partition number is detected, it is appended to the device name of the LUN. If no partition number is found, the full device name is used.

- If required, the hierarchy of the local volume manager is recreated based on the metadata collected during device detection and snapshot creation.
- File systems (LUNs and multipath disks) are mounted on the detected devices. Logical volumes are mounted in the case of logical volume managers.
- $\circ\;$ Index is created and the software moves the data to the media.

WHAT PROVISIONING POLICIES CAN I USE?

Provisioning Policies are optional to use. During the creation of the secondary snapshot copy, the following Provisioning Policies are automatically created and available for selection in the CommCell Console:

- SnapProtect_RAID-DP
- SnapProtect_Dedupe
- SnapProtect_Mirror_Destination

If you need to create your own provisioning policy, ensure it is defined with the following naming convention in the DFM server:

SnapProtect_<provisioning_policy_name>

where "SnapProtect_" is the prefix required for the provisioning policy to be available in the SnapProtect software.

WHAT HAPPENS WHEN A VAULT/MIRROR COPY IS CREATED?

During an Auxiliary Copy job, a new dataset is created or an existing dataset is modified with new data members, as explained in the following flow of events:

- 1. When the SnapProtect software assigns data to the service catalogue, a new baseline transfer may have started in the Data Fabric Manager (DFM) server.
- 2. The Auxiliary Copy job details display its status as the baseline transfer is in progress.
- 3. Once the baseline transfer is completed, the SnapProtect software adds the snaps to the backup list, and the backup starts with the DFM.
- 4. If SnapMirror is the destination copy, then the SnapProtect software sends a command to update the mirror.

The DFM job is monitored and marked as completed/failed depending on the DFM job status.

HOW ARE SNAPSHOTS COPIED DURING A BACKUP COPY OPERATION?

The snapshots are copied to media in a sequential order. If you wish to perform an inline backup copy operation and a previously selected snapshot has not been copied to media, the current SnapProtect backup job will complete without creating the backup copy and you will need to create an offline backup copy for the current backup.

HOW CAN I BACK UP AND RESTORE ALL VIRTUAL MACHINES WITHIN A SPECIFIC DATASTORE?

All virtual machines in a specific datastore can be backed up and restored together as follows:

- Create a new subclient that will be dedicated to the datastore containing the virtual machines you want to back up. Consider giving this subclient the name
 of the datastore you are backing up for easy identification in the CommCell Console. Refer to Creating User-Defined Subclients for complete step-by-step
 instructions.
- 2. From the backup set in which the new subclient is created, configure automatic discovery of virtual machines based on datastore affinity. You can then assign the desired datastore to the new subclient. Refer to Discover by Datastore Affinity for complete step-by-step instructions.
- 3. Schedule routine backups of the subclient. Refer to Scheduling a Backup for complete step-by-step instructions.
- 4. When a restore is needed, you can restore all virtual machines within the datastore by performing a browse operation on the subclient, selecting all virtual machines displayed in the **Browse** window, and selecting either the original datastore or a new datastore as the destination from the **Restore Options** dialog box.

Refer to the following for complete step-by-step instructions:

- Restoring Virtual Machines to Same Destination (In-Place Restore) This procedure describes the steps in restoring the virtual machines to the exact location from which they were backed up.
- Restoring Virtual Machines to Different Destination (Out-of-place Restore) Different Datastore This procedure describes the steps in restoring the virtual machines to a different datastore of your choice.

The above-mentioned steps can also be customized to group backups and restores of other entities, such as ESX Server, Resource Pools, etc.

WHAT SHOULD I TAKE INTO ACCOUNT WHEN USING RETENTION BY NUMBER OF JOBS?

Configuring a storage policy or snapshot copy with job based retention is recommended for File System and File System like Agents, and not for Database Agents.

Review the following scenarios if you are using the retention by number of jobs configuration:

- During a browse operation, deleted files may be displayed for recovery. If the jobs containing these files are pruned by the retention criteria, the deleted files will be irrecoverable.
- You may need to manually delete jobs from deconfigured clients. These clients will continue to retain the old jobs since new jobs will not run again on them.
- When you associate a new storage policy to a subclient, it is important to perform a full backup operation in order to be retained by the new storage policy. The old storage policy will continue to retain the old jobs until you manually delete them.

WHAT UTF SETTING SHOULD BE USED FOR VOLUME LANGUAGE?

To successfully browse and restore files on a NetApp file server that contain Unicode characters, it is recommended to use the UTF-8 setting for volume language. Please consult with NetApp for implications of changing volume language.

HOW IS THE DATA FABRIC MANAGER SERVER AFFECTED WHEN A SNAP COPY IS DELETED?

If you delete a snapshot copy, the following components in the DataFabric Manager server will be affected:

• The storage services associated to the snapshot copy will be deleted.

• Datasets associated with the deleted storage service will be deleted.

Secondary volumes/datasets are not deleted as they are stored in case you need to perform a restore operation from a deleted dataset. Secondary datasets can be removed manually, if needed.

- Any relationship associated with a dataset will be deleted within a configurable period of time defined in the DataFabric Manager server.
- Base snapshot copies remain available.

IS MULTI INSTANCING SUPPORTED?

No. Multi Instancing is not supported for SnapProtect backup.

CAN I USE MEDIA EXPLORER TO RESTORE DATA?

No. Restore of SnapProtect backup data using Media Explorer is not supported. However, Media Explorer can be used to restore SnapProtect backup data from the Primary Copy.

HOW DO I DETERMINE THE NUMBER OF STREAMS TO BE USED FOR A RESTORE OPERATION FROM A SNAPPROTECT BACKUP?

For DB2, SAP for Oracle, and Oracle *i*DataAgents, when restoring from a snapshot using file system, the number of streams depends on the number of mount points used for the restore operation. Similarly, when restoring from a backup copy using file system, the number of streams depends on the number of media groups used for the restore operation.

CAN I PERFORM A SNAPPROTECT BACKUP OF RDM DISKS FOR AN AGENT FROM A VIRTUAL MACHINE HOST?

Yes. It is supported to run a SnapProtect backup operation of Raw Device Map (RDM) disks for any Windows-based Agent configured in a virtual machine. Ensure the iSCSI Initiator is configured on the client computer to access the storage device in order to perform a successful SnapProtect operation.

WHAT ARE THE COMMANDS USED FOR DEVICE DISCOVERY?

During a SnapProtect backup job, the Calypso software runs a set of commands to discover storage devices.

The following table displays the commands that are used to list, rescan and delete adapters/devices for each operating system:

OPERATING	LIST FIBRE CHANNEL	RESCAN FIBRE CHANNEL ADAPTERS	RESCAN ISCSI	DELETE DEVICE
SYSTEM	ADAPTERS		DEVICES	
AIX	<base/> /scan_fc_adapters.sh	cfgmgr -l <hba_name></hba_name>	cfgmgr -l <iscsi_adapter></iscsi_adapter>	rmdev -d -l <hdisk_name></hdisk_name>
HP-UX	<base/> /scan_fc_adapters.sh	 Obtain the path for the host bus adapter (HBA): ioscan -unfC fc Scan the HBA path ioscan -H <hba_path></hba_path> 		 For Legacy HP-UX (earlier than 11.22) rmsf -a <device></device> For non-Legacy HP-UX: 1. Obtain persistent name mapping ioscan -m dsf 2. Check device availability: ioscan -kNF <device></device> 3. Delete the device: rmsf -H <device></device>
LINUX	<base/> /scan_fc_adapters.sh	 Perform the hardware loop initialization (LIP): echo 1 > /sys/class/fc_host/<\$host>/issue_lip Perform a SCSI mid-level rescan: echo '' > /sys/class/fc_host/<\$host>/scan 	 For Red Hat 4 computers: /sbin/iscsi -rescar For SuSE Linux 9 computers: /etc/init.d/iscsi reload /bin/rescan- scsi-bus.sh -r -L 512 -w -c nooptscan For SuSE Linux 10 and Red Hat 5 computers: /sbin/iscsiadm -m session -R 	echo 1 > /sys/block/ <device>/device/de</device>
SOLARIS	<base/> /scan_fc_adapters.sh	cfgadm -c configure <controller></controller>	devfsadm -i iscsi	devfsadm -C -c disk

CAN I CREATE MY OWN COMMANDS TO PERFORM DEVICE DISCOVERY?

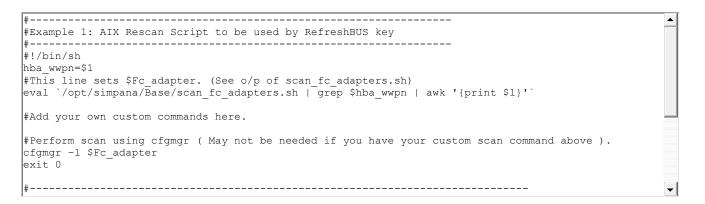
Yes, you can customize the device deletion and the rescan logic by creating the following registry keys:

КЕҮ	DESCRIPTION
DeleteDevice	This key will trigger a custom script which will perform an OS level device deletion. Once all the devices are removed, the Calypso software will remove the LUNs from the storage arrays.
	Use this key if you need to unmount snapshots that are mapped to either the proxy or source machine. The key will delete all devices mapped to the machine.
	Follow the steps below to create this registry key:
	1. From the CommCell Browser, navigate to Client Computers .
	2. Right-click the < <i>Client</i> >, and the click Properties .
	3. Click the Registry Key Settings tab.
	4. Click Add.
	5. In the Name box, type DeleteDevice.
	6. In the Location box, select or type the <i>i</i> DataAgent.
	7. In the Type box, select Value .
	8. In the Value box, type the full path to the script. The device name will be passed as an argument.
	9. Click OK .
RefreshBus	This key will trigger a custom script for each host bus adapter that needs to be rescanned.
	Use this key if you need to rescan the machine for any new devices each time a snapshot is mounted or unmounted.
	Follow the steps below to create this registry key:
	1. From the CommCell Browser, navigate to Client Computers .
	2. Right-click the < <i>Client</i> >, and the click Properties .
	3. Click the Registry Key Settings tab.
	4. Click Add .
	5. In the Name box, type RefreshBus.
	6. In the Location box, select or type the <i>i</i> DataAgent.
	7. In the Type box, select Value .
	8. In the Value box, type the full path to the script. The WWPN of the adapter will be passed as an argument.
	9. Click OK .

After creating the above registry keys, you can use the following script examples:

ON LINUX COMPUTERS

ON AIX COMPUTERS



HOW DOES CALYPSO SELECT TARGET DEVICES DURING CLONE/SNAP OPERATIONS?

When you configure an storage device using Array Management in the CommCell Console, the **Device Group** text box defines the target device group where Calypso will move the source and target devices during SnapProtect backup operations. This option does not specify the source device group (from where a device should be found during Snap/Clone operations).

The following table explains the default behavior for selecting a Snap or Clone target device:

SCENARIOS BASED ON ARRAY MANAGEMENT OPTIONS	TARGET DEVICE IS SELECTED	SOURCE AND TARGET DEVICES
	FROM	ARE MOVED TO
Device Group is not specified and Use devices only from this device group is not checked	Any device in the array	CV_PROTECTION_GROUP device group
Device Group is not specified but Use devices only from this device group is checked	CV_PROTECTION_GROUP device group	CV_PROTECTION_GROUP device group
Device Group is specified but Use devices only from this device group is not checked	Any device in the array	The device group specified in Device Group
Device Group is specified and Use devices only from this device group is checked	The device group specified in Device Group	The device group specified in Device Group

CAN I BACKUP PHYSICAL RDMS IN A VIRTUAL MACHINE USING SNAPPROTECT?

Yes. You can use File System iDataAgent and perform the SnapProtect operation to backup the physical RDMs in the following scenario:

- The datastore of the physical RDM is located on a NetApp storage array.
- The host of the virtual machine has ESX server version 5.0
- The MediaAgent, used for a SnapProtect operation, is installed on a physical computer and not on a virtual machine.
- The virtual machine has File System iDataAgent and Exchange Database iDataAgent installed on it.

VIRTUAL SERVER (VMWARE)

CAN I USE A DIFFERENT ESX SERVER FOR SNAP MOUNT DURING RESTORES OR MOVING TO TAPE?

Yes, you can override the default restore selection by choosing a different Virtual Centre or ESX Server to restore or moving to tape, by following the steps given below:

- 1. From the CommCell Console, right-click the Subclient and select Browse Backup Data.
- 2. Click **OK** and select the virtual machine under the backupset. Its entire contents will be automatically selected in the right pane. Click **Recover All Selected**.
- 3. Click on the Advanced from the Restore Options dialog box.
- 4. Select the ESX Browse tab.
- 5. The **Default Selection** has the IP address of the ESX Server pre-populated.
- 6. Select **Override Default Selection** to locate a different destination.
- 7. Enter appropriate credentials to logon to the server using Configure Password button.
- 8. Click Browse VirtualCenter/ESX Servers for destination to provide the ESX Server path to which the virtual machine will be restored.
- 9. Select the appropriate ESX server.
- 10. Click **OK** to close the **Browse for ESX Server** dialog.

11. Click **OK** to close the **Advanced Restore Options** dialog.

DOES A VIRTUAL SERVER CLIENT SUPPORT ADVANCED TRANSPORT MODES FOR SNAPPROTECT OPERATIONS?

Yes, the Virtual Server client can support advanced transport modes like SAN during restores and mounting operations, if configured as follows:

- 1. The Virtual Server client machine should be physical server.
- 2. LUNs on which the virtual machine is created should be exposed to the Virtual Server proxy client.
- 3. The Virtual Server client is connected through iSCSI or Fiber Channel.

HOW DO BACKUP AND RESTORE OPERATIONS HANDLE INDEPENDENT/RDM DISKS?

If a virtual machine undergoing a backup job includes independent disks, physical or virtual RDMs, these disks will be skipped. During a full VM restore the independent disk/Physical or virtual RDMs will get restored as a regular disk with 0MB data.

If a subclient contains virtual machines with independent disks/physical or virtual RDMs, the backup job will always complete with the status "Completed w/ one or more errors". However, if you create the IgnoreUnsupportedDisks registry key on the proxy computer, the backup job will complete successfully.

HOW DO BACKUP AND RESTORE OPERATIONS HANDLE VIRTUAL RDM DISKS?

Virtual RDMs are protected by the backup job (but not during IntelliSnap backup). However at the time of restore, the data is restored as a regular VMDK on a datastore. A virtual RDM is not re-created and the data is not restored to the virtual RDM's device.

CAN I PERFORM A SNAPPROTECT BACKUP OF A WINDOWS 2008 R2 VIRTUAL MACHINE?

Yes. To successfully run a SnapProtect backup of a virtual machine with Windows 2008 R2, ensure that if the virtual machine resides on a single datastore it is not spread across multiple folders.

If the virtual machine is spanned across multiple datastores, you can run SnapProtect backups for virtual machines with ESX version 4.1 (or higher) by configuring the VM using the steps below:

- 1. Power off the virtual machine.
- 2. From the VI client, right-click the virtual machine and select Edit Settings.
- 3. Click the **Options** tab.
- 4. From the list of settings, select General located under the Advanced setting. Then click the Configuration Parameters button on the right pane.
- 5. From the **Configuration Parameter** dialog box, click the Disk.EnableUUID parameter and set it to false.
- 6. Click **OK**.

CAN I CONFIGURE THE VIRTUAL MACHINE TO INCLUDE THE ROOT VOLUME OF A FILE SERVER?

No, data that resides on the root volume cannot be part of the virtual machine content.

CAN I CONFIGURE ARCHIVE LOG DESTINATION WITH A DIFFERENT PATTERN FOR SNAP PROTECT OPERATIONS?

No. The archive log destination should be a valid directory for snap. Snap protect operation will not work if you configure the archive log destination with a different pattern such as log_Archive_dest_1='location=/archivelog/db_'.

HOW IS VM BACKUP SIZE CALCULATED FOR CAPACITY LICENSING?

For VM backups, capacity licensing is based on the total backup size, calculated as the sum of backup sizes for all VM backup jobs after white spaces (blocks of zeros) are removed. The license counts the backup size of all configured subclients; virtual machines that are included in multiple subclients will be counted multiple times. The backup size is measured for usage tracking and shown on the Backup Job Summary Report.

