

Features - Recovery Director

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Overview - Recovery Director[®] Agent

This feature/product/platform is deprecated in this release. See [Deprecated Features, Products, and Platforms](#) for more information.

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 - Protect Data Volumes of Custom Applications
 - Create a Generic Enabler
-

INTRODUCTION

The Recovery Director[®] Agent provides a common method of specifying coordinated data protection operations across several snapshot-based Agents. Working in conjunction with the Quick Recovery[®] Agent, the Recovery Director Agent both extends the capabilities of the QR[™] Agent, and as well directs, coordinates, and sequences the activities of the QR Agent with the Image Level ProxyHost and ProxyHost>DataAgents to provide:

- backups and quick recovery volumes which are identical, created from the same point-in-time snapshot
- proper sequencing of snapshot, QR[™] Volume creation, and backup operations
- the extended ability for the QR[™] Agent to identify, define, and create snapshots of user-defined Application Types using custom command-line scripts
- the use of 3rd-party (hardware) snapshots with the QR Agent using Generic Enablers

By defining Snapshot Volume Units (content) and Snapshot Management Workflows in the Recovery Director agent, a complex series of data protection operations can easily be configured. Recovery Director can, for example, schedule the creation or update of a QR volume to run three times each day, but only once per day use that same point-in-time copy to perform a ProxyHost backup.

More simply, the Recovery Director agent can be employed merely to extend the abilities of the QR Agent. Through the use of Generic Enablers, 3rd-party (hardware) snapshots can be utilized by the QR Agent. By defining new Application Types, the QR Agent is able to quiesce and un-quiesce the I/O of additional applications not already supported by the QR Agent during QR Volume creation or updating (it already features built-in application intelligence for Microsoft Exchange, Microsoft SQL, and Oracle.)

The Recovery Director agent is used to coordinate backup and QR volume creation only; all restore/recovery operations are performed using the individual Agents involved.

Subclient Policies and Schedule Policies are not supported.

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SUPPORTED DATA TYPES

Refer to the Overview for each product to be used with the Recovery Director[®] agent to determine the data types supported:

- [Overview - Quick Recovery[®] Agent](#)

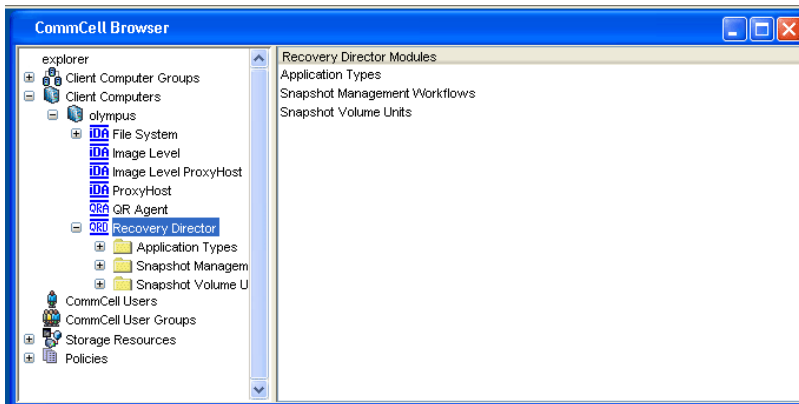
- Overview - Image Level ProxyHost ;DataAgent
- Overview - ProxyHost ;DataAgent

See also: Support Information - Snapshot Engines

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TREE LEVELS IN THE RECOVERY DIRECTOR® AGENT

When the Recovery Director Agent software is installed, the following levels are automatically created in the CommCell® Browser.



olympus: Client

Recovery Director: Agent

Application Types
Snapshot Volume Units
Snapshot Management Workflows

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USER CAPABILITY REQUIREMENTS

To perform any of the following actions in the Recovery Director® agent, certain User Capabilities are required:

- Create a new Snapshot Management Workflow
- Edit the Workflow properties
- Edit the subclients created by the Recovery Director Agent at the Quick Recovery® Agent, ProxyHost or Image Level ProxyHost level

The required User Capabilities are:

- Administrative Management - CommCell®
- Agent Management - Recovery Director® Agent, Quick Recovery® Agent, ProxyHost, and any other ;DataAgent associated to the Snapshot Volume Unit.

For more information about this subject, see User Administration and Security.

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LICENSE REQUIREMENT

To perform a data protection operation using this Agent a specific Product License must be available in the CommServe® Server.

Review general license requirements included in License Administration. Also, View All Licenses provides step-by-step instructions on how to view the license information.

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DISASTER RECOVERY CONSIDERATIONS

- Before you use your agent, be sure to review and understand the associated full system restore (or disaster recovery) procedure. The procedure for some agents may require that you plan specific actions or consider certain items before an emergency occurs. See Disaster Recovery for more information regarding your agent.

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System Requirements - Recovery Director

This feature/product/platform is deprecated in this release. See [Deprecated Features, Products, and Platforms](#) for more information.

The following requirements are for Recovery Director:

OPERATING SYSTEM		PROCESSOR
HP-UX	HP-UX 11i v2 (11.23) 64-bit	PA-RISC
	HP-UX 11i v2 (11.23) 64-bit (Supported with the Generic Enabler only.)	Itanium
	HP-UX 11i v1 (11.11) 64-bit with OS patch PHCO29328 (contact Hewlett Packard to obtain the patch)	PA-RISC
	HP-UX 11i v1 (11.11) 32-bit with OS patch PHCO29328 (contact Hewlett Packard to obtain the patch)	PA-RISC
LINUX	RED HAT ENTERPRISE LINUX/CENTOS	
	Red Hat Enterprise Linux/CentOS 5.x with glibc 2.5.x	x64
	Red Hat Enterprise Linux/CentOS 4.x with a minimum of glibc 2.3.4	Intel Pentium or compatible minimum required
	SUSE LINUX (SLES)	
	SuSE Linux 10.x with glibc 2.4.x	Intel Pentium or compatible minimum required
	SuSE Linux 10.x with glibc 2.4.x	x64
SOLARIS	Solaris 9 64-bit with Service Packs 111711-02 and 111712-02	Sparc5 or higher recommended
	Solaris 10.x 64-bit	Sparc5 or higher recommended
WINDOWS	WINDOWS 2008	
	Microsoft Windows Server 2008 32-bit and x64 Editions*	All Windows-compatible processors supported
	*Core and R2 Editions not supported	
	**Contact your software provider prior to installing the software on this platform.	
	WINDOWS 2003	
	Microsoft Windows Storage Server 2003 32-bit Edition up to Service Pack 2	All Windows-compatible processors supported
	Microsoft Windows Server 2003 R2 Enterprise 32-bit Edition up to Service Pack 2	All Windows-compatible processors supported
	Microsoft Windows Server 2003 Enterprise x64 Edition* up to Service Pack 2	All Windows-compatible processors supported
	WINDOWS SERVER 2003	
	Microsoft Windows Server 2003 R2 Enterprise 32-bit Edition with Service Pack 1 or higher	All Windows-compatible processors supported
WINDOWS SERVER 2003	Microsoft Windows Server 2003 Enterprise 32-bit Edition up to Service Pack 2 All Windows-compatible processors supported	

HARD DRIVE

AIX, HP-UX, LINUX, AND SOLARIS

225 MB minimum of hard drive space for software

100 MB of additional hard disk space for log file growth

10 MB of temp space required for install or upgrade (where the temp directory resides)

WINDOWS

102 MB minimum of hard disk space for software/ 199 MB recommended
 50 MB of additional hard disk space for log file growth
 79 MB of temp space required for install or upgrade (where the temp folder resides)

MEMORY

AIX, HP-UX, LINUX AND SOLARIS

16 MB RAM minimum required beyond the requirements of the operating system and running applications

Swap space = 2*RAM size

WINDOWS

32 MB RAM minimum required beyond the requirements of the operating system and running applications

The above mentioned requirements are beyond the requirements stated for System Requirements - Quick Recovery Agent.

CLUSTER SUPPORT

The software can be installed on a Cluster if clustering is supported by the above-mentioned operating systems. For information on supported cluster types, see Clustering - Support.

PERIPHERALS

DVD-ROM drive

Network Interface Card

MISCELLANEOUS

NETWORK

TCP/IP Services configured on the computer.

On Solaris computers, the operating system must have been installed with at least the `user level software` option selected.

For details on snapshot engines supported by Recovery Director, see Support Information - Snapshot Engines.

MICROSOFT VISUAL C++

Microsoft Visual C++ 2008 Redistributable Package is automatically installed. Note that Visual C++ 2008 Redistributable Package can co-exist with other versions of this software.

NET FRAMEWORK

.NET Framework 2.0 is automatically installed. Note that .NET Framework 2.0 can co-exist with other versions of this software.

SELINUX

If you have SELinux enabled on the client computer, create the SELinux policy module as a root user before performing a backup. The SELinux Development package must be installed on the client.

To create an SELinux policy module, perform the following steps as user "root":

1. Create the following files in the `/usr/share/selinux/devel` directory:

File Name	Content of the File
<code><directory>/<file_name>.te</code> where: <code><directory></code> is <code>/usr/share/selinux/devel</code> <code><file_name></code> is the name of the Unix file, created to save the policy module statement. It is a good idea to use the same name for policy module and the file. For example: When you are creating a policy module for backup_IDA application, you can use the following file name: <code>backup_IDA.te</code>	The content of the file should be as follows: <code>policy_module(<name>,<version>)</code> <code>#####</code> where: <code><name></code> is the name of the policy module. You can give any unique name to the policy module, such as a process or application name. <code><version></code> is the version of the policy module. It can be any number, such as 1.0.0. For Example: While creating a policy module for the backup_IDA application, you can use the following content. <code>policy_module(backup_IDA,1.0.0)</code>
<code><directory>/<file_name>.fc</code>	The content of the file should be as follows:

where:

<directory> is /usr/share/selinux/devel

<file_name> is the name of the Unix file, created to save the policy module statement. It is a good idea to use the same name for policy module and the file.

For example: When you are creating a policy module for backup_IDA application, you can use the following file name: backup_IDA.fc

Note that the following list of files is not exhaustive. If the process fails to launch, check /var/log/messages. Also, if required, add it to the following list of files.

```
/opt/<software installation directory>/Base/libCTreeWrapper.so -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
/opt/<software installation directory>/Base/libCVMAGuiImplgso -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
/opt/<software installation directory>/Base/libdb2locale.so.1 -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
/opt/<software installation directory>/Base/libdb2osse.so.1 -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
/opt/<software installation directory>/Base/libDb2Sbt.so -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
/opt/<software installation directory>/Base/libdb2trcapi.so.1 -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
/opt/<software installation directory>/Base/libDrDatabase.so -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
/opt/<software installation directory>/Base/libIndexing.so -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
/opt/<software installation directory>/Base/libSnooper.so -- gen_context
(system_u:object_r:texrel_shlib_t,s0)
```

2. Create the policy file from command line. Use the following command. Ensure that you give the following commands in the /usr/share/selinux/devel directory.

```
[root]# make backup_IDA.pp
Compiling targeted backup_IDA module
/usr/bin/checkmodule: loading policy configuration from tmp/backup_IDA.tmp
/usr/bin/checkmodule: policy configuration loaded
/usr/bin/checkmodule: writing binary representation (version 6) to tmp/backup_IDA.mod
Creating targeted backup_IDA.pp policy package
rm tmp/backup_IDA.mod tmp/backup_IDA.mod.fc
[root]# semodule -i backup_IDA.pp
[root]#
```

3. Execute the policy module. Use the following command:

```
[root]# restorecon -R /opt/<software installation directory>
```

SELinux is now configured to work with this application.

DISCLAIMER

Minor revisions and/or service packs that are released by application and operating system vendors are supported by our software but may not be individually listed in our System Requirements. We will provide information on any known caveat for the revisions and/or service packs. In some cases, these revisions and/or service packs affect the working of our software. Changes to the behavior of our software resulting from an application or operating system revision/service pack may be beyond our control. The older releases of our software may not support the platforms supported in the current release. However, we will make every effort to correct the behavior in the current or future releases when necessary. Please contact your Software Provider for any problem with a specific application or operating system.

Additional considerations regarding minimum requirements and End of Life policies from application and operating system vendors are also applicable

Install Recovery Director

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Install Requirements

Before You Begin

Install Procedure

- Getting Started
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- Storage Policy Selection
- Configure QSnap
- Verify Summary of Install Options
- Install Remaining Cluster Nodes
- Setup Complete

Post-Install Considerations

INSTALL REQUIREMENTS

The following procedure describes the steps involved in installing Recovery Director software on both cluster and non-clustered environment.

Recovery Director is installed on the server for which you will be creating and managing your snapshots and QR Volumes. (This computer is referred to as the *Client* computer in this install procedure.) In addition, you should also install any snapshot enablers you plan to use with the Agent.

Verify that the computer in which you wish to install the software satisfies the minimum requirements specified in System Requirements - Recovery Director and System Requirements - Quick Recovery Agent.

Review the following Install Requirements before installing the software:

GENERAL

- Review Install Considerations before installing the software.
- Agents should be installed only after the CommServe and at least one MediaAgent have been installed in the CommCell. Also, keep in mind that the CommServe® software and MediaAgent must be installed and running (but not necessarily on the same computer), before you can install the Agent.
- Close all applications and disable any programs that run automatically, including anti-virus, screen savers and operating system utilities. Some of the programs, including many anti-virus programs, may be running as a service. Stop and disable such services before you begin. You can re-enable them after the installation.
- Ensure there is an available license on the CommServe software for the Agent.
- Verify that you have the Software Installation Disc that is appropriate to the destination computer's operating system.

CLUSTER SPECIFIC

- Before you can install this Agent in the cluster group in a clustered environment, you must first install QSnap on all physical nodes of the cluster. Install QSnap - Windows provide step-by-step instructions for installing these components on physical nodes.
- Once QSnap is installed on all physical nodes in the cluster, Recovery Director and the Quick Recovery Agent can be installed from the active node in the cluster group using the following procedure. The software can also be automatically installed on all available passive nodes when the software is installed in the cluster group, or you can choose to install any passive node(s) separately.
- Check the following on the cluster computer in which you wish to install the software:
 - Cluster software is installed and running.
 - Active and passive nodes are available.
 - Disk array devices configured with access to the shared array.
 - Public Network Interface Card is bound first, before the private Network Interface Card. (Does not apply to NetWare Cluster.)

BEFORE YOU BEGIN

- Log on to the client as the local Administrator or as a member of the Administrators group on that computer.
- On a clustered computer, ensure that you are logged on to the **active node** as the Domain User with administrative privileges to all nodes on the cluster.

INSTALL PROCEDURE

GETTING STARTED

1. Create the bIgnoreCommServeVersion registry key.

To create the registry key, see the following steps:

- Click **Start**, click **Run**, type **regedit**, and then click **OK**.
- Navigate to the following directory:
HKEY_LOCAL_MACHINE\SOFTWARE\

 - Right click the **SOFTWARE** and click **New -> Key**.
 - Name the key as **GalaxyInstallerFlags**.
 - Right click the **GalaxyInstallerFlags** and select **New -> DWORD** value, name it as **bIgnoreCommServeVersion**
 - Double-click the **bIgnoreCommServeVersion** key modify the **Value data** to **1**.

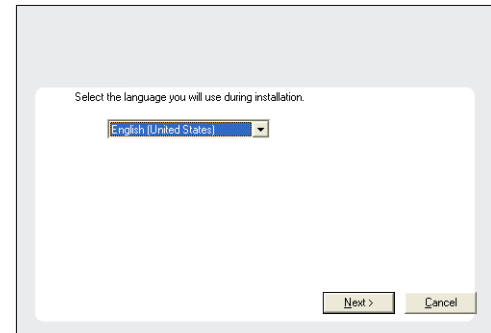
2. Place the Software Installation Disc for the Windows platform into the disc drive.
After a few seconds, the installation program is launched.

If the installation program does not launch automatically:

- 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

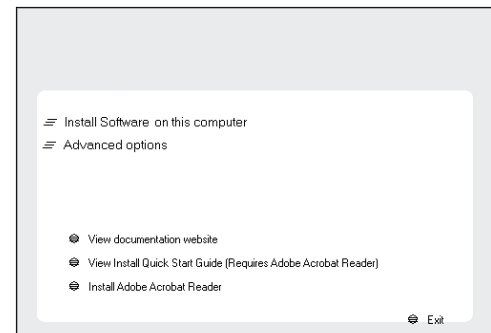
- If you are installing on Windows Server Core editions, mount to Software Installation Disc through command line, go to the **AMD64** folder and run **Setup.exe**.
3. Choose the language you want to use during installation. Click the down arrow and select the desired language from the drop-down list, and click **Next** to continue.



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

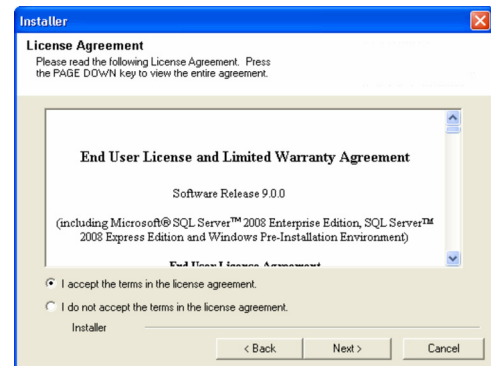
NOTES

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



5. Read the license agreement, then select **I accept the terms in the license agreement**.

Click **Next** to continue.

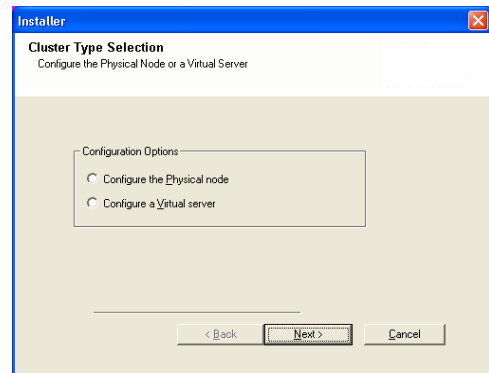


CLUSTER SELECTION

If you are installing in clustered environment, follow the steps below. For non-clustered environment, skip to Select Components for Installation.

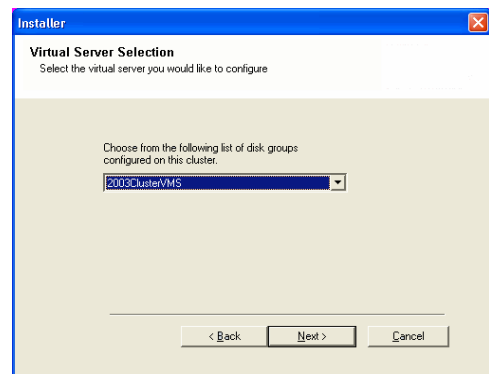
6. Select **Configure a Virtual Server**.

Click **Next** to continue.



7. Select the disk group in which the cluster group resides.

Click **Next** to continue.



SELECT COMPONENTS FOR INSTALLATION

8. Select the component(s) to install.

NOTES

- Your screen may look different from the example shown.
- Components that either have already been installed, or which cannot be installed, will be dimmed. Hover over the component for additional details.
- If you wish to install the agent software for restore only, select **Install Agents for Restore Only** checkbox. See Installing Restore Only Agents for more information.
- The **Special Registry Keys In Use** field will be highlighted when `GalaxyInstallerFlags` registry key is enabled. Move the mouse pointer over this field to see a list of registry keys that have been created in this computer.

Click **Next** to continue.

To install Recovery Director, expand the `Client Modules` folder and the `Quick Recovery` folder and select the following:

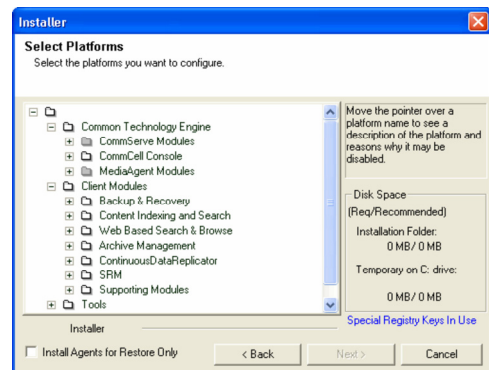
- Recovery Director

When you select Recovery Director for install, the Quick Recovery Agent and QSnap are automatically selected for install.

If you plan on using any of the following components with the Quick Recovery Agent, select them for installation:

- SnapView Enabler for Quick Recovery
- VSS Enabler for Quick Recovery

If you intend to use the Quick Recovery Agent with an application agent for application level browse and recover, see Installation for the installation procedure for that agent.

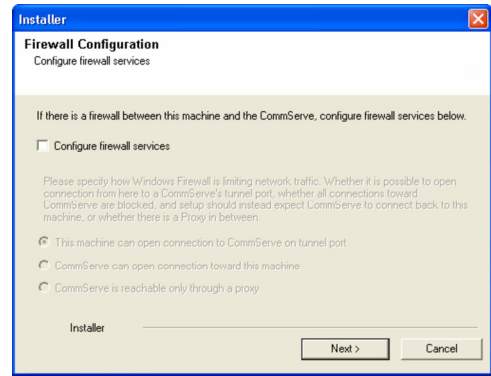


CONFIGURATION OF OTHER INSTALLATION OPTIONS

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

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

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

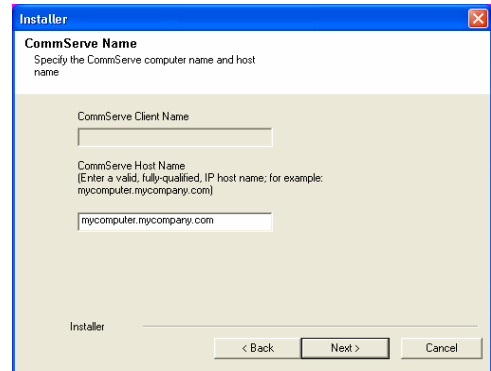


- Enter the fully qualified domain name of the CommServe Host Name. This should be TCP/IP network name. e.g., computer.company.com.

NOTES

- The CommServe client name is the name of the computer. This field is automatically populated.
- Do not use space and the following characters when specifying a new name for the CommServe Host Name:
`\\`~!@#$$%^&*()+=<>/?,[\]{};:|"`
- If a computer has already been installed, this screen will not be displayed; instead the installer will use the same Server Name as previously specified.
- If you do not specify the CommServe Host Name, a window will be prompted to continue in decouple mode. Click **Yes** to continue to Decoupled Install. Click **No** to specify a CommServe Name and continue with the installation.

Click **Next** to continue.

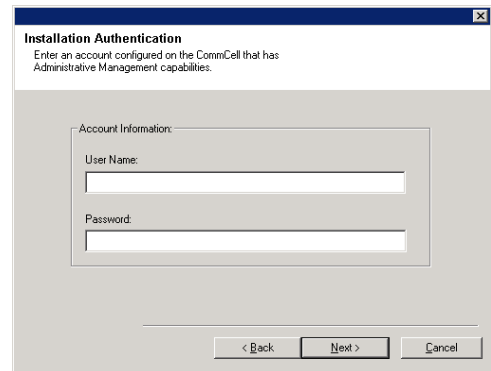


- Enter the **username** and **password** associated with an external domain user account or a CommCell user account to authorize the installation of this agent.

NOTES

- This window will be displayed when the **Require Authentication for Agent Installation** option is selected in the **CommCell Properties**. For more information, see Authentication for Agent Installs.

Click **Next** to continue.



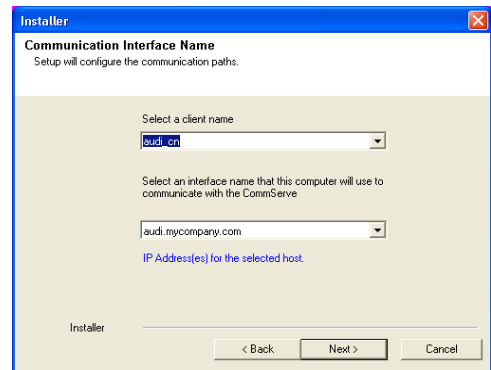
- Enter the following:

- The local (NetBIOS) name of the client computer.
- The TCP/IP IP host name of the NIC that the client computer must use to communicate with the CommServe Server.

NOTES

- Do not use spaces when specifying a new name for the Client.
- The default network interface name of the client computer is displayed if the computer has only one network interface. If the computer has multiple network interfaces, enter the interface name that is preferred for communication with the CommServe Server.
- If a component has already been installed, this screen will not be displayed; instead, the install program will use the same name as previously specified.

Click **Next** to continue.



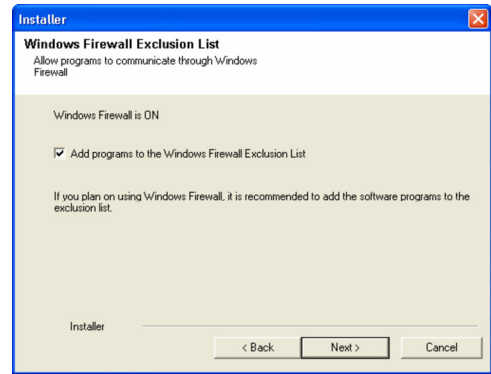
- Select **Add programs to the Windows Firewall Exclusion List**, if you wish to add CommCell programs and services to the Windows Firewall Exclusion List.

NOTES:

- If Windows Firewall is enabled on the computer, this option is selected by default and must be enabled to proceed with the installation.
- If Windows Firewall is disabled on the computer, you can select this option to add the programs and services to enabled CommCell operations across the firewall, if the firewall is enabled at a later time.

You can either select this option during install or add the programs and services after installation. For adding the programs and services after installation, see Configure Windows Firewall to Allow CommCell Communication.

Click **Next** to continue.



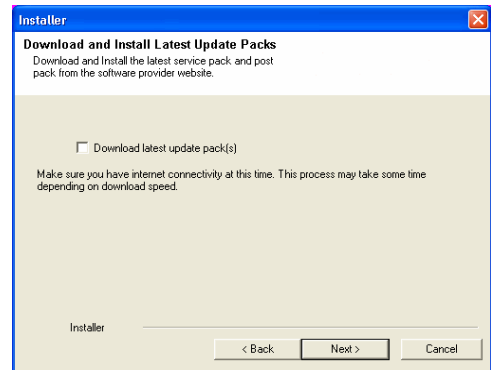
DOWNLOAD AND INSTALL LATEST PACKS

- Select **Download latest update pack(s)** to automatically download and install the latest service packs and/or post packs if applicable at the end of this agent install.

NOTES

- Internet connectivity is required to download updates.
- Updates are downloaded to the following directory:
<software installation>/Base/Temp/DownloadedPacks.
They are launched silently and installed automatically for the first instance.

Click **Next** to continue.



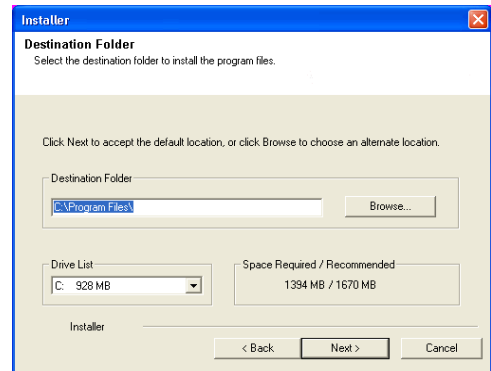
- Specify the location where you want to install the software.

NOTES

- 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.
- If you intend to install other components on this computer, the selected installation directory will be automatically used for that software as well.
- If a component is already installed in this computer, this screen may not be displayed. The software will be automatically installed in the same location that was previously specified.

Click **Browse** to change directories.

Click **Next** to continue.



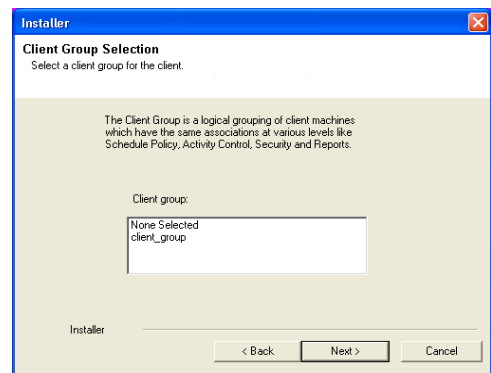
CLIENT GROUP SELECTION

- Select a Client Group from the list.

Click **Next** to continue.

NOTES

- This screen will be displayed if Client Groups are configured in the CommCell Console. For more information, see Client Computer Groups.



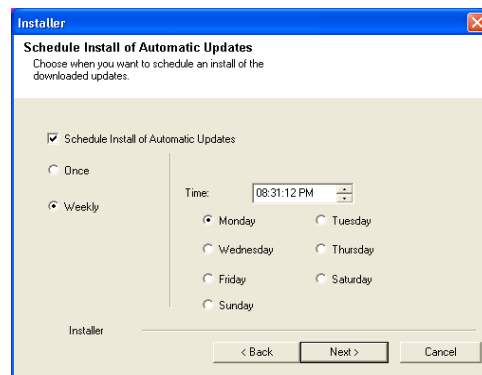
SCHEDULE AUTOMATIC UPDATE

- If necessary, select this option to schedule an automatic installation of software updates.

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.
- To avoid conflict, do not schedule the automatic installation of software updates to occur at the same time as the automatic FTP downloading of software updates.
- If a component has already been installed, this screen will not be displayed; instead, the installer will use the same option as previously specified.

Click **Next** to continue.



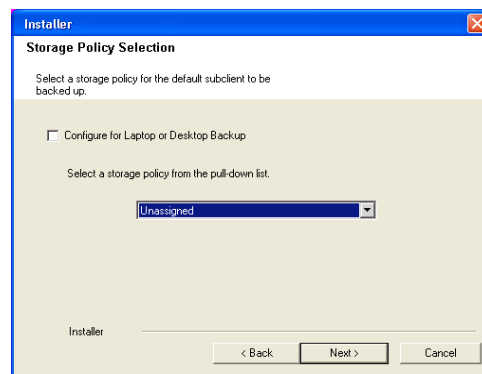
STORAGE POLICY SELECTION

- Select the storage policy through which you want to back up/archive the agent.

NOTES

- A storage policy directs backup data to a media library.
- If desired, you can change your storage policy selection at any time after you have installed the client software.
- This screen may appear more than once, if you have selected multiple agents for installation. You will be prompted to configure the storage policy association for each of the selected agents.

Click **Next** to continue.



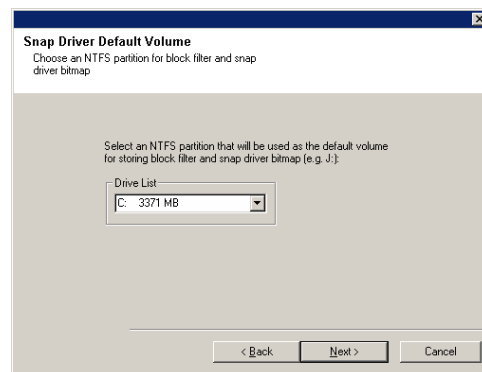
CONFIGURE QSNAP

- From the drop-down list, select an NTFS partition that will be used as the default volume for bitmap file storage.

NOTES

- For standard installation, you can select any available NTFS formatted drive as the default volume for bitmap file storage.
- For cluster installation, the default location for storing the bitmap file is the corresponding shared volume. After the installation is complete, see Change the QSnap Bitmap Location for step-by-step instructions on changing the bitmap location.
- Only NTFS volumes will be shown in the drop-down list.

Click **Next** to continue.



VERIFY SUMMARY OF INSTALL OPTIONS

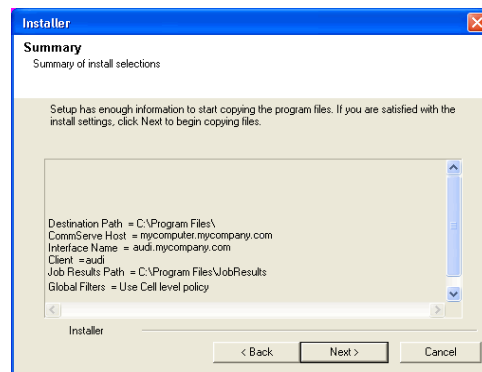
- Verify the summary of selected options.

NOTES

- The **Summary** on your screen should reflect the components you selected for install, and may look different from the example shown.

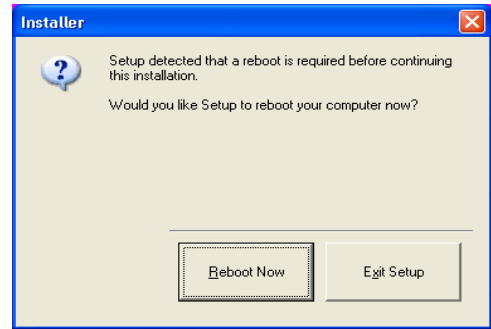
Click **Next** to continue or **Back** to change any of the options.

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



21. The System Reboot message may be displayed. If so, select one of the following:

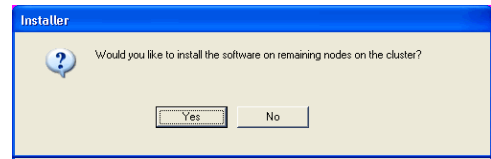
- **Reboot Now**
If this option is displayed without the **Skip Reboot** option, the install program has found files required by the software that are in use and need to be replaced. If **Reboot Now** is displayed without the **Skip Reboot** option, reboot the computer at this point. The install program will automatically continue after the reboot.
- **Exit Setup**
If you want to exit the install program, click **Exit Setup**.



INSTALL REMAINING CLUSTER NODES

If you are installing in clustered environment, follow the steps below to install on remaining nodes of the cluster. For non-clustered environment, skip to Setup Complete.

22. To install/upgrade the software on the remaining nodes of the cluster, click **Yes**.
To complete the install for this node only, click **No**.

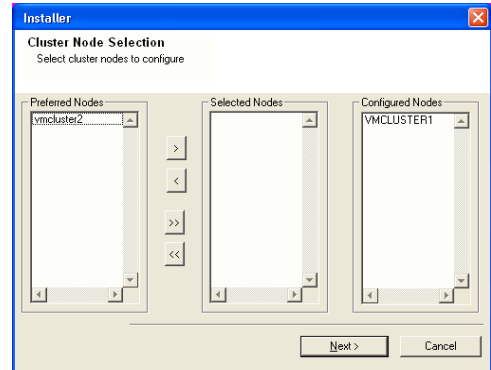


23. Select cluster nodes from the **Preferred Nodes** list and click the arrow button to move them to the **Selected Nodes** list.

NOTES

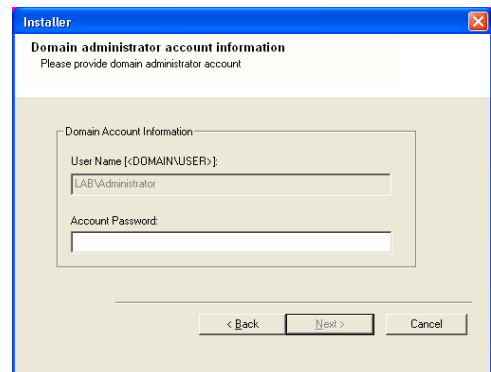
- The list of **Preferred Nodes** displays all the nodes found in the cluster; from this list you should only select cluster nodes configured to host this cluster group server.
- Do not select nodes that already have multiple instances installed. For more information, see Multi Instancing.

When you have completed your selections, click **Next** to continue.



24. Type the **User Name** and **Password** for the Domain Administrator account, so that the installer can perform the remote install/upgrade of the cluster nodes you selected in the previous step.

Click **Next** to continue.



25. 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.

NOTES

- 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,

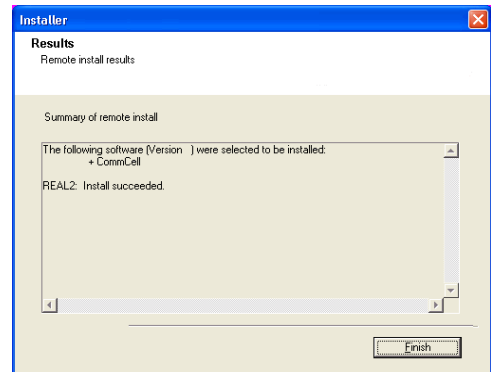
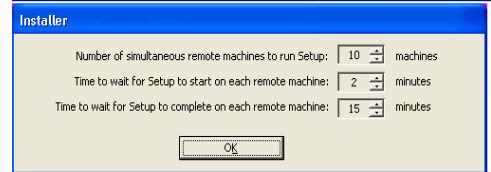
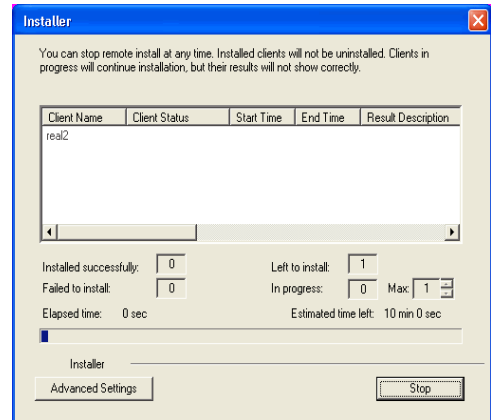
see Manually Installing the Software on a Passive Node.

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

NOTES

- 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.

Click **Next** to continue.



SETUP COMPLETE

27. Click **Next** to continue.

NOTES

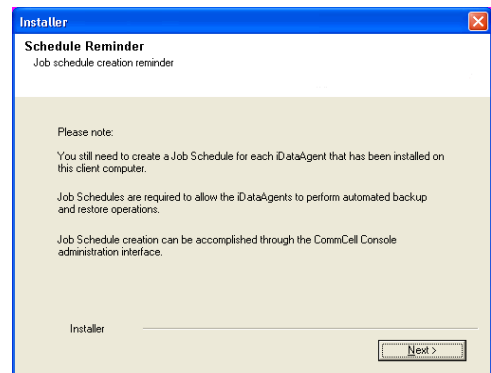
- Schedules help ensure that the data protection operations for the Agent are automatically performed on a regular basis without user intervention. For more information, see Scheduling.