The backup size can be different from the guest host size or used space value shown for the VM in the disk properties dialog by Microsoft Windows.

The following factors can affect the backup size calculation:

- The presence of virtual machine snapshots.
- The presence of sparse files or deleted files in the guest can cause the backup size to vary.
- The backup size reported for VMDKs in a VM can vary depending on white space and change allocation tracking for that VM.

For example:

- A Windows VM with a single volume of 80 GB has 30 GB occupied and 50 GB free.
- The guest size would be 30 GB.
- The backup size is the amount of data transferred and written for that backup, which can be up to 80 GB.

The backup size reflects the size after eliminating white spaces; but data that was written and deleted still counts as reserved (allocated) space. The layering effects of multiple virtual file systems can cause differences between the size reported by the guest host running within the VM and the reported backup size. Frequent deletion of large files can easily cause these numbers to be out of sync.

Version 9.0 reports on all allocated blocks in the VM. The amount reported for allocated blocks can be the same size or larger than what is actually in use and can contained reserved space for deleted items. For each VMware instance, Version 9.0 has an additional reporting column of the actual size of VMs.

The following measures can help reduce backup size:

- Delete or move unnecessary data before virtualizing physical machines. This saves resources and time, and ensures that new VMs only contain used blocks.
- If you already have a large number of VMs with significant reserved and unused blocks, use a tool such as the Windows SDelete utility to release reserved space on VMs, as described in SDelete v1.61.
- Ensure that VM templates used for provisioning do not contain unreferenced blocks in the VMDK.
- Wherever possible, configure virtual machine disks with the VMware Thin Provisioned disk option enabled. Thin provisioning ensures only valid blocks occupy
 space in the VMDK file. With thin provisioned VMs, VMware APIs only return occupied blocks.

MICROSOFT HYPER-V

HOW IS VM BACKUP SIZE CALCULATED FOR CAPACITY LICENSING?

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ORACLE

CAN I USE THE ORACLE AGENT TO PERFORM A SNAPPROTECT BACKUP OF AN ORACLE RAC CLIENT?

Yes, you can perform SnapProtect operations for a single node Oracle RAC setup. The following configurations are required:

- When configuring the Oracle RAC components for the first SnapProtect backup, ensure that:
 - $\,\circ\,$ The Oracle instance is configured on one of the physical nodes for the Oracle RAC agent.
 - If the data and archive logs do not reside on a shared location, create a user-defined subclient for the archive logs and run a backup using RMAN. The original subclient should only include the data volume in order to perform a SnapProtect backup.
 - The Use RMAN for Tape Movement option is selected during the subclient configuration if you plan to backup the archive logs.
- The ASM Oracle Database should be located on a ASM disk group, and the underlying disks should be snap-able.
- If you plan to use RMAN for copying the data to the media on the proxy computer, copy the Oracle parameter file (pfile) from the client to the proxy

computer's \$ORACLE_HOME/dbs/ directory, and remove any parameter containing Oracle RAC related entries. For example:

O cluster_database_instances

- O cluster_database
- O <RAC Instance name>.thread
- O <RAC Instance name>.local_listener
- O <RAC Instance name>.instance_number

CAN I USE A SEPARATE PROXY TO PERFORM A BACKUP COPY?

No. The Use Separate Proxy for Snap to Tape option in Subclient Properties is not supported for the Oracle iDataAgent.

CAN WE RESTORE A POINT IN TIME SNAPPROTECT BACKUP, IF COPY PRECEDENCE IS NOT SELECTED?

Generally, we can set copy precedence for storage policy. The copy that is set to a copy precedence of 1 will be restored. However, if a snapprotect backup job is available, then it won't consider the copy precedence and restores only from the snapprotect backup.

CAN I PERFORM AN INCREMENTAL BACKUP COPY?

Yes. You can perform an incremental backup copy using RMAN.

IF THE DATABASE AND INSTANCE NAME ARE DIFFERENT, CAN I PERFORM A TABLE LEVEL RESTORE?

No. The table level restores will not work, if the database and instance names are different.

CAN WE PREVENT THE SINGLE VOLUME REVERT WHEN THE DATABASE IS SPANNED ACROSS THE MULTIPLE VOLUMES?

No. You cannot prevent a single volume revert when the database is spanned across multiple volumes. When you perform a hard revert, the database will not be restored as the reversion happens at LUN level and the other source paths related to this database are not reverted. Hence, we recommend Restore by Revert which is application aware instead of regular revert using the CommCell Console (GUI).

The following steps explain the current process of reversion for a single volume when the database is spanned across multiple volumes:

- 1. Create two Logical Unit Numbers (LUNs) from the same volume and another LUN from a different Volume.
- 2. Create host volume from each LUN or two LUNs from the same volume. Create two LUNs from a different Volume and host volumes (partitioned disks) from each LUN.
- 3. Create multiple mount points and mount the File System created from above LUNs.
- 4. Create a database on these mount points and create table spaces spanned across these locations.
- 5. Perform a SnapProtect backup for the database.
- 6. Perform a SnapProtect backup after adding data and tables.
- 7. Select all source paths related to LUN at previous Job ID and perform the hardware revert.

CAN I CONFIGURE THE ORACLE DATABASE TO INCLUDE THE ROOT VOLUME OF A FILE SERVER?

No. The data that resides on the root volume cannot be part of the Oracle database content.

CAN I PERFORM A LOG ONLY RESTORE FOR ASM DATABASE?

No. Log Only restore is not supported for ASM database.

IS THE SOFTLINK PATH SUPPORTED FOR SNAPPROTECT OPERATION?

No. Softlinks are not supported for this iDataAgent's datafile paths and archive log location. you should use the real paths.

You can create alias device using mknod for raw devices.

HOW DO I DETERMINE THE SUPPORTED INTELLISNAP OPERATIONS BASED ON THE LOCATION OF THE ORACLE APPLICATION, DATA AND LOG VOLUMES ON THE CLIENT?

The following table displays the supported IntelliSnap operations based on the location of the Oracle Application, Data and Log volumes on the client :

OPERATION	ORACLE APPLICATION /	ORACLE APP IS ON	ORACLE APPLICATION,	NOTES
	DATA / LOG ARE ON THE	DIFFERENT DEVICE /	DATA AND LOG ARE ON	

	SAME PHYSICAL DISK/VOLUME GROUP	VOLUME GROUP BUT ORACLE DATA AND LOG ON SAME PHYSICAL	DIFFERENT PHYSICAL DISKS / VOLUME GROUPS (RECOMMENDED	
		DISK / VOLUME GROUP	CONFIGURATION)	
IntelliSnap Backup	Supported	Supported	Supported	
Backup Copy	Supported	Supported	Supported	
IntelliSnap Restore	Supported	Supported	Supported	
Volume level Revert	Not Supported	Supported (based on Array Support)	Supported	For NetApp array, if data and log are on the same volume, log snap will be deleted automatically after reverting the data volume.
File Level Revert (NetApp NFS only)	Supported	Supported	Supported	

If data and logs are on same volume/disk, multiple snaps will be taken in data phase and log phase separately.

Multi Instance Snap Optimization

CAN WE REVERT FROM SNAP, IF THE SNAP AND CLONE ARE PRESENT ON THE SAME DEVICE?

If the SnapProtect backup and Clone exist for the same source device in the case of EMC Symmetrix, the revert operation from SnapProtect backup will work. However, the revert from clone will not work until all the snap sessions are terminated.

CAN WE PERFORM A LOG ONLY SNAPPROTECT BACKUP IN A MULTIPLE INSTANCES ENVIRONMENT USING A SHARED STORAGE ON A CLIENT?

No. Currently, the Log only SnapProtect backup is not supported for multiple instances using a shared storage on a client

CAN WE PERFORM A TABLE LEVEL AND ASM SNAPPROTECT BACKUPS IN A MULTIPLE INSTANCES ENVIRONMENT USING A SHARED STORAGE ON A CLIENT?

No. Currently, the table level and ASM SnapProtect backups are not supported in a multiple instances environment using a shared storage on a client.

MICROSOFT SQL SERVER

ARE THERE ANY CONSIDERATIONS FOR A SQL DATABASE BACKUP?

- Transactional Log backups always use the traditional backup method. Log backups are stored in the Primary (classic) copy.
- The SQL Writer does not support the following:
 - Log Backups
 - File and filegroup backup
 - Page Restore

NAS

CAN I BACKUP DATA RESIDING ON A VFILER?

Yes. If the data you want to backup resides on a vFiler, set it up as follows:

- 1. Add the vFiler as a NAS client as explained in the Getting Started NAS Configuration procedure.
 - If you plan to add more vFilers as NAS clients, ensure they have unique names. vFilers with the same name are not supported.
- 2. During the NAS client configuration, ensure not to include the vFiler root volume in the subclient content.
- 3. When performing a backup, indexing is supported if the physical file server (where the vFiler resides) has been specified in Array Management. If not, ensure you select the **Skip Catalog phase for SnapProtect** option during backup as indexing will not be supported.
- 4. To restore the data, create a backup copy as explained in the Snap Movement to Media procedure and restore the files and volumes from the backup copy.
- 5. Other operations you can also perform with the snapshot are mount and revert operations.

CAN I CONFIGURE A SUBCLIENT TO INCLUDE THE ROOT VOLUME OF A FILE SERVER?

No, data that resides on the root volume cannot be part of the NAS subclient content.

CAN I USE A VFILER AS DESTINATION FOR SNAPVAULT/SNAPMIRROR COPIES?

No. vFilers cannot be the destination location for SnapVault/SnapMirror copies as it is not supported by the DataFabric Manager.

CAN I USE THE FILE SYSTEM NRE FOR NAS RESTORES?

No. Restore of NAS data to a Windows or Unix computer using File System NDMP Restore Enabler (NRE) is not supported for NAS iDataAgent snapshots.

CAN I ENABLE THE IMAGE BACKUP SET OPTION ON A SNAPVAULT COPY?

Yes, you can enable the **Image Backup Set** option (for SnapMirror to Tape) on a backup set containing the SnapVault copy. However, the image backup of the SnapVault copy will not exactly match the primary (source) volume. For example, the non-qtree data on the primary volume will be in a qtree on the SnapVault copy; the SnapVault copy may also contain data from other primary volumes.

CAN I RESTORE TO A CLIENT FROM A NAS SNAPSHOT?

No. Restores from NAS Snapshots are not supported. You can restore to a client from a NAS backup copy.

SAP FOR ORACLE

HOW CAN I INCREASE THE NUMBER OF SNAPSHOTS CREATED FOR A USP VOLUME?

The maximum number of snapshots created for a USP volume is 3. When using the HDS storage array with SAP for Oracle, you can have up to 4 snapshots on the same volume if you store the Data (\$SAPDATA_HOME) and Config (\$ORACLE_HOME/dbs) directories in the same volume.

IS THE SOFTLINK PATH SUPPORTED FOR SNAPPROTECT OPERATION?

No. Softlinks are not supported for this iDataAgent's datafile paths and archive log location. you should use the real paths.

DB2 (UNIX)

CAN I RESTORE DATA AND LOG FILES?

No. During a SnapProtect backup, log files are not moved to the snapshot copy even if the **Backup Log Files** option is selected on the subclient where the backup operation is being performed. Log files always use the traditional backup method, not the SnapProtect backup.

Running a restore operation from the snapshot copy will fail because the log data will not be found. If you want to restore both data and logs, modify the copy precedence to restore from the **Primary(Classic)** copy.

IS THE SOFTLINK PATH SUPPORTED FOR SNAPPROTECT OPERATION?

No. Softlinks are not supported for this iDataAgent's datafile paths and archive log location. you should use the real paths.

UNIX FILE SYSTEM

CAN I INCLUDE ROOT FOLDER (/) AS SUBCLIENT CONTENT FOR SNAPPROTECT?

No, root folder (/) should not be included as subclient content for SnapProtect.

WHAT NON-NATIVE FC DRIVERS ARE SUPPORTED?

Qlogic SANSurfer CLI on SuSE Linux Enterprise Server 10 SP2.

CAN I PERFORM A CROSS PLATFORM RESTORE OF ACLS?

No, the restore of ACLs from one operating system to another is not supported.

CAN I RESTORE ACLS FROM ONE FILE SYSTEM TYPE TO ANOTHER?

The restore of ACLs from one file system type to another may fail as the ACLs restore is dependent on the file system implementation. For example, ACLs which are backed up from ext3 cannot be restored to NFS and vice versa. Also, if you attempt to restore data from one file system type to another with ACLs included, but the file system is mounted without ACLs, the restore operation will fail. To workaround this issue ensure that the file system is mounted with ACLs before attempting a restore operation.

To prevent the restore operation from failing you can restore data without the ACLs included.

HARDWARE REVERTS FOR AIX LOGICAL VOLUMES. WHAT HAPPENS DURING THIS OPERATION?

When you revert all the logical volumes in the AIX Logical Volume Manager, the revert operation supports all logical volume types and all their attributes are preserved. However, for revert operations on single logical volumes, striped volumes are not supported.

The following table displays the logical volume attributes that are preserved when you revert a single volume:

ATTRIBUTE NAME	DESCRIPTION
INTER	Inter-physical volume allocation policy
INTRA	Intra-physical volume allocation policy
LABEL	Volume label
RELOCATABLE	Defines if relocation is allowed during reorganization of the logical volume
STRICTNESS	Strict allocation policy
ТҮРЕ	Logical volume type
UPPERBOUND	Upper-bound on the physical volume used for new allocations
PERMISSION	Access permission of the logical volume
MIRROR WRITE CONSISTENCY	Defines if mirrored copies are in a consistent/active state
SERIALIZE IO	Defines if logical volumes are overlapping I/O serialized
SCHED POLICY	Defines which scheduling policy is being used when more that one logical partition is written
BB POLICY	Bad block relocation policy
WRITE VERIFY	Defines if all verified write operations are followed by a follow up read operation

IS THE SOFTLINK PATH SUPPORTED FOR SNAPPROTECT OPERATION?

No. Softlinks are not supported for SnapProtect operation. you should use the real paths.

You can create alias device using mknod for raw devices.

WINDOWS FILE SYSTEM

WHAT HAPPENS TO MY BACKUP IF THE TIMESTAMP ON THE COMMSERVE AND CLIENT COMPUTER IS DIFFERENT?

The incremental or differential backup will run as full backup and include all the files located on the source in the backup, even though these backups will be displayed as incremental or differential in the Job Manager.

WHICH SCAN METHODS ARE SUPPORTED FOR SCANNING FILES DURING A SNAPPROTECT BACKUP?

You can enable the classic scan or Data Classification to scan files during a SnapProtect backup. If you select the Data Classification as the scanning method, ensure that the meta database is located on the same volume for which you are performing the snap backup.

Troubleshooting - SnapProtect[™] Backup

TABLE OF CONTENTS

Virtual Server (VMware) Oracle SAP for Oracle NAS Virtual Server (Hyper-V) DB2 Unix File System

VIRTUAL SERVER (VMWARE)

COMPLETED WITH ONE OR MORE ERRORS

Backup jobs from Virtual Server iDataAgent will be displayed as "Completed w/ one or more errors" in the Job History in the following cases:

- If the virtual machine, virtual machine disk, or virtual machine configuration file fails to back up.
- If one or more virtual machines in a backup job fail to back up.
- If communication fails with vCenter.
- If a disk included in a backup is not supported (i.e., independent disks or physical RDM).

If the meta data collection operation fails during a snap backup job, the job will be displayed as "Completed" in the **Backup Job History** of the subclient. You can create the bCWEJobMDataFails registry key if you want to display the status as "Completed w/ one or more errors" in such scenario.

WHILE PERFORMING A SNAPPROTECT BACKUP ON A LINUX VM, THE METADATA COLLECTION IS NOT INCLUDED IN THE BACKUP

To get the file level details of a Linux VM, follow the steps given below:

- 1. Perform a Disk Level SnapProtect backup.
- 2. Perform a Backup Copy operation.
- 3. Perform a File level Browse operation using the Primary Copy. You can specify the copy precedence by clicking **Advanced** on the **Browse Options** dialog box.