28. Select from the following:

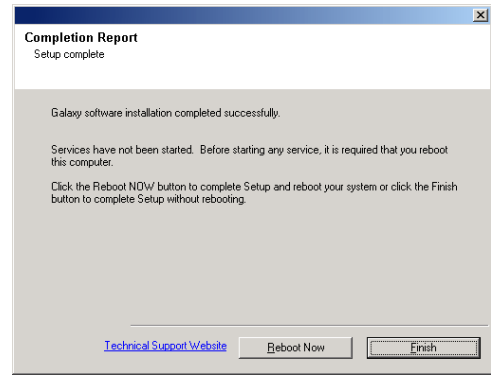
- If the **Reboot Now** button is displayed, a reboot is required before you can use the software. You can click this button to restart the computer now, or choose to perform the restart at another time. If the **Reboot Now** button is not displayed, it will not be necessary to restart the computer.
- Click **Finish** to exit the program.

NOTES

- The **Setup Complete** message displayed on your screen will reflect the components you installed/upgraded, and may look different from the example shown.
- If you install an Agent with the CommCell Console open, you need to refresh the CommCell Console (F5) to see the new Agents.



This procedure is now complete.



POST-INSTALL CONSIDERATIONS

GENERAL

Install post-release updates or Service Packs that may have been released after the release of the software. When you are installing a Service Pack, ensure that it is the same version as the one installed in the CommServe Server. Alternatively, you can enable Automatic Updates for quick and easy installation of updates in the CommCell component.

Install Recovery Director - Unix

TABLE OF CONTENTS

Install Requirements

Before You Begin

Install Procedure

- Getting Started
- Select Components for Installation
- Base Software Installation
- Kernel Parameters
- Enable Global Filters
- Client Group Selection
- Storage Policy Selection
- Setup Complete

Post-Install Considerations

INSTALL REQUIREMENTS

Recovery Director is installed on the server for which you will be creating and managing your snapshots and QR Volumes. (This computer is referred to as the *Client* computer in this install procedure.)

Verify that the computer in which you wish to install the software satisfies the minimum requirements specified in System Requirements - Recovery Director, System Requirements - Quick Recovery Agent.

The following procedure describes the steps involved in installing Recovery Director, Unix File System iDataAgent, and Quick Recovery Agent. You should also install any snapshot enablers you plan to use with the Agent. If you choose to install multiple components simultaneously, refer to the appropriate procedures for installation requirements and steps specific to the component. Note that when you install multiple components, the sequence of the install steps may vary.

Review the following Install Requirements before installing the software:

GENERAL

- Review Install Considerations before installing the software.
- Agents should be installed only after the CommServe and at least one MediaAgent have been installed in the CommCell. Also, keep in mind that the CommServe and MediaAgent must be installed and running (but not necessarily on the same computer), before you can install the Agent.
- Ensure there is an available license on the CommServe for the Agent.
- Verify that you have the Software Installation Disc that is appropriate to the destination computer's operating system.

AGENT SPECIFIC

- For a hardware Snapshots system verify the Snapshot environment has been configured and tested.
- In addition to a license for the agent, you must also have a license for the following components if you intend to install and use them:
 - Unix QSnap (optional)
 - Enablers
- If you intend to use LAN copy manager with the agent, the MediaAgent must be installed on both the source and destination clients.

HP-UX

- If you are installing on a HP-UX computer, you must manually mount the installation disc as described in Mount the Software Installation Disc.

BEFORE YOU BEGIN

- Log on to the client as `root`.
- The install package requires `super-user` permissions to execute.

INSTALL PROCEDURE

GETTING STARTED

1. 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 or mount point:


```
./cvpkgadd -allow-newer-commserve
```
2. The product banner and other information is displayed.

Press **Enter** to continue.

3. Read the license agreement. Type **y** and press **Enter** to continue.
4. Enter the number corresponding to the setup task you want to perform.

NOTES

- For Install data protection agents on this computer option, follow the steps described in this procedure.
- Advance options provide additional setup features such as record and play setup, creating a custom package and External Data Connector Agent software.
 To create a custom package and for record and play setup, follow the steps described in Custom Package - Unix.
 To install the External Data Connector Agent, follow the steps described in External Data Connector - Unix.

5. If your computer is 32-bit, press **Enter**.
 If your computer is 64-bit, see Install Unix Agents on 64-bit Platform for step-by-step procedure.

6. This prompt is displayed only when you are installing on AIX, HP-UX, Linux, or Solaris computers.
 Press **Enter** to continue

NOTES

- When you install on non-clustered computer, you must select the number associated with the option **Install on a physical machine**.

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 number corresponding to the network interface that you wish to use as default, and then press **Enter** to continue.

NOTES

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

8. Specify the client name for the computer.
 Press **Enter** to accept the default name and continue, or
 Enter a new client name for the computer and then press **Enter** to continue.

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]

This machine supports both 32 bit and 64 bit binaries. By default, we will install 32 bit binary set that has full support for all the modules included in this package. Please note that 64 bit binary set currently only support limited modules.

- 1) All platforms (32 bit)
- 2) FS and MA only (64 bit)

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. 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]

SELECT COMPONENTS FOR INSTALLATION

9. Enter the number corresponding to the **CVGxRD** module.
 A confirmation screen will mark your choice with an "X". Type "d" for **Done**, and press **Enter** to continue.

NOTES

- To select multiple component, enter the number by adding a space.
- Your screen may look different from the example shown.
- Components that either have already been installed, or which cannot be installed, will not be shown.
- In addition, the list of modules that appear depends on the specific Unix File System in which the package is installed. (e.g., **CVGxWA** will appear only when the installation package is run on a Solaris computer.)

Install Calypso on physical machine client.company.com
 Select the Calypso module that you would like to install

- ```
[] 1) Media Agent [1301] [CVGxMA]
[] 2) FileSystem IDA [1101] [CVGxIDA]
>) >>>> NEXT PAGE >>>>>
```

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

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

**BASE SOFTWARE INSTALLATION**

10. If you wish to install the agent software for restore only, enter **Yes** and press **Enter** to continue. See Installing Restore Only Agents for more information.

Otherwise, accept **no**, press **Enter** to continue.

11. Type the appropriate number to install the latest software scripts and press **Enter** to continue.

**NOTES**

- Select **Download from the software provider website** to download the latest software scripts from your software provider website.  
Make sure you have internet connectivity when you are using this option.
- Select **Use the one in the installation media**, to install the software scripts from the disc or share from which the installation is 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. Enter **Yes** to download and install the latest service packs and post packs from the software provider.

**NOTES**

- Internet connectivity is required to download updates.
- This step is applicable for multi instancing.

Press **Enter** to continue.

13. Specify the location where you want to install the software.

**NOTES**

- The amount of free space required depends on the components selected for install, and may look different from the example shown.

Press **Enter** to accept the default path and continue, or Enter a path and then press **Enter** to continue.

Press **Enter** again to confirm the path.

14. Specify the location for the log files.

**NOTES**

- All the modules installed on the computer will store the log files in this directory.
- The amount of free space required depends on the components selected for install, and may look different from the example shown.

Press **Enter** to accept the default path and continue, or Enter a path and then press **Enter** to continue.

Press **Enter** again to confirm the path.

15. Indicate whether you would like to launch processes with inherent database access rights.

Press **Enter** to assign a new group, or Type **No** and then press **Enter** to continue.

16. If you indicated **Yes** in the previous step, you will be prompted for the group name that must be used to launch processes.

Enter the group name and then press **Enter** to continue.

Press **Enter** again to continue.

For installs on a Solaris computer, proceed to the next step. Otherwise, skip to Storage Policy Selection.

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]

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 98MB 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]

..

Calypso will be installed in /opt/calypso.

Press ENTER to continue ...

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]

..

Calypso log files will be created

in /var/log/calypso/Log\_Files.

Press ENTER to continue ...

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 Calypso files and on behalf of which all Calypso 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.

17. 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**.

#### NOTES

- For more information about Network TCP Ports, see Network TCP Port Requirements.
- For more information about these services, see Services.
- If the port number you entered already exists, a message will be displayed `Port ### is already reserved in /etc/services`. To work around this issue, enter different port number.

18. If this computer and the CommServe is separated by a firewall, type **Yes** and then press **Enter** to continue.

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

If you do not wish to configure the firewall services, type **No** and then press **Enter** to continue.

19. Type the name of the CommServe computer and press **Enter** to continue.

#### NOTES

- Ensure that the CommServe is accessible before typing the name; otherwise the installation will fail.
- If you enter a short name which resolves to the same IP address as the fully qualified CommServe name, you will be asked if you would prefer to use the fully qualified name.

20. Enter the **username** and **password** information for an external domain user account or a CommCell user account. This authorizes the installation of an agent on the CommCell.

#### NOTES

- This is only displayed when the **Authentication for Agent** feature is enabled in the CommCell Properties. Users must belong to a User Group with Agent Management capabilities to enable this feature. For more information, see Authentication for Agent Installs.

Click **Enter** to continue.

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".

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 : [8600]

Port Number for EvMgrC: [8602]

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:

Enter your CommCell user name and password:

User Name :

Password :

Press <ENTER> to continue ...

## KERNEL PARAMETERS

21. Enter the appropriate number of streams, and then press **Enter** to continue, or Press **Enter** to accept the default number of streams and continue.

#### NOTES

- The number of streams specified ensures that concurrent backup/restore streams would have sufficient system resources. For more information on the subject, see Configuring Kernel Parameters for Macintosh and Configuring Kernel Parameters for Solaris.

This prompt is relevant only when you install/upgrade on a Macintosh or Solaris computer as appropriate.

22. Indicate whether you would like modifications to be made to the `/etc/system` configuration file.

Type **Yes**, and then press **Enter** to automatically update the file and continue, or Press **Enter** to accept the default **No** and continue (if you do not want to automatically update the file).

This prompt is displayed only when you install/upgrade on a Solaris (8 or 9) or Macintosh computer.

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_semmns1=8570 (was 7930)
```

Do you want us to apply these changes now? [no]

23. If you indicated **No** in the previous step, the file to which the changes have been saved is displayed. Make sure that these values are established later to ensure that all the requirements for this setup is satisfied.

**NOTES**

- The settings that are displayed are the maximum or minimum required settings. Value '640', which is provided for various shared memory segment or semaphore requirements, is a maximum value based on 10 streams.

Press **Enter** to continue.

This prompt is displayed only when you install/upgrade on a Solaris (8 or 9) computer, in cases where the install detects that the computer does not have the maximum or minimum required shared memory settings.

Changes saved into /etc/system.gal.1744

Press <ENTER> to continue.

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
```

**ENABLE GLOBAL FILTERS**

24. Type the appropriate number for configuring Global Filters for the default subclient and press Enter to continue.

**NOTES**

- Select **Use Cell level Policy** to inherit the global filter policy configuration set for the CommCell, i.e., if the **Use Global Filters on All Subclients** option is selected in the **Global Filters** dialog box (from the CommCell Console's Control Panel), then this policy will be applied to the default subclient as well. If is not selected, then the global filters will not be applied to the default subclient.
- Select **Always use Global filters** to always apply the global filters policy to the default subclient regardless of the policy set for the CommCell.
- Select **Do not use Global filters** to disregard applying the global filters to the default subclient regardless of the policy set for the CommCell.

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 SELECTION**

25. Type the number of a Client Group and press **Enter**.

A confirmation screen will mark your choice with an "X". Type **d** for done with the selection, and press **Enter** to continue.

**NOTES**

- This screen will be displayed only if Client Groups are configured for the CommCell. For more information, see Client Computer Groups.

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. The selected group(s) will be marked (X) and can be deselected if you enter the same number again. After you are finished with the selection, select "Done with the Selection".

- ```
[ ] 1) Unix
[ ] 2) DR
[ ] 3) DKS
```

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

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

26. Press **Enter** to continue.

NOTES

- Schedules help ensure that the data protection operations for the Agent are automatically performed on a regular basis without user intervention. For more information, see Scheduling.

+-----+

IMPORTANT:

In addition to installing Calypso on this computer, you will also need to create a Job Schedule for each iDataAgent that has been installed on this client computer.

Job Schedules are required to allow the Calypso iDataAgents to perform automated backup and restore operations.

Job Schedule creation can be accomplished through the Calypso CommCell Console administration interface.

+-----+

STORAGE POLICY SELECTION

27. Enter the number corresponding to the storage policy through which you want to back up the File System iDataAgent and then press **Enter** to continue.

NOTES

- A storage policy directs backup data to a media library. Each library has a default storage policy.
- When you install an Agent, the install program creates a default subclient for most Agents.

Please select one storage policy for this IDA from the list below:

- 1) SP_StandAloneLibrary2_2
- 2) SP_Library3_3
- 3) SP_MagLibrary4_4
- 4) fornax_fornax_HWCmp
- 5) ranger_ranger_HWCmp
- 6) fornax_fornax_CIntCmp
- 7) fornax_fornax_MACmp
- 8) fornax_fornax_NoCmp

- If desired, you can change your storage policy selection at any time after you have installed the client software. Storage Policy: [3]
- If this screen appears more than once, it is because you have selected multiple agents for installation and are configuring storage policy association for each of the installed agents.

28. The install program now starts copying the software to the computer. The progress of the operation is displayed.

Press **Enter** to continue.

```
.....
.....
.....
.....

Successfully copied xx files

.....
.....
.....

Successfully installed CVGxQRA

Press ENTER to continue ...
```

29. The install program now starts copying the software to the computer. The progress of the operation is displayed.

Press **Enter** to continue.

```
.....
.....
.....
.....

Successfully copied xx files

.....
.....
.....

Successfully installed CVGxRD

Press ENTER to continue ...
```

SETUP COMPLETE

30. If this is the last package that you wish to install/upgrade, enter the number corresponding to the **Exit** option and then press **Enter** to continue.

NOTES

- Only modules that are not installed/upgraded appear in the list.
- Your screen may appear different from the example shown.
- If you are installing on AIX, FreeBSD, IRIX or Tru64 computers, if this module was the last possible module to install, you are automatically exited from the program. Otherwise, type the number for the **Exit** option and then press **Enter**. The installation is completed.

31. This prompt is displayed only when you are installing on HP-UX, Linux, or Solaris computers. Enter the number corresponding to the **Exit** option and then press **Enter** to continue.

The installation is now complete.

Select the Calypso module that you would like to install.

- ```
1) FileSystem iDataAgent
2) Exit
```

Module number: [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 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]

POST-INSTALL CONSIDERATIONS

GENERAL

- Install post-release updates or Service Packs that may have been released after the release of the software. When you are installing a Service Pack, ensure that it is the same version as the one installed in the CommServe Server. Alternatively, you can enable Automatic Updates for quick and easy installation of updates in the CommCell component.
- The following items include some of the most common features that can be also be configured:
 - Schedule your data protection operations - see Scheduling for more information.
 - Configure Alerts - See Alerts and Monitoring for more information.
 - Schedule Reports - See Reports for more information.

The software provides many more features that you will find useful. See the Index for a complete list of supported features.

AGENT SPECIFIC

- The following configuration tasks are required before you can begin using Recovery Director for data protection operations:
 1. Configure a supported Snapshot Environments for the agents.
 2. Create a Snapshot Management Workflows.

DISASTER RECOVERY CONSIDERATIONS

- Before you use your agent, be sure to review and understand the associated full system restore (or disaster recovery) procedure. The procedure for some agents may require that you plan specific actions or consider certain items before an emergency occurs. See Disaster Recovery for more information regarding your agent.

Snapshot Management Workflows

Topics | How To | Related Topics

Overview

How to Create a Snapshot Management Workflow

Best Practices

OVERVIEW

A Snapshot Management Workflow defines all of the details of how, when, and in what sequence the Snapshot Volume Units are acted upon, and shares similarities with the concept of a Schedule Policy, and defines all of the operations to be performed, such as QR Copy, backups, and unmounting or deleting of snapshots (hardware snapshots only.) When a new Snapshot Management Workflow is created, it is named and associated with an already created Snapshot Volume Unit.

HOW TO CREATE A SNAPSHOT MANAGEMENT WORKFLOW

The following section provides a high-level view of the steps for creating a Snapshot Management Workflow.

CREATE A WORKFLOW USING THE WORKFLOW CONFIGURATION WIZARD:

1. Create custom Application Types, if the Workflow will use applications not supported directly by the QR Agent.
2. Create scripts for the Generic Enabler, if the Workflow will use hardware snapshots not already integrated with the QR Agent.
3. Create the Storage Policies that the iDataAgents in the Workflow will use.
4. Use the Workflow Configuration Wizard to do the following:
 - o Create a Snapshot Volume Unit (SVU).
 - o Create a QR Policy.
 - o Create a Workflow.
 - o Create a Schedule for the Workflow. This is required if you want to Create a QR Volume with Incremental Updates.

CREATE A WORKFLOW MANUALLY:

1. Create custom Application Types, if the Workflow will use applications not supported directly by the QR Agent.
2. Create scripts for the Generic Enabler, if the Workflow will use hardware snapshots not already integrated with the QR Agent.
3. Create the QR Policies that the Workflow will use.
4. Create the Storage Policies that the iDataAgents in the Workflow will use.
5. Create Snapshot Volume Units (SVU) to be used by the Workflow.
6. Create a Snapshot Management Workflow.
7. Create a Snapshot Management Workflow Schedule. This is required if you want to Create a QR Volume with Incremental Updates.

CREATE MULTIPLE WORKFLOWS USING THE SAME SNAPSHOT VOLUME UNIT

You can point multiple Workflows to the same SVU, allowing you to create different Workflows scheduled at different times depending on the frequency and type of job you would like to run. Thus you can, for example:

1. Create an SVU with QR, ProxyHost, and Image Level ProxyHost associated to it.
2. Create Workflow1, and select QR and ProxyHost operations.
3. Create Workflow2, and select QR and Image Level ProxyHost operations.
4. Create Workflow3, and select QR operations.
5. Schedule each Workflow independently, and associate each to the SVU created in Step 1.



- For multiple Workflows pointing to the same SVU, you must create the Workflows manually; this cannot be done using the Wizard.

- All of the jobs in a Workflow for a given SVU must complete before any jobs in another Workflow pointing to the same SVU can start. Thus, if a job in one of the Workflows goes into pending state, and it is time for the next Workflow to be run, it will not do so until all the jobs in the previous Workflow complete successfully.

BEST PRACTICES

Consider the following when creating a SnapShot Management Workflow:

- VSS Hardware snapshot must be marked Transportable, or they cannot be imported.
- When using VSS as the snap engine to create Hardware snapshots and you have selected a ProxyHost backup to run after the QR snapshot job, the snapshot is automatically imported. Select the Delete operation in the Workflow so that the snapshot will be deleted at the end of the workflow.
- When using EMC SnapView as the snap engine to create Hardware snapshots and you have selected a ProxyHost or Image Level ProxyHost backup to run after the QR snapshot job, the snapshot is automatically activated. Select the Delete operation in the Workflow so that the snapshot will be deleted at the end of the workflow.
- All Data Recovery operations are performed from the Agent or the iDataAgent level. Refer to one of the following:
 - Recover QR Volumes
 - Restore Data - Image Level ProxyHost
 - Restore Data - Proxyhost

[Back to Top](#)

Snapshot Management Workflows - How To

[Topics](#) | [How To](#) | [Related Topics](#)

[Workflow Configuration Wizard](#)

[Create/Edit/Delete a Snapshot Management Workflow](#)

[Create/Edit/Delete a Snapshot Management Workflow Schedule](#)

[Run a Snapshot Management Workflow Immediately](#)

USE THE WORKFLOW CONFIGURATION WIZARD

The following procedure describes the use of the Workflow Configuration Wizard.

REQUIREMENTS

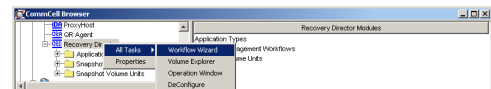
Required Capability: See Capabilities and Permitted Actions.

Creating a new Workflow

- User-defined Application Types that will be part of the Workflow must already be created. See Step 4.
- Generic Enablers that will be used for the Workflow must already be created. See Step 7.
- Suitable Storage Policy(ies) must exist for the iDataAgent(s) that will be part of this Workflow. See Step 8.

WORKFLOW CONFIGURATION WIZARD PROCEDURES

1. In the CommCell Browser, right-click Recovery Director and select **All Tasks**, then select **Workflow Wizard**.



2. The following tasks can be performed using the Wizard:
 - Create or edit a Snapshot Management Workflow
 - Create or edit QR Policies and Scratch Pools
 - Create or edit Snapshot Volume Units
 - Create, edit, or delete Schedules for Workflows
 - Immediately run a Workflow

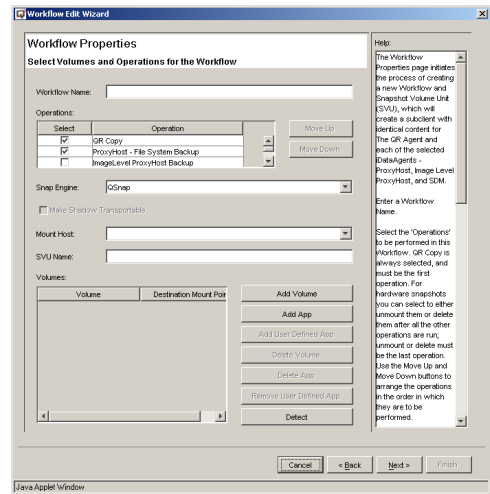
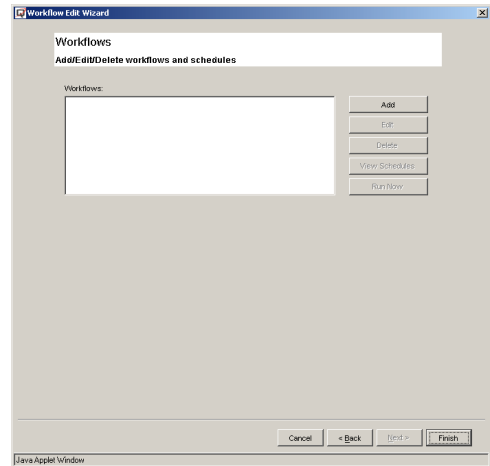
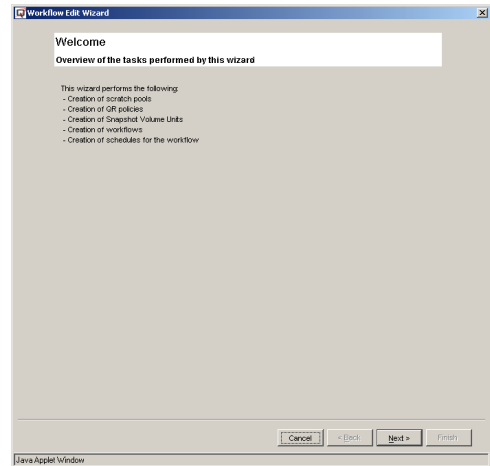
Click **Next**.

3. Select from the following:

- To create a new Workflow, click **Add**, and go to Step 4.
- To edit an existing Workflow, select it, click **Edit**, and go to Step 4.
- To delete an existing Workflow, select it and click **Delete**, then click **Finish**.
- To perform any of the following, go to Step 11:
 - Add a new Schedule.
 - Edit an existing Schedule
 - Delete a Schedule
 - Run a Schedule immediately
 - Run an unscheduled Workflow immediately

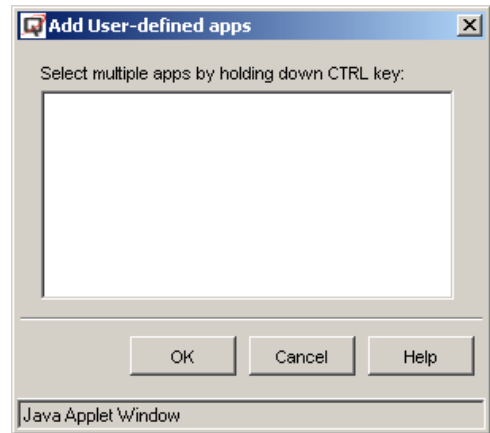
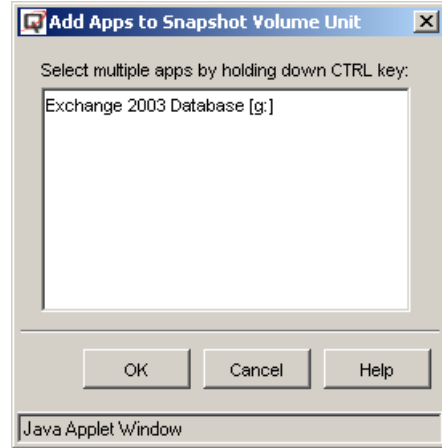
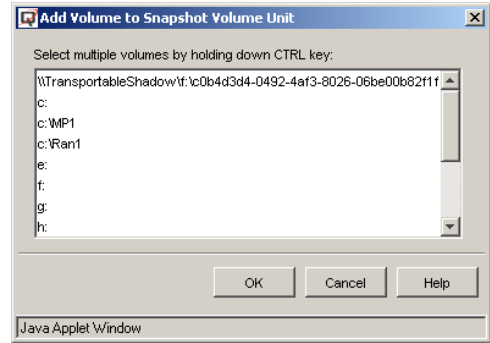
4. The following tasks can be performed:

- Enter a **Workflow Name**.
- Select the **Operations** to be performed for this Workflow. QR Copy is always selected, and must be the first operation. For hardware snapshots you can select to either unmount them or delete them after all the other operations are run; unmount or delete must be the last operation. Click the **Move Up** and **Move Down** buttons to arrange the operations in the order in which they are to be performed.
 - **Unmount:** This will unmount the snapshot, and is preferred for hardware snapshots, unless you have no use for the snapshot after the Workflow completes.
 - **Delete snapshot:** When using a hardware snap engine (SnapView, VSS, Generic Enabler) this will delete the hardware snapshot. A software snap engine (QSnap, VSS) automatically deletes the snapshot at the end of the job, so this operation will not delete the snapshot, but will instead unlock, or release the lock on, the QR volume. Thus, this operation would not normally be selected for a software snap engine.
- Select a **Snap Engine** from the list. This selection determines which QR Policies are eligible to be used during QR subclient creation.
- Select the **Make Shadow Transportable** option if a VSS hardware snapshot is being used, and you want to be able to import the snapshot.
- Select a **Mount Host**, where your QR volumes or hardware snapshots should be mounted.
- Enter an **SVU Name**.
- Click **Add Volume** to select from a list of volumes for subclient content. When done, double-click the **Destination Mount Point** column next to each volume and specify a Mount Point on the Mount Host.
- Click **Add App** to select from a list of the supported applications on all volumes.
- Click **Add User Defined App** to select from a list of previously-defined applications.
- Select a Volume from the list and click **Delete Volume** to remove it.
- Select a Volume from the list and click **Delete App** to remove an associated application from it.

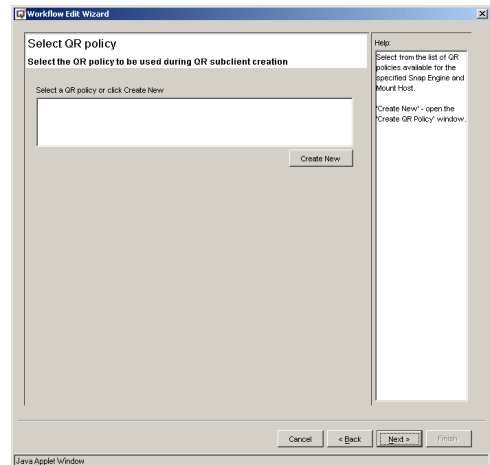


- Select a Volume from the list and click **Remove User Defined App** to remove an associated application it.
- Click **Detect** to open Volume Explorer to detect and configure volumes.

Click **Next**.



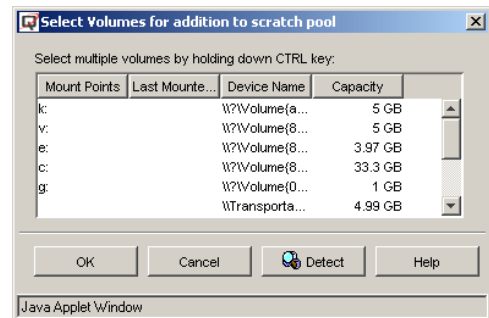
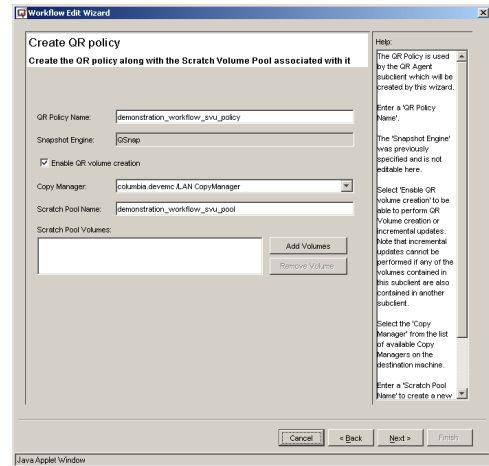
5. Select from the following:
 - To use an existing QR Policy, select it from the list and click **Next**. Go to Step 7.
 - To create a new QR Policy, click **Create New**.



6. The following tasks can be performed to create a new QR Policy:

- Enter a **QR Policy Name**.
- The **Snapshot Engine** was specified in Step 4 and is not editable here.
- Select **Enable QR volume creation** if you will perform QR Volume creation or incremental updates. Note that incremental updates cannot be performed if any of the volumes contained in this subclient are also contained in another subclient. (See Step 7.)
- Select the **Copy Manager** from the list of available Copy Managers on the destination machine.
- Enter a **Scratch Pool Name**.
- Click **Add Volumes** to open a list of volumes to select for the Scratch Volume Pool.

Click **Next**.



7. The following tasks can be performed to configure the QR Subclient (refer to Subclients - Quick Recovery Agent):

General tab

- Enter a **QR Subclient Name**.
- If a VSS hardware snapshot has been specified as the Snap Engine in Step 4, and the Make Shadow Transportable option was selected, either select **Use Source Host as the Default Import Host**, or select a **Default Import Host** from the list.
- Select **Disable Incremental update of QR volumes** if any of the volumes contained in this subclient are also contained in another subclient.
- **Software Compression** can be optionally enabled for the QR subclient (this selection is only available when the selected QR Policy is configured to use a LAN Copy Manager.)

Content tab

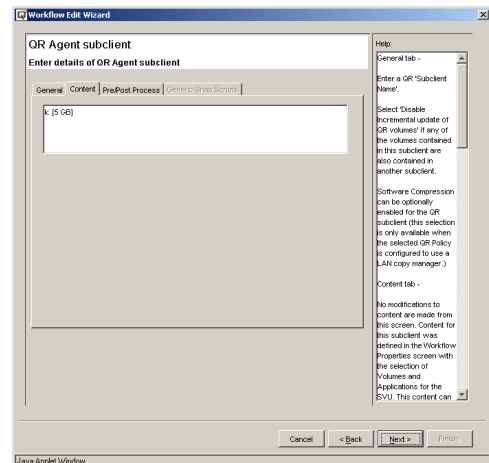
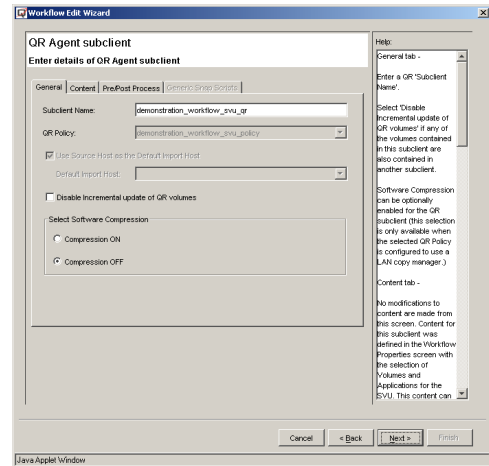
- No modifications to content are made here. Content for this subclient was defined in the Workflow Properties screen with the selection of Volumes and Applications for the SVU. This content can be modified after completing this Wizard, using the Manage SVU command. See Create/Edit/Delete a Snapshot Volume Unit (SVU).

Pre/Post Process tab

- Add optional Pre/Post Processes for the QR Agent subclient. (These are batch files or shell scripts that you can run before or after the Snap or Copy phases.) Type the path of each file or shell script, or click **Browse** to open a window to navigate to it. To run a PostSnap or PostCopy process even if the Snap or Copy phase is killed, fails, completes with errors, or is interrupted due to a media reservation issues, select the appropriate option. Note that if a user suspends or stops the job during the respective phase, or if the job is interrupted during that phase due to Operation Window rules, the Post Process will not run, even if the option has been selected. If either of these two conditions are encountered, and the Post Process is designed to bring a database online, release a snapshot, or execute some other critical process, these tasks must be performed manually.
- Click **Change** to add or modify the User Account that has permission to run these commands.

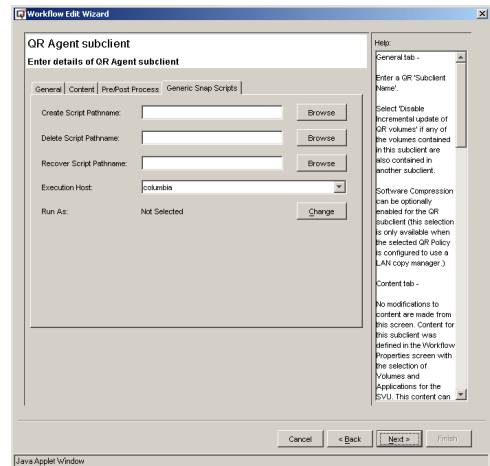
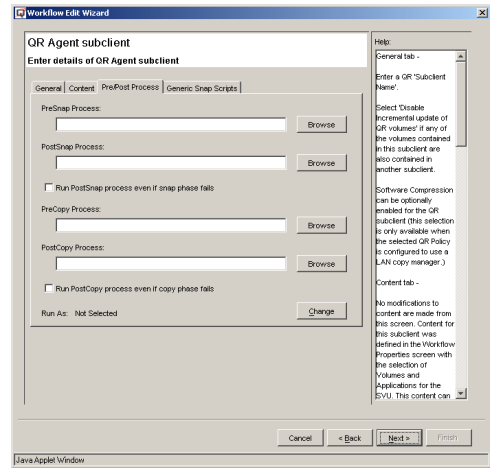
Generic Snap Scripts tab

- **Create Script Pathname** - the path of the user-created batch file or shell script to initialize the hardware snapshot, manage the BCV pair, and mount the snapshot.
- **Delete Script Pathname** - the path of the user-created batch file or shell script to unmount the snapshot and delete the BCV pair.



- **Recover Script Pathname** - the path of the user-created batch file or shell script to quiesce/unquiesce the application, or launch a hardware-based recovery.
- Select an **Execution Host** from the list, where the user-created batch files or shell scripts will be run.
- **Change** - add or modify the account that has permission to run these commands.

Click **Next**.



8. The following tasks can be performed to configure the *iDataAgent* Subclients: (refer to Subclients - SAN *iDataAgents*):

General tab

- Enter a **Subclient Name**.

Content tab

- No modifications to content are made here. Content for this subclient was defined in the Workflow Properties screen with the selection of Volumes and Applications for the SVU. This content can be modified after completing this Wizard, using the Manage SVU command. See Create/Edit/Delete a Snapshot Volume Unit (SVU).

Filters tab

- Make any desired changes. See Filters for more information.

Pre/Post tab

- Add optional Pre/Post Processes for the *iDataAgent* subclient. (These are batch files or shell scripts that you can run before or after the Snap or Copy phases.) Type the path of each file or shell script, or click **Browse** to open a window to navigate to it. To run a PostSnap or PostCopy process even if the Snap or Copy phase is killed, fails, completes with errors, or is interrupted due to a media reservation issues, select the appropriate option. Note that if a user suspends or stops the job during the respective phase, or if the job is interrupted during that phase due to Operation Window rules, the Post Process will not run, even if the option has been selected. If either of these two conditions are encountered, and the Post Process is designed to bring a database online, release a snapshot, or execute some other critical process, these tasks must be performed manually.

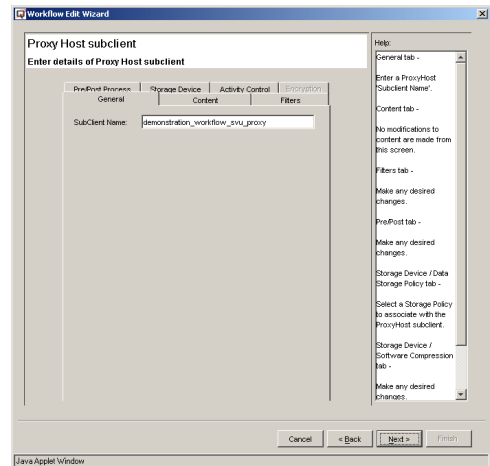
Storage Device / Data Storage Policy tab

- You must select a Storage Policy to associate with the subclient.

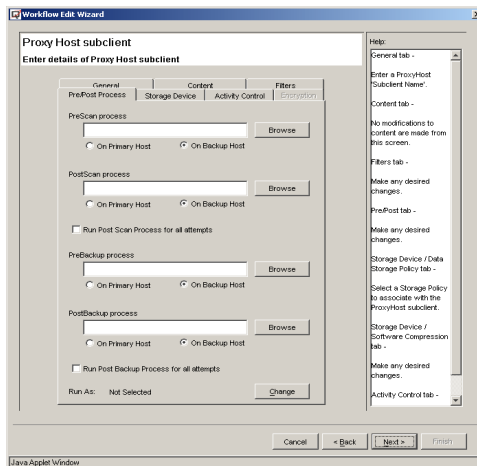
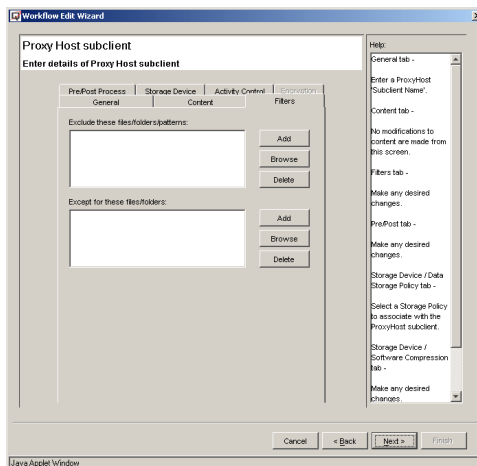
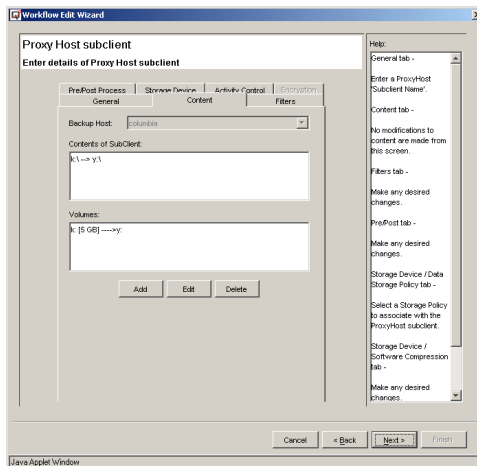
Storage Device / Software Compression tab

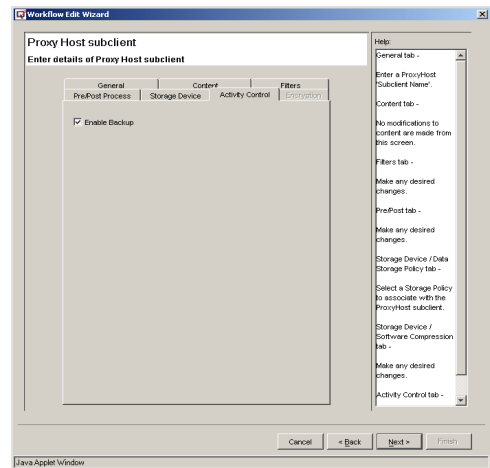
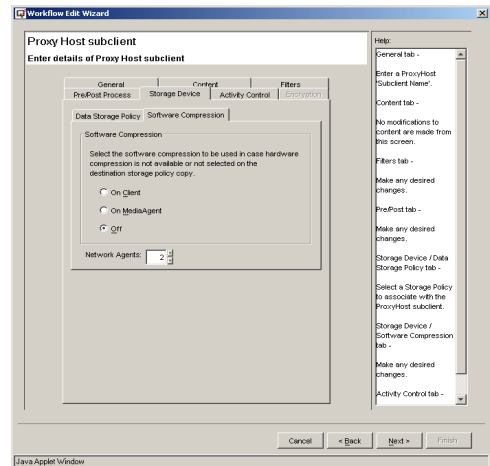
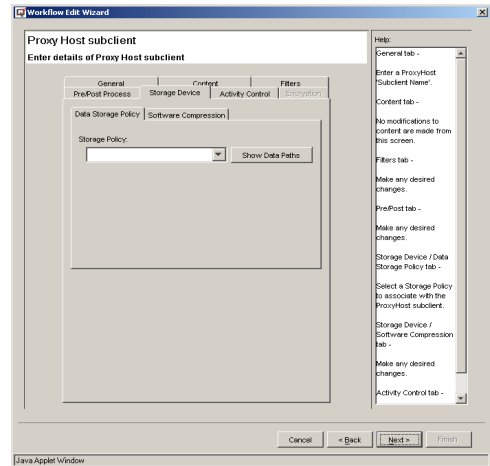
- Make any desired changes. See Client Compression for more information.

Activity Control tab



- Make any desired changes. See Activity Control for more information. Click **Next**.





9. Select from the following:
- Click **Next** if the information presented is correct.
 - Click **Back** to return to previous Wizard screens to make any changes.

10. Select a Workflow from the list and choose one of the following:
- To perform one of the following, click **View Schedules** and go to Step 11:
 - Add a new Schedule
 - Edit an existing Schedule
 - Delete a Schedule
 - Run a Schedule immediately
 - Click **Run Now** to run an unscheduled Workflow immediately. In the Run Workflow Now dialog box, click **OK**. Go to Step 13.

11. The following tasks can be performed:
- To create a new Schedule, click **Add**, and go to Step 12.
 - To edit an existing Schedule, select it, click **Edit**, and go to Step 12.
 - To delete an existing Schedule, select it and click **Delete**. Then click **Finish**.
 - To run a Scheduled Workflow immediately, select the Schedule and click **Run Immediately**. In the confirmation dialog box, click **OK**.

12. The following tasks can be performed:

Schedule tab

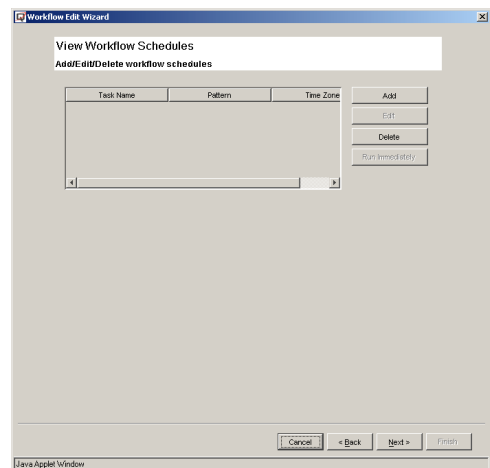
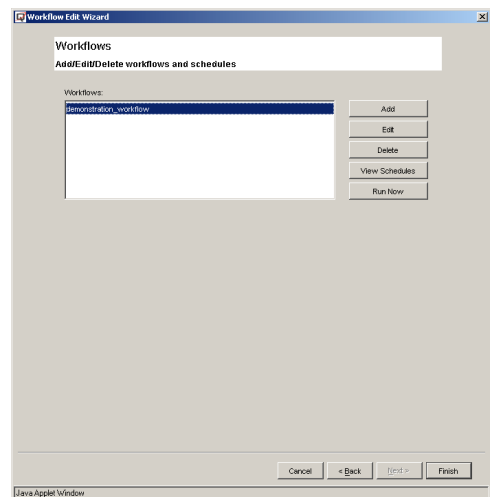
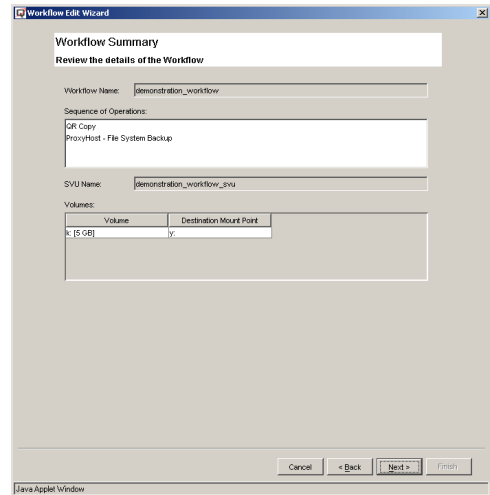
- Create or edit a Schedule. See Scheduling for more information. A Schedule is required if you want to Create a QR Volume with Incremental Updates.

QR Agent tab

- Select QR Volume Creation options. See Create a QR Volume for more information.

iDataAgent tab(s)

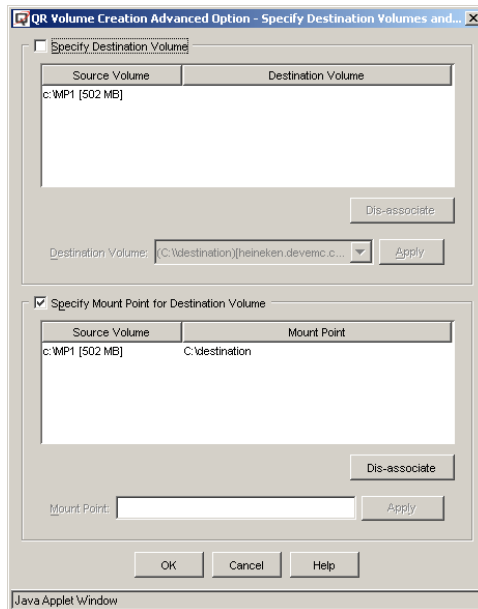
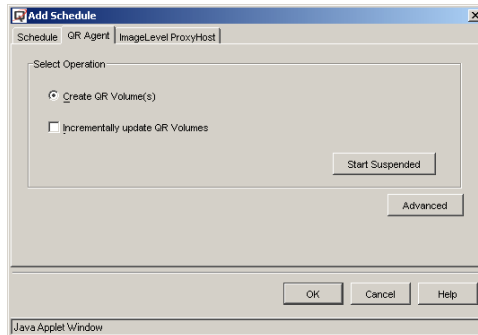
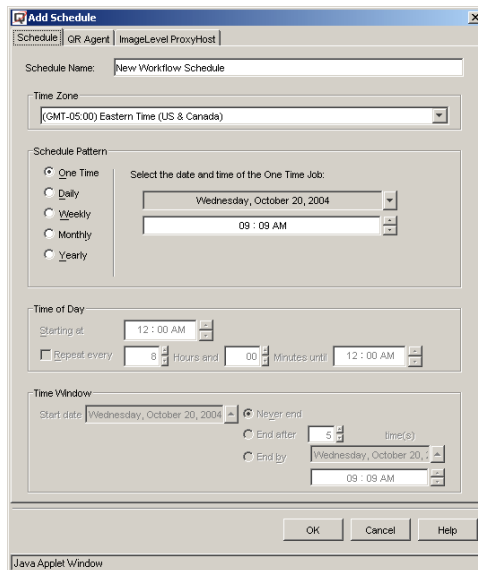
- Select Backup Options. See the following for more information:
 - Backup Data

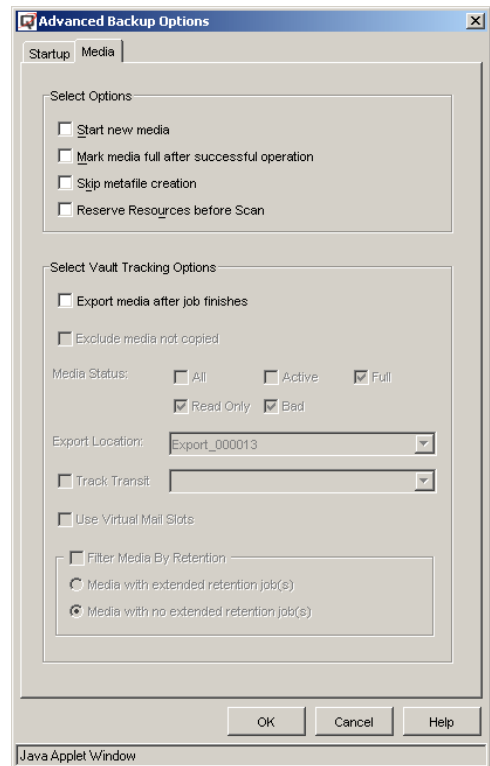
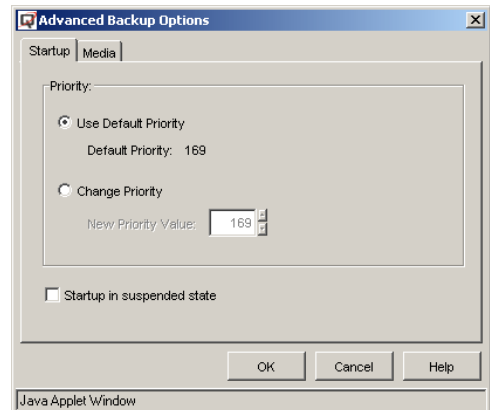
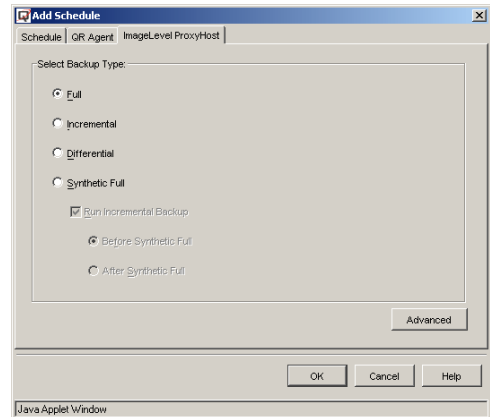


- Advanced Backup/Migrate/Archive Options
- Backup - Image Level ProxyHost
- Backup - ProxyHost

When finished, click **OK**. You will see the Workflows screen again, as shown in Step 10; click **Finish**.

Go to Step 14.





13. To configure the available options for running an unscheduled Workflow immediately, refer to the following:

QR Agent tab

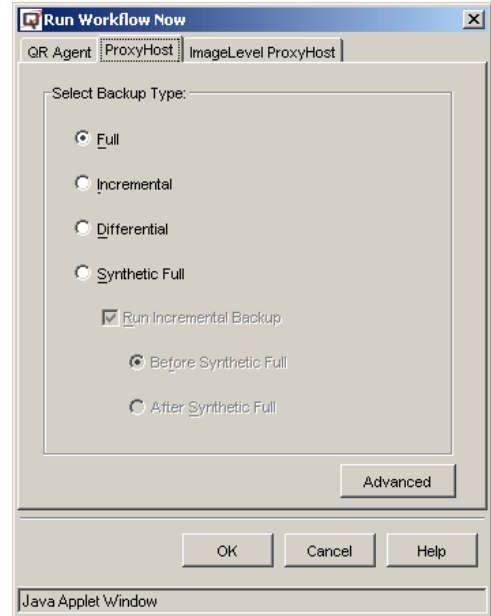
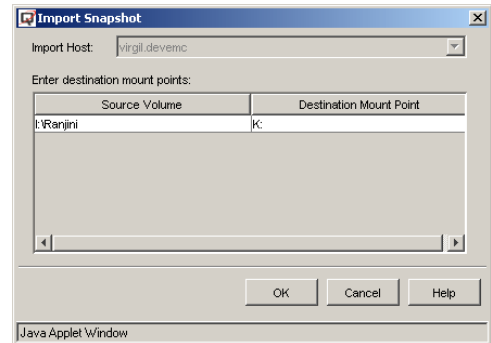
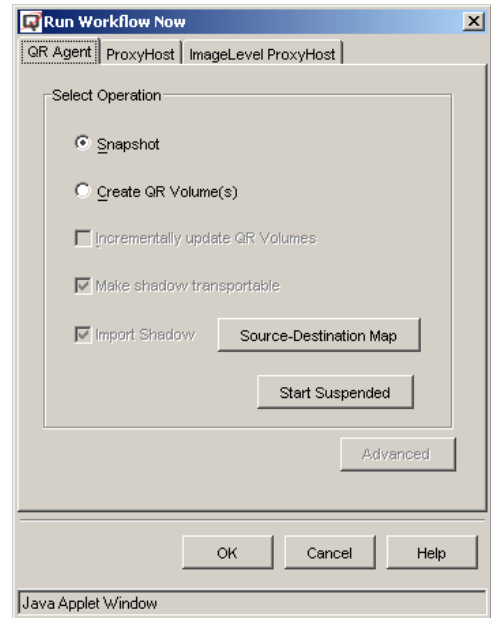
- Select QR Volume Creation options. See Create a QR Volume for more information.

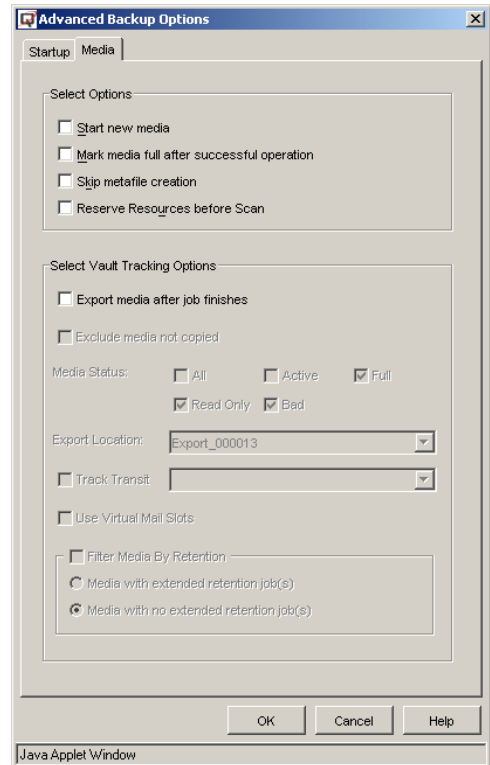
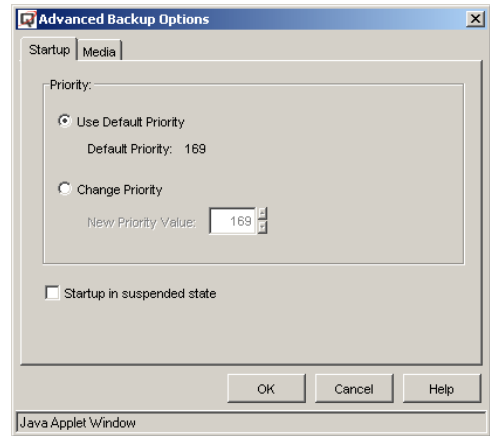
- Source-Destination Map

iDataAgent tab(s)

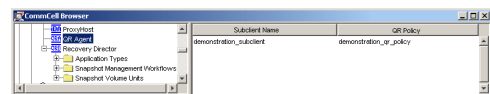
- See the following for more information:
 - Backup Data
 - Advanced Backup/Migrate/Archive Options
 - Backup - Image Level ProxyHost
 - Backup - ProxyHost

When all options have been configured, click **OK**.





14. You can now view the Subclients created for the QR Agent and each of the associated iDataAgents in the CommCell Browser. The SVU and Workflow can be viewed in their respective nodes under Recovery Director.



CREATE/EDIT/DELETE A SNAPSHOT MANAGEMENT WORKFLOW

The following procedure describes the steps involved in creating, editing, or deleting a Snapshot Management Workflow. For an overview of this operation, see Snapshot Management Workflows.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

To create a new Workflow, a Snapshot Volume Unit must already exist; see Step 2.

TO CREATE, EDIT, OR DELETE A SNAPSHOT MANAGEMENT WORKFLOW

1. In the CommCell Browser, expand Recovery Director and select from one of the following:

- To create a new Workflow, right-click **Snapshot Management Workflows**, and select **Create New Workflow**.
- To edit an existing Workflow, click **Snapshot Management Workflows**, right-click an existing Workflow, and select **Edit Properties**.
- To delete an existing Workflow, click **Snapshot Management Workflows**, right-click an existing Application Type, and select **Delete**. In the confirmation dialog box, click **OK**.

2. To create or edit a Workflow, enter the following information:

Name: The name of the Workflow.

Snapshot Volume Unit: The SVU to be used for this Workflow.

Snap Engine: The Snap Engine for the selected SVU, based on the QR Policy that was specified when the SVU was created. This field is not editable.

Operations: The operations to be performed for this Workflow. QR Copy is always selected. For hardware snapshots, Unmount or Delete can be optionally selected.

- **Unmount:** This will unmount the snapshot, and is preferred for hardware snapshots, unless you have no use for the snapshot after the Workflow completes.
- **Delete snapshot:** When using a hardware snap engine (SnapView, VSS, Generic Enabler) this will delete the hardware snapshot. A software snap engine (QSnap, VSS) automatically deletes the snapshot at the end of the job, so this operation will not delete the snapshot, but will instead unlock, or release the lock on, the QR volume. Thus, this operation would not normally be selected for a software snap engine.

Move Up / Move Down: Used to arrange the operations in the order in which they are to be performed. See Notes about the order of operations.

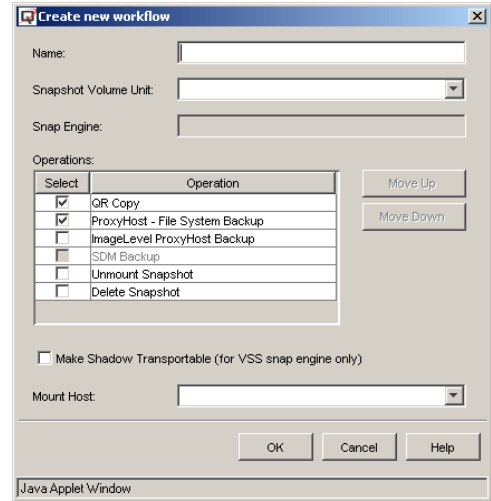
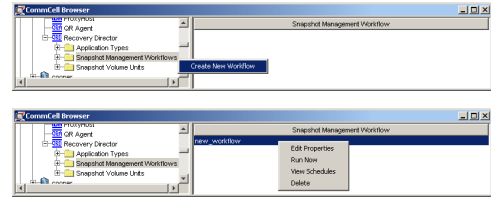
Make Shadow Transportable: For the VSS Snap engine only, allows hardware snapshots to be mounted to a host.

Mount Host: The Host to which the snapshot will be mounted or imported.

Click **OK**.

NOTES

- QR Copy must always be selected, and must always be the first operation.
- Unmount Snapshot or Delete Snapshot must always be the last operation.
- For VSS Hardware Snapshots, do not select Image Level ProxyHost Backup in the list of operations from the Workflow, as the VSS hardware snapshots are read only. Only QR Copy and ProxyHost Backup should be selected in the list of operations from the Workflow.
- Multiple Workflows can be pointed to the same SVU. For more information, see Create Multiple Workflows using the same Snapshot Volume Unit.



CREATE/EDIT/DELETE A SNAPSHOT MANAGEMENT WORKFLOW SCHEDULE

The following procedure describes the steps involved in creating, editing, or deleting a Snapshot Management Workflow Schedule. This can also be accomplished using the Wizard. See Workflow Configuration Wizard.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

To create a new Schedule, a Snapshot Management Workflow must already exist.

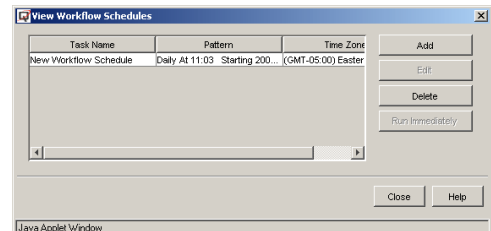
TO CREATE, EDIT, OR DELETE A SNAPSHOT MANAGEMENT WORKFLOW SCHEDULE

1. In the CommCell Browser, expand Recovery Director, select **Snapshot Management Workflow**, right-click a Workflow, and select **View Schedules**.



2. The following tasks can be performed:

- To create a new Schedule, click **Add**, and go to Step 3.
- To edit an existing Schedule, select it, click **Edit**, and go to Step 3.
- To delete an existing Schedule, select it and click **Delete**. Then click **OK**.



3. The following tasks can be performed:

Schedule tab

- Create or edit a Schedule. See Scheduling for more information.

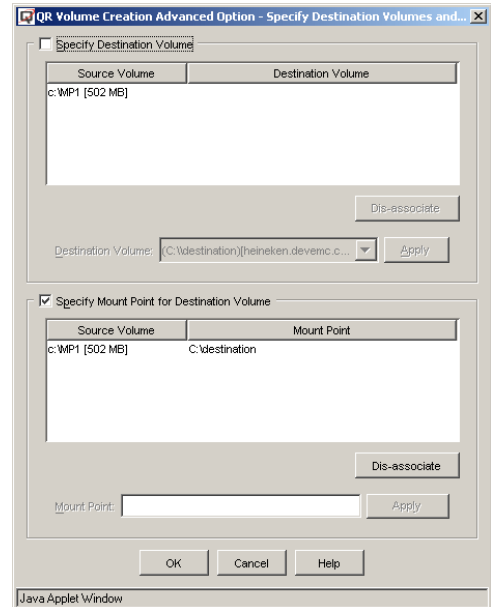
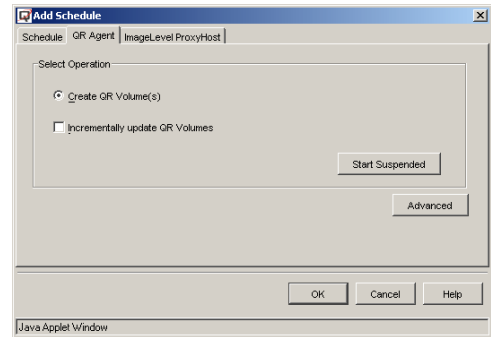
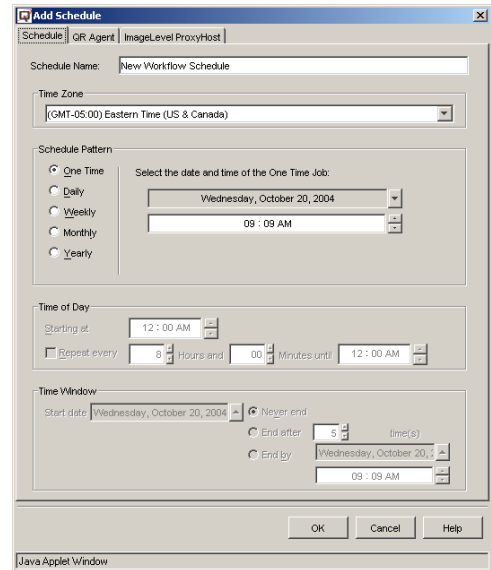
QR Agent tab

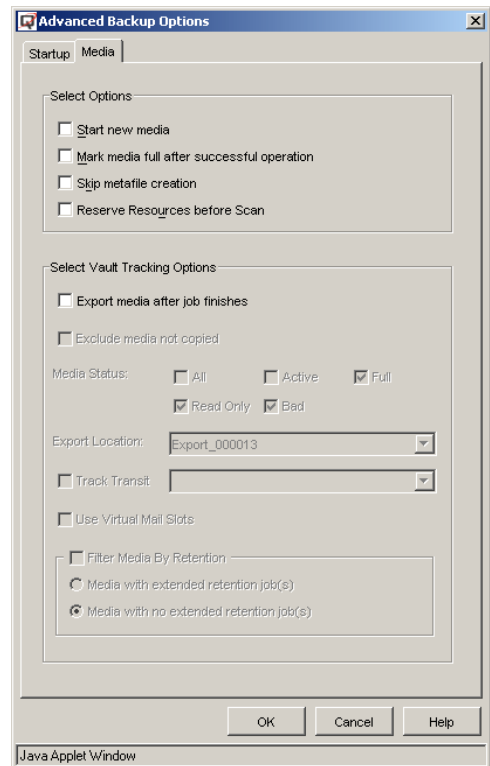
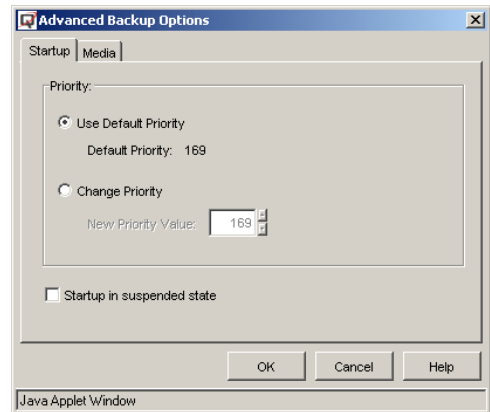
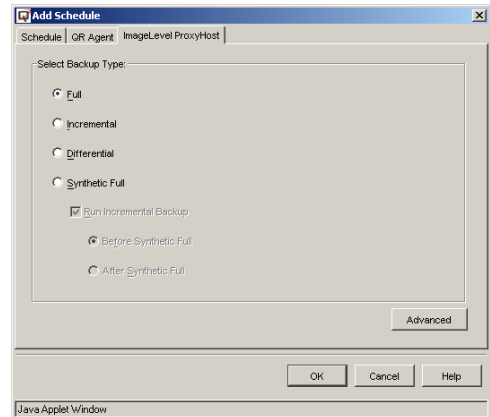
- Select QR Volume Creation options. See Create a QR Volume for more information.

iDataAgent tab(s)

- Select Backup Options. See the following for more information:
 - Backup Data
 - Advanced Backup/Migrate/Archive Options
 - Backup - Image Level ProxyHost
 - Backup - ProxyHost

When finished, click **OK**. You will see the Workflows screen again, as shown in Step 2; click **Done**.





RUN A SNAPSHOT MANAGEMENT WORKFLOW IMMEDIATELY

The following procedure describes the steps involved in running a Snapshot Management Workflow immediately. This can also be accomplished using the Wizard. See Workflow Configuration Wizard.

REQUIREMENTS

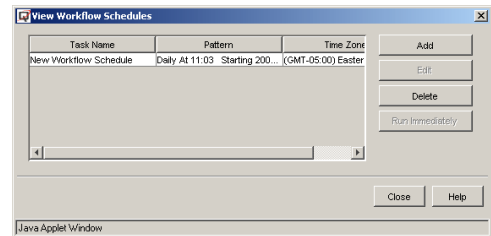
Required Capability: See Capabilities and Permitted Actions

TO RUN A SNAPSHOT MANAGEMENT WORKFLOW IMMEDIATELY

- In the CommCell Browser, expand Recovery Director, select **Snapshot Management Workflow**, and select one of the following:
 - To immediately run a Scheduled Workflow, right-click a Workflow, and select **View Schedules**. Go to Step 2.
 - To immediately run an unscheduled Workflow, right-click a Workflow, and select **Run Now**. Go to Step 3.



- To run a Scheduled Workflow immediately, select the Schedule and click **Run Immediately**. In the confirmation dialog box, click **OK**.



- To configure the available options for running an unscheduled Workflow immediately, refer to the following:

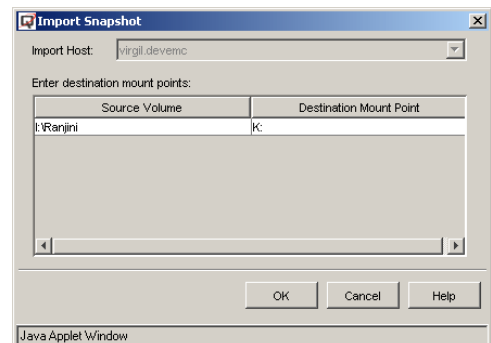
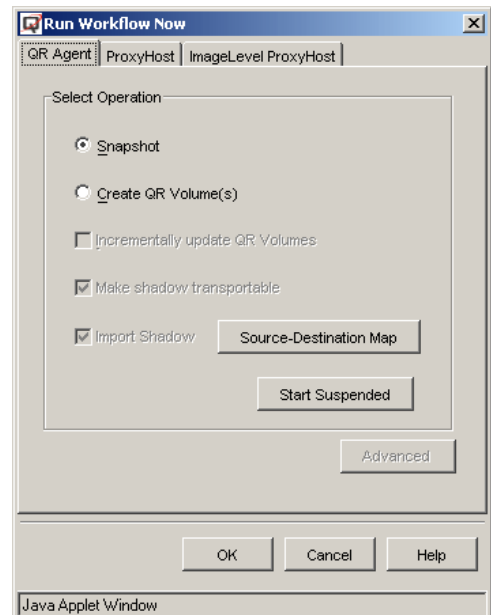
QR Agent tab

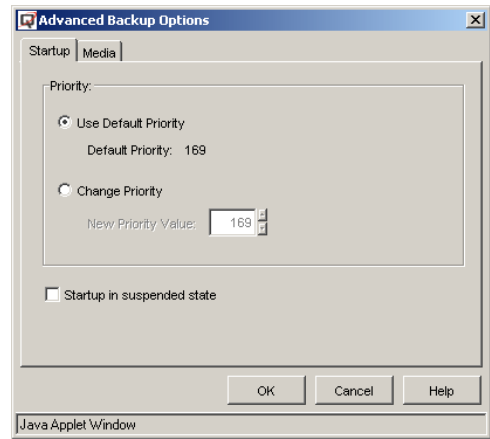
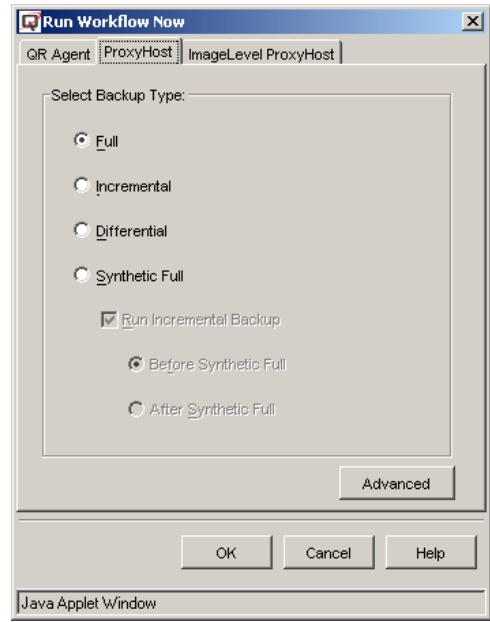
- Select QR Volume Creation options. See Create a QR Volume for more information.
- Source-Destination Map

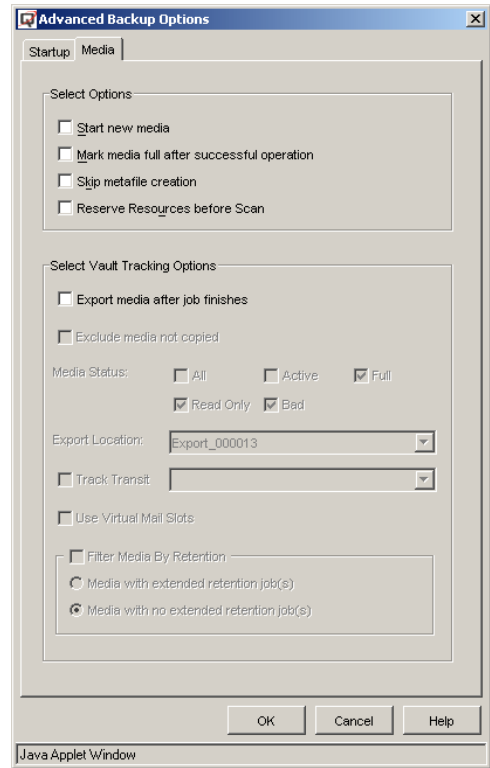
iDataAgent tab(s)

- See the following for more information:
 - Backup Data
 - Advanced Backup/Migrate/Archive Options
 - Backup - Image Level ProxyHost
 - Backup - ProxyHost

When all options have been configured, click **OK**.







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Workflow Configuration Wizard

Topics | How To | Related Topics

OVERVIEW

The Workflow Configuration Wizard is a guide that steps through all the necessary procedures to create a Snapshot Management Workflow, including QR Policies, Scratch Volume Pools, Subclient properties, and the Schedule for the Workflow. The Wizard renders it unnecessary to remember the logical sequence of operations of the different components used.

The following tasks can be performed using the Workflow Configuration Wizard:

- Create or edit a Snapshot Management Workflow
- Create, edit, or delete Snapshot Volume Units
- Create or edit QR Policies
- Create or edit Scratch Volume Pools
- Create, edit, or delete Schedules for Workflows
- Run a Workflow immediately

Once a Workflow has been created using the Wizard, it can be edited either using the Wizard, or directly through the CommCell Browser.

Workflow Configuration Wizard - How To

Topics | How To | Related Topics

Use the Workflow Configuration Wizard

USE THE WORKFLOW CONFIGURATION WIZARD

The following procedure describes the use of the Workflow Configuration Wizard.

REQUIREMENTS

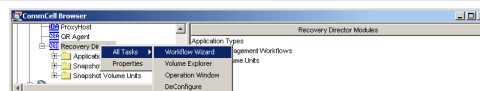
Required Capability: See Capabilities and Permitted Actions.

Creating a new Workflow

- User-defined Application Types that will be part of the Workflow must already be created. See Step 4.
- Generic Enablers that will be used for the Workflow must already be created. See Step 7.
- Suitable Storage Policy(ies) must exist for the iDataAgent(s) that will be part of this Workflow. See Step 8.

WORKFLOW CONFIGURATION WIZARD PROCEDURES

1. In the CommCell Browser, right-click Recovery Director and select **All Tasks**, then select **Workflow Wizard**.



2. The following tasks can be performed using the Wizard:
 - Create or edit a Snapshot Management Workflow
 - Create or edit QR Policies and Scratch Pools
 - Create or edit Snapshot Volume Units
 - Create, edit, or delete Schedules for Workflows
 - Immediately run a Workflow

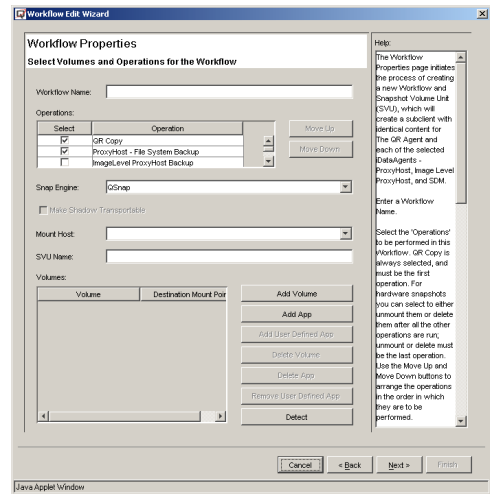
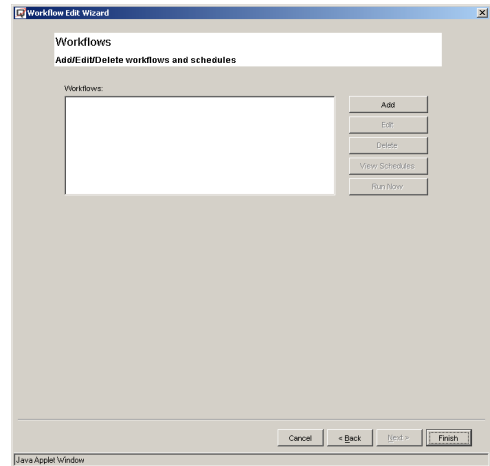
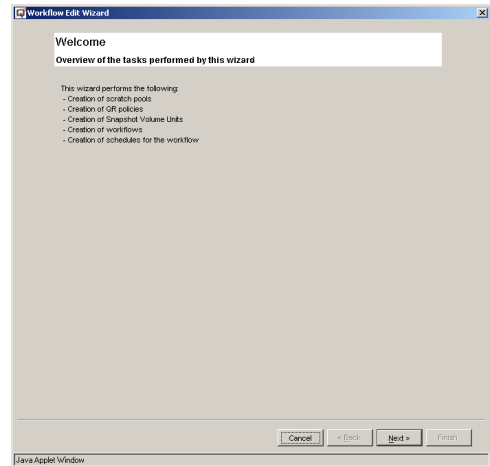
Click **Next**.