RESTORING INDEPENDENT DISK/PHYSICAL RDM RESULTS IN VM NOT POWERING ON

If the virtual machine under backup includes independent disks/physical RDMs, these disks will be skipped. During a full restore the independent disk/Physical RDM gets restored with 0MB, and the virtual machine cannot be powered on. As a work around, prior to powering on, manually remove the independent disks/Physical RDMs and then power on the restored virtual machine.

MOUNT OPERATIONS ON AN ESX SERVER ARE FAILING USING NFS PROTOCOL

When performing SnapProtect operations on VMware using NFS file-based protocol, ensure the following:

The NetApp storage device name specified in Array Management matches that on the ESX Server.



The VMkernel IP address of all ESX servers that are used for mount operations should be added to the root Access of the NFS share on the source storage device. This needs to be done because the list of all root hosts able to access the snaps are inherited and replicated from the source storage device.



SYMPTOM

The Revert job may go to Pending state with the following error:

File level revert is not supported for a Virtual Machine [%VMNAME%] which is on VMFS datastore. [Datastore(s) [%DatastoreName%] does not support file level revert.

CAUSE

The virtual machine may have NFS and iSCSI disks. Ensure that all the disks reside on the NFS data store. If the data does not reside on the NFS data store, you cannot perform the revert operation.

SOLUTION

Perform the conventional **Container Restore** to bring the data back to the point-in-time.

REVERT OPERATION FAILS

Before starting the revert operation, ensure that the Snapshot which you are using to perform the revert operation is not mounted.

EXCHANGE MINING OPERATION FAILS

SYMPTOM

Exchange Snap Mining operation may fail if SAN mode is used to perform the backup and snapshots were exposed in read-only mode.

SOLUTION

It is recommended to use NBD mode for Exchange Snap Mining backup. However, if you want to use SAN mode, ensure that all the disks exposed to the proxy computer have read and write permissions.

Follow the steps give below to clear read-only attributes of any SAN shared disk:

- 1. Open the Command Prompt on the proxy computer.
- 2. Enter the following commands:

diskpart

san policy=onlineall

VIRTUAL MACHINE REGISTRATION FAILS DURING THE BACKUP COPY OPERATION

SYMPTOM

During the backup copy operation, the registration of a virtual machine fails with the following error:

The Operation is not allowed in the current state

CAUSE

The ESX server which hosts the virtual machine is in the maintenance mode.

SOLUTION

Before initiating the backup copy operation, ensure that the ESX server is not in the maintenance mode. If you are performing an inline backup copy, before initiating the SnapProtect operation, ensure that the any host involved in the backup, is not in the maintenance mode.

BACKUP JOB GOES TO PENDING STATE

SYMPTOPM

The SnapProtect backup job goes to pending state.

CAUSE

You cannot perform the SnapProtect backup of a template virtual machine. If the subclient for which you are performing the SnapProtect backup, contains the template virtual machine, the backup job goes to pending state.

SOLUTION

Set the SkipTemplateVM registry key to 1 and perform the backup of the subclient which contains the template virtual machine. The template virtual machine will not be included in the backup and the backup job will complete successfully.

LIVE BROWSE FAILS TO DOWNLOAD VMX FILES WITH HTTP ERROR 403

SYMPTOM

You may get following error when you are restoring files and folders from a virtual machine:

Failed to download config file

SOLUTION

Disable the Symantec End Point Protection on the computer where you have installed Virtual Server iDataAgent and MediaAgent and perform the file level restore.

BACKUP FAILS TO DOWNLOAD VMX FILES

SYMPTOM

The backup operation fails with a error: Unable to download config files.

CAUSE

The name of the datastore contains + or @.

SOLUTION

- 1. Check if the datastore of any virtual machine included in the backup contains + or @ characters in its name.
- 2. Rename the datastore and remove + and @ characters from the name.
- 3. Perform the backup operation.

UNABLE TO MOUNT THE SNAPSHOT

SYMPTOM

When you are mounting any snapshot on a host, you may get following error:

Discovery Failed. Unable to access host

CAUSE

The **Snaps created during SnapProtect operation** dialog box displays a list of all the snapshots on a storage array. If you open the **Snaps created during SnapProtect operation** dialog box by one of the following methods, you can only view the list of snapshots and cannot mount the snapshots:

- Right click the snapshot copy of a storage policy and select List Snaps.
- From the Control Panel, double click Array Management. Select the required array in the Array Management dialog box and click List Snaps.

SOLUTION

For more information about correct method mounting a snapshot, refer to Mount Snapshots.

NFS DATASTORE BECOMES INACCESSIBLE AFTER MOUNTING THE SNAPSHOT

SYMPTOM

Successfully mounted datastore becomes inaccessible when the browse operation is performed or data is accessed.

CAUSE

This issue is caused by incorrect MTU settings between ESX proxy host and NFS storage.

SOLUTION

To check if the issue is occurring due to incorrect MTU settings, use ping command with DF "do not fragment" option by providing different MTU values and check if Ping is working as expected.

FILE-LEVEL RESTORE FAILS WHEN DESTINATION CLIENT HAS A MEDIA AGENT

SYMPTOM

A file-level restore fails when restoring from an IntelliSnap backup to a destination client that has a media agent.

CAUSE

When mounting the virtual machine, the restore operation tries to use the media agent on the destination client rather than the media agent on the source client, and the mount fails.

RESOLUTION

- 1. Initiate the restore.
- 2. During the restore operation, select the content to be restored and the destination client.
- 3. On the Restore Options dialog, click Advanced, then click the Data Path tab.
- 4. In the Use MediaAgent field, select the media agent for the source client.
- 5. In the **Use Proxy** field, select the source proxy.
- 6. Complete the restore.

When the source media agent is used, the mount succeeds and the file-level restore completes successfully.

VIRTUAL MACHINE CLIENT NAMES ARE GETTING CREATED WITH '_1' APPENDED TO THE ORIGINAL CLIENT NAME

SYMPTOM

When viewing virtual machines in the Client Computers list, you may see duplicated client names (for example, <*ClientName>* and <*ClientName>*_1).

CAUSE

Virtual machine information is added to the database during the discovery phase of a backup. If information changes, a new client is discovered during the discovery phase.

Making changes to information such as the virtual machine fully qualified domain name (FQDN), the GUID, or the host name can cause this issue.

RESOLUTION

TO AVOID DUPLICATE CLIENT ENTRIES CAUSED BY DIFFERENT CLIENT OR HOST NAME:

Use the install software option for the client level in the CommCell Console (rather than interactively installing software to the virtual machine Guest Operating System).

TO CORRECT EXISTING CLIENTS:

If duplicate clients are created with '_1" appended to the original client name, you can perform the following steps to merge the duplicate client back into the original:

1. At a command prompt, navigate to the software installation path, log in to the CommServer, and run the following script:

qoperation execscript -sn QS_SetVMClient -si @sourceClient='<ClientName>_1' -si @destClient='<ClientName>'

where *<ClientName>* is the original client name and *<ClientName>_1* is the duplicate.

This script reassigns all backup history from <*ClientName*>_1 to <*ClientName*>. This enables you to view backup history, and to generate Job Summary Reports with the **Include Protected VMs** option enabled.

- 2. Remove the duplicate clients:
 - a. In the CommCell Console, go to Control Panel | User Preferences.
 - b. Click the Client Computer Filter tab.
 - c. Select the Show Virtual Server Discovered Clients option.
 - d. Delete the duplicate clients from the CommCell Browser.

FAILED TO START THE VIRTUAL MACHINE

SYMPTOM

When a virtual machine has been replicated in vSphere and backed up, and a full VM restore is performed from the backup, the following status message might be displayed in vCenter:

Failed to start the virtual machine.

CAUSE

If the **Power ON Virtual Machine After Restore** option is selected when performing a full VM restore, VMware attempts to power on the restored VM before disabling replication.

RESOLUTION

Clear the **Power ON Virtual Machine After Restore** option when initiating the restore. VMware automatically disables replication when the restore is completed, and you can power on the virtual machine manually.

UNABLE TO BROWSE FILES ON SNAPSHOT FOR WINDOWS 2008 R2 VIRTUAL MACHINE - DISK:[<*NAME*>] FILTERED DURING SNAP PROTECT OPERATION

SYMPTOM

A user is unable to browse files on a snapshot for a Windows 2008 R2 virtual machine (ESXi or ESX 4.1 and higher).

The following message appears in the **cvd.log** file:

Disk:[<Name>] filtered during snap protect operation

CAUSE

File-level browse of a virtual machine snapshot fails if the page files for the VM are filtered out. The virtual machine snapshot cannot be mounted because it needs the page file for the VM. The page file is unavailable because it resides on a datastore that is filtered for backup.

This issue occurs when the **disk.EnableUUID** attribute is set to true for the virtual machine. The **disk.EnableUUID** attribute enables application-level quiescing. If the UUID is not enabled, VMware performs file-system consistent quiescing.

RESOLUTION

During the restore, file-level browsing succeeds if the user selects a MediaAgent that has the Virtual Server Agent installed and has access to the datastore that contains the page files. On the **Advanced Restore Options** dialog, go to the **Data Path** tab to specify a MediaAgent.

To resolve this issue, set the disk.EnableUUID attribute to false and run the IntelliSnap backup again on the virtual machines where page files were filtered.

To modify the UUID setting in vSphere 5.1:

- 1. Select the VM and power it off.
- 2. On the Summary tab, click Edit Settings.
- 3. On the Virtual Machine Properties dialog, go to the Options tab.
- 4. Select the General field under Advanced.
- 5. Click the **Configuration Parameters** button.
- 6. Enter the disk.EnableUUID attribute and set the value to false.

As long as there is not a backup copy or auxiliary copy in progress, users should be able to browse files from the VM snapshot.

Disabling the UUID attribute does not affect applications that do not use Volume Shadow Copy Services (VSS), such as Microsoft SQL, Microsoft Exchange, or Active Directory.

ADDITIONAL INFORMATION

See the following articles:

- Cannot take a quiesced snapshot of Windows 2008 R2 virtual machine (1031298)
- Volume Shadow Copy Service Quiescing
- Enabling and disabling Windows 2008 application-consistent quiescing on ESXi/ESX (1028881)

CANNOT RESTORE FILES FROM A WINDOWS 2012 VIRTUAL MACHINE USING DEDUPLICATION

SYMPTOM

When restoring from a backup of a Windows 2012 virtual machine that has deduplication enabled, a file-level restore completes successfully but only creates stub files.

CAUSE

File-level restores are not supported for deduplicated volumes from a Windows 2012 VM.

RESOLUTION

To retrieve files from a backup for a Windows 2012 VM using deduplication, restore the disk that contains the file.

Alternatively, you can install a local file system agent on the Windows 2012 VM to enable file-level restores.

BACKUP COPY FAILS WITH MOUNT ERRORS: "UNABLE TO MOUNT THE VOLUMES."

SYMPTOM

When mounting a snapshot to an existing datastore for a Backup Copy job, the mount operation fails with the following error:

Unable to mount the volumes.

CAUSE

When mounting a snapshot to an existing datastore, the string '_gx_backup', the job ID. and the archive file ID are added to the datastore name.

If the combined name is more than 42 characters, the mount operation fails.

RESOLUTION

Ensure that the combined name is less than 42 characters. In most cases, if the datastore name is 20 characters or less, the combined name will be under 42 characters.

ORACLE

FAILURE DURING SNAPPROTECT BACKUPS

SnapProtect Backup operations fail if the database is in the NOARCHIVELOG mode. Alter the database to ARCHIVELOG mode and then perform the SnapProtect backups.

SQL>startup mount;

SQL>alter database archivelog;

SQL>alter database open;

Sometimes, the SnapProtect backup operations may fail if you enable the SSKIPBACKUPBROWSE registry key. Ensure to disable it.

SNAPPROTECT BACKUP JOB RUNS INDEFINITELY

SnapProtect Backup operations run indefinitely if the archive log location is full. In such cases, you have to either clear the archive logs to make enough space available or specify a different archive log location.

ORACLE RMAN SNAP TO TAPE INCREMENTAL COPY FAILS ON THE PROXY COMPUTER

When performing an Oracle RMAN incremental snap to tape copy, note the following:

- 1. The Oracle database installed on the proxy machine should be of the same version as the source. For example if Oracle 10.2.0.4 is installed on source then the proxy also should be of the same version i.e. 10.2.0.4
- 2. Oracle user ID/group ID on source and proxy should be the same otherwise the RMAN backup copy will fail with permission issues.
- 3. Copy the Oracle parameter file pfile from the source to the proxy (say the instance only as spfile)

sqlplus <username/password@servicename> as sysdba << EOF

Create pfile from spfile;

Exit;

EOF

Copy the pfile init<instance name>.ora to the proxy computer and the destination location should be \$ORACLE_HOME/dbs/ with oracle user permissions. Also, copy the oracle password file from the source to the proxy computer's \$ORACLE_HOME/dbs/ directory.

- 4. Create the bdump, udump, adump, cdump and diagnostic_dest directories. Please note that the directories should be in the same location as the source.
- 5. Create the directories DB_CREATE_FILE_DEST, LOG_ARCHIVE_DEST and any other directory required for starting the database in NOMOUNT mode. If there are multiple archive destinations, then create the directories for each of the archivelog destinations.
- 6. Copy \$ORACLE_HOME/network/admin/tnsnames.ora configuration from source to proxy. If the entire content cannot be copied then copy at least the configuration related to catalog connection.
- 7. Startup the proxy instance in NOMOUNT mode.
- 8. Now configure the proxy Oracle Instance on the CommServer Console and status should be started. Now you are all set to do Oracle RMAN snap to tape incremental

Note that for incremental backup, snap clone will be mounted in the same location as the source mount-point of the source database. For example, if the data mount-point is /netapp/data then on the proxy too it will be mounted in /netapp/data, similarly for the archive log location chosen for the SnapProtect backup. Therefore, ensure that on the proxy this mount-point is free and there is no such directory existing on the proxy computer (even if it exists it should be empty).

SNAP PROTECT BACKUP COPY OF AN ORACLE ASM DATABASE FAILS ON THE PROXY COMPUTER

When performing SnapProtect operations on a backup copy of an Oracle ASM database, note the following:

- The Oracle *i*DataAgent must be installed on the proxy computer.
- The Oracle database installed on the proxy and source computers should be compatible.
- If you create an ASM instance manually in Oracle 11gRelease2, it must be registered to Central Repository Server (CRS). From Oracle 11gRelease2 onwards, ASM instance is a resource in CRS repository.
- 1. Run the following command as Oracle ASM user from ASM \$ORACLE_HOME/bin to register ASM database to OCR:

> srvctl status asm
PRCR-1001 : Resource ora.asm does not exist

- 2. Run the following command to add the resource to the configuration, If resource does not exist:
 - > srvctl add asm -p \$ORACLE_HOME/dbs/init\${ORACLE_SID}.ora
 - > srvctl status asm
 - ASM is not running.
- 3. Run the following command to start the ASM instance:
 - > srvctl start asm
 or
 > sqlplus "/ as sysasm"
 startup
- 4. Run the following command to verify the Status:
 - > srvctl status asm
- 5. Now, you will see the following message:

ASM is running on <proxy>

SNAP PROTECT BACKUP COPY ON PROXY FAILS

SOMETIMES, THE BACKUP COPY ON PROXY FAILS WITH THE FOLLOWING ERROR:

ORA-7217 SLTLN: ENVIRONMENT VARIABLE CANNOT BE EVALUATED.