3. Select from the following:

- To create a new Workflow, click **Add**, and go to Step 4.
- To edit an existing Workflow, select it, click **Edit**, and go to Step 4.
- To delete an existing Workflow, select it and click **Delete**, then click **Finish**.
- To perform any of the following, go to Step 11:
 - Add a new Schedule.
 - Edit an existing Schedule
 - Delete a Schedule
 - Run a Schedule immediately
 - Run an unscheduled Workflow immediately

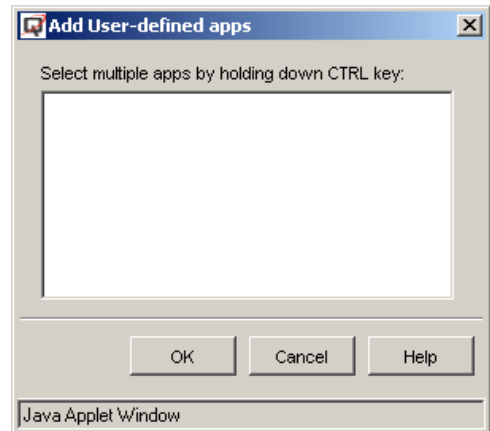
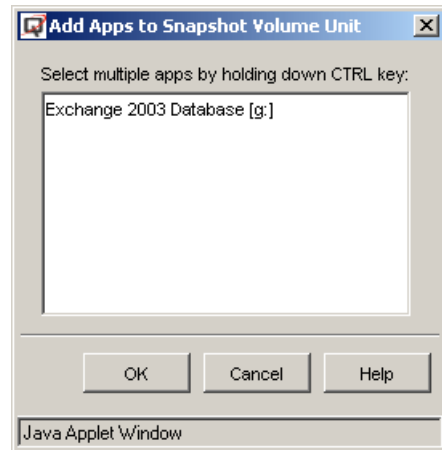
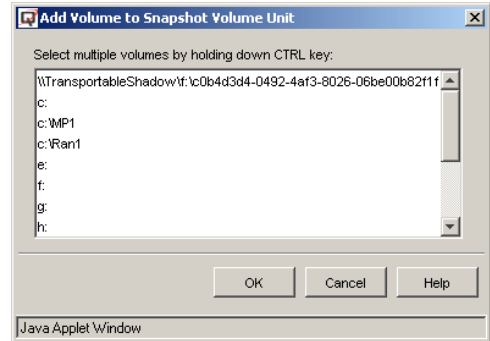
4. The following tasks can be performed:

- Enter a **Workflow Name**.
- Select the **Operations** to be performed for this Workflow. QR Copy is always selected, and must be the first operation. For hardware snapshots you can select to either unmount them or delete them after all the other operations are run; unmount or delete must be the last operation. Click the **Move Up** and **Move Down** buttons to arrange the operations in the order in which they are to be performed.
 - **Unmount:** This will unmount the snapshot, and is preferred for hardware snapshots, unless you have no use for the snapshot after the Workflow completes.
 - **Delete snapshot:** When using a hardware snap engine (SnapView, VSS, Generic Enabler) this will delete the hardware snapshot. A software snap engine (QSnap, VSS) automatically deletes the snapshot at the end of the job, so this operation will not delete the snapshot, but will instead unlock, or release the lock on, the QR volume. Thus, this operation would not normally be selected for a software snap engine.
- Select a **Snap Engine** from the list. This selection determines which QR Policies are eligible to be used during QR subclient creation.
- Select the **Make Shadow Transportable** option if a VSS hardware snapshot is being used, and you want to be able to import the snapshot.
- Select a **Mount Host**, where your QR volumes or hardware snapshots should be mounted.
- Enter an **SVU Name**.
- Click **Add Volume** to select from a list of volumes for subclient content. When done, double-click the **Destination Mount Point** column next to each volume and specify a Mount Point on the Mount Host.
- Click **Add App** to select from a list of the supported applications on all volumes.
- Click **Add User Defined App** to select from a list of previously-defined applications.
- Select a Volume from the list and click **Delete Volume** to remove it.
- Select a Volume from the list and click **Delete App** to remove an associated application from it.

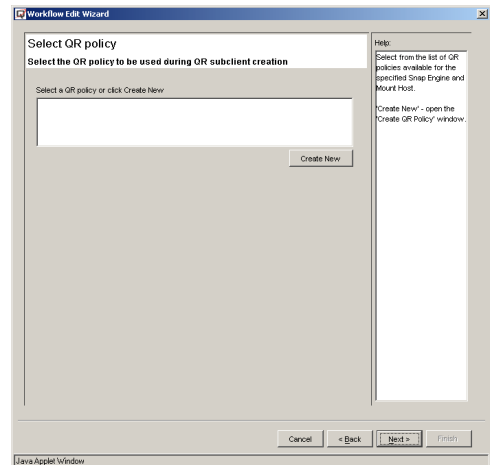


- Select a Volume from the list and click **Remove User Defined App** to remove an associated application it.
- Click **Detect** to open Volume Explorer to detect and configure volumes.

Click **Next**.



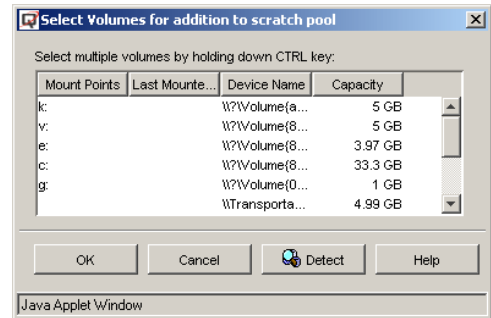
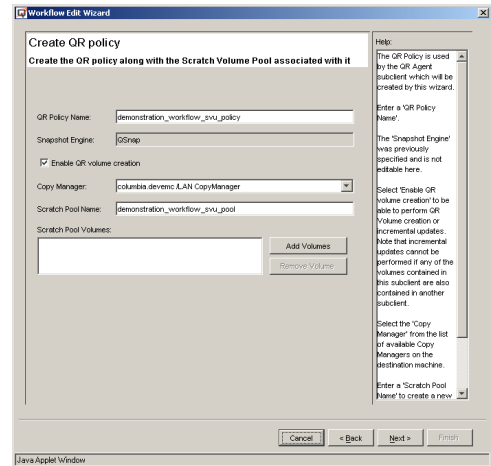
5. Select from the following:
 - To use an existing QR Policy, select it from the list and click **Next**. Go to Step 7.
 - To create a new QR Policy, click **Create New**.



6. The following tasks can be performed to create a new QR Policy:

- Enter a **QR Policy Name**.
- The **Snapshot Engine** was specified in Step 4 and is not editable here.
- Select **Enable QR volume creation** if you will perform QR Volume creation or incremental updates. Note that incremental updates cannot be performed if any of the volumes contained in this subclient are also contained in another subclient. (See Step 7.)
- Select the **Copy Manager** from the list of available Copy Managers on the destination machine.
- Enter a **Scratch Pool Name**.
- Click **Add Volumes** to open a list of volumes to select for the Scratch Volume Pool.

Click **Next**.



7. The following tasks can be performed to configure the QR Subclient (refer to Subclients - Quick Recovery Agent):

General tab

- Enter a **QR Subclient Name**.
- If a VSS hardware snapshot has been specified as the Snap Engine in Step 4, and the Make Shadow Transportable option was selected, either select **Use Source Host as the Default Import Host**, or select a **Default Import Host** from the list.
- Select **Disable Incremental update of QR volumes** if any of the volumes contained in this subclient are also contained in another subclient.
- **Software Compression** can be optionally enabled for the QR subclient (this selection is only available when the selected QR Policy is configured to use a LAN Copy Manager.)

Content tab

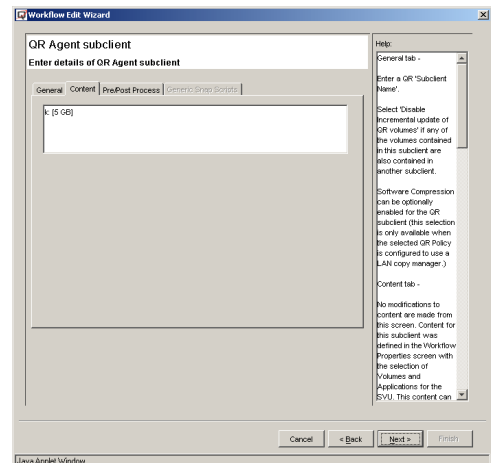
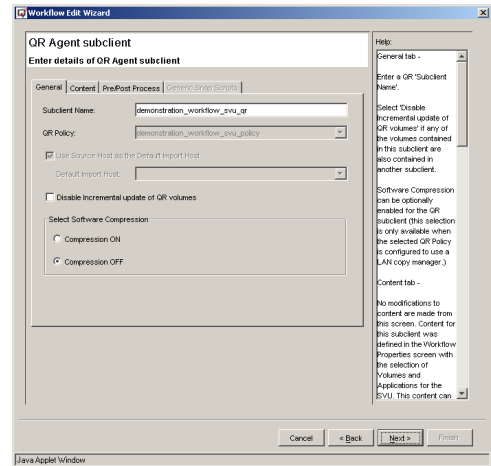
- No modifications to content are made here. Content for this subclient was defined in the Workflow Properties screen with the selection of Volumes and Applications for the SVU. This content can be modified after completing this Wizard, using the Manage SVU command. See Create/Edit/Delete a Snapshot Volume Unit (SVU).

Pre/Post Process tab

- Add optional Pre/Post Processes for the QR Agent subclient. (These are batch files or shell scripts that you can run before or after the Snap or Copy phases.) Type the path of each file or shell script, or click **Browse** to open a window to navigate to it. To run a PostSnap or PostCopy process even if the Snap or Copy phase is killed, fails, completes with errors, or is interrupted due to a media reservation issues, select the appropriate option. Note that if a user suspends or stops the job during the respective phase, or if the job is interrupted during that phase due to Operation Window rules, the Post Process will not run, even if the option has been selected. If either of these two conditions are encountered, and the Post Process is designed to bring a database online, release a snapshot, or execute some other critical process, these tasks must be performed manually.
- Click **Change** to add or modify the User Account that has permission to run these commands.

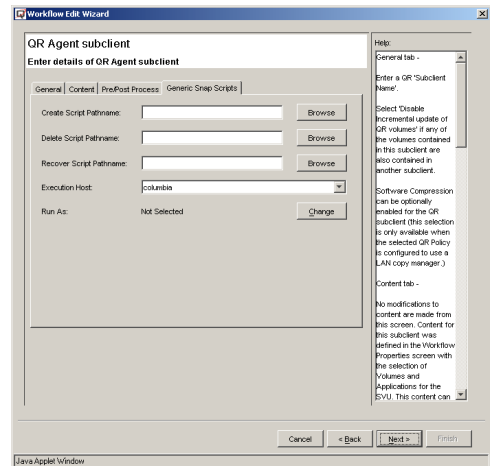
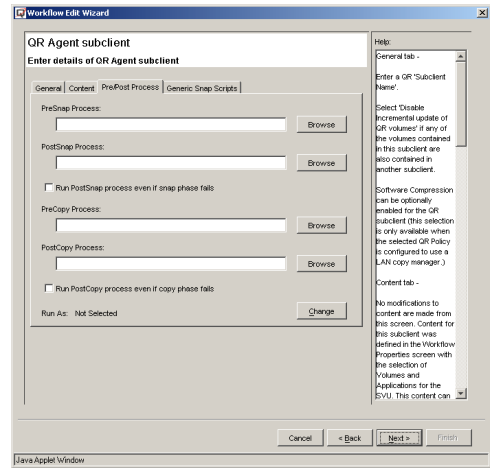
Generic Snap Scripts tab

- **Create Script Pathname** - the path of the user-created batch file or shell script to initialize the hardware snapshot, manage the BCV pair, and mount the snapshot.
- **Delete Script Pathname** - the path of the user-created batch file or shell script to unmount the snapshot and delete the BCV pair.



- **Recover Script Pathname** - the path of the user-created batch file or shell script to quiesce/unquiesce the application, or launch a hardware-based recovery.
- Select an **Execution Host** from the list, where the user-created batch files or shell scripts will be run.
- **Change** - add or modify the account that has permission to run these commands.

Click **Next**.



8. The following tasks can be performed to configure the *iDataAgent* Subclients: (refer to Subclients - SAN *iDataAgents*):

General tab

- Enter a **Subclient Name**.

Content tab

- No modifications to content are made here. Content for this subclient was defined in the Workflow Properties screen with the selection of Volumes and Applications for the SVU. This content can be modified after completing this Wizard, using the Manage SVU command. See Create/Edit/Delete a Snapshot Volume Unit (SVU).

Filters tab

- Make any desired changes. See Filters for more information.

Pre/Post tab

- Add optional Pre/Post Processes for the *iDataAgent* subclient. (These are batch files or shell scripts that you can run before or after the Snap or Copy phases.) Type the path of each file or shell script, or click **Browse** to open a window to navigate to it. To run a PostSnap or PostCopy process even if the Snap or Copy phase is killed, fails, completes with errors, or is interrupted due to a media reservation issues, select the appropriate option. Note that if a user suspends or stops the job during the respective phase, or if the job is interrupted during that phase due to Operation Window rules, the Post Process will not run, even if the option has been selected. If either of these two conditions are encountered, and the Post Process is designed to bring a database online, release a snapshot, or execute some other critical process, these tasks must be performed manually.

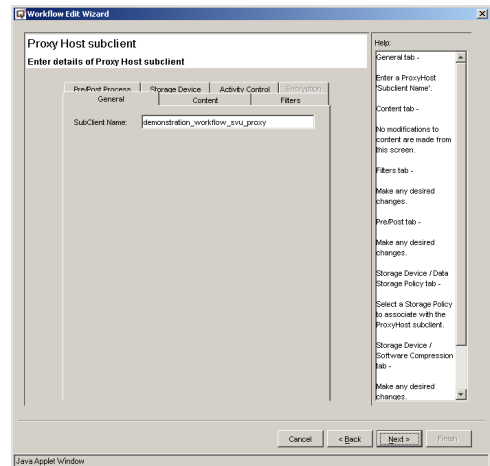
Storage Device / Data Storage Policy tab

- You must select a Storage Policy to associate with the subclient.

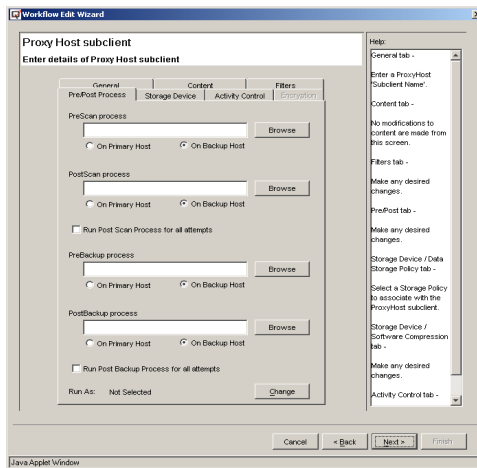
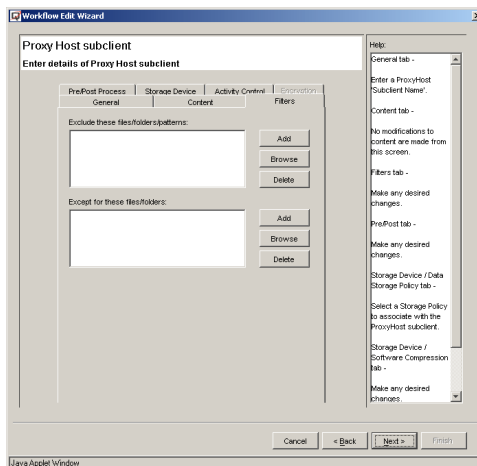
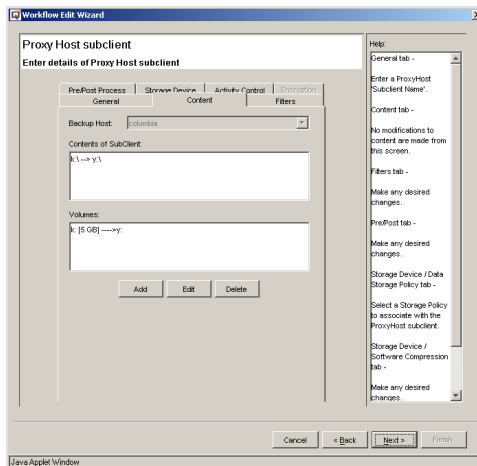
Storage Device / Software Compression tab

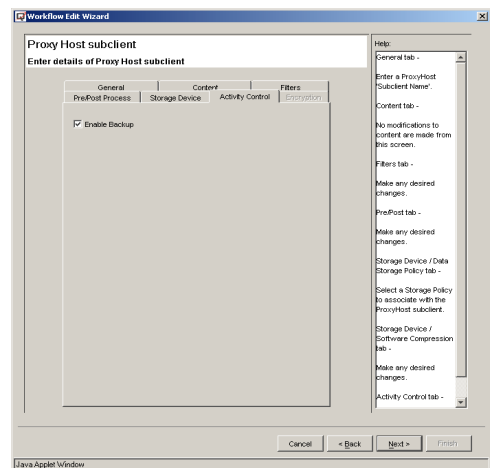
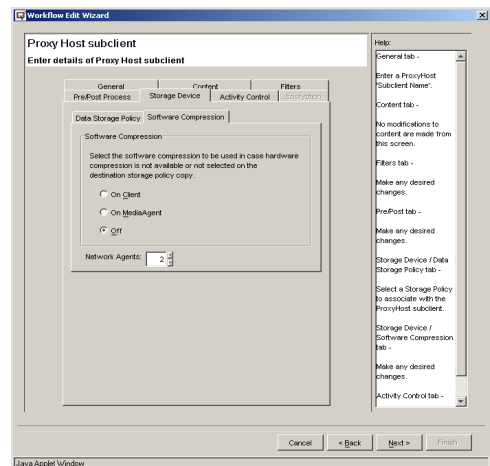
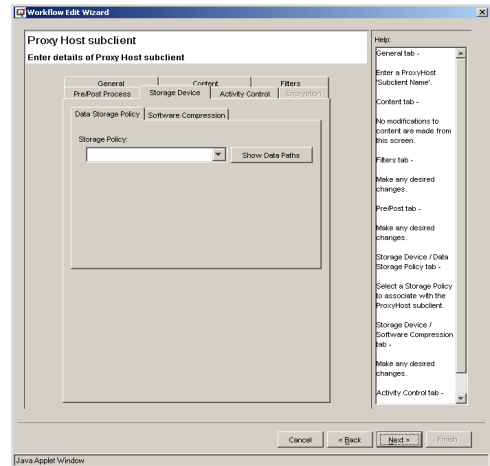
- Make any desired changes. See Client Compression for more information.

Activity Control tab



- Make any desired changes. See Activity Control for more information. Click **Next**.





9. Select from the following:
- Click **Next** if the information presented is correct.
 - Click **Back** to return to previous Wizard screens to make any changes.

10. Select a Workflow from the list and choose one of the following:
- To perform one of the following, click **View Schedules** and go to Step 11:
 - Add a new Schedule
 - Edit an existing Schedule
 - Delete a Schedule
 - Run a Schedule immediately
 - Click **Run Now** to run an unscheduled Workflow immediately. In the Run Workflow Now dialog box, click **OK**. Go to Step 13.

11. The following tasks can be performed:
- To create a new Schedule, click **Add**, and go to Step 12.
 - To edit an existing Schedule, select it, click **Edit**, and go to Step 12.
 - To delete an existing Schedule, select it and click **Delete**. Then click **Finish**.
 - To run a Scheduled Workflow immediately, select the Schedule and click **Run Immediately**. In the confirmation dialog box, click **OK**.

12. The following tasks can be performed:

Schedule tab

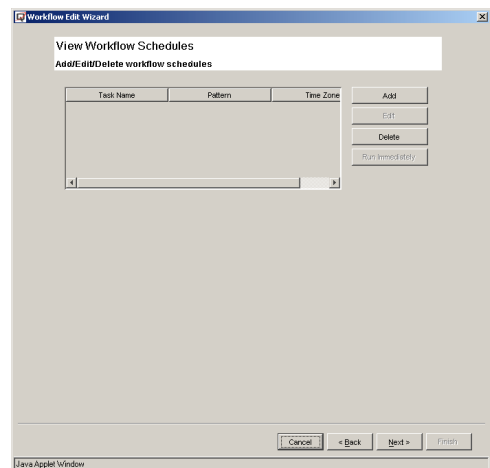
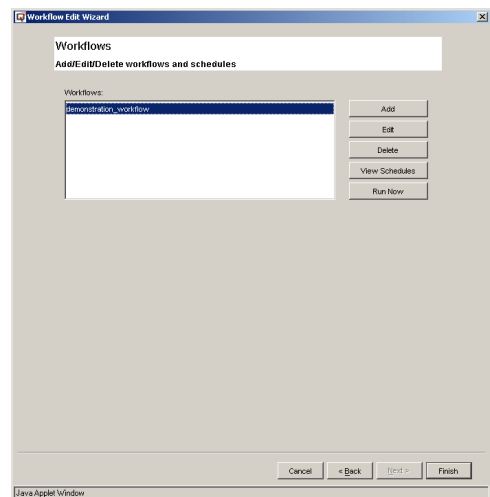
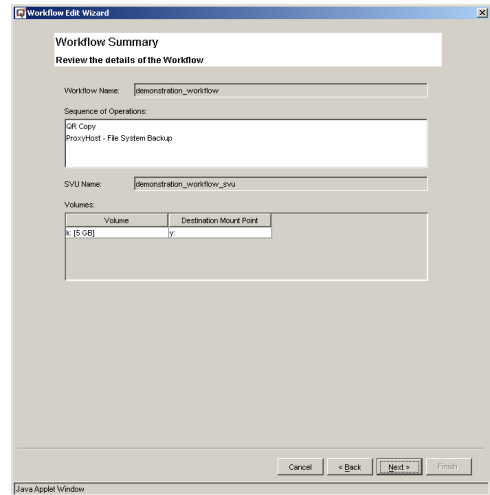
- Create or edit a Schedule. See Scheduling for more information. A Schedule is required if you want to Create a QR Volume with Incremental Updates.

QR Agent tab

- Select QR Volume Creation options. See Create a QR Volume for more information.

iDataAgent tab(s)

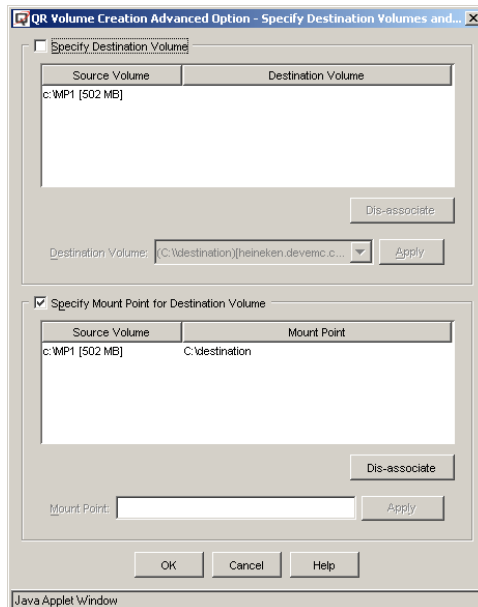
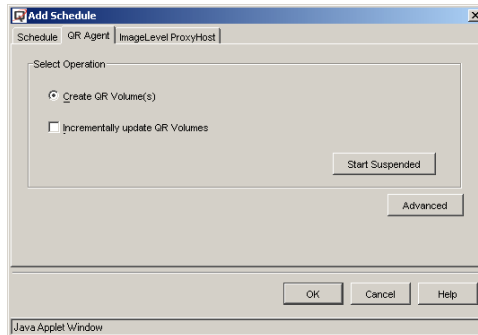
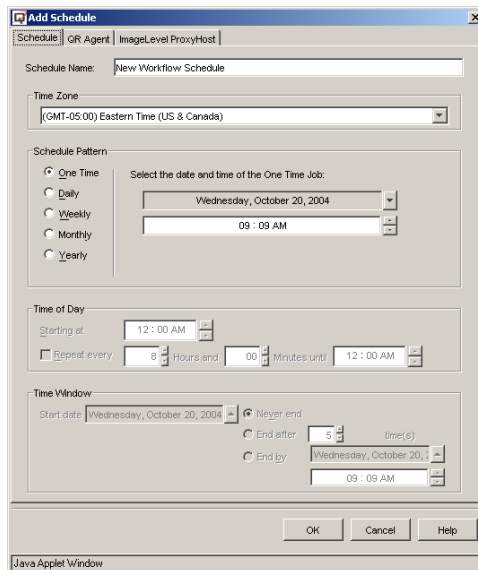
- Select Backup Options. See the following for more information:
 - Backup Data

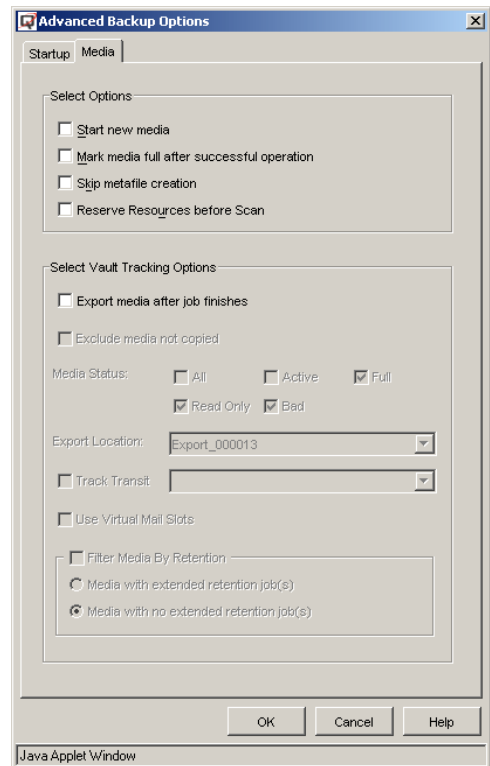
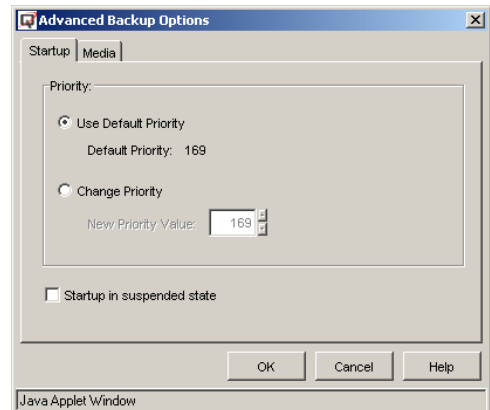
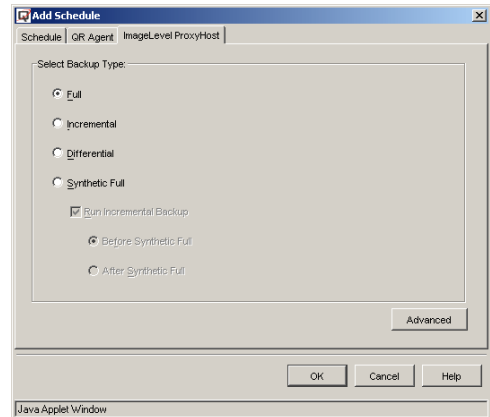


- Advanced Backup/Migrate/Archive Options
- Backup - Image Level ProxyHost
- Backup - ProxyHost

When finished, click **OK**. You will see the Workflows screen again, as shown in Step 10; click **Finish**.

Go to Step 14.





13. To configure the available options for running an unscheduled Workflow immediately, refer to the following:

QR Agent tab

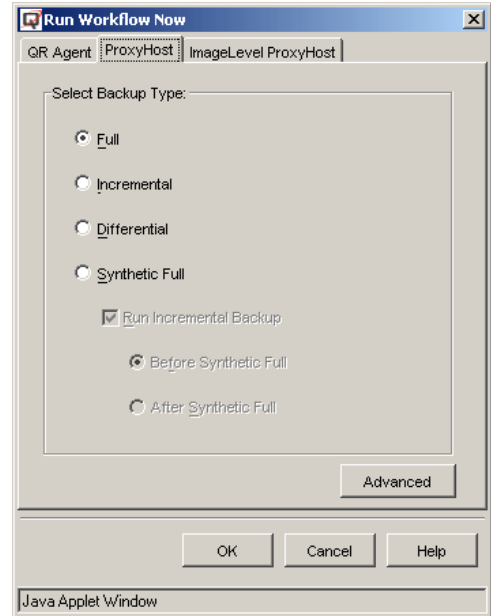
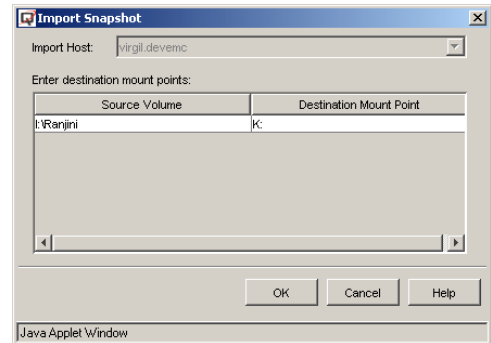
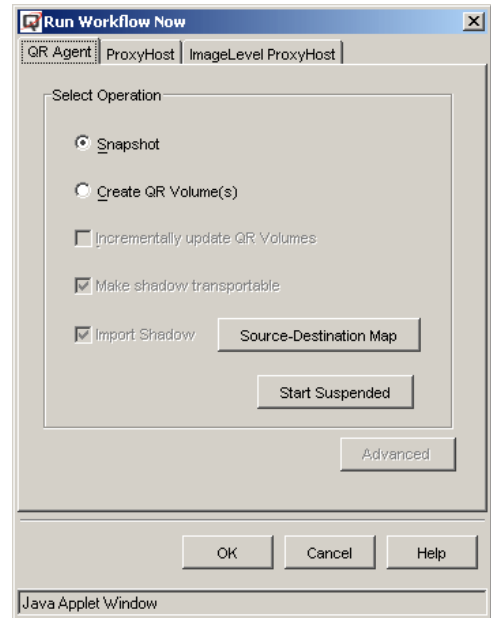
- Select QR Volume Creation options. See Create a QR Volume for more information.

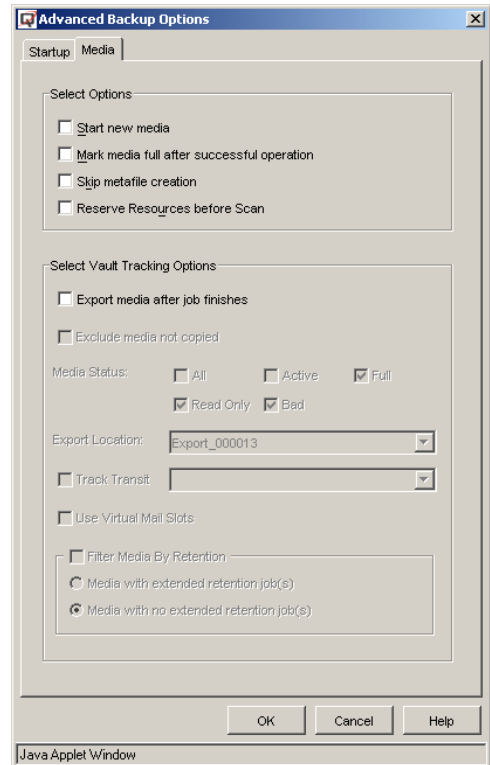
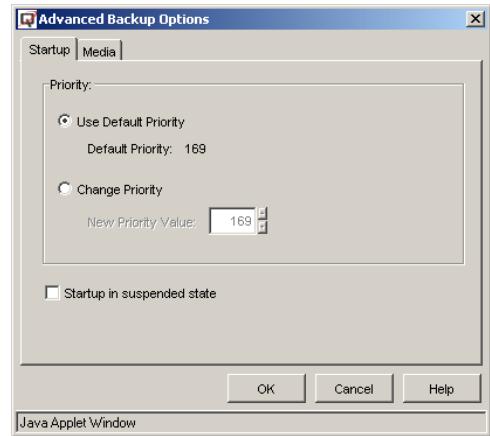
- Source-Destination Map

iDataAgent tab(s)

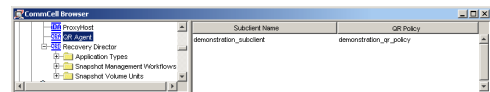
- See the following for more information:
 - Backup Data
 - Advanced Backup/Migrate/Archive Options
 - Backup - Image Level ProxyHost
 - Backup - ProxyHost

When all options have been configured, click **OK**.





14. You can now view the Subclients created for the QR Agent and each of the associated iDataAgents in the CommCell Browser. The SVU and Workflow can be viewed in their respective nodes under Recovery Director.



Back to Top

Generic Enablers

Topics | How To | Related Topics

Overview

- Quick Recovery Agent and Generic Enablers
- Recovery Director and Generic Enabler

Supported Platforms

Configuration

- AIX Considerations

License Requirements

OVERVIEW

The Generic Enabler feature, which is included with the Quick Recovery Agent and can thus be used with Recovery Director, allows you to create custom snapshot enabler scripts that tap into the capabilities of third-party hardware snapshot engines and the Unix File System Snapshot feature. Three basic scripts - `snap`, `unsnap`, and `recovery` -- are needed to implement this capability on a supported platform. Standard templates are provided. The scripts do the following:

- initialize the hardware snapshot (clone)
- manage the Business Continuance Volume (BCV) pair for data protection operations
- handle mounting and unmounting of volumes.

The scripts provide performance and flexibility. A snapshot can be deleted by calling the hardware `unsnap` script and removing the CommServe database entry. The `recovery` script provides a way to accomplish recovery on the hardware level, providing greater speed and avoiding LAN congestion.



Generic Enablers do not support multiple snaps of the same source volume for any snap engine (e.g., SnapView) that requires its own unique identifier to be referenced in both its create snap and its delete snap scripts.

QUICK RECOVERY AGENT AND GENERIC ENABLERS

When the Copyback feature is used with a Generic Enabler and the Quick Recovery Agent, it is not necessary to flip the mount point or drive letter. Copyback unmounts both source and destination volumes (if they are mounted) and then re-mounts them when the copyback process is completed.

RECOVERY DIRECTOR AND GENERIC ENABLER

If the QR Policy selected for a Snapshot Volume Units (SVU) is associated with a Generic snapshot, the hardware snap (clone) is used to manage the snapshot as both a QR volume and a BCV that can be backed up to the tape using the Image Level ProxyHost, or ProxyHost iDataAgent. Recovery Director coordinates the hardware snap (i.e., the QR copy) and the backup job, so that the same version of data will be both replicated and backed up. For examples of using Generic Enabler with Recovery Director in specific environments, see [Create a Generic Enabler](#).

SUPPORTED PLATFORMS

Generic Enablers can be created for devices that run on any platform supported by the Quick Recovery Agent, including:

- Windows
- AIX
- HP-UX
- Linux
- Solaris

For details on specific platform versions supported, see [Quick Recovery Agent System Requirements](#).

AIX CONSIDERATIONS

When using a Generic Enabler with the Quick Recovery Agent on AIX, note that AIX's Journal File System requires that you specify a separate log volume when mounting a disk. It is recommended that you create an external log volume in the Volume Configuration dialog box as follows:

1. Click the Mount Points tab.

2. Click the Add button.
3. Select Specify Mount Point Option in the Add Mount Point dialog box.
4. In the Specify Mount Point Option space, type the mount option command and specify the log's volume name (e.g.: `mount -o log=logvolumename`).
5. Click OK.



If you do not do this beforehand, and the file system mount information is removed from `/etc/filesystems`, then you **must** specify the log device as explained in the previous procedures in order for the file system to be mounted.

CONFIGURATION

To configure a Generic Enabler script for use with the Quick Recovery Agent:

1. Create three Generic Enabler scripts based on template scripts for your hardware provider. For a remote scenario, you need scripts for snap, unsnap, and copyback. For a local scenario, use a recovery script rather than a copyback script. (See Hitachi ShadowImage and HP EVA for sample scripts.)
2. Create a QR Policy. Select **Generic snapshot** as the Snapshot Engine Type.
3. Create a subclient.
4. Associate the subclient created in the previous step with the QR Policy created in step 2.
5. Configure the subclient for using Generic Enabler scripts in the Generic Snap Scripts tab of the Subclient Properties window. Specify the pathnames for the snap, unsnap, and recovery (or copyback) scripts, and select the host for the scripts.

LICENSE REQUIREMENTS

No separate license is needed for the Generic Enabler feature when you purchase a Quick Recovery Agent license. The Generic Enabler feature and template scripts for five hardware providers are included with the Quick Recovery Agent.

Review general license requirements described in License Administration.

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Generic Enablers - How To

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CREATE A GENERIC ENABLER

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OVERVIEW

A Generic Enabler for a specific hardware device is implemented through scripts for snapping, unsnapping, and recovering. You provide these scripts based on your snap type and your environment. (The template scripts for Hitachi ShadowImage and HP EVA are provided for reference purposes.) The following sections describe the Recovery Director configuration procedure for these two snap environments.

IMPLEMENT THE HITACHI HDS SHADOWIMAGE SNAP ENGINE

"I have a Hitachi HDS subsystem as my storage array and ShadowImage or TrueCopy as the snapshot engine. I know the Quick Recovery Agent does not have an integrated enabler for HDS. How can I integrate the QR Agent's replication and backup solution with the Hitachi system?"

When implementing Hitachi HDS through the Generic Enabler feature, two scenarios must be considered:

- **Remote Scenario:** The hardware snapshot will be created and mounted on a remote host, and backed up from that remote host. The mounted snapshot will also be recorded as a QR volume. In this scenario, recovery is accomplished either by using the QR Copyback feature or by calling the recovery script that launches the HDS copyback command.
- **Local Scenario:** The hardware snapshot will be created and mounted on the primary host itself. The mounted snapshot will be recorded as a QR volume. In this scenario, QR quick recovery is available.

In the following implementation example, we describe the operation steps of the **Remote Scenario**.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

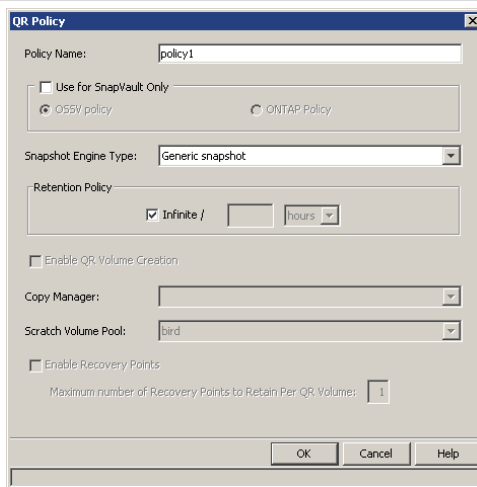
TO IMPLEMENT THE HITACHI HDS SHADOWIMAGE SNAP ENGINE

1. Create the HORCM instance and configure the horcm.conf.
2. Create Generic Enabler scripts (see Template Scripts for Hitachi HDS).
Three scripts should be created for the remote scenario: snap, unsnap, and copyback. (If it were a local scenario, you would create a recovery script rather than a copyback script.)
 - The snap script launches the pair-create process to make the snap pair and populate the CommServe database to create the QR volume entry.
 - The unsnap script deletes the pair.
 - The copyback script launches the reverse pair-create process to restore data from SVOL to PVOL. (The recovery script would unmount the PVOLs and SVOLs and swap the drive letters between PVOL and SVOL.)

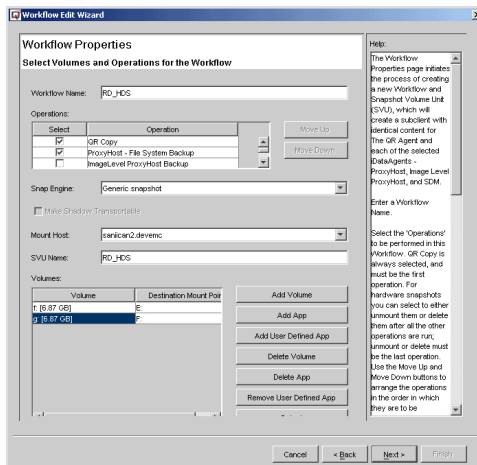
3. Create a Generic Enabler QR Policy.
In the QR Policy screen, select **Generic snapshot** as the Snapshot Engine Type.

Note

- QR Volume Creation is automatically disabled (grayed out) when you choose **Generic snapshot**.



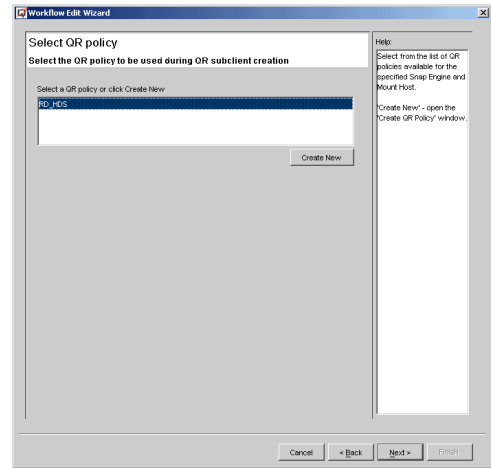
4. Create a Workflow using the Workflow Wizard.
 - Select **QR Copy** and **ProxyHost File System Backup** (or **Image Level ProxyHost Backup**) as the Workflow operations.
 - Select **Generic snapshot** as the Snap Engine.
 - Specify the source volume (PVOL) and the destination volume (SVOL).



5. In the next Workflow Wizard screen, all existing Generic-Enabler-based QR Policies

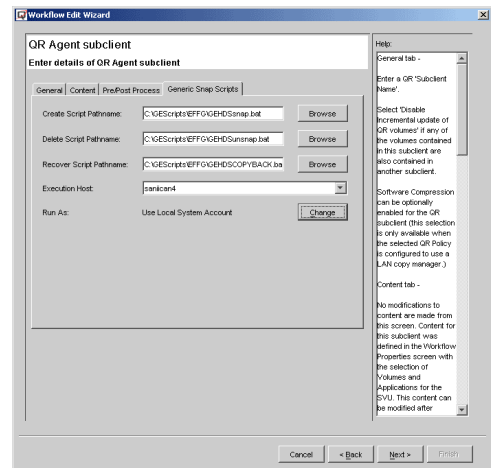
will be displayed.

Select the correct one and continue.



6. In the QR Agent Subclient Properties screen, a new **Generic Snap Scripts** tab will be enabled. This tab is only enabled when a Generic-Enabler-based QR Policy is associated.

- Specify the snap script in **Create Script Pathname**.
- Specify the unsnap script in **Delete Script Pathname**.
- Specify the copyback script in **Recovery Script Pathname**.
- Select an **Execution Host** -- where these scripts are located and executed.



7. Complete the rest of the Workflow configuration.

8. During QR volume creation, the snap script is launched by the Generic Enabler to create the hardware snapshots, mount the snapshots, and update the CommServe database as if the snapshots were created by the QR Copy Manager. If any applications reside on the PVOLS, you can include the application quiesce/unquiesce operations as part of the snap script.

9. To recover the data:

- Because we mounted the SVOLs (Business Continuance Volumes (BCVs)) on a remote machine (remote scenario), the data on the SVOLs (BCVs) can be copied back to the PVOLs (source volumes) through either the QR Agent's built-in Copyback feature (LAN-based copy manager) or through the hardware-based recovery. (The copyback script -- see Template Scripts for Hitachi HDS -- should have been specified in "Recovery Script Pathname. "). Hardware-based recovery is recommended because it is faster and it is LAN-free.

Here are two other recovery possibilities:

- If the SVOLs (BCVs) are mounted on the same machine (local scenario), Quick Recovery can be used. In this case the recovery script (see Template Scripts for Hitachi HDS) should have been specified on the **Recovery Script Pathname**.
- Recover from the point-in-time backup. Since each version of the snapshot has been backed up, they can be restored to anywhere, including the source volume(s).

IMPLEMENT THE HP EVA BUSINESS COPY

"I have HP StorageWorks as my storage array and Business Copy as the snapshot engine. I know the Quick Recovery Agent does not have an integrated enabler for the HP EVA. How can I integrate the QR Agent's replication and backup solution with the HP system?"

The configuration procedures for HP EVA implementation with Recovery Director is almost the same as that of the Hitachi HDS. (See Template Scripts for HP EVA.)



- When implementing HP EVA Business Copy through the Generic Enabler, the QR Copyback feature will not work with the Business Copy snapshot because the snapshot always "locks" the source volume.
- The HP EVA does not have reserve restore functionality.

CREATE A QR POLICY

Required Capability: Capabilities and Permitted Actions

The system allows you to create a QR policy in the CommCell Console from the QR Policies level.

▶ To create a QR policy:

1. From the CommCell Browser, right-click the **QR Policies** icon, and then click **Create New QR Policy** from the short-cut menu.
2. Type the policy name (Up to 32 characters).
3. Select the **Snapshot Engine Type** from the dropdown menu.



- If you are creating snapshot scripts using the Generic Enabler feature, select **Generic snapshot** as your Snapshot Engine Type.
- Depending on the Snapshot Engine you select, some options may not be available for configuration.

4. Select the **Retention Policy** by checking Infinite (default), or by entering the number of hours/days/weeks.
5. Select the **Enable QR Volume Creation** check box to activate the **Copy Manager** and **Scratch Pool** menus.



This option is automatically disabled if you selected **Generic snapshot** as your Snapshot Engine Type in Step 3.

6. Select the **Copy Manager** from the list of available Copy Managers that currently exist for this QR Volume. (Refer to LAN Copy Manager.)
7. Select the **Scratch Pool** from the list of available scratch pools that currently exist for this QR Volume.
8. If this QR Policy will be used to create Recovery Points, select **Enable Recovery Points**, and specify the maximum number of Recovery Points that will be retained, up to a maximum of 32.
 - When you select **Enable Recovery Points**, you are prompted to enter a location for the cache partition for the snapshots of the QR Volume. This location cannot be on the QR Volume.
 - When you are satisfied with the QR Policy's configuration, click **OK**. The new QR Policy appears in the CommCell Browser.

CONFIGURE SUBCLIENT CONTENT

Before You Begin

- Review Subclients.
- Do not configure the content of a subclient while the parent node or any sibling subclient has a data protection or archive operation currently running on it.
- Exchange Mailbox *iDataAgents* and Exchange Mailbox/Public Folder Archiver Agents: If you change the contents of the default backup set or archive set then the auto-discover feature will be disabled. If you disable the auto-discovery feature, newly created mailboxes will not be backed up/archived unless they are manually discovered and assigned to a subclient.
- NAS NDMP *iDataAgents*: You must ensure there is no overlap in content between all subclients. Overlap in subclient content will result in loss of data. An existing subclient's contents are not automatically changed when another subclient is added with overlapping contents.
- SharePoint Server *iDataAgent*: The Site Content Database, the Site Collection Database, the Site Database, and the Site Index for the virtual server must all be assigned to the same subclient.
- Lotus Notes Document *iDataAgent*: Review Assigning Restore View Names to Newly-discovered Databases
- QR Agent: Follow these guidelines when adding a volume to a QR Agent subclient:
 - The volume must correspond to a physical disk or RAID array.
 - A volume created by volume management software other than VxVM is not valid subclient content.
 - Subclients may have overlapping content; however, if two or more subclients overlap, they all must use the same snapshot engine. If the QR policies associated with the subclients are configured to use different snap engines, they must be reconfigured to use the same snap engine in this scenario.
- **Caution Against Re-configuring Default Subclient Content**

We recommend that you do not re-configure the content of a default subclient because this would disable its capability to serve as "catch-all" entity for client data. As a result, the likelihood that some data will not get backed up or scanned for archiving would increase.

Required Capability: See Capabilities and Permitted Actions

▶ To configure subclient content:

1. From the CommCell Browser, right-click the subclient for which you want to configure content, click **All Tasks** (if applicable) and then click **Properties**.
2. Follow the procedure below that is applicable for your agent:
 - For File System, Active Directory, File Archiver, Exchange Public Folder *iDataAgents*, NDS, and SharePoint Server *iDataAgents* click the Subclient Properties (Content) tab and configure content for the subclient as described below for your agent:
 - For File System, Active Directory, File Archiver, NDS, and SharePoint Server *iDataAgents*: Type the full path of the data that you want to include as

subclient content in the **Enter New Content** field, then click **Add**. Optionally, click **Browse** to enter the content. When browsing content while configuring SharePoint subclients, you can add content via multiple selections with the CTRL or SHIFT keys. For Windows, when specifying a UNC Path, click **As User**, and enter the user account information for the domain user with permissions for that path. For NetWare/DNS, see the Notes section below for content path examples. For Unix File Systems, you can enter the mount point of an NFS-mounted file system, see the Notes section below for examples.

- For Exchange Public Folder *iDataAgents*: Click **Browse**, select folders to include as content, then click **Add**.
 - For the Unix File System *iDataAgents*, to facilitate the management of resource fork data in Apple double-encoded Macintosh files, click **Enable Apple Double Support**.
 - For the Unix File System *iDataAgents*, to view the actual data path for any symbolic link in the subclient content, click **Expand symbolic links of subclient content** and then click **Discover**.
- For NAS NDMP *iDataAgents*, configure the **Backup Content Path** field(s) as described below, then click **Add**:
- Click the drop-down list arrow to display the root volumes on the file server. To change the root volume, click one in the list. If you want to refine the content path further, use the space to the right of (or below) the root volume list to enter additional path information. Note the following:
 - For NetApp, the root volume is the mount path of each volume.
Example: for volume FS1 the root volume will be /vol/FS1.
 - For EMC Celerra, the root volume is the mount point created for a volume.
Example: for volume FS1 with mount point /FS1 the root volume will be /FS1.
 - For Hitachi, no root volumes are shown in the drop down list. Type the full path of the root volume.
Example: for volume FS1 with mount point /mnt/FS1 the root volume will be /mnt/FS1.
 - For BlueArc, the root volume is a combination of a descriptor of the path and the volume name.
Example: for volume FS1 with a mount point of / the root volume will be /__VOLUME__/FS1.
 - Optionally, for NetApp NAS NDMP, click **Browse** to enter the content.
- For Exchange Mailbox and Exchange Mailbox/Public Folder Archiver Agents follow the procedure to Discover and Assign New Mailboxes or Assign Mailboxes to Another Subclient.
- For Lotus Notes Database and Document *iDataAgents* follow the procedure to Discover and Assign New Databases or Assign Databases to a Subclient.
- For DB2, DB2 DPF, Exchange Database, Novell GroupWise, SharePoint Server, SQL Server Database, Sybase, and MySQL *iDataAgents*, click the Subclient Properties (Content) tab and configure content for the subclient as described below for your agent:
- For the DB2 *iDataAgent*, specify whether you want to include the entire database or a subset of this data as content for the subclient. For the DB2 DPF *iDataAgent*, specify whether you want to include all the affected database partitions or a subset of this data as content for the subclient.
 - For Exchange and GroupWise *iDataAgents*: Click **Configure**. From the Add/Modify Subclients dialog box click the subclient entry for the database element/Storage Group that you want to add to the new subclient and select the name of the destination subclient from the list that appears. Alternatively, you can select and assign a range of databases/storage groups using the **Change all selected databases/storage groups to list**. Note that you must have at least one database element/Storage Group assigned to this subclient in order to save the configuration.
- A database/Storage Group that is not configured for a subclient does not appear in the list. This can be the case if the subclient containing the database/Storage Group was deleted. If this happens, click **Discover** to display all databases/Storage Groups.
- For the SharePoint Server *iDataAgent*, follow the procedure to Discover and Assign New Data Types.
 - For the Sybase *iDataAgent*, follow the procedure to Manually Discover Databases.
 - For the MySQL *iDataAgent*, follow the procedure to Configure MySQL Databases.
- For the Informix *iDataAgent*, click the Subclient Properties (Content) tab and define the contents of the subclient. Specifically, establish the backup mode for the data to be backed up, set the backup level, and decide whether to back up the emergency boot file and/or the ONCONFIG file.
- For the Oracle, SAP for Oracle, or Oracle RAC *iDataAgent*, click the Subclient Properties (Content) tab and define the contents of the subclient. To configure this subclient for specialized types of backups, follow the appropriate procedure below:
- Create Subclient for Backing Up Archived Redo Log Files
 - Create Subclient for Backing Up Offline Databases
 - Create Subclient for Backing Up Online Databases
 - Create Subclient for Performing Selective Online Full Backups
- For SAN *iDataAgents*, click the Subclient Properties (Content) tab and configure content for the subclient as described below for your agent:
- Image Level on Unix *iDataAgent*: Click **Add**. From the Add Content Path dialog box, select the volume(s) that you want to back up (use CTRL + click to select multiple volumes). Click **OK**. The selected volumes are added to the **Contents of subclient** list. These volumes are automatically configured to be CXBF devices. Alternatively, use Volume Explorer per specific scenarios to configure CXBF devices.
- To configure an unmounted block device or raw device as content, first use Volume Explorer to configure the device as a CXBF device. Then select the configured CXBF device as subclient content. You can ignore the warning that is displayed.
- For more information, see When to Use Volume Explorer. For a step-by-step procedure, see Configure a CXBF Device in Volume Explorer.
- Image Level and Image Level ProxyHost on Windows *iDataAgents*: Click **Add**. Then in the **Add Content** dialog box, type the full path of the volume or mount point that you want to include as subclient content, then click **Add**. Optionally, click **Browse** to select the content. Click **OK**. The volume

or mount point is added to the **Contents of subclient** list. Add additional content by repeating this step.

- ProxyHost *iDataAgent*: Select a backup host from the **Backup Host** list. This is the computer to which the BCV is connected. Click **Add**. In the **Content** field of the Add/Edit Content for Subclient dialog box, type the primary host path of the content that you want to back up, or click **Browse** to find and select this data. In the **Backup Host BCV Path** field of the Add/Edit Content for Subclient dialog box, type the path through which the backup host accesses this data on the BCV, or click **Browse** to find and select this path. Click **OK**. The primary host data path and corresponding backup host BCV path are added as a single entry in the **Contents of subclient** list. To add additional entries, repeat these steps. Refer to Notes below for more information.
- For Quick Recovery Agents, click the Subclient Properties (Content) tab and configure the following options:
 - Click **Add Volume**. From the Adding Volume dialog box, select volume(s) that you want to add to the subclient content (use CTRL + click to select multiple volumes). You can add/edit additional advanced options for the selected volume by select **Advanced** on the Adding Volume dialog box. Click **OK**.
 - Click Add App to select an application and associated volumes. Click **OK**.

Any instances you intend to protect and recover with the QR Agent must be configured in the QR Agent properties Authentication tab. They will not appear in the Add App dialog box if they are not configured. Only volumes containing datafiles and archive log files will be detected by Add App. Volumes containing control files and redo log files will not be detected.

For a clustered Exchange Server, if you are *not* using VSS to perform an online quiesce, sufficient permissions are required in order to be able to perform an offline quiesce; in such cases, ensure that the **User Name** specified has Exchange Administrator rights.

See also Configure Subclients for Overlapping Content.

3. Click **OK** to save your content configuration.

NOTES

- Content examples for NetWare are **OU=prospects.O=engineering.[Root]**, (for NDS content), and **SYS:\public** (for File System content).
- Content examples for adding an NFS-mounted file system to subclient content of a Unix File System *iDataAgent*:
 - `/mountpointA` to include the entire file system at mountpointA
 - `/mountpointA/projects` for only the *projects* directory within the file system at mountpointA.
- Informix subclients include one or more dbspaces. As databases are added to the dbspaces, the subclients are updated automatically.
- Exchange Mailbox *iDataAgents* and Exchange Mailbox/Public Folder Archiver Agents: Initially, all unconfigured mailboxes are assigned to the default subclient. You can create a new subclient and reassign mailboxes to this new subclient (within the same backup set/archive set). Once assigned, the mailboxes become part of the content of the new subclient.
- SharePoint Server *iDataAgent*: Initially, all unconfigured data types are assigned to the default subclient. You can create a new subclient and reassign data types to this new subclient. Once assigned, they become part of the content of the new subclient.
- ProxyHost *iDataAgent*: The primary host data path is backed up by the subclient and is the path through which the backup host accesses this data on the BCV. A primary host path and its corresponding backup host path are listed in the following format:

<primary_host_path> --> <backup_host_path>

For example, assume that you want to back up the **D:\data** directory from your primary host and **D:** is mirrored by a BCV, which is mapped to the backup host as **F:**. Consequently, the path to this data on the backup host is **F:\data**. When you add this directory to a subclient, it is listed in the **Contents of subclient** pane as **D:\data --> F:\data**.

The primary host path in the **Content** field is used for browse and restore purposes. However, it is the data in the **Backup Host BCV Path** which is actually backed up. If these two paths do not accurately correspond, the path that appears when data is browsed for restore does not accurately reflect the data that will be restored. In the example given above, assume that **D:\data** is entered in the **Content** field, while **F:\data1** is accidentally entered in the **Backup Host BCV Path**. If you browse and select **D:\data** to be restored, it is actually **D:\data1** that is restored. (Remember, **F:\Data1** is the path on the backup host that corresponds to **D:\data1** on the primary host.)

CREATE A NEW SUBCLIENT

Before You Begin

- Review Subclients.
- Do not create a subclient while the parent node or any sibling subclient has a data protection or archive operation currently running on it.
- In cases where a new subclient is created with the same name as a deleted subclient, the system will append a Unix time stamp to the deleted subclient's name in data protection job history reports and views to distinguish the two subclients. For example, `subclientname_1104257351`.
- Informix *iDataAgents*: If you will be using the Informix ONBAR utility to create backup and restore scripts, you need not create subclients. Otherwise, if you will be using the CommCell Console to back up and restore Informix database objects (subsets/dbspaces), then you will need to create a subclient.
- ProxyHost *iDataAgents*: If you are using a BCV, you must prepare a batch file or a shell script file on the backup host containing commands to synchronize and split the BCV. The Resource Pack includes information on configurations for these batch files or shell scripts, as well as examples that apply to specific applications and hardware (e.g., Exchange databases in an EMC Symmetrix environment). See Resource Pack for more information on the Resource Pack.

The ProxyHost *iDataAgent* also requires that you set permissions for the batch/shell script file on the backup host.

- SQL Server Database *iDataAgents*: When running on Windows Server 2003 and VSS is enabled, the **New Subclient** command is not available.
- PostgreSQL *iDataAgents*: Once you configure the PostgreSQL instance, the system automatically generates the default backup sets and default subclients. However, you can use the CommCell Console to create user-defined subclients for dump backup sets to distribute some of the database content. You cannot create user-defined subclients for FS backup sets.

Required Capability: See Capabilities and Permitted Actions

▶ To create a new subclient:

1. From the CommCell Browser, right-click the node (agent/backup set/archive set/instance) for which you want to create a new subclient, click **All Tasks** (if applicable), and then simply click **New Subclient** for most agents.
 - For the SQL Server *iDataAgent*, expand **New Subclient** and click either **Database** to include individual databases or **File/File Group** to include database elements.
2. Click the General tab or General (Quick Recovery Agent) tab of the Subclient Properties dialog box and type the name (up to 32 characters) of the subclient that you want to create.
 - For supported agents identified in Support Information - Snapshot Engines, you can select a QSnap option to snap data and then perform a data protection operation on the data.
 - For Image Level on Unix and Image Level ProxyHost on Unix, use the **Incremental Support Using** field to configure either a CXBF subclient or a checksum subclient and to enable incremental support for either subclient type.
 - For QR Agents, you must also select a QR Policy from the **QR Policy** list.
 - For the Windows *iDataAgents* that support VSS, you can optionally Enable VSS on a Subclient.
3. Select other options from the General tab as appropriate for the agent.
4. Click the **Content** or **Databases** tab of the Subclient Properties dialog box and Configure Subclient Content as appropriate for your agent.
5. For all agents (except QR), click the Storage Device (Data Storage Policy) tab of the Subclient Properties dialog box, then select a data storage policy to associate with this subclient from the storage policy list.
 - For the DB2 and DB2 DPF *iDataAgents*, you can also change the number of data backup streams. For the DB2 DPF *iDataAgent*, the default stream threshold should be equal to the total number of database partitions for the subclient.
 - For SQL Server *iDataAgents*, you can also click the Storage Device (Log Storage Policy) tab of the Subclient Properties dialog box, then select a log storage policy to associate with this subclient from the storage policy list and select the number of backup streams for transaction log backup jobs.
 - For 1-Touch for Unix, it is strongly recommended that the storage policy that you select for the subclient configured for 1-Touch use a MediaAgent on a different computer. If you do this, and if the system crashes, the media will not have to be exported to another MediaAgent in order to recover the system.
6. For Oracle and DB2 *iDataAgents*, click the Backup Arguments (Oracle) or Backup Arguments (DB2, DB2 DPF) tab of the Subclient Properties dialog box and Configure Backup Arguments as appropriate for your agent. Note that the backup arguments for Informix are located on the Content tab.
7. For Migration Archiver Agents, click the **Archiving Rules** or **Rules** tab of the Subclient Properties dialog box and configure archiving rules as appropriate for your agent. In order to perform rules-based migration archiving operations, the **Disable All Rules** checkbox must be cleared.

If the File Archiver for Windows supports Data Classification, several filter-like configuration fields are defined as archiving rules and are available from the Subclient Properties (Rules) tab. If you want to define content and archiving rules based on file attributes other than volumes, size, and modified time (i.e., if you want to customize your rules), click the Advanced tab and configure as appropriate. Also, stub management options can be configured from the Stub Rule tab. See Configure Archiving Rules - File Archiver Agents for step-by-step instructions.
8. For ProxyHost and Image Level ProxyHost *iDataAgents*, click the Pre/Post Process tab of the Subclient Properties dialog box. In the **PreScan** field, type the path to the batch file/shell script file that contains those commands that are to run before each backup of the subclient, or click **Browse** to locate and select this file. For ProxyHost and Image Level ProxyHost, the file must reside on the backup host or primary host.
9. Optionally (if supported for your agent) you can:
 - Add a Data Protection or Discovery Filter for a Subclient on the Filters tab.
 - Configure a Subclient for Pre/Post Processing of Data Protection/Archive Operations on the Pre/Post Process tab.
 - Enable Software Compression for a Subclient on the Software Compression tab of the **Storage Device** tab.
 - Configure the Subclient for Data Encryption on the Encryption tab.
 - Enable or Disable Operations for this subclient on the Activity Control tab.
 - Configure Mailbox Stores for Auto-Discovery on the Auto-discovery tab.
 - Configure the Subclient for 1-Touch on the 1-Touch Recovery tab.
 - View or change the user group security associations for this subclient from the Security tab.
 - Determine location from where archive logs will be backed up or deleted from the Log Destinations tab.
10. Click **OK** to save the subclient configuration. For QR Agents, this procedure is now complete. For all other agents, continue on to the next step.

11. The Backup Schedule dialog box advises you to schedule data protection operations for your new subclient. It is recommended you elect to set a schedule now. You can also associate this subclient with an All Agent Types schedule policy (which is automatically created by the system, or can be a user defined Data Protection schedule policy). If you have already associated a schedule policy at a previous level (Backup Set/Instance, Agent, Client, or Client Computer Group) the schedules defined in the Schedule Policy will be automatically applied to the new subclient. See Schedule Policy for more information.
 - o If you want to associate this subclient with an All Agent Types schedule policy, click **Associate with Generic Schedule Policy**, and then select that schedule policy from the drop-down list box. Click **OK**.
 - o If you want to associate this subclient with a specific schedule policy, click **Associate to schedule policy**, and then select the schedule policy from the drop-down list box. Click **OK**.
 - o If you have selected to define a schedule for this subclient:
 - Click **Schedule**.
 - From the Backup/Archive Options dialog box, select the type of data protection operation that you want to schedule.
 - If you want to set Advanced Backup/Archive Options, click **Advanced**.
 - After selecting the data protection type and any advanced options, click **OK**. The **Schedule Details** dialog box appears.
 - From the Schedule Details tab, select the scheduling options that you want to apply, then click **OK**.
 - o If you don't want to create a data protection schedule at this time, click **Do Not Schedule**, and then click **OK**.

This task is now complete.

COPY BACK A QR VOLUME

▶ To copy back a QR Volume:

1. From the CommCell Browser, right-click the QR Agent whose volumes (including Recovery Points and snapshots) you want to browse, click **All Tasks**, and then click **Browse** from the short-cut menu.
 2. From the Browse QR Volumes window, right-click the volume (or Recovery Point or snapshot) that you want to copy back, and then click **Copyback** to open the Select Volumes for Copyback dialog box. (If you want to copy back multiple QR Volumes, highlight all of the volumes you want to copy back by control-clicking the QR Volumes.)
 3. From the Select Volumes for Copyback dialog box, assign a destination volume to each QR Volume you want to copy back. The destination volume must be larger than the QR Volume.
 4. To assign a destination volume, click on the QR Volume, and then click the **Set Destination** button to open the Select Destination for Copyback dialog box.
 5. From the list of volumes in the Select Destination for Copyback dialog box, select the volume that is to be the copyback destination. (You can see a list of volumes on a different host by selecting a different computer in the dropdown Host: list.) Click the volume you want as the copyback destination and click **Select**.
 6. Repeat steps 4 and 5 for any QR Volumes that do not have a destination volume for copyback in the Select Destination for Copyback dialog box.
 7. Ensure that all volumes you want to copy back are checked in the Select column.
 8. Click **OK** to copy back the volumes. The system displays a progress bar and copies back the volumes. You can track the progress of the recover operation from the Job Controller window.
-

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Snapshot Volume Units (SVU)

Topics | How To | Related Topics

OVERVIEW

An SVU can be thought of as a Subclient content template; it contains a set of specified volumes that define Subclient content in a way that is common across all Agents. Once content is identified and committed, a Subclient containing this content is automatically created under the individual Agent(s), and they are flagged as "Recovery Director" Subclients.

Subclients

Recovery Director may be installed on a Client which already has Agents installed; if Subclients already exist for these Agents, they can continue to be used if so desired, but their content cannot be added to the Subclients created by Recovery Director as a result of defining new Snapshot Volume Units. After Recovery Director is installed, new Subclients for these Agents can only be created through Recovery Director.

- Subclients created by Recovery Director cannot be deleted, nor can their content be edited, at the Agent level; they can only be edited or deleted through the SVU.
- Overlapping content is not supported except for the Quick Recovery Agent, which has some specific limitations. See [Overlapping Content](#) for more information.
- All Subclient Operations (Data Protection, Scheduling, etc.) are performed through Recovery Director, and not directly from the Subclient.
- Unlike Subclients created directly for ProxyHost and Image Level ProxyHost a PreScan Process is optional, not required, when Subclients are created by Recovery Director.

Snapshot Volume Units (SVU) - How To

Topics | How To | Related Topics

Create/Edit/Delete a Snapshot Volume Unit

CREATE/EDIT/DELETE A SNAPSHOT VOLUME UNIT (SVU)

The following procedure describes the steps involved in creating, editing, or deleting a Snapshot Volume Unit.

REQUIREMENTS

Required Capability: See [Capabilities and Permitted Actions](#)

Creating a new SVU

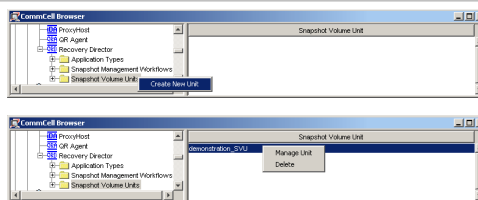
- User-defined Application Types that will be added as Subclient content must already be created. See Step 4.
- Suitable Storage Policy(ies) must exist for the iDataAgent(s) that will be associated with this SVU. See Step 5.
- A suitable QR Policy must exist. See Step 5.
- Generic Snap Scripts for the specified QR Policy must already be created. See Step 5.

TO CREATE, EDIT, OR DELETE A SNAPSHOT VOLUME UNIT

1. Select from one of the following:
 - To edit an existing SVU, go to Step 3.
 - To create a new SVU, in the CommCell Browser, expand Recovery Director, right-click **Snapshot Volume Unit** and select **Create New Unit**.
 - To delete an existing SVU, in the CommCell Browser, expand Recovery Director, click **Snapshot Volume Unit**, right-click an existing Application Type, and select **Delete**. In the confirmation dialog box, click **OK**.

NOTES

- If you delete an SVU, the following will also be deleted:
 - all Workflows that used the SVU
 - all subclients associated with those Workflows that used the SVU
- 2. To create a new SVU, enter a name for it.



Click **OK**.

3. To edit a new or existing SVU, in the CommCell Browser, expand Recovery Director, click **Snapshot Volume Unit**, right-click an existing SVU, and select **Manage Unit**.

4. To configure the SVU, see the following selections:

- a. **Name:** To edit the name of the SVU, click the **Change** button.
- b. To add content to the subclients that will be created from this SVU, select one or more of the following:
 - o **Add Volume:** Click to open the Add Volume dialog box, and select from the list of available volumes. Click **OK**. The Add/Edit Destination Mount Points dialog box will be displayed; type the drive letter (e.g., w:) to which the snapshot will be mounted and click **OK**.
 - o **Add App:** Click to open the Add Apps dialog box, and select from the list of supported applications on all volumes. Click **OK**. The Add/Edit Destination Mount Points dialog box will be displayed; type the drive letter (e.g., w:) to which the snapshot will be mounted and click **OK**.
 - o **Add User Defined App:** To specify a user defined application, select a volume from the list, then click to open the Add User-defined Apps dialog box to select from a list of previously created user-defined Application Types.
- c. **Edit Snap Parameters:** If necessary to edit the snapshot parameters, click to open the Advanced Add/Edit Volume Options dialog box.
- d. To delete or edit items in the list of Volumes, select one or more of the following:
 - o **Delete Volume:** Click to delete a selected volume from the list.
 - o **Delete App:** Click to remove an associated application from a selected volume.
 - o **Remove User Defined App:** Click to remove an associated user-defined application from the list.
 - o **Edit Mount Points:** To edit the mount point for a selected volume, click to open the Add/Edit Destination Mount Points dialog box. See Note below about editing existing mount points.
- e. **Detect:** If necessary to detect or configure volumes, click to open Volume Explorer. For more information, see also Volume Explorer.
- f. Each associated Agent will have a subclient with the content and configuration defined by this SVU. Select from the following:
 - o **Add Association:** Click to open a dialog box to select *iDataAgents* for this SVU, then click **OK**. Go to Step 5.
 - o **Edit Association:** Click to open the Subclient Configuration dialog box for the selected *iDataAgent*. Go to Step 5.
 - o **Remove Association:** Click to remove the selected *iDataAgent* from the list.
- g. When all volumes for this SVU have been selected and configured, and all Agents have been associated and configured, click **Close**.

NOTES

- If you change an existing Destination Mount Point, you must also change the Subclient Content for each associated *iDataAgent* -- ProxyHost and Image Level ProxyHost using the Edit Association button in the Snapshot Volume Unit dialog box.

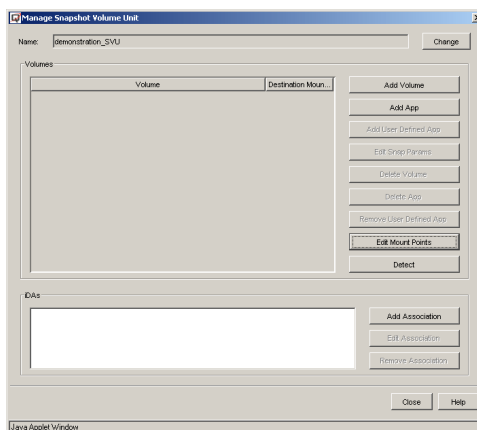
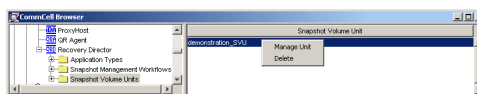
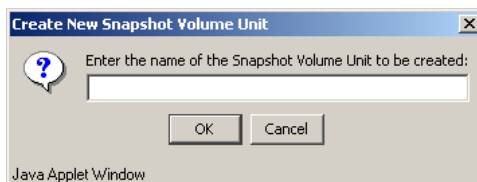
5. Configure the Subclients for the Agents you have selected to associate with this SVU.

- To edit a subclient, select the Agent from the list and click the **Configure** button. When you are done, click **Apply**.
- At minimum, you must specify a name and select a Storage Policy (or QR Policy for QR) for each subclient.

The following tasks can be performed to configure the QR Subclient (refer to Subclients - Quick Recovery Agent):

General tab

- Enter a QR **Subclient Name**.
- Select a **QR Policy**.
- If a VSS hardware snapshot has been specified as the Snap Engine for the selected QR Policy, either select **Use Source Host as the Default Import Host**, or select a **Default Import Host** from the list.



- Select **Disable Incremental update of QR volumes** if any of the volumes contained in this subclient are also contained in another subclient.
- **Software Compression** can be optionally enabled for the QR subclient (this selection is only available when the selected QR Policy is configured to use a LAN Copy Manager.)

Content tab

- No modifications to content are made here. Content for this subclient was defined in Step 4.

Pre/Post Process tab

- Add optional Pre/Post Processes for the QR Agent subclient. (These are batch files or shell scripts that you can run before or after the Snap or Copy phases.) Type the path of each file or shell script, or click **Browse** to open a window to navigate to it. To run a PostSnap or PostCopy process even if the Snap or Copy phase is killed, fails, completes with errors, or is interrupted due to a media reservation issues, select the appropriate option. Note that if a user suspends or stops the job during the respective phase, or if the job is interrupted during that phase due to Operation Window rules, the Post Process will not run, even if the option has been selected. If either of these two conditions are encountered, and the Post Process is designed to bring a database online, release a snapshot, or execute some other critical process, these tasks must be performed manually.
- Click **Change** to add or modify the User Account that has permission to run these commands.

Generic Snap Scripts tab

- **Create Script Pathname** - the path of the user-created batch file or shell script to initialize the hardware snapshot, manage the BCV pair, and mount the snapshot.
- **Delete Script Pathname** - the path of the user-created batch file or shell script to unmount the snapshot and delete the BCV pair.
- **Recover Script Pathname** - the path of the user-created batch file or shell script to quiesce/unquiesce the application, or launch a hardware-based recovery.
- Select an **Execution Host** from the list, where the user-created batch files or shell scripts will be run.
- **Change** - add or modify the account that has permission to run these commands.

The following tasks can be performed to configure the *iDataAgent* Subclients: (refer to Subclients - SAN *iDataAgents*):

General tab

- Enter a **Subclient Name**.

Content tab

- No modifications to content are made here. Content for this subclient was defined in the Workflow Properties screen with the selection of Volumes and Applications for the SVU. This content can be modified after completing this Wizard, using the Manage SVU command. See Create/Edit/Delete a Snapshot Volume Unit (SVU).

Filters tab

- Make any desired changes. See Filters for more information.

Pre/Post tab

- Add optional Pre/Post Processes for the *iDataAgent* subclient. (These are batch files or shell scripts that you can run before or after the Snap or Copy phases.) Type the path of each file or shell script, or click **Browse** to open a window to navigate to it. To run a PostSnap or PostCopy process even if the Snap or Copy phase is killed, fails, completes with errors, or is interrupted due to a media reservation issues, select the appropriate option. Note that if a user suspends or stops the job during the respective phase, or if the job is interrupted during that phase due to Operation Window rules, the Post Process will not run, even if the option has been selected. If either of these two conditions are encountered, and the Post Process is designed to bring a database online, release a snapshot, or execute some other critical process, these tasks must be performed manually.

Storage Device / Data Storage Policy tab

- You must select a Storage Policy to associate with the subclient.

Storage Device / Software Compression tab

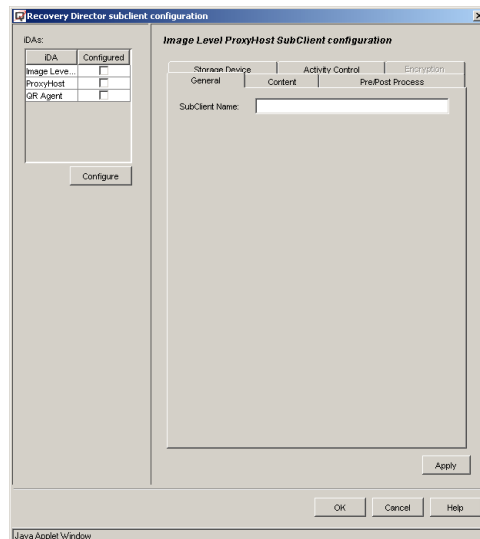
- Make any desired changes. See Client Compression for more information.

Activity Control tab

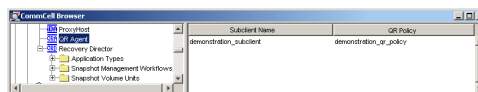
- Make any desired changes. See Activity Control for more information.

When you are done configuring all Subclients, click **OK**.

In the **Manage Snapshot Volume Unit** dialog box, click **Close**.



6. You can now view the Subclients created for the QR Agent and each of the associated iDataAgents in the CommCell Browser.



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Application Types

Topics | How To | Related Topics

OVERVIEW

Custom application types can be defined to extend the ability of the QR Agent to identify, define, and create snapshots of user-defined applications using custom command-line scripts to quiesce and unquiesce applications. These are referenced by a Snapshot Volume Unit, defining its contents, and thus the contents of each of the associated Agents' subclients.