Example: If RMAN configuration parameters contain \$s as shown below: RMAN> show all; RMAN configuration parameters for database with db_unique_name CVLT are: CONFIGURE RETENTION POLICY TO RECOVERY WINDOW OF 0 DAYS; CONFIGURE BACKUP OPTIMIZATION ON; CONFIGURE DEFAULT DEVICE TYPE TO DISK; # default CONFIGURE CONTROLFILE AUTOBACKUP OFF; CONFIGURE CONTROLFILE AUTOBACKUP FORMAT FOR DEVICE TYPE DISK TO '\$ORACLE BKUP/\$ORACLE SID/controlfile%F.f'; CONFIGURE DEVICE TYPE DISK PARALLELISM 2 BACKUP TYPE TO COMPRESSED BACKUPSET; CONFIGURE DATAFILE BACKUP COPIES FOR DEVICE TYPE DISK TO 1; # default CONFIGURE ARCHIVELOG BACKUP COPIES FOR DEVICE TYPE DISK TO 1; # default CONFIGURE CHANNEL DEVICE TYPE DISK FORMAT '\$ORACLE BKUP/\$ORACLE SID/%d df %t b%s p%p.rmf' MAXPIECESIZE 2000 M; CONFIGURE MAXSETSIZE TO UNLIMITED; # default CONFIGURE ENCRYPTION FOR DATABASE OFF; # default CONFIGURE ENCRYPTION ALGORITHM 'AES128'; # default CONFIGURE COMPRESSION ALGORITHM 'BASIC' AS OF RELEASE 'DEFAULT' OPTIMIZE FOR LOAD TRUE ; # default CONFIGURE ARCHIVELOG DELETION POLICY TO NONE; # default CONFIGURE SNAPSHOT CONTROLFILE NAME TO '\$ORACLE BKUP/\$ORACLE SID/snapcf CVLT.f'; ORA-7217 sltln: environment variable cannot be evaluated Perform one of the the following steps to resolve this issue:

- Configure "/" as connect string on proxy and set the environment variables specified for snapshot control file path in cvprofile residing in Base directory.
 - a. Edit /opt/calypso/Base/cvprofile
 - b. export ORACLE_BKUP=/tmp
 - c. calypso restart
- Change the configuration parameters on source to remove environment variables (\$ORACLE_BKUP etc).

SOMETIMES, THE BACKUP COPY ON PROXY FAILS WITH THE FOLLOWING ERROR EVEN THOUGH THE CONTROL FILE COPY IS CATALOGED INTO RECOVERY CATALOG:

RMAN-03002: failure of backup command at 04/11/2012 13:44:03

RMAN-06004: ORACLE error from recovery catalog database: RMAN-20220: control file copy not found in the recovery catalog

RMAN-06090: error while looking up control file copy: +DATA/backup.ctl.galaxy

RMAN>

Perform the following to resolve this failure:

- Unregister and then reregister the source database to recovery catalog.
- Resume the backup copy job.

SOMETIMES THE SNAP PROTECT OPERATION AND A BACKUP COPY ON PROXY FOR ASM DATABASE WILL FAIL WITH THE FOLLOWING ERRORS:

FOR SNAP:

ERROR CODE: [19:1335]

Description: Oracle Backup [GetASMLogDisks Failed.]

FOR BACKUP COPY:

ERROR CODE: [19:1335]

Description: Oracle Backup [Mounting snap or renaming ASM DiskGroup operation failed with an error. Please check the logs for more details.]

30156 f48b7410 04/18 13:00:37 97550 OraObject::GetOraMode() - oraMode = SHUTDOWN.

30156 f48b7410 04/18 13:00:37 97550 OraObject::GetOraMode() - oraMode = SHUTDOWN: return Error.

30156 f48b7410 04/18 13:00:37 97550 OraInfoBase::GetInfo() - CheckOraMode() failed: oraError=301989906

30156 f48b7410 04/18 13:00:37 97550 ASMSnapUtil::runSqlWithScript() - Failed while getting the Oracle version

30156 f48b7410 04/18 13:00:37 97550 ASMSnapUtil::runSqlWithScript() - Writing into file [@/opt/calypso/Base/Temp/tmp_asm_30156.sql] sql = [select 'U,'|| state from v\$asm_diskgroup where name = 'DATADG1'

/ 1

Ι

30156 f48b7410 04/18 13:00:37 97550 ASMSnapUtil::runSqlWithScript() - Executing SQL select 'U,'|| state from v\$asm_diskgroup where name = 'DATADG1'

failed with an error Database is in SHUTDOWN mode

30156 f48b7410 04/18 13:00:37 97550 ASMSnapUtil::isASMDiskGroupMounted() - Failed while executing the sqlscript [select 'U,'|| state from v\$asm_diskgroup where name = 'DATADG1'

) output = []

30156 f48b7410 04/18 13:00:37 97550 ASMDiskGroup::renameASMDiskGroup() - Child change user=oracle, gid=501, uid=501 30156 f48b7410 04/18 13:00:37 97550 ClOraSnapAgent::RenameAndMountASMDiskGroup() - Successfully Renamed ASM DISK GROUPS 30156 f48b7410 04/18 13:00:37 97550 OraObject::GetOraMode() - strictSID = 0 30156 f48b7410 04/18 13:00:37 97550 OraChildProcess::SetPostForkParam() - Parent path = /oracle11gr2/product/11.2.0/dbhome_1/bin/sqlplus 30156 f48b7410 04/18 13:00:37 97550 OraChildProcess::SetPostForkParam() - Parent path = /oracle11gr2/product/11.2.0/dbhome_1/bin/sqlplus

Perform the following to resolve this failure:

- 1. Log in to the CommCell Console.
- 2. Verify the Oracle +ASM instance status. The status should be in started mode.
- 3. Resume the Snap protect operation or the backup copy job that you need to perform.

LATENCY OCCURS FOR RELEASING FILEDESCRIPTORS BY ASM INSTANCE DURING DISMOUNTING OF ASM DISKGROUPS

On Oracle version 11.2.02, there is a latency for releasing filedescriptors by ASM instance during dismounting of ASM diskgroups.

Apply the following patch on Oracle version 11.2.02 to resolve the latency issue:

Patch:11666137

https://updates.oracle.com/download/11666137.html

SNAP PROTECT BACKUP COPY OF AN ORACLE ASM DATABASE FAILS IF YOU PERFORM A SNAPPROTECT OPERATION WITHOUT DISABLING THE SNAP INTEGRITY FOR PERSISTENT SNAP ENGINES

if you perform a SnapProtect operation without disabling the Snap Integrity for persistent snap engines, the following error is displayed:

19935 b7f476d0 03/01 12:20:03 11972 ASMDiskGroup::mountASMDisk() - Failed while excuting sql [alter system set asm_diskstring='/ora_snap*/asm*','/ora_snap*/*'

/

alter diskgroup DATA mount

/

19935 b7f476d0 03/01 12:20:03 11972 ASMDiskGroup::mountASMDisk() - One of the diskgroups could not be mounted

19935 b7f476d0 03/01 12:20:03 11972 ClOraSnapAgent::RenameAndMountASMDiskGroup() - mountASMDiskGroup failed

Perform the following steps to resolve this issue:

1. Mount the snaps from the CommCell console (List Snaps-->Mount) on Proxy and then use the following command:

/opt/calypso/Base/diskgroup_rename.pl -y <original source diskgroup name> <mounted disk path>

For example, if snap is mounted on /tmp and the original diskgroup name is DATA01, then perform the following command:

[oracle@Hindu ~]\$ /opt/calypso/Base/diskgroup rename.pl -y DATA01 /tmp/volume 1335990104/DATA01

renaming disks to: DATA01

current name for /tmp/volume 1335990104/DATA01: DS2995770

new name for /tmp/volume 1335990104/DATA01: DATA01

2. Unmount the Snap. Perform the same for all the snaps in that SnapProtect operation.

IF A BLOCK TRACK CHANGE FILE EXISTS, THE RMAN BACKUP COPY OPERATION ON A PROXY USING SRMANDATAFILECOPY REGISTRY KEY IS FAILING

The RMAN backup copy operation using sRMANDATAFILECOPY registry key will fail on proxy, if a block track change file exists for the source database.

You should manually create the block track change file in the same location as source on proxy and resume the backup copy operation.

SYSTEM IS DISPLAYING VOLUME OPERATION IN PROGRESS ERROR FOR BACKUP COPY

If you see Volume Operation in Progress error for backup copy, then on the proxy computer configure either the count of the retries for mounting the snapshots or the interval between two retries for mounting the snapshots.

Follow the steps given below to configure the number of retries for mounting the snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers**.
- 2. Right-click the *<Client*>, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name box, type nSnapMountingRetryCount.
- 6. In the Location box, select or type MediaAgent from the list.
- 7. In the **Type** box, select **Value**.
- 8. In the Value box, type the value and then click OK.



Follow the steps given below to configure the time interval between two retries for mounting the snapshots:

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the *<Client>*, and then click **Properties**.
- 3. Click the **Registry Key Settings** tab.
- 4. Click Add.
- 5. In the Name box, type nSnapMountingRetryInterval.
- 6. In the Location box, select or type MediaAgent from the list.
- 7. In the Type box, select Value.
- 8. In the Value box, type the value and then click **OK**.

Add Reg	gistry Key on Unix Client 🔰 🔉	1
Name	nSnapMountingRetryInterval	
Location	MediaAgent	
Туре	VALUE	
Value	5	
	OK Cancel Help	

SYSTEM IS DISPLAYING ORA-01145: OFFLINE IMMEDIATE DISALLOWED UNLESS MEDIA RECOVERY ENABLED ERROR WHEN RECOVERING THE NO ARCHIVELOG DATABASE

When you see ORA-01145: offline immediate disallowed unless media recovery enabled error when recovering the no archivelog database, verify whether the catalog is in sync with the database. If the catalog is not in sync with the database, perform a resync.

SYSTEM IS DISPLAYING ORA-01031: INSUFFICIENT PRIVILEGES ON THE PROXY

During the proxy setup the following error may occur after the Oracle password file is copied over the proxy

SQL> conn sys/<password>@orcl as sysdba; ERROR: ORA-01031: insufficient privileges

The listener uses the dynamic service information about the database and instance before using statically configured information in the listener.ora file. Configuration of static service information is necessary if you require remote database startup from a tool other than Oracle Enterprise Manager, or you have Oracle Database releases earlier than Oracle8i.

Also please note that the SID_NAME is case sensitive. Listener.ora file on proxy

Cause:

```
SID_LIST_LISTENER=
(SID_LIST=
(SID_DESC=
(ORACLE_HOME=/u01/app/oracle/rdbms/11.2.0.3/dbhome_1)
(SID_NAME=prd1)
)
(SID_DESC=
(ORACLE_HOME=/u01/app/oracle/rdbms/11.2.0.3/dbhome_1)
(SID_NAME=orcl)
)
```

Solution:

```
SID_LIST_LISTENER=
(SID_LIST=
(SID_DESC=
(ORACLE_HOME=/u01/app/oracle/rdbms/11.2.0.3/dbhome_1)
(SID_NAME=PRD1)
)
(SID_DESC=
(ORACLE_HOME=/u01/app/oracle/rdbms/11.2.0.3/dbhome_1)
(SID_NAME=ORCL)
)
)
```

Verification:

SQL> conn sys@ORCL as sysdba Enter password: Connected.

SEPARATE MEDIAAGENTS FOR PRIMARY AND SNAP BACKUP COPIES IS NOT SUPPORTED

Separate MediaAgents for Primary and Snap Backup Copies is not supported for SnapProtect operations. The backup copy operation fails in such configurations.

CATALOG ERRORS DURING SNAPPROTECT BACKUP

During SnapProtect backup job, you may notice the following catalog errors:

File Name: /opt/calypso/MediaAgent/SnapVolumeMounts/SnapMnt 1 2 26099/oradata/ONLINE/dbconf.cfg

RMAN-07517: Reason: The file header is corrupted

File Name: /opt/calypso/MediaAgent/SnapVolumeMounts/SnapMnt_1_2_26099/oradata/ONLINE/initONLINE.ora

RMAN-07517: Reason: The file header is corrupted

File Name: /opt/calypso/MediaAgent/SnapVolumeMounts/SnapMnt_1_2_26099/oradata/ONLINE/spfileONLINE.ora

RMAN-07518: Reason: Foreign database file DBID: 0 Database Name:

File Name: /opt/calypso/MediaAgent/SnapVolumeMounts/SnapMnt_1_2_26099/oradata/ONLINE/GalaxyControlFile.Conf

RMAN-07517: Reason: The file header is corrupted

These error messages can be ignored. As part of the backup job, files such as spfile, pfile and backup controlfiles are copied to the archive log location. Oracle does not recognize these files as archive log files and hence displays the error messages.

RESTORE ERROR ON LINUX CLIENT WHEN SWITCH DATABASE MODE IS ENABLED

When restoring Oracle database on Linux clients, if the **Switch database mode for restore** option is selected to keep database in correct mode during restore, the database may not restart after switching the database mode. Also, the restore operation may fail with the following error message.

RMAN Script execution failed with error [RMAN-04014: startup failed: ORA-27137: unable to allocate large pages to create a shared memory segment]. Please check the Logs for more details.

This issue occurs if the oracle user has a higher ulimit configuration than the root user. To resolve this issue, apply the ulimit value of Oracle user for the restore using the following steps:

- 1. From the CommCell Browser, navigate to Client Computers.
- 2. Right-click the <*Client*>, and then click **Properties**.
- 3. Click the Registry Key Settings tab.
- 4. Click Add.
- 5. In the Name box, type OracleUser.
- 6. In the Location box, select or type OracleAgent from the list.
- 7. In the Type box, select Value.
- 8. In the Value box, type the Oracle user name (eg., oracle) and then click **OK**.
- 9. Click OK.
- 10. Restart Calypso Services on the client.

Add Reg	gistry Key on Unix Client brahmani64
Name	OradeUser
Location	OracleAgent 🔹
Туре	VALUE
Value	orade
	OK Cancel Help

SAP FOR ORACLE

When you perform SnapProtect backup operation, snaps are performed twice on sapbackup directory, dbs folder etc. However, there is a limitation with Hitachi Data System (HDS). You can only create 3 S-VOL for a given P-VOL when you are using HDS shadow image snap engine. If we have the entire SAPDATA_HOME on a single volume, all the 3 available S-VOL's may be exhausted.

Hence, you need to perform the following for SAP HDS:

• Perform the SnapProtect backup operation Data and Logs separately using 2 different subclients.

• Use the spool copy for every SnapProtect backup operation so that snaps can be aged once it is copied to disk / tape.

SEPARATE MEDIAAGENTS FOR PRIMARY AND SNAP BACKUP COPIES IS NOT SUPPORTED

Separate MediaAgents for Primary and Snap Backup Copies is not supported for SnapProtect operations. The backup copy operation fails in such configurations.

NAS

SNAPVAULT/SNAPMIRROR COPIES ARE NOT CREATED WHEN BACKING UP VFILER DATA

When you configure a physical file server (vfiler0) as a NAS client and define vFiler volumes in the subclient content, auxiliary copy operations will fail to create the SnapVault/SnapMirror copies. You can resolve this issue by configuring each vFiler as a NAS client. During the client configuration, ensure not to include the vFiler root volume in the subclient content. You can also perform mount and revert operations with the snapshot.

I CANNOT RESTORE FROM A SNAPSHOT AFTER SELECTING TO SKIP THE INDEXING PHASE DURING BACKUP

Restore operations from a snapshot are not supported if you selected the **Skip Catalog phase for SnapProtect** option in the **Advanced Backup Options** dialog box during backup. To restore your backed up data, you must create a backup copy as explained in the Snap Movement to Media procedure and restore your data from the backup copy.

RESTORE FROM SNAPVAULT/SNAPMIRROR COPIES FAILS WITH AN ERROR INDICATING THE FILE SERVER IS NOT A NAS CLIENT

Restore operations will fail with the following error code if the file server used to backup Vault or Mirror copies is not added as a NAS client:

[39:279] The host <file_server_name> could not be found in the list of NAS Clients. Please add this host as NAS Client.

To resolve this issue, add the file server as a NAS client as well as any other NAS storage device used to back up secondary storage data.

VIRTUAL SERVER (HYPER-V)

SNAPPROTECT BACKUP FOR ONLINE VIRTUAL MACHINES IN HYPER-V CLUSTERS FAILS

You can resolve this issue by temporarily suspending the virtual machine during the SnapProtect operation.

WHILE PERFORMING A RESTORE OPERATION, THE MEDIAAGENT DOES NOT HAVE ACCESS TO THE STORAGE DEVICE

If the storage policy uses a Media Agent that does not have access to the storage device where the snapshot was created, an additional step is required while selecting the options in the **Restore Options for all selected items** window.

- Click on the **Advanced** button.
- From the Advanced Restore Options window, click the Data Path tab.
- Select a proxy from the **Use Proxy** dropdown to mount the snapshot.
- Click OK.