After creating an application type, use the Create/Edit a Snapshot Volume Unit (SVU) procedure to associate the application type with a Snapshot Volume Unit. The SVU will then use the scripts defined in the application type automatically, whenever it is incorporated into a workflow. Note that the aforementioned procedure can also be used to change or remove the association.



QR Volumes created from user-defined applications using Recovery Director cannot be automatically recovered. Only manual recovery of user-defined applications is supported; check with the application vendor for the proper procedures required to recover point in time data.

Application Types - How To

Topics | How To | Related Topics

Create/Edit/Delete a User Defined Application Type

Protect Data Volumes of Custom Applications

Create/Edit a Snapshot Volume Unit (SVU)

CREATE/EDIT/DELETE A USER-DEFINED APPLICATION TYPE

The following procedure describes the steps involved in creating, editing, or deleting a user-defined Application Type. This can also be accomplished using the Workflow Configuration Wizard.

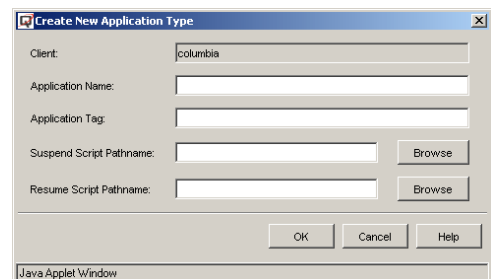
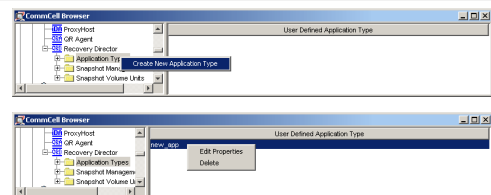
REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

TO CREATE, EDIT, OR DELETE A USER-DEFINED APPLICATION TYPE

- In the CommCell Browser, expand Recovery Director and select from one of the following:
 - To create a new Application Type, right-click **Application Types**, and select **Create New Application Type**.
 - To edit an existing Application Type, click **Application Types**, right-click an existing Application Type, and select **Edit Properties**.
 - To delete an existing Application Type, click **Application Types**, right-click an existing Application Type, and select **Delete**. In the confirmation dialog box, click **OK**.
- To create or edit an Application Type, enter the following information:
 - Application Name:** The name of the application.
 - Application Tag:** A short name for the application.
 - Suspend Script Pathname:** The full path to the script or batch file that will suspend/quiesce the application before a snapshot is performed.
 - Resume Script Pathname:** The full path to the script or batch file that will resume/unquiesce the application after a snapshot is performed.

Click the **Browse** button to open a browse window to locate the script or batch file.
Click **OK**.



PROTECT DATA VOLUMES OF CUSTOM APPLICATIONS

One of the distinguishing functionalities of the Quick Recovery Agent is application awareness. The QR Agent currently has built-in support for Exchange, SQL, and Oracle, but this list may not include the application you have and want to protect. Similar in purpose to Generic Enablers as a means of extending hardware support, Recovery Director extends support for user-defined applications. When you configure an application name and the scripts (CLI) to quiesce/unquiesce the application, Recovery Director will associate this application information with the volumes and build up the requisite information, performing as if the application is one for which the QR Agent has built-in support. When QR Volume Creation is launched, the specified quiesce/unquiesce commands will be executed by the Job Manager in the appropriate phase.

Two scripts are needed for customized application implementation: quiesce and unquiesce. You should provide these scripts based on the application type and environment.

USE RECOVERY DIRECTOR TO PROTECT DATA VOLUMES OF AN APPLICATION NOT CURRENTLY DETECTED BY QUICK RECOVERY AGENT

"Quick Recovery Agent has a few built-in supported applications: Exchange, SQL and Oracle, but I have an application that is not one of them. How can I take the advantage of the QR Agent's application awareness as if my application is also supported?"

SQL is currently supported by QR. For the sake of this example, let's assume it is not supported. The following procedure describes the configuration procedure of supporting SQL with QR as a user-defined application.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

TO PROTECT DATA VOLUMES OF AN APPLICATION NOT CURRENTLY DETECTED BY QUICK RECOVERY AGENT

1. Create a new application type.
 - Select **Recovery Director**, then right-click **Application Types** and select **Create New Application Type**.
 - Fill in the **Application Name** and **Application Tag**. These can be anything you like. The Application Name will be used to identify this application by the QR Agent.
 - Specify the quiesce and unquiesce scripts in the **Suspend Script Pathname** and **Resume Script Pathname** fields.

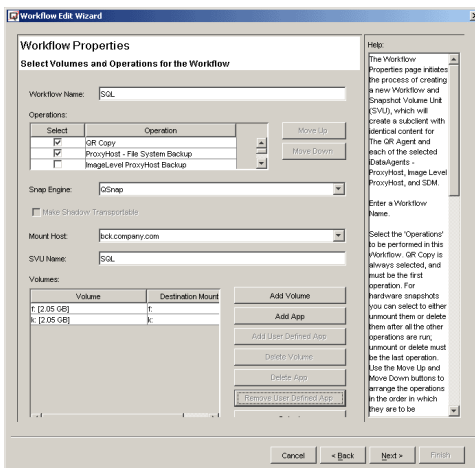
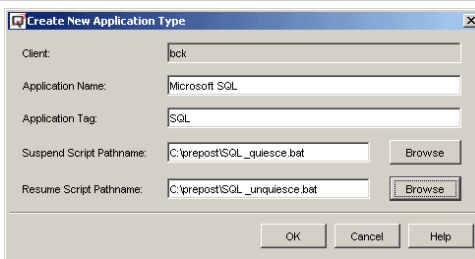
NOTES

- The template scripts for quiescing and unquiescing SQL are shown in Template scripts for quiescing and unquiescing a user defined application (SQL).

2. Create a new Workflow using the Workflow Configuration Wizard.

Click **Add Volume** to populate source volumes and specify the destination mount path.

Highlight all the source volumes (K and F in this case) and click **Add User Defined App**.

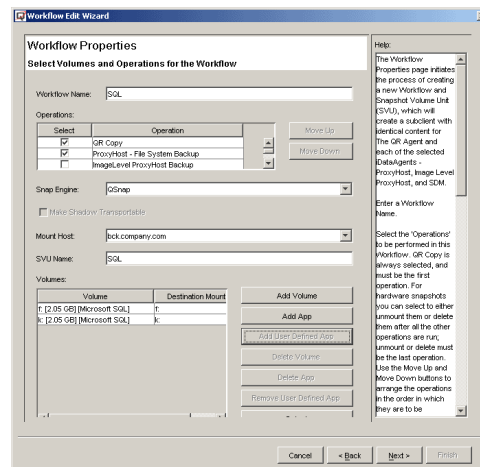
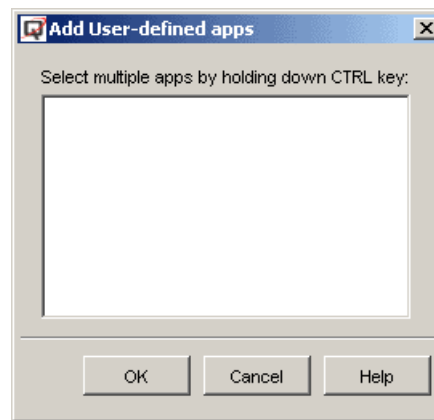


3. Select the application that resides on these source volumes (in this example **Microsoft SQL**) and click **OK**. The application name will be attached to the source volumes.

- Complete the balance of the Wizard sections as usual. Refer to Use the Workflow Configuration Wizard.

NOTES

- To remove the association of the application with the volumes, select **Remove User Defined App**.



- For those applications that are supported within the QR Agent, the application (volumes) recovery is done through the database iDataAgent Browse window. For a user-defined application, you must manually bring down the application and recover the volumes from the Browse QR Volumes window.

CREATE/EDIT/DELETE A SNAPSHOT VOLUME UNIT (SVU)

The following procedure describes the steps involved in creating, editing, or deleting a Snapshot Volume Unit.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

Creating a new SVU

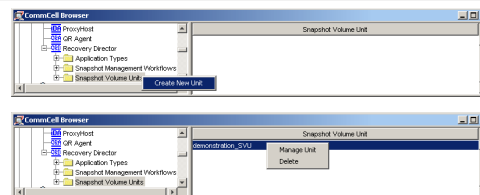
- User-defined Application Types that will be added as Subclient content must already be created. See Step 4.
- Suitable Storage Policy(ies) must exist for the iDataAgent(s) that will be associated with this SVU. See Step 5.
- A suitable QR Policy must exist. See Step 5.
- Generic Snap Scripts for the specified QR Policy must already be created. See Step 5.

TO CREATE, EDIT, OR DELETE A SNAPSHOT VOLUME UNIT

- Select from one of the following:
 - To edit an existing SVU, go to Step 3.
 - To create a new SVU, in the CommCell Browser, expand Recovery Director, right-click **Snapshot Volume Unit** and select **Create New Unit**.
 - To delete an existing SVU, in the CommCell Browser, expand Recovery Director, click **Snapshot Volume Unit**, right-click an existing Application Type, and select **Delete**. In the confirmation dialog box, click **OK**.

NOTES

- If you delete an SVU, the following will also be deleted:
 - all Workflows that used the SVU



- o all subclients associated with those Workflows that used the SVU
2. To create a new SVU, enter a name for it.
Click **OK**.

3. To edit a new or existing SVU, in the CommCell Browser, expand Recovery Director, click **Snapshot Volume Unit**, right-click an existing SVU, and select **Manage Unit**.

4. To configure the SVU, see the following selections:

- a. **Name:** To edit the name of the SVU, click the **Change** button.
- b. To add content to the subclients that will be created from this SVU, select one or more of the following:
 - o **Add Volume:** Click to open the Add Volume dialog box, and select from the list of available volumes. Click **OK**. The Add/Edit Destination Mount Points dialog box will be displayed; type the drive letter (e.g., w:) to which the snapshot will be mounted and click **OK**.
 - o **Add App:** Click to open the Add Apps dialog box, and select from the list of supported applications on all volumes. Click **OK**. The Add/Edit Destination Mount Points dialog box will be displayed; type the drive letter (e.g., w:) to which the snapshot will be mounted and click **OK**.
 - o **Add User Defined App:** To specify a user defined application, select a volume from the list, then click to open the Add User-defined Apps dialog box to select from a list of previously created user-defined Application Types.
- c. **Edit Snap Parameters:** If necessary to edit the snapshot parameters, click to open the Advanced Add/Edit Volume Options dialog box.
- d. To delete or edit items in the list of Volumes, select one or more of the following:
 - o **Delete Volume:** Click to delete a selected volume from the list.
 - o **Delete App:** Click to remove an associated application from a selected volume.
 - o **Remove User Defined App:** Click to remove an associated user-defined application from the list.
 - o **Edit Mount Points:** To edit the mount point for a selected volume, click to open the Add/Edit Destination Mount Points dialog box. See Note below about editing existing mount points.
- e. **Detect:** If necessary to detect or configure volumes, click to open Volume Explorer. For more information, see also Volume Explorer.
- f. Each associated Agent will have a subclient with the content and configuration defined by this SVU. Select from the following:
 - o **Add Association:** Click to open a dialog box to select iDataAgents for this SVU, then click **OK**. Go to Step 5.
 - o **Edit Association:** Click to open the Subclient Configuration dialog box for the selected iDataAgent. Go to Step 5.
 - o **Remove Association:** Click to remove the selected iDataAgent from the list.
- g. When all volumes for this SVU have been selected and configured, and all Agents have been associated and configured, click **Close**.

NOTES

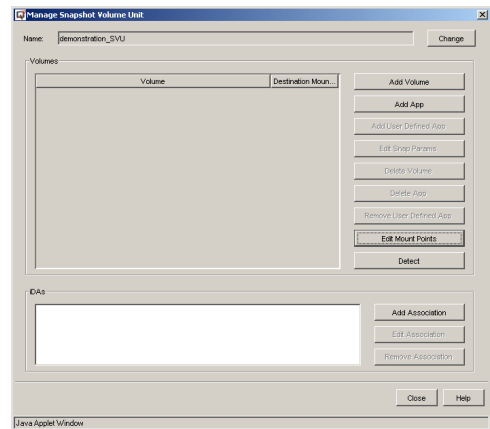
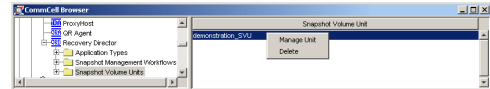
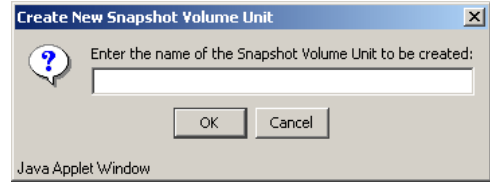
- If you change an existing Destination Mount Point, you must also change the Subclient Content for each associated iDataAgent -- ProxyHost and Image Level ProxyHost using the Edit Association button in the Snapshot Volume Unit dialog box.

5. Configure the Subclients for the Agents you have selected to associate with this SVU.
 - To edit a subclient, select the Agent from the list and click the **Configure** button. When you are done, click **Apply**.
 - At minimum, you must specify a name and select a Storage Policy (or QR Policy for QR) for each subclient.

The following tasks can be performed to configure the QR Subclient (refer to Subclients - Quick Recovery Agent):

General tab

- Enter a QR **Subclient Name**.
- Select a **QR Policy**.
- If a VSS hardware snapshot has been specified as the Snap Engine for the selected



QR Policy, either select **Use Source Host as the Default Import Host**, or select a **Default Import Host** from the list.

- Select **Disable Incremental update of QR volumes** if any of the volumes contained in this subclient are also contained in another subclient.
- **Software Compression** can be optionally enabled for the QR subclient (this selection is only available when the selected QR Policy is configured to use a LAN Copy Manager.)

Content tab

- No modifications to content are made here. Content for this subclient was defined in Step 4.

Pre/Post Process tab

- Add optional Pre/Post Processes for the QR Agent subclient. (These are batch files or shell scripts that you can run before or after the Snap or Copy phases.) Type the path of each file or shell script, or click **Browse** to open a window to navigate to it. To run a PostSnap or PostCopy process even if the Snap or Copy phase is killed, fails, completes with errors, or is interrupted due to a media reservation issues, select the appropriate option. Note that if a user suspends or stops the job during the respective phase, or if the job is interrupted during that phase due to Operation Window rules, the Post Process will not run, even if the option has been selected. If either of these two conditions are encountered, and the Post Process is designed to bring a database online, release a snapshot, or execute some other critical process, these tasks must be performed manually.
- Click **Change** to add or modify the User Account that has permission to run these commands.

Generic Snap Scripts tab

- **Create Script Pathname** - the path of the user-created batch file or shell script to initialize the hardware snapshot, manage the BCV pair, and mount the snapshot.
- **Delete Script Pathname** - the path of the user-created batch file or shell script to unmount the snapshot and delete the BCV pair.
- **Recover Script Pathname** - the path of the user-created batch file or shell script to quiesce/unquiesce the application, or launch a hardware-based recovery.
- Select an **Execution Host** from the list, where the user-created batch files or shell scripts will be run.
- **Change** - add or modify the account that has permission to run these commands.

The following tasks can be performed to configure the *iDataAgent* Subclients: (refer to Subclients - SAN *iDataAgents*):

General tab

- Enter a **Subclient Name**.

Content tab

- No modifications to content are made here. Content for this subclient was defined in the Workflow Properties screen with the selection of Volumes and Applications for the SVU. This content can be modified after completing this Wizard, using the Manage SVU command. See Create/Edit/Delete a Snapshot Volume Unit (SVU).

Filters tab

- Make any desired changes. See Filters for more information.

Pre/Post tab

- Add optional Pre/Post Processes for the *iDataAgent* subclient. (These are batch files or shell scripts that you can run before or after the Snap or Copy phases.) Type the path of each file or shell script, or click **Browse** to open a window to navigate to it. To run a PostSnap or PostCopy process even if the Snap or Copy phase is killed, fails, completes with errors, or is interrupted due to a media reservation issues, select the appropriate option. Note that if a user suspends or stops the job during the respective phase, or if the job is interrupted during that phase due to Operation Window rules, the Post Process will not run, even if the option has been selected. If either of these two conditions are encountered, and the Post Process is designed to bring a database online, release a snapshot, or execute some other critical process, these tasks must be performed manually.

Storage Device / Data Storage Policy tab

- You must select a Storage Policy to associate with the subclient.

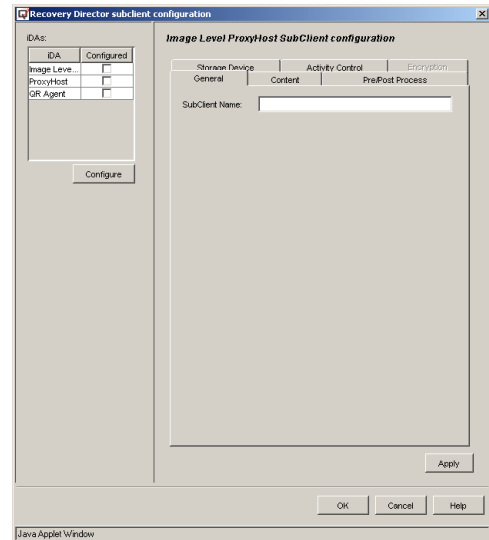
Storage Device / Software Compression tab

- Make any desired changes. See Client Compression for more information.

Activity Control tab

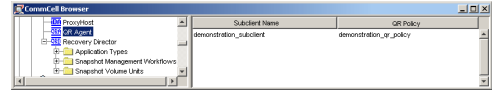
- Make any desired changes. See Activity Control for more information.

When you are done configuring all Subclients, click **OK**.



In the **Manage Snapshot Volume Unit** dialog box, click **Close**.

6. You can now view the Subclients created for the QR Agent and each of the associated iDataAgents in the CommCell Browser.



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Volume Explorer

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Overview

Accessing Volume Explorer

When to Use Volume Explorer

Volume Explorer Display

Volume Explorer Volume Properties

Special Notes on Volume Explorer

OVERVIEW

Volume Explorer maintains a database of the disk volumes attached to each MediaAgent and Image Level on Unix *iDataAgents*, and the Quick Recovery Agent client, including unique identifying information (WWN/LUN) for each volume. Also, two types of NetApp data server volumes will be displayed in Volume Explorer. Volumes on the primary data server will be displayed under the QR agent, if they are mounted on that client; the volumes on the secondary data server will be displayed under the data server name. Note that the NetApp NAS *iDataAgent* must be installed in order to detect the volumes.

This information can be used to determine when a single physical volume is mapped to different drive letters or paths on multiple hosts. The system can also look up this information during backup and restore operations, eliminating the need for tedious manual entry of WWNs and LUNs for each subclient or restore job.

For Windows clients, only hosts with the QR Agent and MediaAgent installed will appear in Volume Explorer.

For Unix clients, only hosts with the QR Agent and Image Level on Unix *iDataAgents* and the CXBF driver installed will appear in Volume Explorer. For AIX, Solaris and Linux, Volume Explorer will only detect volumes on disks that have been partitioned, or have had a partition table created on them. Data servers with secondary SnapVault licenses will be displayed for use with SnapVault.

See also `DisableWWNDetect`, a registry key that allows you to change the default WWN detection behavior of the Quick Recovery Agent.

ACCESSING VOLUME EXPLORER

To access Volume Explorer:

1. From the **Tools** menu in the CommCell Console, select **Control Panel**; or (if applicable), go to the **Subclient Properties (Content)** tab for your agent.
 2. Click or double-click **Volume Explorer** and then click **Yes** at the warning prompt.
-

WHEN TO USE VOLUME EXPLORER

Run a Volume Explorer Detect operation for any of the following conditions:

- after installing a new Image Level *iDataAgent* on Unix or QR Agent, but prior to configuring subclients. Valid Volume Explorer volume information is required prior to proceeding with subclient configuration.
 - after disk volumes on a Image Level on Unix, or the Quick Recovery Agent client, or a MediaAgent are added, removed, or reconfigured in any way (including partitioning and drive letter assignments). Note a special case for Linux clients: partitions that have been deleted on a locally connected IDE drive will continue to appear in Volume Explorer until the Linux client has been rebooted.
 - when configuring NetApp volumes for use with SnapVault.
 - for Image Level on Unix, and Quick Recovery Agent on Unix, to configure/deconfigure and mount/unmount CXBF devices.
-

VOLUME EXPLORER DISPLAY

The Volume Explorer interface consists of two panes. The left pane displays a list of eligible hosts (including all Windows MediaAgents and all clients with Quick Recovery Agent, or Image Level on Unix installed). The right pane lists the disk volumes that Volume Explorer has detected on the currently selected host.

At the top of the window is a toolbar with several available functions; to read more about each of them, refer to the Volume Explorer Help file.

The Detect operation scans for disk volumes currently attached to the selected host and compares their characteristics with the information in the Volume Explorer database. Volume Explorer will automatically add new volumes to the database. If previously configured volumes are not found during the scan, Volume Explorer will ask for permission before removing their records from the database. If the characteristics of a discovered volume do not match those in

the database, Volume Explorer will ask you whether to preserve or update the database records.

Some types of disk hardware do not support the method of WWN discovery implemented by Volume Explorer. In such cases, Volume Explorer may report a Unique ID Type of ATAPI/IDE instead of Fibre Channel WWN. If you want to use a hardware device for SAN-based data movement, you will need to set the appropriate ID type and enter the WWN and LUN for each volume manually. On subsequent detections of the same volume, you should direct Volume Explorer not to update the database, or you will have to repeat this step.

VOLUME EXPLORER VOLUME PROPERTIES

Volume Explorer displays the following properties for each volume:

Device Name	the Windows device name, or Unix mount path for the volume.
Hostname	the hostname of the attached computer.
Scratch Pool	the Scratch Volume Pool to which this disk belongs, if any.
Assign button	allows you to assign the volume to a new or different Scratch Pool.
ID Type	the type of Unique Identifier to be used with this volume. If the disk is SAN-attached, the Fibre Channel WWN type should be used. If it is an internal disk, ATAPI/IDE is appropriate. If it is a virtual disk device created by QSnap, the QSnap ID type will appear here.
ID	a string (based on ID Type) that uniquely identifies the physical disk containing this volume. Note that multiple partitions on the same disk will have the same ID value, but different LB Offset values (see below).
LUN	A Logical Unit Number for the physical disk. This is used in conjunction with the FC WWN ID type to uniquely identify the logical unit on multi-LUN disk devices (e.g. RAID controllers).

Together, the ID Type/ID/LUN represent the unique identity of the physical volume. Some fields (e.g., WWN) are not always detectable by Volume Explorer. Therefore, Volume Explorer allows you to enter the correct values manually, if needed.

LB Offset	the Logical Block Offset at the beginning of the disk partition.
Block Count	the size of the partition in physical disk blocks.
Block Size	the size of a physical disk block in bytes.

If a Quick Recovery Agent volume creation/recovery operation fails, verify that the ID Type, ID, and LUN entries in Volume Explorer are correct.

SPECIAL NOTES ON VOLUME EXPLORER

- Snapshots can be deleted in Volume Explorer. Use caution when deleting snapshots in Volume Explorer. Volume Explorer allows you to delete snapshots from the CommServe database, even if they are being used, or scheduled to be used by a job, causing the job to fail.
- Volume Explorer will display all disk volumes found on the selected host, including those which are not connected to a SAN. Usually these non-SAN volumes will show up as ATAPI/IDE ID devices and LUN as zero.
- Some SAN attached disk devices (e.g. EMC Symmetrix) do not support the WWN discovery method used by Volume Explorer. For these disks, you will need to enter the ID Type, ID, and LUN information manually. You will only need to do this once per volume.
- In the case of a SCSI disk device that is connected to the SAN using a FC-SCSI router or gateway, Volume Explorer may be unable to detect the WWN correctly. Enter the WWN of the gateway, and be sure to use the LUN that is assigned by the gateway.
- In the unusual case where a native FC device is connected to the SAN via a FC-SCSI router or gateway device, be sure to use the WWN and LUN assigned by the gateway device. The Volume Explorer may detect the WWN of the device itself rather than the gateway, so check these entries carefully to make sure that you provide the WWN and LUN assigned by the gateway. (This caveat does not apply to ordinary FC-AL hubs or fabric switches.)
- For Unix volumes, Volume Explorer will only detect volumes on disks that have been partitioned, or have had a partition table created on them.

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QR Policies

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This feature/product/platform is on Extended Support in this release. See [Deprecated Features, Products, and Platforms](#) for more information.

Overview

Deleting QR Policies

OVERVIEW

The QR Policy associated with a subclient determines how the volumes in that subclient will be snapped and copied to QR Volumes. When creating a QR Policy, a snapshot engine and copy manager are selected.

The QR Policy also includes a built-in retention policy that defines how long QR Volumes will be retained after creation. Stale QR Volumes are automatically deleted (and their resources returned) each time the Data Aging administration job runs on the CommServe. To prevent QR Volumes from being pruned, you can specify an infinite retention policy. To prevent an individual QR Volume from being pruned, you can set the In Use flag on the QR Volume Properties screen.



- QR Volumes that are scheduled for incremental updates are never pruned.
- If you are creating a QR Policy for use with ONTAP SnapVault or OSSV SnapVault, review the respective overview first.
- Review Recovery Points before creating a QR Policy for use with Recovery Points.

DELETING QR POLICIES

When a QR policy is deleted, all the QR Volume information associated with the QR policy will be removed from the CommServe database. Therefore, once the QR policy is deleted, the QR Volumes associated with the QR policy cannot be recovered. Note that a QR Policy cannot be deleted if there are any Data Aging or recovery jobs running on this QR Policy.

A QR Policy cannot be deleted if it is associated with a subclient. If you want to delete a QR Policy that is associated with a subclient, then you must do the following:

- Delete any currently associated subclients or
- Reassign the existing subclients to another QR Policy.

You may decide to delete a QR policy if:

- You determine that you do not need the QR Volumes that were created through that QR policy.
- QR Volumes no longer exist on the QR policy and you have no plans to use the policy for future QR Volume creations.

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QR Policies - How To

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[Delete a QR Policy](#)

[Modify QR Policy Properties](#)

CREATE A QR POLICY

Required Capability: Capabilities and Permitted Actions

The system allows you to create a QR policy in the CommCell Console from the QR Policies level.

▶ To create a QR policy:

1. From the CommCell Browser, right-click the **QR Policies** icon, and then click **Create New QR Policy** from the short-cut menu.

2. Type the policy name (Up to 32 characters).
3. Select the **Snapshot Engine Type** from the dropdown menu.



- If you are creating snapshot scripts using the Generic Enabler feature, select **Generic snapshot** as your Snapshot Engine Type.
- Depending on the Snapshot Engine you select, some options may not be available for configuration.

4. Select the **Retention Policy** by checking Infinite (default), or by entering the number of hours/days/weeks.
5. Select the **Enable QR Volume Creation** check box to activate the **Copy Manager** and **Scratch Pool** menus.



This option is automatically disabled if you selected **Generic snapshot** as your Snapshot Engine Type in Step 3.

6. Select the **Copy Manager** from the list of available Copy Managers that currently exist for this QR Volume. (Refer to LAN Copy Manager.)
7. Select the **Scratch Pool** from the list of available scratch pools that currently exist for this QR Volume.
8. If this QR Policy will be used to create Recovery Points, select **Enable Recovery Points**, and specify the maximum number of Recovery Points that will be retained, up to a maximum of 32.
 - When you select **Enable Recovery Points**, you are prompted to enter a location for the cache partition for the snapshots of the QR Volume. This location cannot be on the QR Volume.
 - When you are satisfied with the QR Policy's configuration, click **OK**. The new QR Policy appears in the CommCell Browser.

DELETE A QR POLICY

WARNING! When a QR policy is deleted, all the QR Volume information associated with the QR policy will be removed from the CommServe database. Therefore, once the QR policy is deleted, the QR Volumes associated with the QR policy cannot be recovered. Note that a QR Policy cannot be deleted if there are any Data Aging or recover jobs running on this QR Policy.

Required Capability: Capabilities and Permitted Actions

▶ To delete a QR policy:

1. Select **QR Policies** from the CommCell Browser, and right-click the QR policy that you wish to delete.
2. Click **Delete** from the short-cut menu.

The system prompts you to confirm the deletion of the QR policy.

3. To confirm the deletion, click **Yes**. The deleted QR Policy is removed from the CommCell Browser.

MODIFY QR POLICY PROPERTIES

It is recommended that you do not change any of the QR policy properties while the QR policy being used by an operation (e.g., QR Volume Creation, QR Volume Recovery, etc.)

Required Capability: Capabilities and Permitted Actions

▶ To change the properties of a QR policy:

1. Select **QR Policies** from the CommCell Browser, click **Properties** and right-click the QR policy that you wish to modify.
2. Change any of the following properties:
 - QR policy name (Up to 32 characters).
 - Snapshot Engine Type from the dropdown menu.
 - Retention Policy by checking Infinite (default) or enter the number of hours/days/weeks.
 - **Enable QR Volume Creation** check box to activate the **Copy Manager** and **Scratch Pool** menus.
 - Copy Manager from the list of available Copy Managers that currently exist for this QR Volume.
 - Scratch Pool from the list of available scratch pools that currently exist for this QR Volume.
 - If this QR Policy will be used to create Recovery Points, select **Enable Recovery Points**, and specify the maximum number of Recovery Points that will be retained, up to a maximum of 32.
 - When you select **Enable Recovery Points**, you are prompted to enter a location for the cache partition for the snapshots of the QR Volume. This location cannot be on the QR Volume.
3. Once you have made your changes, click **OK**.

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Backup Job History

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Overview

Items That Were Backed Up

Items That Failed

Pruning Backup History Information

Supported Features

Content Indexing History Information

OVERVIEW

You can view the backup and restore history of *iDataAgents*, *BackupSets/Instances*, and subclients.

The **Backup Job History Filter** dialog box allows you view detailed, historical information about backup jobs. Once you have chosen your filter options, they are displayed in the **Backup Job History** window.

For information on Job Details displayed in the Job History, see [Viewing Job Information](#).

From this window, you can right-click a backup job to:

- Browse the data backed up by the backup set or instance from the **Backup Job History** window. This is provided as right-click option for each job. (This menu option, when selected, initiates the **Browse Options** dialog box preset with the values needed to browse the data.)
 - Browse the snapshots created during SnapProtect backup
 - View items that failed during the backup job
 - View details of the backup job
 - View files that were not indexed during a backup job that performed content indexing
 - View associated media
 - View events of the backup job
 - View a list of items that were backed up
 - View a list of items that were moved to media for a SnapProtect backup job
 - View the log files of the backup job.
 - View the RMAN log of an Oracle backup job.
 - View the BRTools log of a SAP for Oracle job. You can view the BRTools log for only those jobs that were initiated from the CommCell Console.
-

ITEMS THAT WERE BACKED UP

The **View backup file list** option allows you to view a list of the files that were backed up during a backup job, along with the data sizes of each backed up file. The **View backed up messages** option allows you to view a list of messages that were backed up by using, along with the alias name, display name, email address, sender name, and recipient of each message.

From these windows you can conduct searches based on a particular string, allowing to find particular files quickly and easily.



It is not recommended that this option is used to view a very large list of items that were backed up (such as lists that total over 100,000 items). It is suggested that the Browse option is used to find a list of backed up items in such cases.

See [View the Items That Were Protected During a Data Protection Operation](#) for step-by-step instructions.

ITEMS THAT FAILED

The items that failed for a data protection operation include individual files that may fail the job even though a particular job completed successfully. You can determine the degree of success for these jobs using this window.

Filters can be used in conjunction with the "Items That Failed" list on the data protection Job History Report to eliminate backup or archive failures by excluding items which consistently fail that are not integral to the operation of the system or applications. Some items fail because they are locked by the operating system or application and cannot be opened at the time of the data protection operation. This often occurs with certain system-related files and database

application files.

Also, keep in mind that you will need to run a full backup after adding failed files to the filter in order to remove them.



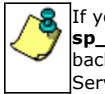
A listing of files and folders that failed is not available for the Quick Recovery Agent, or the Image Level and Image Level ProxyHost *iDataAgents*. These agents do not perform a file level backup/copy.

Certain application related files can never be backed up by the File System *iDataAgent* due to the nature of the data. For example, Microsoft SQL Server database files cannot be backed up by the File System *iDataAgent*. In this and other similar circumstances, consider entering files such as these as exclusions in the corresponding subclient filter.

See [View the Items That Failed For a Data Protection Operation](#) for step-by-step instructions.

PRUNING BACKUP HISTORY INFORMATION

You can prune backup history information based on the number of days established in the **Days to keep the backup job histories** option from the **Media Management Configuration (Service Configuration)** dialog box available in the **Control Panel**.



If you have installed the SQL Server *iDataAgent*, do not use the stored procedure **sp_delete_backuphistory**, **sp_delete_database_backuphistory** and **sp_delete_backup_and_restore_history** provided by Microsoft clean up backup history. By default backup history is automatically pruned from the CommServe database and the Microsoft SQL Server, as necessary.

SUPPORTED FEATURES

- NAS *iDataAgents* do not support the ability to view items that failed.
- The Image Level and Image Level ProxyHost *iDataAgents* do not support the ability to Browse the data of a selected backup job in Backup Job History.

CONTENT INDEXING HISTORY INFORMATION

Content Indexing history can also be viewed of *iDataAgents*, BackupSets/Instances, and subclients. The following information is displayed:

ITEMS THAT WERE SUCCESSFULLY CONTENT INDEXED

You can view the list of items that were successfully content indexed during a Content Indexing operation for a particular job. for step-by-step instructions, see [View the Items that Were Successfully Content Indexed](#).

CONTENT INDEXING FAILURES

Content Indexing failures allows you to look at the messages, files and documents that could not be indexed during a content indexing operation. Content Indexing looks at each file (of the supported data types) and indexes its contents allowing advanced searches of backed up/archived/migrated data.

Files that were not indexed, (perhaps because the file's content could not be read) are added to the Content Indexing Failures list, and are viewable from the View Content Index (Failed Items) option in the Job History window. For step-by-step instruction, see [View the Items that Failed to Content Index](#).

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Backup Job History - How To

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[View Job History Details](#)

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[View the Log Files of a Job History](#)

View the Items that Were Not Indexed During Content Indexing

View the Items that Were Successfully Content Indexed

Resubmit a Backup Job

VIEW BACKUP JOB HISTORY

▶ To view backup history:

1. From the CommCell Browser, right-click the entity (client computer, iDataAgent, backup set or subclient) whose backup history you want to view, click **View**, and then click **View Backup History**.
2. From the Backup History filter window select the filter options, if any, that you want to apply, and then click OK. The system displays the Backup Job History window.
3. Click **OK**.

VIEW THE ITEMS THAT WERE PROTECTED DURING A DATA PROTECTION OPERATION



This option is available for File System-like agents.

Required Capability: none required

▶ To view the list of items that were protected during a data protection operation.

1. From the CommCell Browser, right-click the entity whose history of data protection operations you want to view, click **View**, and then click the necessary options to view a job history.
2. From the Job History Filter dialog box, select the filter options, if any, that you want to apply, and then click **OK**.
3. From the Job History window, right-click the operation whose list of protected items you want to view, and then select **View backup file list/View Backed Up Messages**. The **Backup file List** window displays a list of the backed up files/messages that were included in the backup job. You can use the **Search** option to find items in the window.
4. Click **File -> Exit**.
5. Click **Close** from the **Job History** window.

VIEW THE ITEMS THAT FAILED FOR A DATA PROTECTION OPERATION



A listing of files and folders that failed is not available for the Quick Recovery Agent, nor the Image Level and Image Level ProxyHost iDataAgents. These agents do not perform a file level backup/copy.

▶ To view the list of items that failed for a data protection operation:

1. From the CommCell Browser, right-click the entity whose history of data protection operations you want to view, click **View**, and then click to view a job history.
2. From the Job History Filter dialog box, select the filter options, if any, that you want to apply, and then click **OK**.
3. From the Job History window, right-click the operation whose list of failed items you want to view, and then select **View Failed Items**. The **Unsuccessful Backup Files** window (for DataArchiver Agents, **Items On Which Archive Failed**) displays those items that failed. If no items failed, a message to that effect is displayed.
4. Click **Close**.

VIEW JOB HISTORY DETAILS

Required Capability: See Capabilities and Permitted Actions

▶ To view the details of a job history:

1. From the CommCell Browser, right-click the entity (e.g., subclient, client computer, etc.) whose job history you want to view, click **View**, and then click job history.
2. From the Job History Filter dialog box, select the filter options that you want to apply and click **OK**.

3. From the Data Management Job History window, right-click the job whose job details you want to view, and then click **View Job Details**.
4. The Job Details dialog box appears, displaying detailed job history in General, Details, Phase Details and Attempts tabs for the selected job.
5. Click **OK**.



If viewing the details of a job with a pending or failed status, the **Reason for Job Delay** field will contain an Error Code, which, if clicked, will launch the customer support website displaying troubleshooting article(s) related to the specific issue.

VIEW THE MEDIA OR MOUNT PATHS OF A JOB HISTORY

▶ To view media or mount paths associated with a job history:

1. From the CommCell Browser, right-click the entity (e.g., subclient, client computer, etc.) whose job history you want to view, click **View**, and then select the appropriate history.
2. From the Job History window select the filter options, if any, that you want to apply, and then click **OK**.
3. From the job history window, right-click the backup whose media or mount paths you want to view, and then click **View Media**.
4. The Media Used By Job ID window displays a list of media or mount paths used by the operation.
5. Click **OK**.

VIEW THE EVENTS OF A JOB HISTORY

Required Capability: See Capabilities and Permitted Actions

▶ To view the events associated with a job:

1. From the CommCell Browser, right-click the entity (e.g., subclient, client computer, etc.) whose job history you want to view, click **View**, and then click **Job History**.
2. From the Job History Filter dialog box, select the filter options that you want to apply and click **OK**.
3. From the Data Management Job History window, right-click the job whose job details you want to view, and then click **View Events**.
4. The All Found Events window gets displayed. If no events were found for the backup, a message is displayed to that effect.
5. Click **Close**.

VIEW THE ITEMS THAT WERE MOVED TO MEDIA DURING SNAPPROTECT BACKUP



This option is available for the SnapProtect Backup.

▶ To view the list of items that were moved to tape during SnapProtect Backup.