VIRTUAL MACHINES RESTORED FROM SNAPPROTECT ARE NOT POWERED ON AUTOMATICALLY

The virtual machine may have been in a running state during the SnapProtect backup. Consequently, the virtual machine is restored in a saved state. To resolve this issue:

- 1. Right-click the virtual machine in the Hyper-V Manager.
- 2. Click Delete Saved State.

FILE-LEVEL RESTORE FAILS

The restore operation fails when you are restoring files or folders from a Disk Level backup. The restore will fail if the **Enable Granular Recovery** option is not selected before performing the backup or the Granular Recovery operation fails.

In such scenario, you can use following procedure to restore files and folders from a disk level backup:

- 1. Mount the snapshot that contains the data which you want to restore. For more information, refer to Mount Snapshots.
- 2. Browse the **Destination Path** which you selected while mounting the snapshot and locate the VHD file for the disk which contains the required files and folder.
- 3. Use the DiskManager to mount the VHD file on any Windows server. A new drive will be created on the Windows server.
- 4. Browse the files and folder on this drive and copy the required files and folders to a desired destination.

CANNOT RESTORE FILES FROM A WINDOWS 2012 VIRTUAL MACHINE USING DEDUPLICATION

SYMPTOM

When restoring from a backup of a Windows 2012 virtual machine that has deduplication enabled, a file-level restore completes successfully but only creates stub files.

CAUSE

File-level restores are not supported for deduplicated volumes from a Windows 2012 VM.

RESOLUTION

To retrieve files from a backup for a Windows 2012 VM using deduplication, restore the disk that contains the file.

Alternatively, you can install a local file system agent on the Windows 2012 VM to enable file-level restores.

DB2

SEPARATE MEDIAAGENTS FOR PRIMARY AND SNAP BACKUP COPIES IS NOT SUPPORTED

Separate MediaAgents for Primary and Snap Backup Copies is not supported for SnapProtect operations. The backup copy operation fails in such configurations.

UNIX FILE SYSTEM

FAILURE DURING MOUNT OF SECOND LOGICAL VOLUME HAVING THE FIRST LOGICAL VOLUME ALREADY MOUNTED

You have two logical volumes on the same physical volume group. After performing a SnapProtect backup on a subclient which has both logical volumes as content, you proceed to mount each logical volume. After successfully mounting the first volume, an error will be displayed while trying to mount the second one saying the mount operation failed during the volume group recreation. Although the mount operation was not successful, the second logical volume will show as mounted in the **Snaps created during SnapProtect operation** window of the CommCell Console. In this scenario, proceed to unmount the second logical volume.

- From the CommCell Console, right-click the entity that contains the snapshots you want to browse, and click All Tasks | List Snaps.
- From the Snaps created during SnapProtect operation window, right-click the logical volume and select Unmount.
- Click Yes.

To avoid this issue on future mount operations, it is recommended to mount one of the logical volumes, and not both.

IOSCAN ERROR ON AN IA64 MACHINE RUNNING HP-UX 11.23

When running a SnapProtect backup on an IA64 machine running HP-UX 11.23, the below ioscan error in the logs can be safely ignored.

5774 16 02/14 14:14:57 ###### UXScsi::scanAgile() - "/usr/sbin/ioscan -kFnN" failed: ioscan: illegal option -- N

SNAPPROTECT FAILURE AT THE VGIMPORT PHASE ON AN IA64 MACHINE RUNNING HP-UX

On an IA64 machine running HP-UX, SnapProtect job may fail at the vgimport phase with an error message if the maximum number of volume groups allowed on the machine is exhausted. For example,

<Failure during recreate VG. Error [Failed import: vgimport -v m /opt/**calypso**/Base/Temp/vg_test_1360887863.map /dev/vg_test_1360887863 /dev/dsk/c20t0d2 14672 Error: vgimport: Cannot open the control file "/dev/vg_test_1360887863/group":

In such cases, use the following steps to increase the maximum number of volume groups and resume the job:

1. Check the maxvgs parameter using query:

kctune -v maxvgs

2. Check the maximum minor number, represented as NN, in the output below using the following command. For example,

ls -1 /dev/vg_test_1360887863 crw-r---- 1 root dba 128 <0xNN0000> Dec 17 16:00 group

3. If the maximum value of the minor number determined in the previous step is equal to the maxvgs parameter then modify it to accommodate more volume groups. For example,

kctune maxvgs=50

4. Reboot the machine.

Accessing Exchange Data from VMware Snapshots

ACCESS EXCHANGE DATA ON A VIRTUAL MACHINE

Exchange data, such as mail messages, can be restored from an offline point-in-time virtual machine snapshot to reduce impact to the production Exchange Server. To mine Exchange data on a virtual machine, do the following:

- Setup Backup Proxy Computer and Exchange Server Virtual Machine
- Configure Virtual Server iDataAgent and Discover Exchange Server Virtual Machine
- Create Magnetic Library and Storage Policy
- Configure and Create Snapshot of Exchange Data
- Configure and Run Snap Mining Job
- Browse and Mine Exchange Data

SETUP BACKUP PROXY COMPUTER AND EXCHANGE SERVER VIRTUAL MACHINE

The addresses of both computers must be network resolvable.

BACKUP PROXY COMPUTER

The backup proxy computer is used to create the snapshot of the Exchange data on the virtual machine. It also is used to run the snap mining job. This proxy computer must satisfy certain requirements, as listed in System Requirements. In addition, ensure that the proxy computer and the Exchange Server virtual machine are members of the same domain.

On this proxy computer, install the following:

• Virtual Server *i*DataAgent.

See Getting Started - VMware Deployment for installation instructions.

• Exchange Mailbox iDataAgent (Restore Only).

See Deployment - Microsoft Exchange Server Agents for installation instructions.

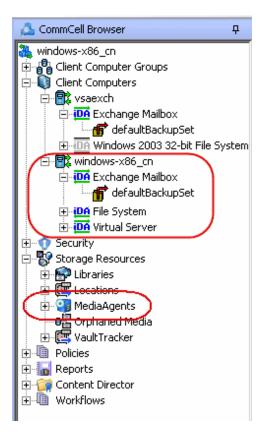
When prompted for the **Exchange Server Name**, enter the fully-qualified name of the Exchange Server (e.g., exchange.vm.company.com) installed on the Exchange Server virtual machine. Ensure you also select the correct **Exchange Server Version**, or else the snap mining job may fail.

• MediaAgent.

See MediaAgent Deployment for installation instructions.

- Active Directory Lightweight Directory Services (AD LDS) Snap-Ins and Command-Line Tools. This feature is used to remotely manage Active Directory Domain Services.
- Microsoft Outlook.

After installing, the components in CommCell Console are displayed as follows:



EXCHANGE SERVER VIRTUAL MACHINE

This virtual machine has the Exchange data that you wish to mine. The Exchange Server has already been installed on this machine. Install the following:

• Exchange Mailbox *i*DataAgent.

See Deployment - Microsoft Exchange Server Agents for installation instructions.

When prompted for the **Exchange Server Name**, enter the fully-qualified name of the Exchange Server (e.g., exchange.vm.company.com) installed on the Exchange Server virtual machine. Ensure you also select the correct **Exchange Server Version**, or else the snap mining job may fail.

• Windows File System iDataAgent (Restore Only).

See Deployment - Windows File System *i*DataAgent for installation instructions.

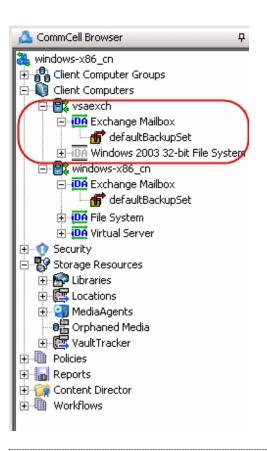
• VMware Tools (latest version).

See http://downloads.vmware.com/ for more information.

• VSS Provider.

See VSS Provider for step-by-step installation instructions.

After installing, the components in CommCell Console are displayed as follows:



CONFIGURE VIRTUAL SERVER IDATAAGENT AND DISCOVER EXCHANGE SERVER VIRTUAL MACHINE

The following steps are performed on the backup proxy computer.

- **1.** Configure an instance of the Virtual Server iDataAgent as follows:
 - 1. From the CommCell Console, navigate to **Client Computers** | Virtual Server.
 - 2. Right-click the Agent and click **All Tasks** | **Create New Instance**.
 - 3. Enter an **Instance Name** and select **Vendor Type**.
 - 4. Click Virtual Center.
 - 5. Enter a valid Host name for the Virtual Center.
 - 6. Click **Configure Password** and enter User Name and Password of Virtual Server. Click **OK**.
 - 7. Click **OK**.

Virtual Server Instance Properties
General
Client Name: windows-x86_cn
iDataAgent: Virtual Server
Instance Name: snapshot
Vendor Type: VMWare
C ESX Servers
Configure E5X Servers
OK Cancel Help

- 2. Discover the Exchange Server virtual machine as follows:
 - 1. From the CommCell Console, navigate to Client Computers | Virtual Server.
 - 2. Right-click the backupset and select **Properties**.
 - 3. Click the Guest Hosts Configuration tab.
 - 4. Click Discover.
 - 5. Scroll through the list and select the Exchange Server virtual machine you wish to mine.
 - 6. Click **OK**.

Click the **Virtual Machine** column to sort the machines alphabetically.

172.19.96.52 172.19.96.52	VSAE2K3			
172 10 06 52	VDHE2KJ			
	VSAE2K3_1			
172.19.96.52	VSAE2K7			
172.19.96.52	VSAE2K7_1			
172.19.96.52	VSAEXCH	default		
172.19.96.52	VsaExch2k10			
172.19.98.173	VsaExch2k7			
172.19.96.52	VSAEXCH7_1			
172.19.96.52	W2K3-X64-FRE5H_Latest			
172.19.96.52	W2K3_X64			
172.19.96.52	W2K3_X86			
172.19.96.52	W2K3_X86_SQL			
172.19.96.52	WIND-COPY			
172.19.98.173	winddk1			
172.19.98.173	winddk2			
172.19.96.52	Window_2008_R2_Fresh			
172.19.96.52	Windows2003-x86			
172.19.96.52	XIV-DS04-VM1			
172.19.96.52	XIV-DS3-VM1			
172.19.96.52	XIV-TEST-GX-VM1			
172.19.96.52	XIV-TEST-VM2			
172.19.96.52	XIV-VM-TEST1			
				Discover
			-	1100101
Change all selected guest host to				

CREATE MAGNETIC LIBRARY AND STORAGE POLICY

The following steps are performed on the backup proxy computer.

- 1. Create a magnetic library if one has not already been configured as follows:
 - 1. From the **Tools** menu in the CommCell Console, click **Control Panel**.
 - 2. Double click Library & Drive Configuration.
 - 3. Select the MediaAgent(s) whose devices you want to detect or display, and then click ${\bf OK.}$

NOTES

- If a device has already been configured for the MediaAgent, the system displays the device in the **Library & Drive Configuration** window.
- 4. Click **OK** to continue.
- 5. Click **OK** again if prompted.
- 2. Create a storage policy as follows:
 - 1. From the CommCell Browser, right-click **Storage Policies** | **New Storage Policy**.
 - 2. Follow the prompts displayed in the Storage Policy Wizard:
 - Click Data Protection and Archiving for type of Storage Policy and click Next.
 - Click No for Legal Hold and click Next.
 - Enter a name in Storage Policy Name and click Next.
 - Enter the **Primary Copy** name and and click **Next**.
 - Select the library that was created in Step 1 and click Next.
 - Select the MediaAgent and click Next.
 - Configure device stream and retention criteria (default is infinite) and click Next.
 - For deduplication, select No and click Next.
 - Confirm the selections and click **Finish**.

CONFIGURE AND CREATE A SNAPSHOT OF EXCHANGE DATA

The following steps are performed on the backup proxy computer.

- 1. Enable SnapProtect as follows:
 - 1. From the CommCell Console, navigate to **<Client>**.
 - 2. Right-click the client and select **Properties**.
 - 3. Click on the Advanced tab.
 - 4. Select the **Enable SnapProtect** option to enable SnapProtect backup for the client.
 - 5. Click **OK**.



Create Storage Policy Wizard	×
Which library should become the default library for this primary copy?	
Library: [maj]lb]
Press Next to continue	
Cancel <back next=""> F</back>	inish

Client Computer Properties for murphy rsion Security Activity Control Groups Firewall Configuration Job Configuration Advanced Content Indexing Registry Key Settings Client Side Deduplication General Ver Enter Alternate Cache Partition for QSnap. Please ensure that the volume specified is an NTFS CDR Log File Location Browse Advanced Features: System Recovery Server on Windows Enable SnapProtect 2 Enable retry on network errors Retry Frequency (seconds) 30 ÷ Retry Count 40 🕂 Cancel Help 3 (OK

Pre/Post Process

Virtual Machine

Security SnapProtect Operations

Device Content

*

General | Filters | Activity Control |

VSAEXCH

- **2.** Configure the content of the subclient as follows:
 - 1. From the CommCell Console, navigate to Client Computers | Virtual Server.
 - $2. \quad \text{Right-click the sublcient and click the ${\bf Content}$ tab. } \\$
 - 3. Click Configure.
 - 4. In the **Guest Hosts Configuration** dialog, select the Exchange Server virtual machine and click **OK**.
 - 5. Click **OK**.

- **3.** Assign the storage policy to the subclient as follows:
 - 1. From the CommCell Console, navigate to **Client Computers** | **Virtual Server**.
 - $2. \quad \text{Right-click the subclient and click $\mathbf{Properties}$}. \\$
 - 3. Click the **Strorage Device** tab.
 - 4. In **Storage Policy**, select the storage policy as created in Create Magnetic Library and Storage Policy.
 - 5. Click **OK**.

Configure OK Cancel Help Subclient Pr otect Op Security Activity Control Er General Filters Pre/Post Process Storage D Data Storage Policy Data Transfer Option Deduplication Storage Policy: mag_lib(windows-x86_cn)_(1) Data Paths Create Storage Policy OK Cancel Help

- 4. Enable SnapProtect and snap mining for the subclient as follows:
 - 1. From the CommCell Console, navigate to **Client Computers** | **Virtual Server**.
 - 2. Right-click the subclient and click **Properties**.
 - 3. Click the SnapProtect Operations tab.

- 4. Select **SnapProtect** option to enable SnapProtect backup for the selected subclient.
- Select the relevant snap engine from the Available Snap Engines drop-down list.

Ensure that the snap engine has been configured in Array Management. To configure it, click **Enter Array Credentials** and click **Add**.

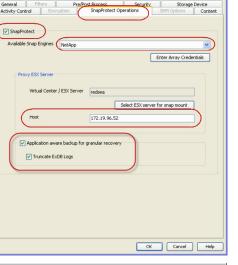
- 6. Specify the IP address of the Host by clicking **Select ESX server for snap mount**. Select a Host IP address and click **OK**.
- 7. Select **Application aware backup for granular recovery** option to enable snap mining for the selected subclient.
- Optionally, select the Truncate ExDB Logs to prune Exchange Database logs that are no longer needed and prevent them from growing to an unmanageable size. This is recommended.
- 9. Click OK.

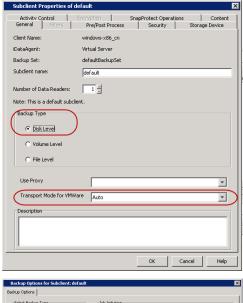
Keep in mind that once snap mining is enabled for a subclient, it cannot be reversed.

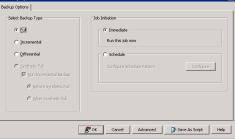
- 5. Configure the backup type and transport mode for the subclient as follows:
 - 1. From the CommCell Console, navigate to **Client Computers** | **Virtual Server**.
 - 2. Right-click the subclient and click Properties.
 - 3. For Backup Type, select Disk Level.
 - 4. In Transport Mode for VMWare, select Auto.
 - 5. Click OK.

- 6. Run the SnapProtect backup job as follows:
 - 1. From the CommCell Console, navigate to **Client Computers** | Virtual Server.
 - 2. Right-click the subclient and click Backup.
 - 3. Click Full.
 - 4. Click **OK**.

In **Job Controller**, you can view the progress of the job. Double-click the job to view the job details.







CONFIGURE AND RUN SNAP MINING JOB

The following steps are performed on the Exchange Server virtual machine.

- **1.** Configure the subclient of the Exchange Mailbox *i*DataAgent as follows:
 - 1. From the CommCell Console, navigate to **Client Computers** | <*Exchange server* client> | **Exchange Mailbox**.
 - 2. Right-click a subclient and click **Properties**.
 - 3. Click the **Content** tab.
 - 4. Click Perform backup using mining off snapshot.
 - 5. Choose the client computer on which the snapshot was created in **Client**.

- 6. Choose Virtual Server as the Agent that was used to create the snapshot.
- 7. Choose the **Instance** of the Virtual Server *i*DataAgent that was used to create the snapshot.
- 8. Choose the **Backupset** of the Virtual Server *i*DataAgent that was used to create the snapshot.
- 9. Choose the subclient of the Virtual Server *i*DataAgent in **subclient to use** that was used to create the snapshot.
- 10. Click **Proxy Client** and from the pulldown menu, select the proxy computer that will be used to run the snap mining data protection job. You must choose a proxy computer for running the data protection job; it cannot be run from the Exchange Server virtual machine itself. If desired, an additional proxy computer could be used for running the data protection job instead of the backup host proxy. It would have the same requirements as the backup host proxy.
- 11. Click OK.

2. Run the snap mining job as follows:
--

- 1. From the CommCell Console, navigate to **Client Computers** | <*Exchange server client*> | **Exchange Mailbox**.
- 2. Right-click a subclient and click **Backup**.
- 3. From the CommCell Console, right-click the subclient and click **Backup**.
- 4. Select Full as backup type and Immediate to run the job immediately.
- 5. Click **OK**.

Display Name	Alias Name	SMTP Address	×
			
			+
al: 0 mailbox(es).		⊆onfi	
/ backup following folders (sep	arated by ;) (Note: Other folde	's in the mailbox will not be b	acked u
			-
 Perform backup using mi 	ning off snapshot		
Client	windows-x86_cn		-
Agents	Virtual Server		
Instance	snapshot		
Backupset	defaultBackupSet		-
subclient to use	default		-
🔽 Proxy Client	windows-x86_cn		-
	WINDOWS-XOD_CD		·
po moxy cacile	jwindows-xob_cn		
p Hoy close	windows-xxe_cn		
p moy con	[Windows-xoo_cn	OK Cancel	Help
p Options for Subciliant- de			
p. Options for Subclient: do Coture lect Backup Type	fault 3db Inhiston		
p. Options for Subclient. de Options liet Backup Type OFT	fault	OK Cancel	
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p. Options for Subclient. do Octuos Debus Debus Decemental Differential	fault 26b Initiation © Immediato Run this go nc O Schedule	OK Cancel	
p. Options for Subclient. do Octuos Net Backup Type OFTI O Incremental	fault Ab Initiation Immediate Run this job ne	OK Cancel	
p Options for Subclient: de options idet Backup Type © Fell 1 O Incremental O Differential O Synthetic Ful	fault 26b Initiation © Immediato Run this go nc O Schedule	OK Cancel	
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Auto-disc Content Activity Control

Pre/Post Proce

BROWSE AND MINE EXCHANGE DATA

The following steps are performed on the Exchange Server virtual machine.

- **1.** Browse and mine Exchange data as follows:
 - 1. From the CommCell Browser, right-click the subclient and click **Browse Backup** Data.
 - 2. Click **OK**.
 - 3. Select data to restore in the Browse window and click Recover All Selected...
 - 4. Click one of the following in the **Restore Options** window:
 - Click **To Mailbox** to restore data to a mailbox. Choose whether to restore to original or different client computer and the same or different path.
 - Click **To PST** to restore the data to a PST file. Choose whether to restore the PST file to a local or network drive.
 - 5. Click **OK**.

Back to Top



Accessing Exchange Data from Database Snapshots

TABLE OF CONTENTS

Overview

Prerequisites

Create a Snapshot Hardware Supported Storage Array Data Replicator

Configure Snap Mining Mining on a Proxy Mining on a Single Computer

Configuring Wait Time for Parallel Snap Mining

Configuring for Parallel Snap Mining Preparation Timeout

Run a Snap Mining Job

View Job History

Best Practices

FAQ

OVERVIEW

Snap mining allows you to protect data from an offline copy of the Exchange database. The offline copy is a point-in-time snapshot of the data to be used for data protection operations. With snap mining, impact to the Exchange Server can be reduced in a production environment thus improving performance.

PREREQUISITES

The following are prerequisites to using this feature:

- Mailboxes that are mined from a Microsoft Exchange 2003 32-bit Server database requires the 32-bit Exchange Mailbox iDataAgent.
- Mailboxes that are mined from a Microsoft Exchange 2007 64-bit Server or Microsoft Exchange 2010 64-bit Server databases require the 64-bit Exchange Mailbox *i*DataAgent.
- Ensure that the Operating System on the computer on which the Exchange Server is installed and the computer where the snap is mounted is the same.

CREATE A SNAPSHOT

A snapshot needs to be created for snap mining. It can be created before or after configuring the subclient for snap mining. Snapshots are created in one of these ways:

- Hardware supported storage array
- Software storage array (Data Replicator)

HARDWARE SUPPORTED STORAGE ARRAYS

A snapshot can be created with SnapProtect backup using a supported storage array.

For step-by-step instructions on creating a snapshot with a hardware storage array, refer to SnapProtect Backup - Microsoft Exchange Database.

DATA REPLICATOR

A snapshot can be created with SnapProtect backup when Data Replicator is selected as the storage array. Data Replicator provides the snapshot functionality without the need for any specialized hardware.

For step-by-step instructions on creating a snapshot with Data Replicator as the software storage array, refer to SnapProtect[™] Backup - Data Replicator.

Data Replicator is not supported when mining a snapshot on a single source computer.

CONFIGURE SNAP MINING

You can mine data from a snapshot directly on the computer hosting the snapshot or from a proxy computer.

- Method 1: Mining on a Proxy
- Method 2: Mining on a Single Computer

RELATED TOPICS

SnapProtect[™] Backup - Exchange Database Use SnapProtect backup to create a point-in-time snapshot of the data using hardware storage arrays to provide snapshot functionality for data protection operations.

METHOD 1: MINING ON A PROXY

Running the data protection job on a proxy server improves performance as it offloads processing on the production Exchange server.

Select one of the following configurations to run a snap mining job on the proxy computer. Then configure the subclient of the Exchange Mailbox iDataAgent.

- Configure on Source but Mine on Proxy
- Configure on Proxy and Mine on Proxy

CONFIGURE ON SOURCE BUT MINE ON PROXY

In this configuration, the Exchange Database *i*DataAgent creates the snapshot on the source computer. To run the snap mining job on a proxy but configure it on the source computer, install the following components:

Source Computer

- Microsoft Exchange Server
- Exchange Database iDataAgent
- Exchange Mailbox iDataAgent
- MediaAgent
- VSS Provider (required for hardware storage arrays)
- ContinuousDataReplicator (if Data Replicator is the storage array)

Proxy Computer

- Exchange Mailbox iDataAgent
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

The Exchange Database and Exchange Mailbox Agents are installed on same source client. The Exchange Mailbox *i*DataAgent is also installed on the proxy server so that the subclient is configured on the source client. Mounting of the snapshot and backing it up are performed on the proxy computer.

CONFIGURE ON PROXY AND MINE ON PROXY

In this configuration, the Exchange Database *i*DataAgent creates the snapshot on the source computer. To configure and run the snap mining job on a proxy computer, install the following components:

Source Computer

- Microsoft Exchange Server
- Exchange Database iDataAgent
- MediaAgent
- VSS Provider (required for hardware storage arrays)
- ContinuousDataReplicator (if Data Replicator is the storage array)

Proxy Computer

- Exchange Mailbox iDataAgent
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

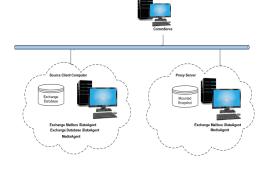
The Exchange Mailbox iDataAgent is installed on the proxy server so configuration of the subclient content is performed on the proxy server. Mounting of the snapshot and backing it up are also performed on the proxy server.

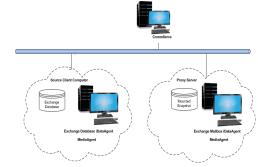
CONFIGURE SUBCLIENT

A Snap Mining job is configured from a subclient of the Exchange Mailbox iDataAgent.

- Regardless of the settings in Agent properties (General tab), the Deleted Item Retention will always be protected in a snap mining operation.
- It is recommended to create one snap mining subclient for each database subclient, since only one subclient can mine from a snapshot at a time.
- It is not recommended to mix snap mining subclients and traditional subclients within the same backupset.
- Snap mining can be performed for databases configured in the subclient in which Snap Mining is enabled.
- Typically, the subclient is configured first before the snapshot is created. The only exception to this rule would be for NetApp snapshots that are discovered using External Data Connector. In this case, the subclient can be configured at any time.

Keep in mind that once snap mining is enabled for a subclient, it cannot be reversed.





1. From the CommCell Browser, right-click a subclient of the Exchange Mailbox *i*DataAgent and select **Properties**.

This subclient will be used to run the snap mining data protection job.

2. Click the Content tab in Subclient Properties.

- Click Perform backup using mining off snapshot.
- Select the Exchange DB client. This is the source computer where the Exchange Database is installed and where the snapshot was created.
- Select the **Agent** that was used to create the SnapProtect backup. In this case, it is **Exchange Database**.
- Select the subclient on the source computer to use for mining the SnapProtect backup in **Exchange DB subclient to use**.
- If you configured the snap mining job on a source computer but to be run on a proxy, select **Proxy Client** and select the proxy computer from the drop-down list.
 - The content of a subclient that will be used for snap mining should not be manually assigned. If any mailboxes are assigned to a subclient before running a snap mining data protection job, they may not be included in the job.
 - If the target database for the snap mining data protection job contains a mailbox that currently exists in another subclient, it will not be included in the data protection job. It is recommended to remove it from the other subclient's content so that the next snap mining data protection job will pick it up.
- Click **OK** to save your changes.

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	<u> </u>
Total: 0 mailbox(es). Only backup following folders (separated by	
Exchange DB client	
Agents	
Instance	
Backupset	Y
Exchange DB subclient to use	
Proxy Client	
	OK Cancel Help

METHOD 2: MINING ON A SINGLE COMPUTER

When running a snap mining job on a single computer, install the following components.

- Microsoft Exchange Server
- Exchange Database iDataAgent
- Exchange Mailbox *i*DataAgent
- VSS Provider (required for hardware storage arrays)
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

In this configuration, the Exchange Database and Mailbox *i*DataAgents are installed on the same computer, so creating the snapshot and configuring the subclient is performed on this computer. Mounting of the snapshot and backing it up are also performed on this computer.

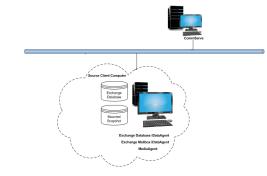
CONFIGURE SUBCLIENT

A Snap Mining job is configured from a subclient of the Exchange Mailbox iDataAgent.

- Regardless of the settings in Agent properties (General tab), the Deleted Item Retention will always be protected in a snap mining operation.
- It is recommended to create one snap mining subclient for each database subclient, since only one subclient can mine from a snapshot at a time.
- It is not recommended to mix snap mining subclients and traditional subclients within the same backupset.
- Snap mining can be performed for databases configured in the subclient in which Snap Mining is enabled.
- Typically, the subclient is configured first before the snapshot is created. The only exception to this rule would be for NetApp snapshots that are discovered using External Data Connector. In this case, the subclient can be configured at any time.

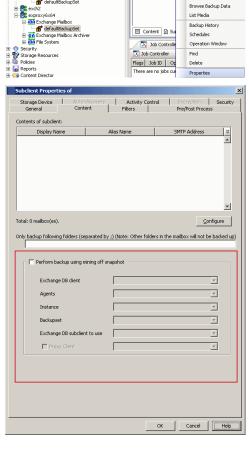
Keep in mind that once snap mining is enabled for a subclient, it cannot be reversed.

1. From the CommCell Browser, right-click a subclient of the Exchange Mailbox *i*DataAgent and select **Properties**.



This subclient will be used to run the snap mining data protection job.

- 2. Click the Content tab in Subclient Properties.
 - Click Perform backup using mining off snapshot.
 - Select the **Exchange DB client**. This is the source computer where the Exchange Database is installed and where the snapshot was created.
 - Select the **Agent** that was used to create the SnapProtect backup. In this case, it is **Exchange Database**.
 - Select the subclient on the source computer to use for mining the SnapProtect backup in **Exchange DB subclient to use**.
 - If you configured the snap mining job on a source computer but to be run on a proxy, select **Proxy Client** and select the proxy computer from the drop-down list.
 - The content of a subclient that will be used for snap mining should not be manually assigned. If any mailboxes are assigned to a subclient before running a snap mining data protection job, they may not be included in the job.
 - If the target database for the snap mining data protection job contains a mailbox that currently exists in another subclient, it will not be included in the data protection job. It is recommended to remove it from the other subclient's content so that the next snap mining data protection job will pick it up.
 - Click **OK** to save your changes.



Backup

CONFIGURING WAIT TIME FOR PARALLEL SNAP MINING

In cases where multiple Exchange Mailbox subclients are configured to mine from the same Exchange Database subclient the first job will prepare the snapshot to be used by all other concurrently running jobs. While this preparation is ongoing the other subclients will wait for preparation to complete. By default they will check the status of preparation every 15 minutes.

Once the snapshot is prepared the remaining subclients can continue with the backup phase. To change the frequency for checking the preparation status the key WAITTIME_PARALLEL_SNAPMINING can be created on the client for the appropriate agent.

- From the CommCell Browser, navigate to Client Computers.
- Right-click the <Client> in which you want to add the registry key, and then click **Properties**.
- Click the Registry Key Settings tab.
- Click Add.
- Enter WAITTIME_PARALLEL_SNAPMINING in the **Name** field.
- Enter <Instance Root>\MSExchangeMBAgent in the Location field (For Exchange Mailbox iDataAgent).
- Enter REG_DWORD in the Type filed.
- Enter *n* in the Value field.

Where *n* is the number of minutes the other jobs will wait before checking for the availability of metadata for snap mining.

• Click OK.

CONFIGURING FOR PARALLEL SNAP MINING PREPARATION TIMEOUT

It is also advisable to set up a timeout value in case of parallel snap mining. This timeout value specifies the amount of time after which the mailbox subclients waiting for the snap preparation will start their own snap preparation process.

- From the CommCell Browser, navigate to Client Computers.
- Right-click the <Client> in which you want to add the registry key, and then click Properties.
- Click the Registry Key Settings tab.
- Click Add.
- Enter TIMEOUT_PREPARATION_PARALLEL_SNAPMINING in the Name field.

- Enter <Instance Root>\MSExchangeMBAgent in the Location field (For Exchange Mailbox iDataAgent).
- Enter REG_DWORD in the **Type** filed.
- Enter *n* in the Value field.

Where n is the number of minutes after which the jobs in the waiting state will timeout.

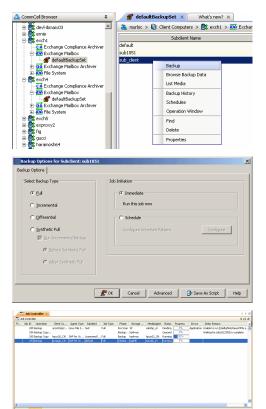
• Click OK.

RUN A SNAP MINING JOB

Run a snap mining job by selecting the subclient that was configured.

The procedure to run a snap mining data protection job is the same for all configurations, except for the configuration where the subclient is configured on the proxy server instead of the source computer.

1. Right-click the subclient that was configured and select **Backup**.



2. Click Full backup type.

3. Click OK.

You can track the progress of the backup job from the **Job Controller** window.

If you are using a stand-alone drive, you are prompted to load a specific cartridge into the drive. If you are using a library, you will not receive this prompt. The system loads the tapes automatically. Your cartridges should be appropriately labeled. This will enable you to locate the correct cartridge for a restore job, if necessary.