1. From the CommCell Browser, right-click the entity whose history of data protection operations you want to view, click **View**, and then click the necessary options to view a job history.
2. From the Job History Filter dialog box, select the filter options, if any, that you want to apply, and then click **OK**.
3. From the Job History window, right-click the operation whose list of items moved to media you want to view, and then select **View Backup Copy file listing**. The **Backup file List** window displays a list of the backed up files that were included in the backup copy job. You can use the **Search** option to find items in the window.



- To view the files moved to media for a backup copy job, right-click the SnapProtect backup job corresponding to the Backup Copy job and select **View Backup Copy file listing**.
- View backup items will not display anything for a Backup Copy job.

4. Click **File** -> **Exit**.
5. Click **Close** from the **Job History** window.

VIEW THE LOG FILES OF A JOB HISTORY

Required Capability: See Capabilities and Permitted Actions

► To view the log files of a Job History:

1. From the CommCell Browser, right-click the entity whose job history you want to view, and then click to view a job history.
2. From the job history filter window select the filter options, if any, that you want to apply, and then click **OK**.
3. From the job history window, right-click the job whose log files you want to view, and then click **View Logs**.
4. The contents of the log file related to the selected job history are displayed in the **Log File for Job n** window.

VIEW THE ITEMS THAT WERE SUCCESSFULLY CONTENT INDEXED



This option is available for operations that performed content indexing.

► To view the list items that were not indexed during content indexing:

1. From the CommCell Browser, right-click the entity whose operations you want to view, click **View**, and then click the necessary options to view a job history.
2. From the Job History Filter dialog box, select the filter options, if any, that you want to apply, and then click **OK**.
3. From the Job History window, right-click the job for which you want to view the successfully content indexed items, select **View Content Index**, and click **Successful Items**.
4. Click **Close**.
5. Click **Close** from the **Job History** window.

VIEW THE ITEMS THAT FAILED TO CONTENT INDEX



This option is available for operations that performed content indexing.

► To view the list of items that failed to content index:

1. From the CommCell Browser, right-click the entity whose operations you want to view, click **View**, and then click the necessary options to view a job history.
2. From the Job History Filter dialog box, select the filter options, if any, that you want to apply, and then click **OK**.
3. From the Job History window, right-click the job for which you want to view the list of items failed to content index, select **View Content Index**, and click **Failed Items**.
4. Click **Close**.
5. Click **Close** from the **Job History** window.

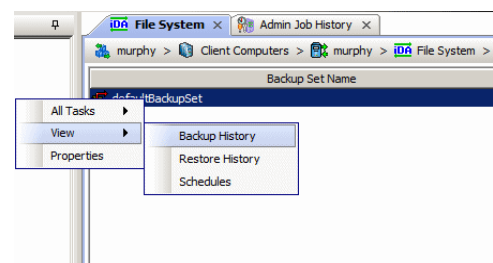
RESUBMIT A BACKUP JOB

► To resubmit a backup job:

1. From the CommCell Browser, right-click the subclient whose backup history you want to view, click **View**, and then click **View Backup History**.

Additionally, you can view the backup history for a client computer, iDataAgent, or backup set. However, the dialogs displayed may be different.

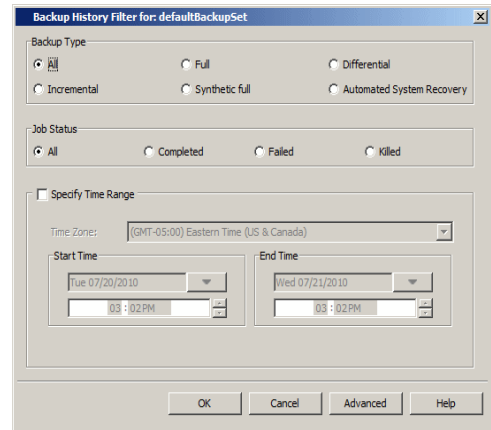
Note, if viewing the backup history for a client computer, right-click the computer name and select **Job History**.



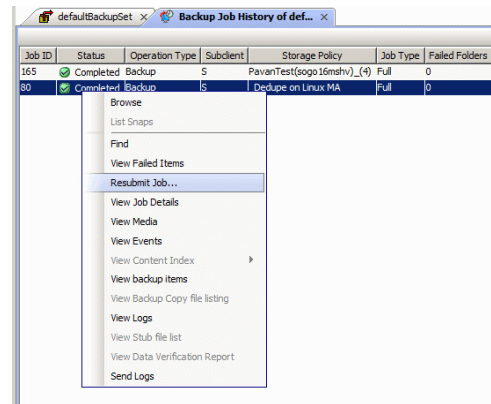
2. From the Backup History filter window select the filter options, if any, that you want to apply, and then click OK. The system displays the Backup Job History window.

Note: If viewing the job history for a client computer, ensure that the **Backup** radio button is selected.

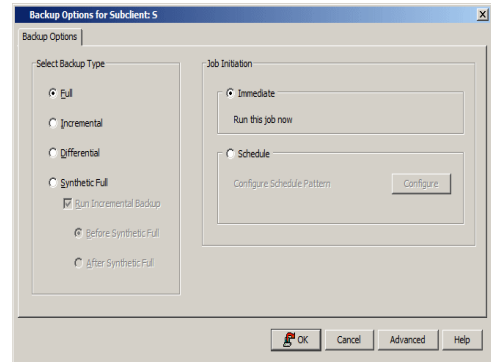
3. The Backup Job History window displays with the specified filter options.
4. Right-click on any job, and select **Resubmit Job**.



5. From the Backup Options dialog box, select the job options appropriate for the job you want to restart.

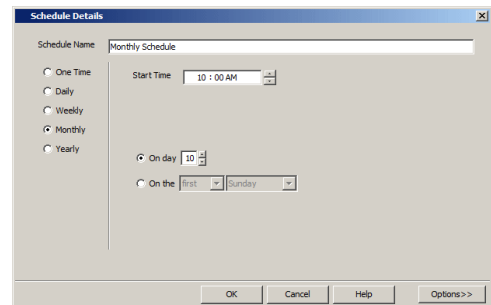


6. If you need to run the backup operation immediately, select **Immediate** from the **Job Initiation** tab. Go to step 11.
7. If you need to schedule the restore operation, select **Schedule** from the Job Initiation tab and click **Configure**.
8. From the **Schedule Details** dialog box that appears, select the appropriate scheduling options.



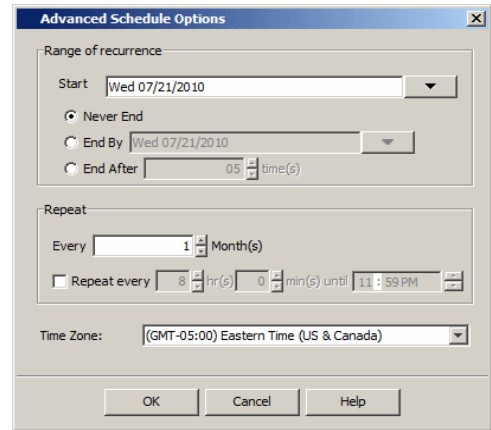
Click **Options** to view the Advanced Schedule Options dialog box.

9. From the **Advanced Schedule Options** dialog box:
 - **Range of recurrence:** Specify the date on which you want this schedule to take effect.



- **Repeat:** Select the value for which you want to run the job repeatedly on the day in which the job is scheduled to run.
- **Time Zone:** Select a specific time zone from which the job schedule time will be based.

Click **OK** to close the **Advanced Schedule Options** dialog box.



10. Click **OK** to close the **Schedule Details** window.
11. Click **OK** to close the job restart window.

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Implement QSnap with Recovery Director

Use Recovery Director to create a replication and tape backup from the same QSnap snapshot

Use Recovery Director to create a local and remote replication with tape backup for the same volume

Related Topics

- Overview - Recovery Director

USE RECOVERY DIRECTOR TO CREATE A REPLICATION AND TAPE BACKUP FROM THE SAME QSNAP SNAPSHOT

"I want to create a local replication of my data volumes so that I can quickly recover my volumes in case of disaster, or create a remote copy that can be used to build a stand-by server. I also want to keep the point-in-time backup of each snapshot."

This implementation allows you to create snapshot-based replication, even if an expensive hardware snapshot system is not available and a tape backup from the same version of snapshot without extra administration work. The backup job can be moved to a BCV on a remote machine using either the ProxyHost or Image Level ProxyHost iDataAgent.

The following steps briefly describe the configuration procedure for this implementation scenario.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

TO CREATE A REPLICATION AND TAPE BACKUP FROM THE SAME QSNAP SNAPSHOT

1. Identify the scratch volumes that will be used to host the replication data. These volumes will also be used as the BCV or Clone for the backup. The volumes can reside on either the local machine for quick recovery purpose or on a remote machine for disaster recovery purposes.

Create the Scratch Volume Pool that will contain these scratch volumes.

2. Create the QR policy for the QR volume creation.

In the QR Policy screen, select **QSnap** as the Snapshot Engine Type.

Select the LAN Copy Manager on the machine where scratch volumes reside.

3. Identify a Storage Policy that can be used for the backup. If the destination machine is a remote machine, it is recommended to install the MediaAgent on that remote machine so that the backup will be a LAN free backup.

4. Create the Snapshot Volume Unit (SVU) and the Snapshot Management Workflow.

Although they can be created separately through the 'classic' method, the Workflow Configuration Wizard for Recovery Director simplifies the process considerably. The Configuration Wizard leads you through all the required configuration tasks in sequence, and will prompt you to correct any potential conflicts, or to supply any missing information, while displaying help content in each Wizard screen. The Wizard can be launched by right-clicking **Recovery Director**, selecting **All Tasks**, then **Workflow Wizard**.

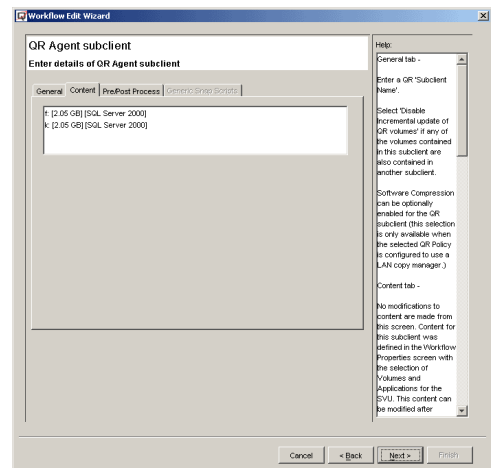
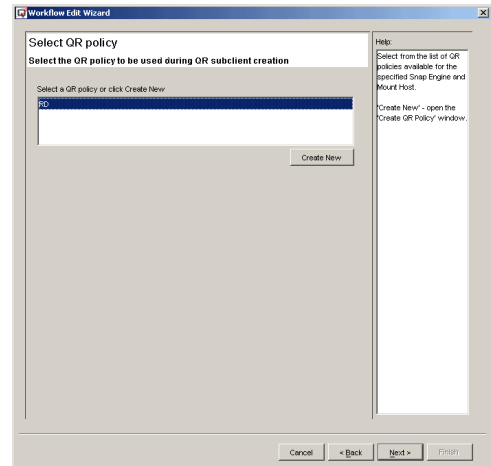
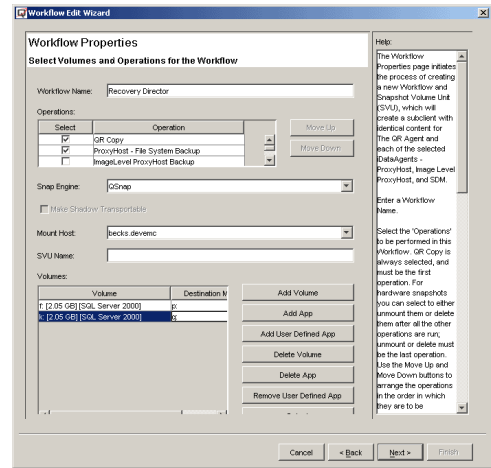
There are three major sections to the Wizard:

- a. Configure the volumes and Snapshot engine.

In this section, the source volumes, the destination volumes, the Snapshot engine and the destination host information are specified. The Add App feature which extends the functionality of the QR Agent is available through Recovery Director. In this case we will use SQL database volumes as the example.

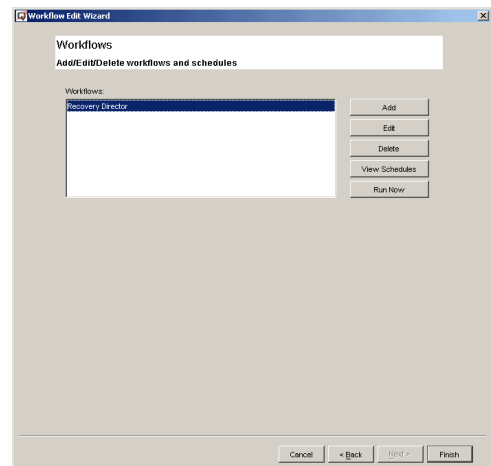
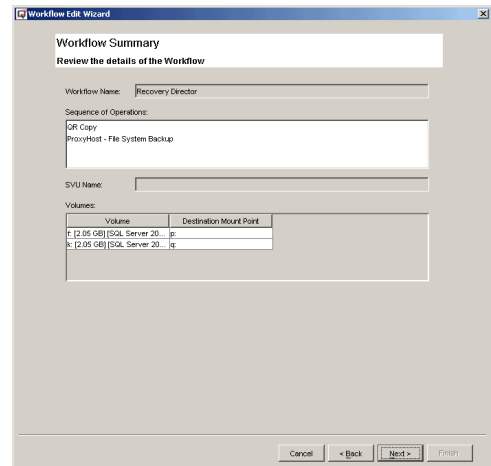
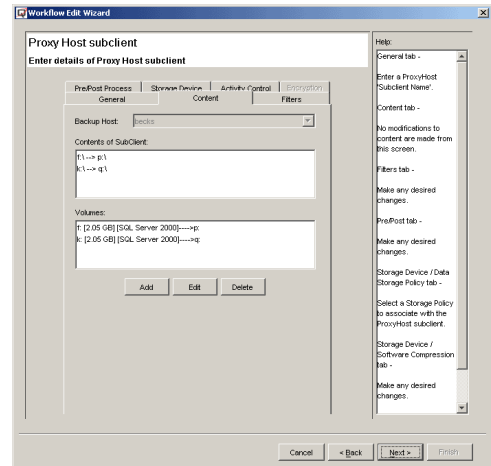
b. Configure the associations.

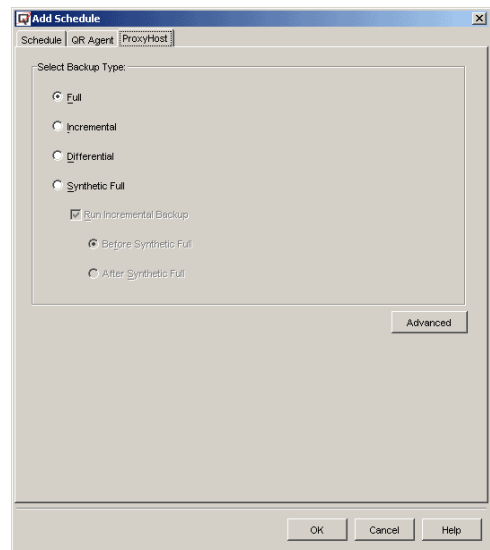
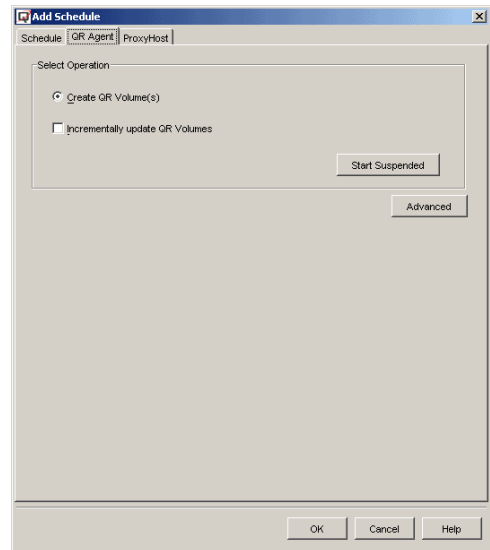
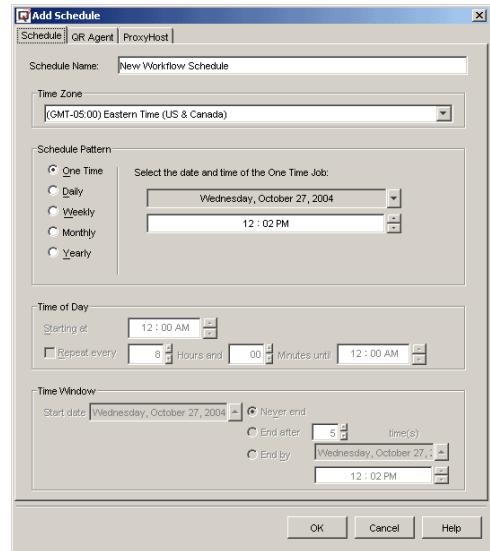
In this section the information previously specified is used to configure the subclients for the QR Agent and the selected backup iDataAgent(s). As you can see, the subclient content of the QR Agent and the ProxyHost iDataAgent have been populated. The specified QR volume will automatically be used as the BCV or Clone for the ProxyHost iDataAgent. Other subclient proprieties (Storage Policy, Pre/Post commands, compression, etc.) can be configured in this section as well.



c. Summary and schedule options for the Workflow.

In this section, a summary of the configured Workflow is presented. You have the option to create a new Workflow, edit/delete an existing Workflow or schedule the Workflow. (The Workflow can also be scheduled after you exit the Wizard.) Very rich scheduling options are provided for the Workflow, as well as the data protection options of the associated Agents (QR Agent and the ProxyHost iDataAgent in this example.)





- Schedule the Workflow or launch the Workflow immediately. Each Workflow starts with a QR job. This job can consist of a snapshot only or include QR Volume creation. With the Generic Enabler, this QR job merely launches the customized hardware snapshot scripts and populates the CommServe database. After the QR job is completed, Job Manager will launch any scheduled backup job(s) automatically. After all the Workflow component

phases are executed (see Step 1) the entire Workflow is considered complete. The Workflow can be scheduled to repeat.

6. After each Workflow, the same version of data has been replicated to disk and backed up to tape as well. Although the QR Agent does not save the point-in-time data, the backup does. Therefore you now have the following flexibility to recover the data:
 - Run Quick Recovery. If the QR volume(s) reside on the local machine, the data can be recovered in seconds in case of disk failure or data corruption.
 - Copy Back. The data on the QR volume(s) can be transferred back to the source volume by using the Copy Back feature.
 - Restore from tape. This is particularly useful if the point-in-time data is needed. Another benefit of this type of recovery is that an individual file or folder can be recovered quickly.
7. Data Aging (Archive Pruning) is still managed by each individual association (through QR Policy for the QR Agent and Storage Policy for backup iDataAgents).

USE RECOVERY DIRECTOR TO CREATE A LOCAL AND REMOTE REPLICATION WITH TAPE BACKUP FOR THE SAME VOLUME

"I want to create a local replication of my data volumes so that I can quickly recover my volumes in case of disaster. Also I want to keep a remote copy and keep updating it. For both the local and remote copy, I want to keep a point-in-time backup of each snapshot."

While a remote replication is maintained through remote QR Copy for the purpose of disaster recovery, a local QR volume of the same source volume can be created so that Quick Recovery can be accomplished within a few seconds in case of disk error or data corruption. The QR Agent subclient content overlap feature manages replicating the same source volume using two different subclients, each with its own schedule. Integrating the tape backup together with the local QR volume creation will allow a point-in-time recovery without interrupting the application.

The following steps briefly describe the configuration procedure for this implementation scenario. For the purpose of introduction, the classic method will be used here to create the Snap Volume Unit (SVU) and Workflow.

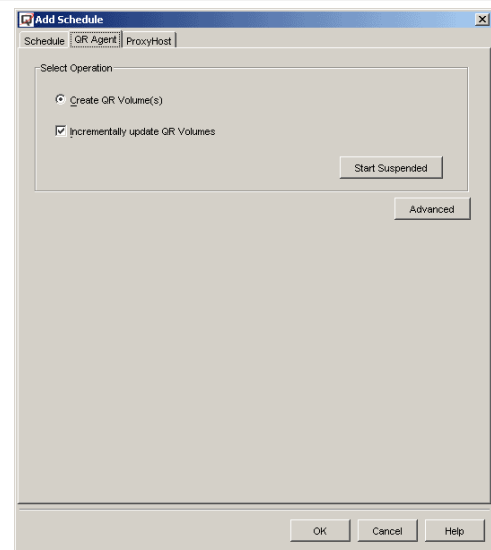
REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

TO CREATE A LOCAL AND REMOTE REPLICATION WITH TAPE BACKUP FOR THE SAME VOLUME

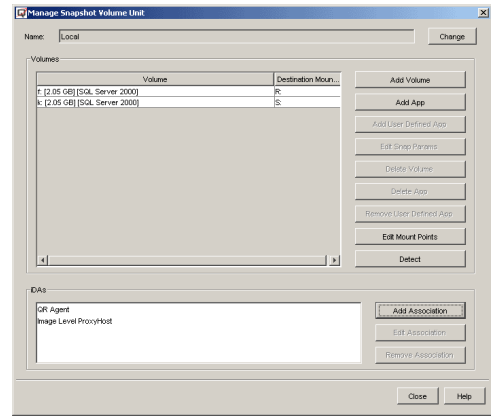
1. Create a Workflow to replicate the data to remote volumes. (This is the same procedure described in Use Recovery Director to create a replication and tape backup from the same QSnap snapshot above.)

In the QR Agent tab of the Add Schedule screen, select **Incrementally update QR Volumes**.



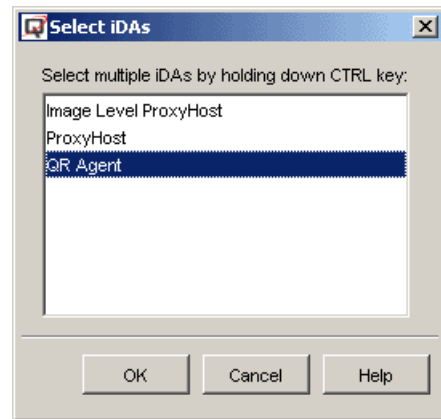
2. Create another Workflow that will replicate the same data to local volumes. If the classic method is used to create this Workflow, the following steps are required:
 - a. Create a Scratch Volume Pool.
 - b. Create a QR Policy.
 - c. Create the Snapshot Volume Unit (SVU).
 - Select **Recovery Director**, then right-click **Snap Volume Units**, and select **Create New Unit**.
 - Right-click the created SVU and select **Manage Unit**.
 - d. Click **Add Volume** or **Add App** to configure the volume pairs.

- e. Click **Add Association** to configure the subclients for the QR Agent and backup iDataAgent(s). In the selection window, click **QR Agent** and then **OK**.

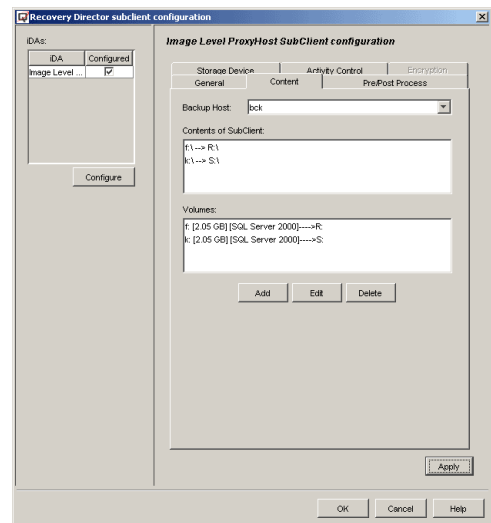
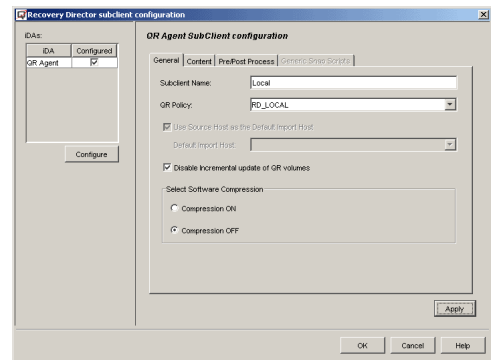


- f. In the QR Subclient General Properties window, select the **Disable Incremental Update of QR Volumes** option. (This is to make sure the full copy on the same source volume will not interrupt the incremental change tracking of another Workflow that was created in the first step.)

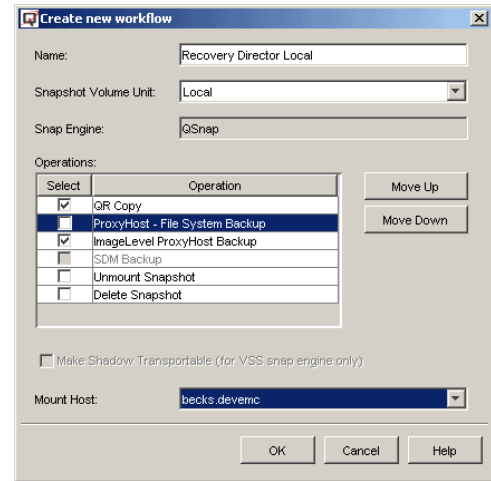
After configuring other subclient properties, click **Apply** to save the configuration.



- g. Click **Add Association** again to configure the backup iDataAgents. Since the same volumes have been configured as ProxyHost iDataAgent Subclient Content, only a different backup iDataAgent can be used here. We will use Image Level ProxyHost iDataAgent for this example.



- h. Create the Workflow and associate the created SVU.
 - o Select **Recovery Director**, then right-click **Snapshot Management Workflows**, and select **Create New Workflow**.
 - o From the SVU drop-down list, select the newly created SVU.
 - o Select an **Image Level ProxyHost** backup, since it has been added as an association.



3. Both Workflows can be scheduled or launched immediately. It is important to mention that QR copy from these two Workflows can be run simultaneously because they attempt to copy from the same source volume. The job manager will manage any schedule conflict.
4. After each Workflow, the same version of data has been replicated to disk and backed up to tape as well. Although the QR Agent does not save the point-in-time data, the backup does, providing the flexibility to recover the data:
 - Run Quick Recovery from the local QR volumes in case of disk failure or data corruption.
 - Copy Back: The data on the QR volume can be transferred back to the source volume by using the Copy Back feature.
 - Restore from tape: This is particularly useful if the point-in-time data is needed. Another benefit of this type of recovery is that an individual file or folder can be recovered quickly.

IMPLEMENT EMC SNAPVIEW WITH RECOVERY DIRECTOR

Related Topics

- Overview - Recovery Director

"I have an EMC CLARiiON as my storage array and SnapView as the snapshot engine. I know the Quick Recovery Agent has an integrated enabler for SnapView. I want to keep multiple SnapView sessions alive and back them up to tape; I also want to be able to recover from any point-in-time SnapView session. What should I do with Recovery Director?"

EMC SnapView is a hardware based snap engine. It allows creating and maintaining multiple versions of snapshots. Recovery Director can take advantage of this feature and maintain the point-in-time version of data in both replication and backup formats. The data can be recovered from either a Point-In-Time SnapView session (it must be activated) or the corresponding backup image from tape.

The following steps briefly describe the configuration procedure for this implementation scenario.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

USE RECOVERY DIRECTOR TO RECOVER FROM AN ALIVE POINT-IN-TIME SNAPVIEW

CONFIGURE RECOVERY DIRECTOR

- Install the following components on the Source computer:

- Recovery Director
- QuickRecovery Agent
- SnapView Enabler for Recovery Director
- ProxyHost iDataAgent
- Windows File System iDataAgent

Install the following components on the Destination computer:

- QuickRecovery Agent
- SnapView Enabler for Recovery Director
- Windows File System iDataAgent

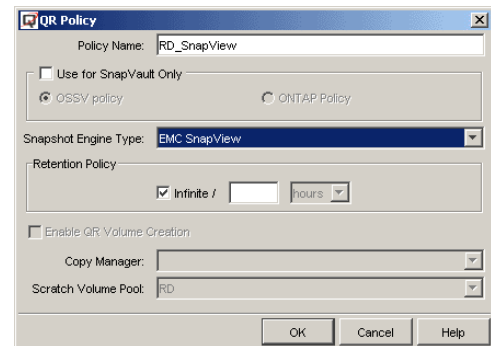
For installation instructions, refer to Installation.

- Create a SnapView QR Policy.

In the QR Policy screen, select **EMC SnapView** as the Snapshot Engine Type.

Notes

- For a SnapView QR Policy, the QR volume creation is disabled automatically.

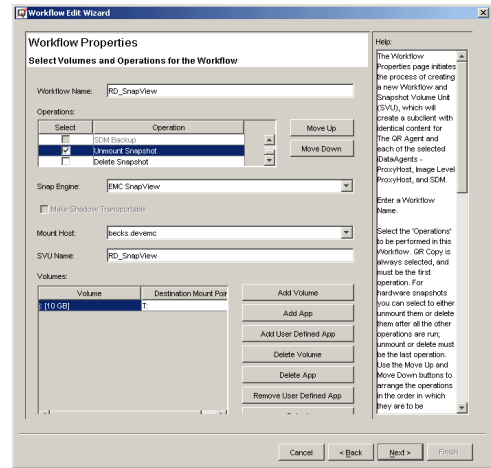


- Create a Workflow.
 - Select **QR Copy, ProxyHost File System Backup** (or **Image Level ProxyHost Backup**) and **Unmount Snapshot** as the Workflow operations.
 - Select **EMC SnapView** as the Snap Engine.
 - Specify the source volume and the mount point of the snapshot.

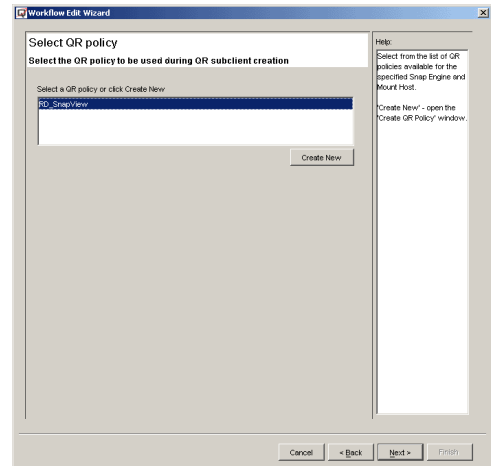
NOTES

- The key point here is to check the **Unmount Snapshot** option. The SnapView session must be mounted for the following backup job, but, at the end of the backup job, the mount point must be released so that the next session can be mounted with the same mount point, which has been defined as the backup content.

- In the next screen, all the existing EMC SnapView based QR Policies will be displayed. Select the correct one and continue.



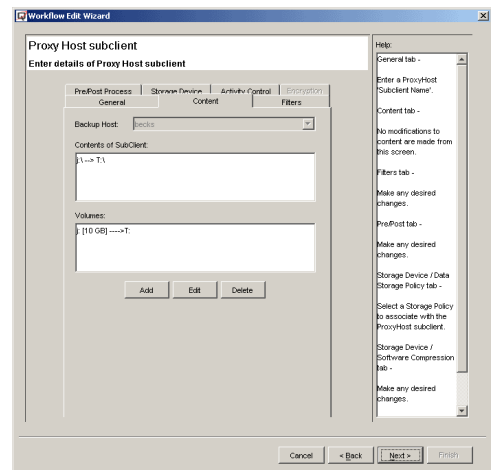
- In the ProxyHost Subclient Content screen, the SnapView session (T drive) will be used as the BCV and data will be backed up from this snapshot. Complete the balance of the Configuration Wizard.



- When each scheduled Workflow is launched, the QR operation will create the SnapView session by calling the Navisphere CLIs, activating the session on the backup host and assigning the drive letter. The backup job will back up the data from the SnapView snapshot on the mount host, so that the performance of the production host will not be impacted by the backup job. After the backup is completed, the SnapView session will be unmounted. The next scheduled Workflow will create a new session and mount it with the same drive letter.

- There are two ways to recover the data.

- Recover from the point-in-time snapshot. This is done through the QR Browse screen. The snapshot must be Activated before it can be recovered.
- Recover from the point-in-time backup. Since each version of the snapshot has been backed up, they can be restored to anywhere, including the source volumes.



ID	Status	Subclient	Volume	Backup Set	Subclient	Snapshot	Failed Files	Failed Files	Start Time	End Time
95	Completed	ProxHost		RD_SnapView	Incremental	0	0	0	2004/10/21 15:02:41	2004/10/21 15:02:41
96	Completed	ProxHost		RD_SnapView	Incremental	0	0	0	2004/10/21 15:03:40	2004/10/21 15:03:40
97	Completed	ProxHost		RD_SnapView	Incremental	0	0	0	2004/10/21 15:04:44	2004/10/21 15:04:44
98	Completed	ProxHost		RD_SnapView	Incremental	0	0	0	2004/10/21 15:05:42	2004/10/21 15:05:42
99	Completed	ProxHost		RD_SnapView	Full	0	0	0	2004/10/21 15:07:46	2004/10/21 15:07:46

Total records found: 9

IMPLEMENT VSS HARDWARE PROVIDERS WITH RECOVERY DIRECTOR

- Overview
- Create a VSS transportable shadow and back it up from a second host
- Recover from an alive point-in-time VSS transportable shadow

Related Topics

- Overview - Recovery Director

OVERVIEW

Microsoft VSS (Volume Shadow Copy Service) does not interrupt the application while creating snapshots of volumes. Most hardware snapshot vendors are delivering their hardware provider for VSS to integrate VSS and the hardware snapshot system. With VSS hardware provider, a VSS transportable shadow can be created and imported to a remote location for backup or other purposes. Also, multiple versions of VSS shadows can be kept so that a point-in-time recovery can be done from any one of the shadows.

Recovery Director adds built-in support for VSS transportable shadow so that the management of VSS shadow creation, import of shadow, and the backup job from the shadow are seamless and quite easy. The VSS shadow creation and maintenance are managed by the QR Agent within Recovery Director. The backup of the shadow is managed by one of the supported backup agents (ProxyHost or Image Level ProxyHost). All activities are coordinated by the Recovery Director Workflow.

CREATE A VSS TRANSPORTABLE SHADOW AND BACK IT UP FROM A SECOND HOST

"I have a storage array with VSS hardware provider. I know the Quick Recovery Agent has an enabler for VSS. How can I integrate QR Agent support of VSS with the backup solution?"

EMC SnapView is a hardware based snap engine. It allows creating and maintaining multiple versions of snapshots. Recovery Director can take advantage of this feature and maintain the point-in-time version of data in both replication and backup formats. The data can be recovered from either a Point-In-Time SnapView session (it must be activated) or the corresponding backup image from tape.

The following steps describe the implementation procedure for using VSS transportable shadows with Recovery Director:

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

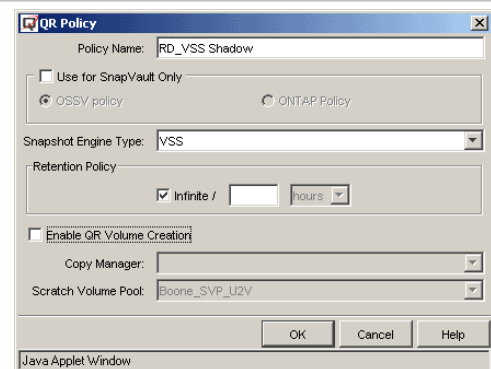
USE RECOVERY DIRECTOR TO CREATE A VSS TRANSPORTABLE SHADOW AND BACK IT UP FROM A SECOND HOST

1. Create a VSS based QR Policy.

In the QR Policy screen, select **VSS** as the snapshot Engine Type.

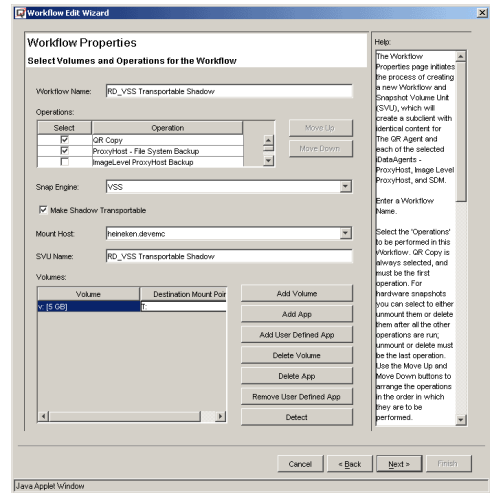
NOTES

- For a VSS QR Policy, QR volume creation is not disabled by default, although the QR volume creation will be skipped in the case of a VSS transportable shadow. This is because the software VSS snapshot and the VSS hardware provider currently share the same snap engine type. This option will be ignored in the case of transportable shadow.



2. Create a Workflow.
 - Select **QR Copy** and **ProxyHost File System Backup** as the Workflow operations.
 - Select **VSS** as the Snap Engine.
 - Select **Make Shadow Transportable**.
 - Specify the Mount Host.
 - Specify the source volume and the mount point of the shadows.

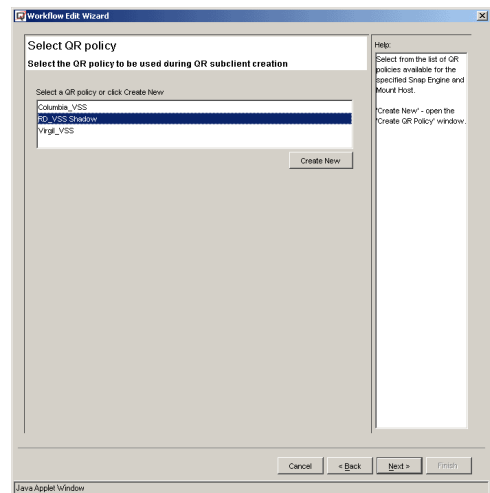
- In the next screen, all the existing VSS based QR Policies will be displayed. Select the correct one and continue.



- In the QR Agent Subclient Properties General screen, select either the default setting **Use Source Host as the Default Import Host** or specify the Default Import Host.