Once completed, the details of the job can be viewed in the **Job History** window.

4. Run a Browse and Restore operation.

VIEW JOB HISTORY

Once a snap mining job has completed, it may be useful to view specific historical information about the job, such as the following:

- Items that failed during the job
- Items that succeeded during the job
- Details of the job
- Media associated with the job
- Events of the job
- Log files of the job.

This information can be viewed in the Job History window. The history provided depends on the entity from which the job history is viewed. For example, viewing job history from the subclient level will yield information for the jobs performed for that subclient. Conversely, viewing job history from the instance level will yield information for jobs run from all subclients within that instance.

To view the backup job history:

1. From the CommCell Browser, right-click the entity (client computer, *i*DataAgent, instance, or subclient) whose backup history you want to view, click **View**, and then click **View Job History**.

2. From the **Job History** filter window select the filter options, if any, that you want to apply, and then click **OK**.

The system displays the Job History window.

3. Once you have chosen your filter options, they are displayed in the **Job History** window.

To view the additional options discussed above, right-click the desired job choose the appropriate option.

4. Click **OK**.

BEST PRACTICES

It is not recommended to use Regular Expression or Active Directory group auto-discovery affinity on a backupset which contains subclients configured for Snap Mining as the subclient content association may not behave as expected and some mailboxes may fail to be protected. In this case, it is recommended to use Database affinity as the auto-discovery method.

FAQ

- Exchange 2010 message moderation approval requests may fail to restore if they were protected by a Snap Mining operation.
- Mailbox Quotas are not supported by Snap Mining.

KEYWORDS

Snap Mining, Mining Exchange Data, Exchange Snap Mining.

Back to Top

Accessing Archived Exchange Data from Database Snapshots

TABLE OF CONTENTS

Overview

Prerequisites

Create a Snapshot Hardware Supported Storage Array Data Replicator

Configure Snap Mining Mining on a Proxy Mining on a Single Computer

Configuring Wait Time for Parallel Snap Mining

Configuring for Parallel Snap Mining Preparation Timeout

Run a Snap Mining Job

View Job History

Best Practices

FAQ

OVERVIEW

Snap mining allows you to protect data from an offline copy of the Exchange database. The offline copy is a point-in-time snapshot of the data to be used for data protection operations. With snap mining, impact to the Exchange Server can be reduced in a production environment thus improving performance.

PREREQUISITES

The following are prerequisites to using this feature:

- Mailboxes that are mined from a Microsoft Exchange 2003 32-bit Server database requires the 32-bit Exchange Mailbox iDataAgent.
- Mailboxes that are mined from a Microsoft Exchange 2007 64-bit Server or Microsoft Exchange 2010 64-bit Server databases require the 64-bit Exchange Mailbox iDataAgent.
- Ensure that the Operating System on the computer on which the Exchange Server is installed and the computer where the snap is mounted is the same.

CREATE A SNAPSHOT

A snapshot needs to be created for snap mining. It can be created before or after configuring the subclient for snap mining. Snapshots are created in one of these ways:

- Hardware supported storage array
- Software storage array (Data Replicator)

HARDWARE SUPPORTED STORAGE ARRAYS

A snapshot can be created with SnapProtect backup using a supported storage array.

For step-by-step instructions on creating a snapshot with a hardware storage array, refer to SnapProtect Backup - Microsoft Exchange Database.

DATA REPLICATOR

A snapshot can be created with SnapProtect backup when Data Replicator is selected as the storage array. Data Replicator provides the snapshot functionality without the need for any specialized hardware.

For step-by-step instructions on creating a snapshot with Data Replicator as the software storage array, refer to SnapProtect[™] Backup - Data Replicator.

Data Replicator is not supported when mining a snapshot on a single source computer.

CONFIGURE SNAP MINING

You can mine data from a snapshot directly on the computer hosting the snapshot or from a proxy computer.

- Method 1: Mining on a Proxy
- Method 2: Mining on a Single Computer

RELATED TOPICS

SnapProtect[™] Backup - Exchange Database Use SnapProtect backup to create a point-in-time snapshot of the data using hardware storage arrays to provide snapshot functionality for data protection operations.

METHOD 1: MINING ON A PROXY

Running the data protection job on a proxy server improves performance as it offloads processing on the production Exchange server.

Select one of the following configurations to run a snap mining job on the proxy computer. Then configure the subclient of the Exchange Mailbox Archiver Agent.

- Configure on Source but Mine on Proxy
- Configure on Proxy and Mine on Proxy

CONFIGURE ON SOURCE BUT MINE ON PROXY

In this configuration, the Exchange Database *i*DataAgent creates the snapshot on the source computer. To run the snap mining job on a proxy but configure it on the source computer, install the following components:

Source Computer

- Microsoft Exchange Server
- Exchange Database iDataAgent
- Exchange Mailbox Archiver Agent
- MediaAgent
- VSS Provider (required for hardware storage arrays)
- ContinuousDataReplicator (if Data Replicator is the storage array)

Proxy Computer

- Exchange Mailbox Archiver Agent
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

The Exchange Database and Exchange Mailbox Archiver Agents are installed on same source client. The Exchange Mailbox Archiver Agent is also installed on the proxy server and in this case, the configuration of the subclient is configured on the source client. Mounting of the snapshot and backing it up are performed on the proxy server.

CONFIGURE ON PROXY AND MINE ON PROXY

In this configuration, the Exchange Database *i*DataAgent creates the snapshot on the source computer. To configure and run the snap mining job on a proxy computer, install the following components:

Source Computer

- Microsoft Exchange Server
- Exchange Database iDataAgent
- MediaAgent
- VSS Provider (required for hardware storage arrays)
- ContinuousDataReplicator (if Data Replicator is the storage array)

Proxy Computer

- Exchange Mailbox Archiver Agent
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

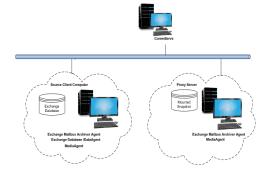
The Exchange Mailbox Archiver Agent is installed on the proxy server so configuration of the subclient content is performed on the proxy server. Mounting of the snapshot and backing it up are also performed on the proxy server.

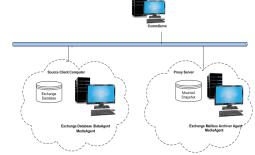
CONFIGURE SUBCLIENT

A Snap Mining job is configured from a subclient of the Exchange Mailbox Archiver Agent.

- It is recommended to create one snap mining subclient for each database subclient, since only one subclient can mine from a snapshot at a time.
- It is not recommended to mix snap mining subclients and traditional subclients within the same backupset.
- Snap mining can be performed for databases configured in the subclient in which Snap Mining is enabled.
- Typically, the subclient is configured first before the snapshot is created. The only exception to this rule would be for NetApp snapshots that are discovered using External Data Connector. In this case, the subclient can be configured at any time.

Keep in mind that once snap mining is enabled for a subclient, it cannot be reversed.





 Right-click a subclient of the Exchange Mailbox Archiver Agent and select **Properties**. This subclient will be used to run the snap mining data protection job.

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Control Contro Control Control Control Control Control Control Control Control Co	Content 🛛 Su	Backup History Schedules Operation Window
Security Storage Resources Polcies Solution	Job Controller Flags Job ID Op	Find Delete
Reports	There are no jobs cur	Properties

- 2. Click the Content tab in Subclient Properties.
 - Click Perform backup using mining off snapshot.
 - Select the **Exchange DB client**. This is the source computer where the Exchange Database is installed and where the snapshot was created.
 - Select the **Agent** that was used to create the SnapProtect backup. In this case, it is **Exchange Database**.
 - Select the subclient on the source computer to use for mining the SnapProtect backup in **Exchange DB subclient to use**.
 - If you configured the snap mining job on a source computer but to be run on a proxy, select **Proxy Client** and select the proxy computer from the drop-down list.
 - The content of a subclient that will be used for snap mining should not be manually assigned. If any mailboxes are assigned to a subclient before running a snap mining data protection job, they may not be included in the job.
 - If the target database for the snap mining data protection job contains a mailbox that currently exists in another subclient, it will not be included in the data protection job. It is recommended to remove it from the other subclient's content so that the next snap mining data protection job will pick it up.
 - Click **OK** to save your changes.

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Subclient Properties of	1	1	×
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			_
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Perform backup using mining off s	napshot		
Exchange DB client			
Agents			<u>~</u>
Instance			<u>v</u>
Backupset			<u>~</u>
Exchange DB subclient to use			7
Proxy Client			7
L			
	(Cance	el Help

METHOD 2: MINING ON A SINGLE COMPUTER

When running a snap mining job on a single computer, install the following components.

- Microsoft Exchange Server
- Exchange Database iDataAgent
- Exchange Mailbox Archiver Agent
- VSS Provider (required for hardware storage arrays)
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

In this configuration, the Exchange Database and Exchange Mailbox Archiver Agents are installed on the same source client, so the configuration of the subclient is configured on the source client. Mounting of the snapshot and backing it up are also performed on this client.

CONFIGURE SUBCLIENT

A Snap Mining job is configured from a subclient of the Exchange Mailbox Archiver Agent.

- It is recommended to create one snap mining subclient for each database subclient, since only one subclient can mine from a snapshot at a time.
- It is not recommended to mix snap mining subclients and traditional subclients within the same backupset.
- Snap mining can be performed for databases configured in the subclient in which Snap Mining is enabled.
- Typically, the subclient is configured first before the snapshot is created. The only exception to this rule would be for NetApp snapshots that are discovered using External Data Connector. In this case, the subclient can be configured at any time.

Keep in mind that once snap mining is enabled for a subclient, it cannot be reversed.

 Right-click a subclient of the Exchange Mailbox Archiver Agent and select Properties. This subclient will be used to run the snap mining data protection job.

Backup Browse Backup Data List Media Backup Histor 🖾 Content 👔 Schedules 🗔 Job Cont Operation Windo Job Contr Find Flags Job ID Delete Pro Content Direct Storage Device Pre/Post Pro Contents of subclient Display Nam SMTP Address * Alias Name -Total: 0 mailbox(es) Configure Only backup following folders (separated by ;) (Note: Other folders in the mailbox will not be backed up) Perform backup using mining off snapsho Exchange DB client Agents -Instance Exchange DB subclient to use Proxy Clier Cancel Help OK

2. Click the Content tab in Subclient Properties.

- Click Perform backup using mining off snapshot.
- Select the **Exchange DB client**. This is the source computer where the Exchange Database is installed and where the snapshot was created.
- Select the **Agent** that was used to create the SnapProtect backup. In this case, it is **Exchange Database**.
- Select the subclient on the source computer to use for mining the SnapProtect backup in **Exchange DB subclient to use**.
- If you configured the snap mining job on a source computer but to be run on a proxy, select **Proxy Client** and select the proxy computer from the drop-down list.
 - The content of a subclient that will be used for snap mining should not be manually assigned. If any mailboxes are assigned to a subclient before running a snap mining data protection job, they may not be included in the job.
 - If the target database for the snap mining data protection job contains a mailbox that currently exists in another subclient, it will not be included in the data protection job. It is recommended to remove it from the other subclient's content so that the next snap mining data protection job will pick it up.
- Click **OK** to save your changes.

CONFIGURING WAIT TIME FOR PARALLEL SNAP MINING

In cases where multiple Exchange Mailbox subclients are configured to mine from the same Exchange Database subclient the first job will prepare the snapshot to be used by all other concurrently running jobs. While this preparation is ongoing the other subclients will wait for preparation to complete. By default they will check the status of preparation every 15 minutes.

Once the snapshot is prepared the remaining subclients can continue with the backup phase. To change the frequency for checking the preparation status the key WAITTIME_PARALLEL_SNAPMINING can be created on the client for the appropriate agent.

- From the CommCell Browser, navigate to Client Computers.
- Right-click the <Client> in which you want to add the registry key, and then click Properties.
- Click the Registry Key Settings tab.
- Click Add.
- Enter WAITTIME_PARALLEL_SNAPMINING in the **Name** field.
- Enter <Instance Root>\MSExchangeDMAgent in the Location field (For Exchange Mailbox Archiver).
- Enter REG_DWORD in the **Type** filed.
- Enter *n* in the Value field.

Where n is the number of minutes the other jobs will wait before checking for the availability of metadata for snap mining.

• Click OK.

CONFIGURING FOR PARALLEL SNAP MINING PREPARATION TIMEOUT

It is also advisable to set up a timeout value in case of parallel snap mining. This timeout value specifies the amount of time after which the mailbox subclients waiting for the snap preparation will start their own snap preparation process.

- From the CommCell Browser, navigate to Client Computers.
- Right-click the <Client> in which you want to add the registry key, and then click Properties.
- Click the Registry Key Settings tab.
- Click Add.
- Enter TIMEOUT_PREPARATION_PARALLEL_SNAPMINING in the Name field.

- Enter <Instance Root>\MSExchangeDMAgent in the Location field (For Exchange Mailbox Archiver).
- Enter REG_DWORD in the **Type** filed.
- Enter *n* in the Value field.

Where n is the number of minutes after which the jobs in the waiting state will timeout.

• Click OK.

RUN A SNAP MINING JOB

Run a snap mining job by selecting the subclient that was configured.

The procedure to run a snap mining data protection job is the same for all configurations, except for the configuration where the subclient is configured on the proxy server instead of the source computer.

- 1. Right-click the subclient that was configured and select **Backup**.
- 📅 defaultBackupSet 🗙 📃 What's new? 🗙 * 🍇 murloc > 🟮 Client Computers > 式 exch1 > 🚾 Excha devl-ibmaix03 ernie Subclient Name default CA Excl aub 103 \$11 Backur File Syst List Media Backup History Schedules Operation Window Find Delete Properties Backup Opti ient: sub105 Select Backup Typ Job Initiatio • Full € Im Run this job nor C Incrementa C Differential C. Schedule Synthetic Full C Before Syntheti OK Cancel Advanced 🚱 Save As Script Help Glent Co... Agent Type Subdent 3x8 Type Phase Storage... Medialgent Status Progress accels/sg2... Linux File S... test Full Pre Scan SP satisfie...m Prending 0%

2. Click Full backup type.

3. Click OK.

You can track the progress of the backup job from the **Job Controller** window.

If you are using a stand-alone drive, you are prompted to load a specific cartridge into the drive. If you are using a library, you will not receive this prompt. The system loads the tapes automatically. Your cartridges should be appropriately labeled. This will enable you to locate the correct cartridge for a restore job, if necessary.

Once completed, the details of the job can be viewed in the **Job History** window.

4. Run a Browse and Restore operation.

VIEWING JOB HISTORY

Once a snap mining job has completed, it may be useful to view specific historical information about the job, such as the following:

- Items that failed during the job
- Items that succeeded during the job
- Details of the job
- Media associated with the job
- Events of the job
- Log files of the job.

This information can be viewed in the Job History window. The history provided depends on the entity from which the job history is viewed. For example, viewing job history from the subclient level will yield information for the jobs performed for that subclient. Conversely, viewing job history from the instance level will yield information for jobs run from all subclients within that instance.

To view the backup job history:

1. From the CommCell Browser, right-click the entity (client computer, *i*DataAgent, instance, or subclient) whose backup history you want to view, click **View**, and then click **View Job History**.

2. From the **Job History** filter window select the filter options, if any, that you want to apply, and then click **OK**.

The system displays the Job History window.

3. Once you have chosen your filter options, they are displayed in the **Job History** window.

To view the additional options discussed above, right-click the desired job choose the appropriate option.

4. Click **OK**.

BEST PRACTICES

It is not recommended to use Regular Expression or Active Directory group auto-discovery affinity on a archiveset which contains subclients configured for Snap Mining as the subclient content association may not behave as expected and some mailboxes may fail to be protected. In this case, it is recommended to use Database affinity as the auto-discovery method.

FAQ

- Exchange 2010 message moderation approval requests may fail to restore if they were protected by a Snap Mining operation.
- Mailbox Quotas are not supported by Snap Mining operations.
- Exchange 2010 Archive Mailboxes are not supported for Snap Mining operations.

Back to Top

Accessing SharePoint Data from SQL Database Snapshots

TABLE OF CONTENTS

Overview

Prerequisites Microsoft SharePoint

Create a Snapshot

Hardware Supported Storage Array Data Replicator

Configure Snap Mining Mining on a Proxy Mining on a Single Computer

Run a Snap Mining Job

View Job History

Mining a SnapProtect Backup from SharePoint

Mounting a Snapshot of a SharePoint Content Database Attaching the Snapshot to a Database on a SQL Server Instance Accessing the Snapshot from SharePoint Central Administration

Best Practices

OVERVIEW

Snap mining allows a granular-level SharePoint Document data protection job to be run from an offline snapshot of SharePoint SQL databases. With snap mining, performance is improved since processing calls are no longer required from the production back-end SQL Server during a data protection job of an offline SnapProtect backup. Processing also improves on SharePoint Front-End Web Servers when the data protection job is run on a proxy server.

PREREQUISITES

The following are prerequisites to using this feature:

MICROSOFT SHAREPOINT

These versions of Microsoft SharePoint are supported for snap mining:

- MOSS 2007
- WSS v3.0
- SharePoint 2010 Foundation
- SharePoint Server 2010

CREATE A SNAPSHOT

A snapshot needs to be created for snap mining. It can be created before or after configuring the subclient for snap mining. Snapshots are created in one of these ways:

- Hardware supported storage array
- Software storage array (Data Replicator)
- NetApp snapshots

HARDWARE SUPPORTED STORAGE ARRAYS

A snapshot can be created with SnapProtect backup using a supported storage arrays.

For step-by-step instructions on creating a snapshot with a hardware storage array, refer to SnapProtect Backup - Microsoft SQL Server.

DATA REPLICATOR

A snapshot can be created with SnapProtect backup when Data Replicator is selected as the storage array. Data Replicator provides the snapshot functionality without the need for any specialized hardware.

For step-by-step instructions on creating a snapshot with Data Replicator as the software storage array, refer to SnapProtect[™] Backup - Data Replicator.

Data Replicator is not supported when mining a snapshot on a single source computer.

RELATED TOPICS

SnapProtect[™] Backup - Microsoft SQL Server Use SnapProtect backup to create a point-in-time snapshot of the data using hardware storage arrays to provide snapshot functionality for data protection operations.

CONFIGURE SNAP MINING

You can mine data from a snapshot directly on the computer hosting the snapshot or from a proxy computer.

- Method 1: Mining on a Proxy
- Method 2: Mining on a Single Computer

METHOD 1: MINING ON A PROXY

Select one of the following configurations to run a snap mining job on the proxy computer. Then configure the subclient of the SharePoint Server iDataAgent.

- Configure on Source but Mine on Proxy
- Configure on Proxy and Mine on Proxy

CONFIGURE ON SOURCE BUT MINE ON PROXY SERVER

The SQL Server *i*DataAgent creates the snapshot on the source computer. To run the snap mining job on a proxy but configure it on the source computer, install the following components:

Source Computer

- SQL Server application
- SQL Server iDataAgent
- SharePoint Server iDataAgent
- MediaAgent
- VSS Provider (required for hardware storage arrays)
- ContinuousDataReplicator (if Data Replicator is the storage array)

Proxy Computer

- SQL Server application
- SharePoint Server iDataAgent
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

The configuration of the subclient content of the SharePoint Server *i*DataAgent is performed on the source client. Mounting of the snapshot and backing it up are performed on the proxy computer.

CONFIGURE ON PROXY AND MINE ON PROXY SERVER

The SQL Server *i*DataAgent creates the snapshot on the source computer. To configure and run the snap mining job on a proxy, install the following components:

Source Computer

- SQL Server application
- SQL Server iDataAgent
- MediaAgent
- VSS Provider (required for hardware storage arrays)
- ContinuousDataReplicator (if Data Replicator is the storage array)

Proxy Computer

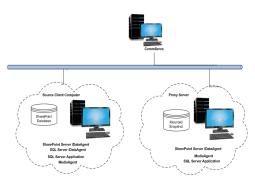
- SQL Server application
- SharePoint Server iDataAgent
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

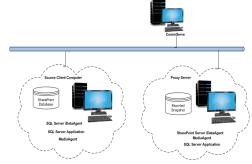
The SharePoint Server *i*DataAgent is installed on the proxy server and configuration of the subclient content is performed on the proxy server. Mounting of the snapshot and backing it up are also performed on the proxy server.

CONFIGURE SUBCLIENT

A Snap Mining job is configured from a subclient of the SharePoint Server iDataAgent.

- It is not recommended to mix snap mining subclients and traditional subclients within the same backupset.
- Snap mining can be performed for databases configured in the subclient in which Snap Mining is enabled.
- Typically, the subclient is configured first before the snapshot is created. The only exception to this rule would be for NetApp snapshots that are discovered using External Data Connector. In this case, the subclient can be configured at any time.





2.

Keep in mind that once snap mining is enabled for a subclient, it cannot be reversed.

1. From the CommCell Browser, right-click a subclient of the SharePoint Server *i*DataAgent and select **Properties**.

This subclient will be used to run the snap mining data protection job.

• Click the Content tab in Subclient Properties.

SharePoint Databases are located.

• Click Populating...> Proxy Client.

Content Director	🗔 Job Co	ant D Su	okup Data st Media st Media skup History hedules peration Window operties operties	
Subclient Properties of Pre/Post Process Security Sto	rage Device	Activity Control	Encryption	1
General	Content	Heavier Condron	Filters	
Contents of subclient:				
		Delete		
		Browse		

🖲 📑 bron

SnapProtect backup.
Select the subclient on the source computer to use for mining the SnapProtect backup from the SQL DB subclient to use drop-down list.

 $\circ~$ Select the Agent that was used to create the SnapProtect backup. In this case,

 If you are using a proxy computer to run the snap mining job, click Proxy Client and select the proxy computer.

 $\circ~$ Select the SQL DB client. This is the source client computer where the

• Select the **Instance** of the SQL Server *i*DataAgent used to create the

• In the **Offline Mining** section:

it is SQL Server.

- Specify the SQL Instance Name that will be used to mine the offline databases.
- Enter the credentials in User Name and Password to access the offline databases so that the snapshot is successfully mounted and attached.
- Click **OK** to save your changes.

▼ Populating > Proxy Client	
SQL DB client	vm32-de-moss
Agents	SQL Server
Instance	VM32-DE-MOSS\EWS1
SQL DB subClient to use	snap-sp-db
Proxy Client	V
Offline Mining	
SQL Instance Name	spsql
User Name	gala×ylab\spbackup
Password	******
	OK Cancel H

METHOD 2: MINING ON A SINGLE COMPUTER

When running a snap mining job on a single computer, install the following components:

- SQL Server application
- SQL Server iDataAgent
- SharePoint Server iDataAgent
- VSS Provider (required for hardware storage arrays)
- MediaAgent
- ContinuousDataReplicator (if Data Replicator is the storage array)

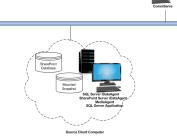
In this configuration, the SQL Server and SharePoint Server *i*DataAgents are installed on the same computer, so creating the snapshot and configuring the subclient is performed on this computer. Mounting of the snapshot and backing it up are also performed on this computer.

CONFIGURE SUBCLIENT

A Snap Mining job is configured from a subclient of the SharePoint Server iDataAgent.

- It is not recommended to mix snap mining subclients and traditional subclients within the same backupset.
- Snap mining can be performed for databases configured in the subclient in which Snap Mining is enabled.
- Typically, the subclient is configured first before the snapshot is created. The only exception to this rule would be for NetApp snapshots that are discovered using External Data Connector. In this case, the subclient can be configured at any time.

Keep in mind that once snap mining is enabled for a subclient, it cannot be reversed.



1. From the CommCell Browser, right-click a subclient of the SharePoint Server *i*DataAgent and select **Properties**.

This subclient will be used to run the snap mining data protection job.

Eronx	default	
drone D0 File System defaultBackupSet defaultBackupSet		Backup Browse Backup Da List Media
DA File System DA Sharepoint Server Da babases Documents	Content D Su	Backup History Schedules Operation Window
Security Storage Resources	Job Controlle	Find Delete
Policies Reports Content Director	Flags Job ID Or	Properties

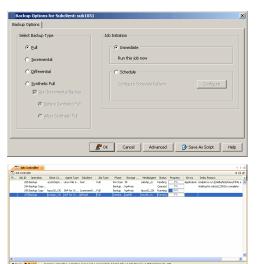
- Click the **Content** tab in **Subclient Properties**.
 - Click Populating...> Proxy Client.
 - Select the SQL DB client. This is the source client computer where the SharePoint Databases are located.
 - Select the Agent that was used to create the SnapProtect backup. In this case, it is SQL Server.
 - Select the **Instance** of the SQL Server *i*DataAgent used to create the SnapProtect backup.
 - Select the subclient on the source computer to use for mining the SnapProtect backup from the SQL DB subclient to use drop-down list.
 - If you are using a proxy computer to run the snap mining job, click **Proxy Client** and select the proxy computer.
 - In the Offline Mining section:
 - Specify the SQL Instance Name that will be used to mine the offline databases.
 - Enter the credentials in User Name and Password to access the offline databases so that the snapshot is successfully mounted and attached.
 - Click **OK** to save your changes.

General Contents of subclient:	Content Filters
☐ I Populating > Proxy Client	
SQL DB client	vm32-de-moss
Agents	SQL Server
Instance	VM32-DE-MOSS\EWS1
SQL DB subClient to use	snap-sp-db
Proxy Client	
Offline Mining	
SQL Instance Name	spsql
User Name	galaxylab\spbackup
Password	*****

RUN A SNAP MINING JOB

Run a snap mining job by selecting the subclient that was configured.

- 1. Right-click the subclient that was configured and select **Backup**.
- 2. Click Full backup type.



Click OK.

You can track the progress of the backup job from the **Job Controller** window.

If you are using a stand-alone drive, you are prompted to load a specific cartridge into the drive. If you are using a library, you will not receive this prompt. The system loads the tapes automatically. Your cartridges should be appropriately labeled. This will enable you to locate the correct cartridge for a restore job, if necessary.

Once completed, the details of the job can be viewed in the **Job History** window.

4. Run a Browse and Restore operation.

VIEW JOB HISTORY

Once a snap mining job has completed, it may be useful to view specific historical information about the job, such as the following:

- Items that failed during the job
- Items that succeeded during the job
- Details of the job
- Media associated with the job
- Events of the job
- Log files of the job.

This information can be viewed in the Job History window. The history provided depends on the entity from which the job history is viewed. For example, viewing job history from the subclient level will yield information for the jobs performed for that subclient. Conversely, viewing job history from the instance level will yield information for jobs run from all subclients within that instance.

To view the backup job history:

- 1. From the CommCell Browser, right-click the entity (client computer, *i*DataAgent, instance, or subclient) whose backup history you want to view, click **View**, and then click **View Job History.**
- 2. From the Job History filter window select the filter options, if any, that you want to apply, and then click OK.

The system displays the Job History window.

3. Once you have chosen your filter options, they are displayed in the **Job History** window.

To view the additional options discussed above, right-click the desired job choose the appropriate option.

4. Click **OK**.

MINING A SNAPPROTECT BACKUP FROM SHAREPOINT

You can restore a SnapProtect backup of a SharePoint content database without restoring a configuration database, and then mine the contents of the snapshot with SharePoint Central Administration.

- 1. Restore a snapshot of a SharePoint content database to a mount location.
- 2. Using SQL Server Management Studio, attach the snapshot of the SharePoint content database to a SQL server instance.
- 3. Using SharePoint Central Administration, browse or back up files from the snapshot of the SharePoint content database that are attached to the SQL server instance.

MOUNTING A SNAPSHOT OF A SHAREPOINT CONTENT DATABASE

Perform the following operation on an SQL Server iDataAgent that contains a snapshot of a SharePoint content database.

You can mount any available snapshot to access the data included in the snapshot. It is recommended that you select the option to protect a snapshot when it is mounted, as this will ensure that the changes made to the snapshot when it is mounted are not retained when you unmount the snapshot and the snapshot is usable for data protection operations. Follow the steps given below to mount snapshots:

- 1. From the CommCell Browser, navigate to **Client Computers** | <**Client**> | **SQL** Server.
- 2. Right-click < Instance>, point to All Tasks, and then click List Snaps.
- 3. Right-click the snapshot that you wish to mount and click **Mount**.
- 4. Click Yes.
- 5. In the **Mount Path** dialog box, specify the destination client and the path on the client in the **Destination Client** and **Destination Path** fields.
 - On a Windows platform, enter a CIFS Share Name for the Agent.
- 6. If you do not wish to save any changes made to the mounted snapshot after the snapshot is unmounted, select **Protect Snapshot during mount**.
- 7. Click OK.

If you do not select **Protect Snapshot during mount**, the changes made to snapshot when it is mounted will be retained after the snapshot is unmounted and the snapshot can no longer be used for restore.

Source Cli.	. Source P	ath Mount Host	Mount Path	Applicatio	Job ID	¥
nasteam4	/vol/vol2	nasteam4		NAS NDMP	19	^
nasteam4	/vol/g	Mount		hurstenen	18	
nasteam4	/vol/g				7	
		Use hardware rev	ert capability if	available		
		Delete				
		Detail				

ATTACHING THE SNAPSHOT TO A DATABASE ON A SQL SERVER INSTANCE

You must attach the snapshot of the SharePoint content database using SQL Server Management Studio.

To attach the snapshot to a database on a SQL server instance:

- 1. Open Microsoft SQL Server Management Studio.
- 2. From the Server type list, select Database Engine.
- 3. In the Server name list, specify a server, and then click Connect.
- 6. In Object Explorer, right-click Databases, and then click Attach.

- 7. In the Attach Databases dialog box, click Add.
- In the Locate Database Files dialog box, navigate to the disk drive where the snapshot of the SharePoint content database resides, and then select the .mdf file for the snapshot.
- 9. Click OK.

Click OK.

10.

The snapshot is now attached to the SQL Server instance.

ACCESSING THE SNAPSHOT FROM SHAREPOINT CENTRAL ADMINISTRATION

Once you have attached the SharePoint content database snapshot to a SQL server instance, you can then view, back up, or restore the contents. You must perform these steps inside SharePoint Central Administration.

To access the SharePoint content database snapshot from the SharePoint Central Administration application:

- 1. Open the SharePoint Central Administration application.
- 2. Click Backup and Restore.

He is e	
Connect to Serv	
SQ	Server 2008
Server type:	Database Engine
Server name:	
Authentication:	Windows Authentication
User name:	DOCINT01 \Administrator
Password:	
	Remember password
	nect Cancel Help Options >>
Object Explorer	- 4 ×
Connect - 💷	2 = 7 💽 📓
	COMMVAULT (SQL Server 10.0.2531 -
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Microsoft Synchr Microsoft Visual Microsoft NET	Indeation Services Add Catalog Remove:
MSBuild MSS0ML 6.0 MSS0ML 6.0	-
Selected gath: Files of type:	C:VProgram Files/Microsoft SQL Server/MSSQL Database Files(* mdt)
File pame:	testdb1.mdf
	OK Cancel

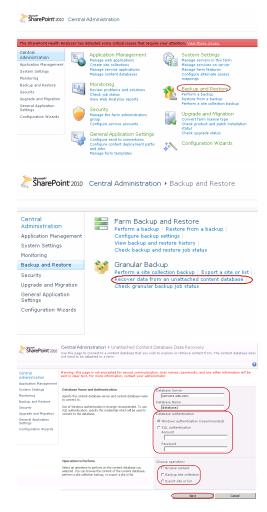
3. Under Granular Backup, click Recover data from an unattached content database.

- 4. In the **Database Server** box, enter the name of the Database Server where the content database is located.
- 5. In the **Database Name** box, enter the name of the content database.
- **6.** Under **Database authentication**, select an authentication type, and if required, enter the appropriate credentials.
- 7. Select one of the options, and then click **Next**.
 - To view the contents of the snapshot, select **Browse content**.
 - To back up the snapshot, select **Backup site collection**.
 - To restore the contents of the snapshot, select **Export site or list**.

BEST PRACTICES

During snap mining backup, views that reside on a Web Server's file system will not be backed up.

Back to Top



User Guide - SnapProtect