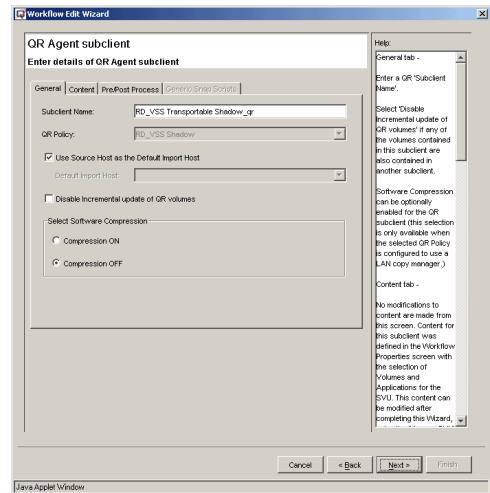
NOTES

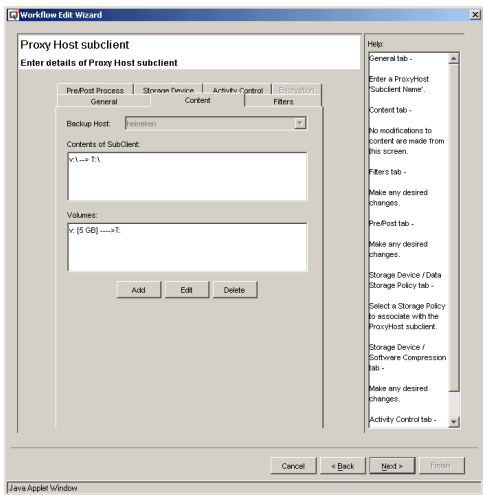
- A VSS shadow must be imported before it can be deleted. If a mount host has been specified for the backup *iDataAgent*, that *iDataAgent* will be used to automatically import the VSS shadow. If no backup *iDataAgent* is specified (no intention to back up), a predefined default import host will be used to import the shadow for deletion.
- This option is only enabled when VSS is specified.



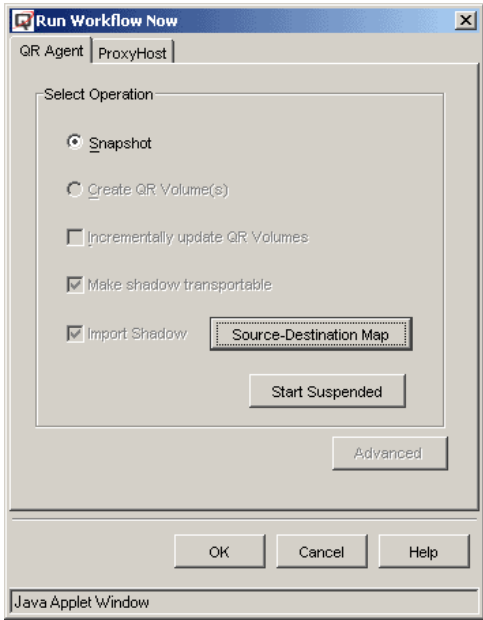
- In the ProxyHost Subclient Content screen, the VSS shadow will be used as the BCV and data will be backed up from the shadow.

Complete the balance of the configuration Wizard.





6. In the Workflow Run Properties screen (right-click a Workflow and select **Run Now**), there are some VSS-specific operation properties. For example, the **Source-Destination Map** of the transportable import can be modified here.



7. There are two ways to recover the data.
- Using the QR Agent’s built-in Copy Back (LAN-based copy manager) feature to copy the data from the shadow to the source volume. This is done through the QR Browse screen.
 - Recover from the point-in-time backup. Since each version of the shadows has been backed up, they can be restored to anywhere, including the source volumes.

RECOVER FROM AN ALIVE POINT-IN-TIME VSS TRANSPORTABLE SHADOW

"I have a storage array with VSS hardware provider. I know the Quick Recovery Agent has an enabler for VSS. I want to keep multiple VSS sessions alive and back them up to tape. I want to be able to recover from any point-in-time VSS session. What should I do with Recovery Director?"

VSS transportable shadow is a hardware based snap engine. It allows creating and maintaining multiple versions of snapshots. Recovery Director can take advantage of this feature and maintain the point-in-time version of data in both replication and backup format. The data can be recovered from either the Point-In-Time Shadow (it must be imported) or the corresponding backup image from tape.

The following steps briefly describe the configuration procedure for this implementation scenario.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

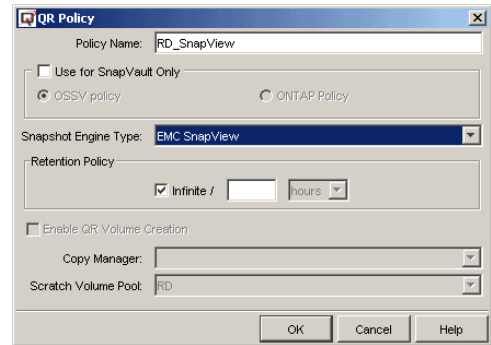
USE RECOVERY DIRECTOR TO CREATE A VSS TRANSPORTABLE SHADOW AND BACK IT UP FROM A SECOND HOST

1. Create a VSS based QR Policy.

In the QR Policy screen, select **VSS** as the snapshot Engine Type.

NOTES

- For a VSS QR Policy, QR volume creation is not disabled by default, although the QR volume creation will be skipped in the case of a VSS transportable shadow. This is because the software VSS snapshot and the VSS hardware provider currently share the same snap engine type. This option will be ignored in the case of transportable shadow.

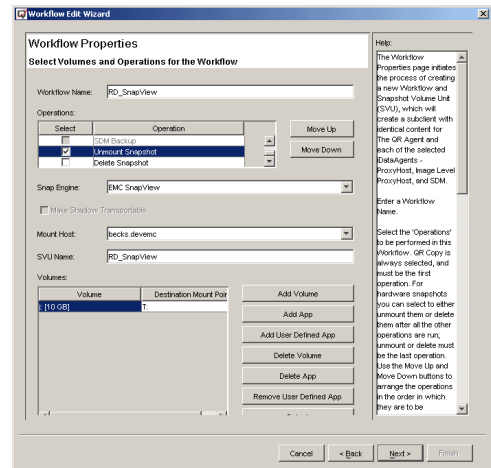


2. Create a Workflow.

- Select **QR Copy, ProxyHost File System Backup, and Unmount Snapshot** as the Workflow operations.
- Select **VSS** as the Snap Engine.
- Specify the Mount Host.
- Specify the source volume and the mount point of the snapshot.

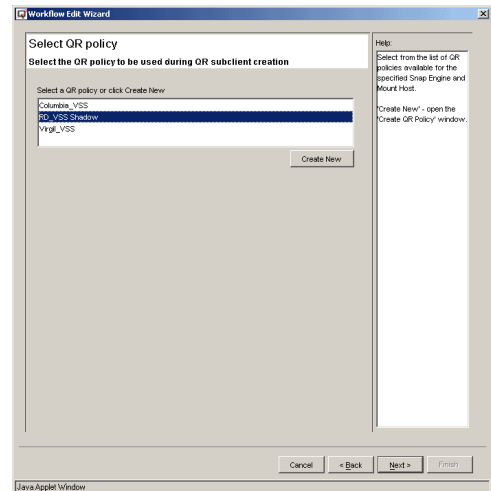
NOTES

- The key point here is to check the **Unmount Snapshot** option. The Shadow must be mounted (imported) for the following backup job, but, at the end of the backup job, the mount point must be released so that the next session can be mounted with the same mount point, which has been defined as the backup content. All the unmounted shadows will still reside on the mount host if the **Delete Snapshot** option is not selected.



3. In the next screen, all the existing VSS based QR Policies will be displayed.

Select the correct one and continue.

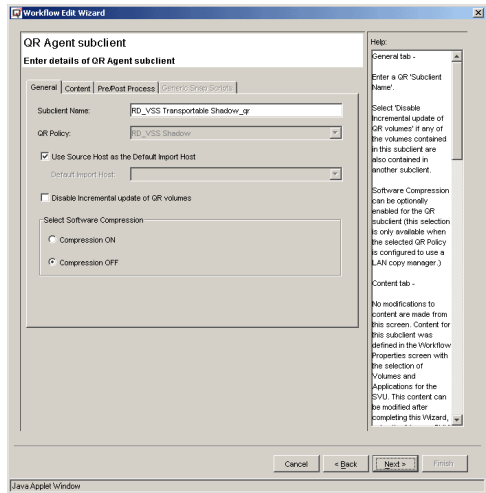


4. In the QR Agent Subclient Properties General screen, select either the default setting **Use Source Host as the Default Import Host** or specify the Default Import Host.

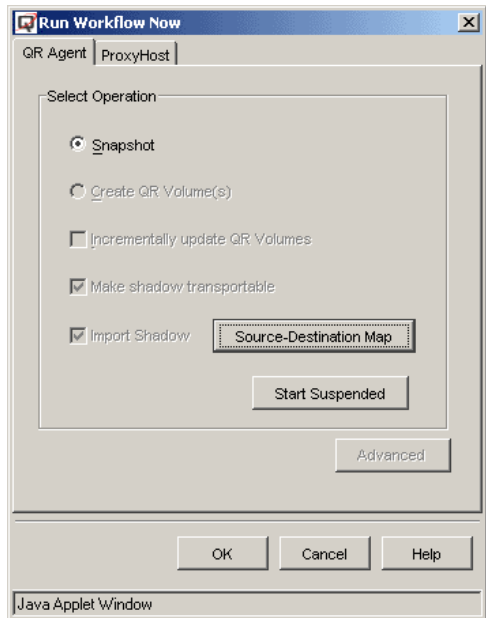
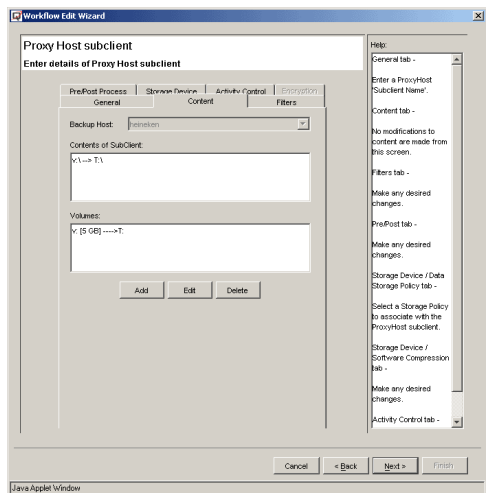
NOTES

- A VSS shadow must be imported before it can be deleted. If a mount host has been specified for the backup iDataAgent, that iDataAgent will be used to automatically import the VSS shadow. If no backup iDataAgent is specified (no intention to back up), a predefined default import host will be used to import the shadow for deletion.
- This option is only enabled when VSS is specified.

- In the ProxyHost Subclient Content screen, the VSS shadow will be used as the BCV and data will be backed up from the shadow. Complete the balance of the configuration Wizard.



- In the Workflow Run Properties screen (right-click a Workflow and select **Run Now**), there are some VSS-specific operation properties. For example, the **Source-Destination Map** of the transportable import can be modified here.



- When each scheduled Workflow is launched, the QR operation will create the VSS shadow by calling the VSS Hardware Provider, importing the shadow to the mount host, and assigning the drive letter. The backup job will back up the data from the shadow on the mount host, so that the performance of the production host will not be impacted by the backup job. After the backup is completed, the transportable shadow will be unmounted. The next scheduled Workflow will create a new shadow and mount it with the same drive letter.
- There are two ways to recover the data.

- Using the QR Agent's built-in Copy Back (LAN-based copy manager) feature to copy the data from the shadow to the source volume. This is done through the QR Browse screen.
 - Recover from the point-in-time backup. Since each version of the shadows has been backed up, they can be restored to anywhere, including the source volumes.
-

PROTECT DATA VOLUMES OF CUSTOM APPLICATIONS

One of the distinguishing functionalities of the Quick Recovery Agent is application awareness. The QR Agent currently has built-in support for Exchange, SQL, and Oracle, but this list may not include the application you have and want to protect. Similar in purpose to Generic Enablers as a means of extending hardware support, Recovery Director extends support for user-defined applications. When you configure an application name and the scripts (CLI) to quiesce/unquiesce the application, Recovery Director will associate this application information with the volumes and build up the requisite information, performing as if the application is one for which the QR Agent has built-in support. When QR Volume Creation is launched, the specified quiesce/unquiesce commands will be executed by the Job Manager in the appropriate phase.

Two scripts are needed for customized application implementation: quiesce and unquiesce. You should provide these scripts based on the application type and environment.

USE RECOVERY DIRECTOR TO PROTECT DATA VOLUMES OF AN APPLICATION NOT CURRENTLY DETECTED BY QUICK RECOVERY AGENT

"Quick Recovery Agent has a few built-in supported applications: Exchange, SQL and Oracle, but I have an application that is not one of them. How can I take the advantage of the QR Agent's application awareness as if my application is also supported?"

SQL is currently supported by QR. For the sake of this example, let's assume it is not supported. The following procedure describes the configuration procedure of supporting SQL with QR as a user-defined application.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

TO PROTECT DATA VOLUMES OF AN APPLICATION NOT CURRENTLY DETECTED BY QUICK RECOVERY AGENT

1. Create a new application type.
 - Select **Recovery Director**, then right-click **Application Types** and select **Create New Application Type**.
 - Fill in the **Application Name** and **Application Tag**. These can be anything you like. The Application Name will be used to identify this application by the QR Agent.
 - Specify the quiesce and unquiesce scripts in the **Suspend Script Pathname** and **Resume Script Pathname** fields.

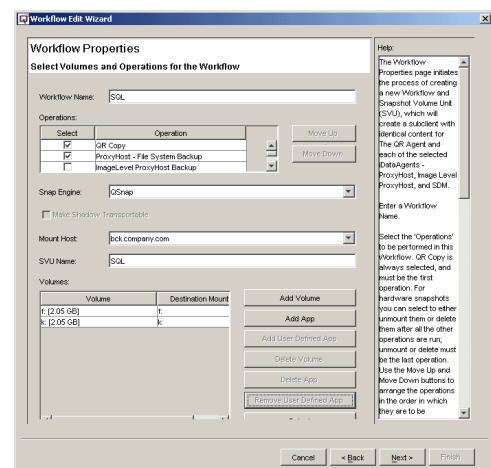
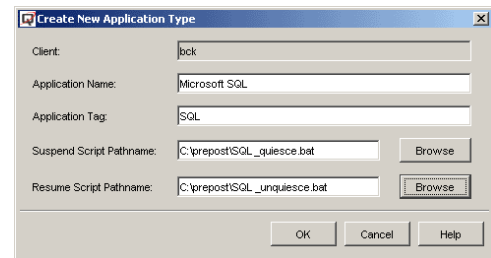
NOTES

- The template scripts for quiescing and unquiescing SQL are shown in Template scripts for quiescing and unquiescing a user defined application (SQL).
2. Create a new Workflow using the Workflow Configuration Wizard.

Click **Add Volume** to populate source volumes and specify the destination mount path.

Highlight all the source volumes (K and F in this case) and click **Add User Defined App**.

3. Select the application that resides on these source volumes (in this example **Microsoft SQL**) and click **OK**. The application name will be attached to the source volumes.

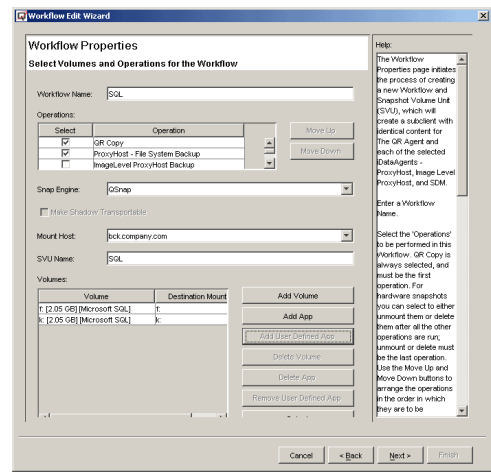
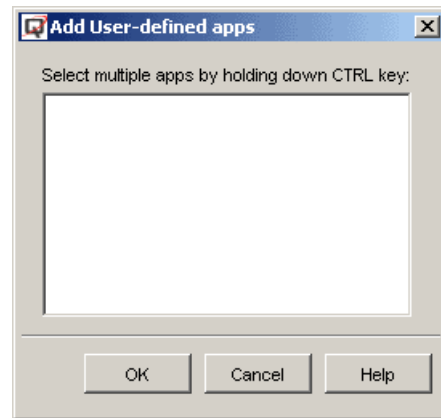


- Complete the balance of the Wizard sections as usual. Refer to Use the Workflow Configuration Wizard.

NOTES

- To remove the association of the application with the volumes, select **Remove User Defined App**.

- For those applications that are supported within the QR Agent, the application (volumes) recovery is done through the database iDataAgent Browse window.
For a user-defined application, you must manually bring down the application and recover the volumes from the Browse QR Volumes window.



CREATE A GENERIC ENABLER

Overview

Implement the Hitachi HDS ShadowImage Snap Engine

Implement the HP EVA Business Copy

OVERVIEW

A Generic Enabler for a specific hardware device is implemented through scripts for snapping, unsnapping, and recovering. You provide these scripts based on your snap type and your environment. (The template scripts for Hitachi ShadowImage and HP EVA are provided for reference purposes.) The following sections describe the Recovery Director configuration procedure for these two snap environments.

IMPLEMENT THE HITACHI HDS SHADOWIMAGE SNAP ENGINE

"I have a Hitachi HDS subsystem as my storage array and ShadowImage or TrueCopy as the snapshot engine. I know the Quick Recovery Agent does not have an integrated enabler for HDS. How can I integrate the QR Agent's replication and backup solution with the Hitachi system?"

When implementing Hitachi HDS through the Generic Enabler feature, two scenarios must be considered:

- **Remote Scenario:** The hardware snapshot will be created and mounted on a remote host, and backed up from that remote host. The mounted snapshot will also be recorded as a QR volume. In this scenario, recovery is accomplished either by using the QR Copyback feature or by calling the recovery script that launches the HDS copyback command.
- **Local Scenario:** The hardware snapshot will be created and mounted on the primary host itself. The mounted snapshot will be recorded as a QR volume. In this scenario, QR quick recovery is available.

In the following implementation example, we describe the operation steps of the **Remote Scenario**.

REQUIREMENTS

Required Capability: See Capabilities and Permitted Actions

TO IMPLEMENT THE HITACHI HDS SHADOWIMAGE SNAP ENGINE

1. Create the HORCM instance and configure the horcm.conf.
2. Create Generic Enabler scripts (see Template Scripts for Hitachi HDS).
Three scripts should be created for the remote scenario: snap, unsnap, and copyback. (If it were a local scenario, you would create a recovery script rather than a copyback script.)
 - The snap script launches the pair-create process to make the snap pair and populate the CommServe database to create the QR volume entry.
 - The unsnap script deletes the pair.
 - The copyback script launches the reverse pair-create process to restore data from SVOL to PVOL. (The recovery script would unmount the PVOLs and SVOLs and swap the drive letters between PVOL and SVOL.)

3. Create a Generic Enabler QR Policy.

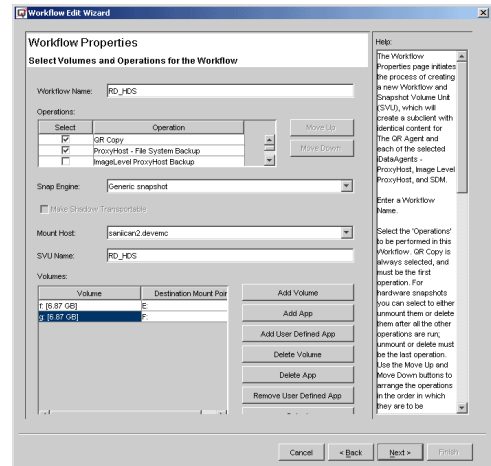
In the QR Policy screen, select **Generic snapshot** as the Snapshot Engine Type.

Note

- QR Volume Creation is automatically disabled (grayed out) when you choose **Generic snapshot**.

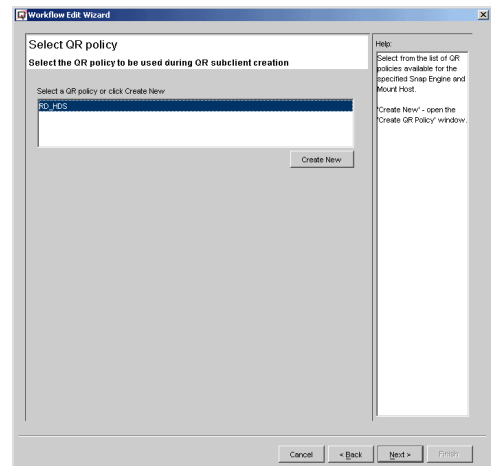
4. Create a Workflow using the Workflow Wizard.
 - Select **QR Copy** and **ProxyHost File System Backup** (or **Image Level ProxyHost Backup**) as the Workflow operations.
 - Select **Generic snapshot** as the Snap Engine.

- Specify the source volume (PVOL) and the destination volume (SVOL).



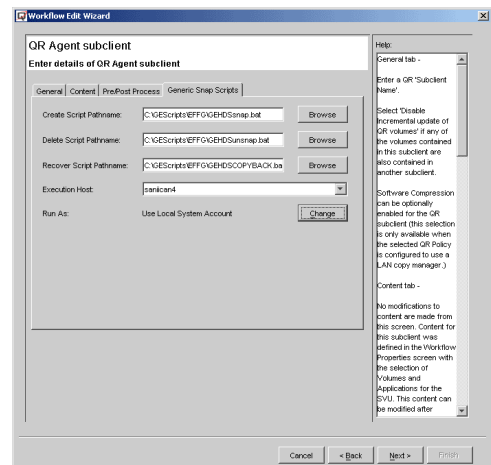
- In the next Workflow Wizard screen, all existing Generic-Enabler-based QR Policies will be displayed.

Select the correct one and continue.



- In the QR Agent Subclient Properties screen, a new **Generic Snap Scripts** tab will be enabled. This tab is only enabled when a Generic-Enabler-based QR Policy is associated.

- Specify the snap script in **Create Script Pathname**.
- Specify the unsnap script in **Delete Script Pathname**.
- Specify the copyback script in **Recovery Script Pathname**.
- Select an **Execution Host** -- where these scripts are located and executed.



- Complete the rest of the Workflow configuration.

- During QR volume creation, the snap script is launched by the Generic Enabler to create the hardware snapshots, mount the snapshots, and update the CommServe database as if the snapshots were created by the QR Copy Manager. If any applications reside on the PVOLs, you can include the application quiesce/unquiesce operations as part of the snap script.

- To recover the data:

- Because we mounted the SVOLs (Business Continuance Volumes (BCVs)) on a remote machine (remote scenario), the data on the SVOLs (BCVs) can be copied back to the PVOLs (source volumes) through either the QR Agent's built-in Copyback feature (LAN-based copy manager) or through the hardware-based recovery. (The copyback script -- see Template Scripts for Hitachi HDS -- should have been specified in "Recovery Script Pathname. "). Hardware-based recovery is recommended because it is faster and it is LAN-free.

Here are two other recovery possibilities:

- If the SVOLs (BCVs) are mounted on the same machine (local scenario), Quick Recovery can be used. In this case the recovery script (see Template Scripts for Hitachi HDS) should have been specified on the **Recovery Script Pathname**.

- Recover from the point-in-time backup. Since each version of the snapshot has been backed up, they can be restored to anywhere, including the source volume(s).
-

IMPLEMENT THE HP EVA BUSINESS COPY

"I have HP StorageWorks as my storage array and Business Copy as the snapshot engine. I know the Quick Recovery Agent does not have an integrated enabler for the HP EVA. How can I integrate the QR Agent's replication and backup solution with the HP system?"

The configuration procedures for HP EVA implementation with Recovery Director is almost the same as that of the Hitachi HDS. (See Template Scripts for HP EVA.)



- When implementing HP EVA Business Copy through the Generic Enabler, the QR Copyback feature will not work with the Business Copy snapshot because the snapshot always "locks" the source volume.
 - The HP EVA does not have reserve restore functionality.
-

Template Scripts for Generic Enabler Implementation with Hitachi HDS

===== Typical Hitachi ShadowImage Snap Script for RD Generic Enabler =====

@ECHO OFF

REM This is an example script

REM It will be used by Generic Enabler of Recovery Director to manage snapshot for Hitachi 9900V system.

REM -- Required Vars

set HORCC_MRCF=1

set HORCMINST=0

set sivg=remote

set remotehost=saniican2.devemc.company.com

set localhost=saniican4.devemc.company.com

set shortlocalhost=saniican4

set HitachiBaseDir=c:\horcm\etc

set GalaxyBaseDir=<software installation path>\Base

set ScriptDir=c:\GEScripts

set RemoteScriptDir=c:\GEScripts

set CV_ERRORLEVEL=0

REM -- Optional Vars

set timeout=300

REM Check for certain key binaries before running.

IF NOT EXIST "%GalaxyBaseDir%\remex.exe" GOTO MissingFile

REM *****

REM unmount remote drives

"%GalaxyBaseDir%\remex.exe" -s %remotehost% -c "%RemoteScriptDir%\GEHDSumount.bat" -vm <InstanceName*> -cn <ClientName>

if not errorlevel 0 goto Abort

REM Verify that the status of the primary volumes are SMPL

"%HitachiBaseDir%\pairevwait.exe" -g %sivg% -s smpl -t %timeout%

if not errorlevel 0 goto Abort

REM Create pairs and do initial copy operation

"%HitachiBaseDir%\paircreate.exe" -g %sivg% -vl -c 15

if not errorlevel 0 goto Abort

REM wait until S-VOL is in PAIR status

:rescan

sleep 5

"%HitachiBaseDir%\pairvolchk.exe" -g %sivg% -c -ss

if not errorlevel 33 goto rescan

REM -- Use CVSnapTool to quiesce the applications if they exist

REM "%GalaxyBaseDir%\cvsnaptool.exe" -x saniican4 -a ex2000 -g SG1 -o quiesce -vm <InstanceName*> -cn <ClientName>

REM if not errorlevel 0 goto Abort

REM "%GalaxyBaseDir%\cvsnaptool.exe" -x saniican4 -a sql2000 -v G: -o quiesce -vm <InstanceName*> -cn <ClientName>

REM if not errorlevel 0 goto Abort

```

REM split pairs
"%HitachiBaseDir%\pairsplit.exe" -g %sivg% -S
if not errorlevel 0 goto Abort

REM -- Use CVSnapTool to unquiesce the applications if they exist
REM "%GalaxyBaseDir%\cvsnaptool.exe" -x saniican4 -a ex2000 -g SG1 -o unquiesce -vm <InstanceName*> -cn <ClientName>
REM if not errorlevel 0 goto Abort
REM "%GalaxyBaseDir%\cvsnaptool.exe" -x saniican4 -a sql2000 -v G: -o unquiesce -vm <InstanceName*> -cn <ClientName>
REM if not errorlevel 0 goto Abort

REM mount remote drives
"%GalaxyBaseDir%\remex.exe" -s %remotehost% -c "%RemoteScriptDir%\GEHDSmount.bat" -vm <InstanceName*> -cn <ClientName>
if not errorlevel 0 goto Abort

REM Execute gesnap.exe to populate the CS database
"%GalaxyBaseDir%\gesnap.exe" update create -src F: -dest E: -desthost %remotehost% -mp E: -uniqueid 10000 -vm <InstanceName*> -cn <ClientName>
if not errorlevel 0 goto Abort
"%GalaxyBaseDir%\gesnap.exe" update create -src G: -dest F: -desthost %remotehost% -mp F: -uniqueid 10001 -vm <InstanceName*> -cn <ClientName>
if not errorlevel 0 goto Abort

REM *****

REM Exit clean
set CV_ERRORLEVEL=0
goto Exit

:MissingFile
net send %shortlocalhost% "Missing file %GalaxyBaseDir%\remex.exe"
goto Abort

:Abort
echo An error occurred during batch file execution.
set CV_ERRORLEVEL=1
goto Exit

:Exit
@echo off
@echo ERRORLEVEL=%ERRORLEVEL%
@echo CV_ERRORLEVEL=%CV_ERRORLEVEL%

=====

===== Typical Hitachi ShadowImage Unsnap Script for RD Generic Enabler =====
@ECHO OFF

REM The following script unmounts and destroys pairs.
cd c:\horcm\etc
set HORCC_MRCF=1
set HORCMINST=0

REM -- Required Vars
set HORCC_MRCF=1
set sivg=remote
set remotehost=saniican2.devemc.company.com
set localhost=saniican4.devemc.company.com
set HitachiBaseDir=c:\horcm\etc
set GalaxyBaseDir=<software installation path>\Base
set ScriptDir=c:\GEScripts
set RemoteScriptDir=c:\GEScripts

REM Check for certain key binaries before running.
IF NOT EXIST "%GalaxyBaseDir%\remex.exe" GOTO MissingFile

```

```
"%GalaxyBaseDir%\remex.exe" -s %remotehost% -c "%RemoteScriptDir%\GEHDSumount.bat" -vm <InstanceName*> -cn <ClientName>
if not errorlevel 0 goto Abort
```

```
REM The ShadowImage pair will be deleted by the end of the Workflow.
"%HitachiBaseDir%\pairsplit.exe" -g %sivg% -S
if not errorlevel 0 goto Abort
```

```
REM Exit clean
set CV_ERRORLEVEL=0
goto Exit
```

```
:MissingFile
net send %shortlocalhost% "Missing file %GalaxyBaseDir%\remex.exe"
goto Abort
```

```
:Abort
echo An error occurred during batch file execution.
set CV_ERRORLEVEL=1
goto Exit
```

```
:Exit
@echo off
@echo ERRORLEVEL=%ERRORLEVEL%
@echo CV_ERRORLEVEL=%CV_ERRORLEVEL%
```

```
=====
```

```
===== Typical Hitachi ShadowImage CopyBack Script for RD Generic Enabler =====
```

```
@ECHO OFF
```

```
REM This is an example script
REM It will be used by Generic Enabler of Recovery Director to manage hardware level restore for Hitachi 9900V system.
REM This script can be launched as the Recovery Script so that much faster LAN free recovery can be completed
```

```
REM -- Required Vars
set HORCC_MRCF=1
set HORCMINST=0
set sivg=remote
set remotehost=saniican2.devemc.company.com
set localhost=saniican4.devemc.company.com
set shortlocalhost=saniican4
set HitachiBaseDir=c:\horcm\etc
set GalaxyBaseDir=<software installation path>\Base
set ScriptDir=c:\GEScripts
set RemoteScriptDir=c:\GEScripts
set CV_ERRORLEVEL=0
```

```
REM -- Optional Vars
set timeout=300
```

```
REM unmount source volumes
"%HitachiBaseDir%\pairsplit.exe" -x amount F:
"%HitachiBaseDir%\pairsplit.exe" -x amount G:
if not errorlevel 0 goto Abort
```

```
REM Verify that the status of the primary volumes are SMPL
"%HitachiBaseDir%\pairevwait.exe" -g %sivg% -s smpl -t %timeout%
if not errorlevel 0 goto Abort
```

```

REM Create pairs and do REVERSE copy operation
"%HitachiBaseDir%\paircreate.exe" -g %sivg% -vr -c 15
if not errorlevel 0 goto Abort

```

```

REM wait until S-VOL is in PAIR status
:rescan
sleep 5
"%HitachiBaseDir%\pairvolchk.exe" -g %sivg% -c -ss
if not errorlevel 23 goto rescan

```

```

REM -- Use CVSnapTool to quiesce here
REM "%GalaxyBaseDir%\cvsnaptool.exe" -x saniican4 -a ex2000 -g SG1 -o quiesce -vm <InstanceName*> -cn <ClientName>
REM if not errorlevel 0 goto Abort
REM "%GalaxyBaseDir%\cvsnaptool.exe" -x saniican4 -a sql2000 -v G: -o quiesce -vm <InstanceName*> -cn <ClientName>
REM if not errorlevel 0 goto Abort

```

```

REM split pairs
"%HitachiBaseDir%\pairsplit.exe" -g %sivg% -S
if not errorlevel 0 goto Abort

```

```

REM -- Use CVSnapTool to unquiesce here
REM "%GalaxyBaseDir%\cvsnaptool.exe" -x saniican4 -a ex2000 -g SG1 -o unquiesce -vm <InstanceName*> -cn <ClientName>
REM if not errorlevel 0 goto Abort
REM "%GalaxyBaseDir%\cvsnaptool.exe" -x saniican4 -a sql2000 -v G: -o unquiesce -vm <InstanceName*> -cn <ClientName>
REM if not errorlevel 0 goto Abort

```

```

REM mount source volumes
"%HitachiBaseDir%\pairsplit.exe" -x mount F: HarddiskVolume12
"%HitachiBaseDir%\pairsplit.exe" -x mount G: HarddiskVolume13
if not errorlevel 0 goto Abort

```

```

REM Exit clean
set CV_ERRORLEVEL=0
goto Exit

```

```

:Abort
echo An error occurred during batch file execution.
set CV_ERRORLEVEL=1
goto Exit

```

```

:Exit
@echo off
@echo ERRORLEVEL=%ERRORLEVEL%
@echo CV_ERRORLEVEL=%CV_ERRORLEVEL%

```

```

=====

```

```

===== Typical Hitachi ShadowImage Quick Recovery Script for RD Generic Enabler =====

```

```

@ECHO OFF

```

```

REM Set HDS environment
REM cd c:\horcm\etc
set HORCC_MRCF=1
set HORCMINST=1

```

```

REM -- Required Vars
set HORCC_MRCF=1
set sivg=local
set localhost=saniican4.devemc.company.com

```

```
set shortlocalhost=saniican4
set HitachiBaseDir=c:\horcm\etc
set GalaxyBaseDir=<software installation path>\Base
set ScriptDir=c:\GEScripts
```

REM The ShadowImage pair will be deleted by the recovery process.

```
"%HitachiBaseDir%\pairsplit.exe" -g %sivg% -S
if not errorlevel 0 goto Abort
```

REM The following script unmount the source volumes and BCVs.

```
"%HitachiBaseDir%\pairsplit.exe" -x umount P:
if not errorlevel 0 goto Abort
"%HitachiBaseDir%\pairsplit.exe" -x umount Q:
if not errorlevel 0 goto Abort
"%HitachiBaseDir%\pairsplit.exe" -x umount U:
if not errorlevel 0 goto Abort
"%HitachiBaseDir%\pairsplit.exe" -x umount V:
if not errorlevel 0 goto Abort
```

REM The following script mount the BCVs using drive letters of source volumes.

```
"%HitachiBaseDir%\pairsplit.exe" -x mount P: HarddiskVolume16
if not errorlevel 0 goto Abort
"%HitachiBaseDir%\pairsplit.exe" -x mount Q: HarddiskVolume17
if not errorlevel 0 goto Abort
```

```
:Exit_Clean
REM Exit clean
set CV_ERRORLEVEL=0
goto Exit
```

```
:Abort
echo An error occurred during batch file execution.
set CV_ERRORLEVEL=1
goto Exit
```

```
:Exit
@echo off
@echo ERRORLEVEL=%ERRORLEVEL%
@echo CV_ERRORLEVEL=%CV_ERRORLEVEL%
```

===== Typical Hitachi ShadowImage Mount Script for RD Generic Enabler =====

```
REM Set the ShadowImage environment
REM cd c:\horcm\etc
set HORCC_MRCF=1
set HORCMINST=0
set HitachiBaseDir=c:\horcm\etc
```

REM Mount the SVOLs to the remote machine

```
"%HitachiBaseDir%\pairsplit.exe" -x mount E: HarddiskVolume1
"%HitachiBaseDir%\pairsplit.exe" -x mount F: HarddiskVolume2
```

===== Typical Hitachi ShadowImage Unmount Script for RD Generic Enabler =====

```
REM Set the ShadowImage environment
REM cd c:\horcm\etc
set HORCC_MRCF=1
set HORCMINST=0
set HitachiBaseDir=c:\horcm\etc
```

REM Unmount the SVOLs from the remote machine

"%HitachiBaseDir%\pairsplit.exe" -x umount E:

"%HitachiBaseDir%\pairsplit.exe" -x umount F:

=====

* *InstanceName is the name used for a Recovery Director instance (by default it is Instance001).*

Template Scripts for Generic Enabler Implementation with HP EVA

=====
 Typical HP EVA Snap Script for RD Generic Enabler
 =====

@ECHO OFF

REM This is an example script
 REM It will be used by Generic Enabler of Recovery Director to manage snapshot for HP EVA Subsystem.

REM -- Required Vars
 set evmjob=RD
 set remotehost=olympus.devemc.company.com
 set localhost=athena.devemc.company.com
 set shortlocalhost=athena
 set HPBaseDir=C:\Program Files\Compaq\Sanworks\Enterprise Volume Manager\bin
 set ScriptDir=c:\GEScripts\HPEVA
 set RemoteScriptDir=c:\GEScripts\HPEVA
 set GalaxyBaseDir=<software installation path>\Base
 set CV_ERRORLEVEL=0

REM Delete the dangling snapshots
 "%HPBaseDir%\evmcl.exe" SMAD307FK34H036 undo "%evmjob%"
 if not errorlevel 0 goto Abort

REM Create snap-clone
 "%HPBaseDir%\evmcl.exe" SMAD307FK34H036 run "%evmjob%"
 if not errorlevel 0 goto Abort

REM Execute gesnap.exe to populate the CS database
 "%GalaxyBaseDir%\gesnap.exe" update create -src X: -dest X: -desthost %remotehost% -mp X: -uniqueid 10000 -vm <InstanceName*> -cn <ClientName>
 if not errorlevel 0 goto Abort

** InstanceName is the name used for a Recovery Director instance (by default it is Instance001).*

REM Exit clean
 set CV_ERRORLEVEL=0
 goto Exit

:Abort
 echo An error occurred during batch file execution.
 set CV_ERRORLEVEL=1
 goto Exit

:Exit
 @echo off
 @echo ERRORLEVEL=%ERRORLEVEL%
 @echo CV_ERRORLEVEL=%CV_ERRORLEVEL%
 =====

=====
 Typical HP EVA Unsnap Script for RD Generic Enabler
 =====

@ECHO OFF

REM This is an example script
 REM It will be used by Generic Enabler of Recovery Director to delete snapshot for HP EVA Subsystem.

REM -- Required Vars
 set evmjob=RD
 set remotehost=olympus.devemc.company.com


```
set localhost=athena.devemc.company.com
set shortlocalhost=athena
set HPBaseDir=C:\Program Files\Compaq\Sanworks\Enterprise Volume Manager\bin
set ScriptDir=c:\GEScripts\HPEVA
set RemoteScriptDir=c:\GEScripts\HPEVA
set GalaxyBaseDir=<software installation path>\Base
set CV_ERRORLEVEL=0
```

```
REM Unmount and Delete the snapshots
"%HPBaseDir%\evmcl.exe" SMAD307FK34H036 undo "%evmjob%"
if not errorlevel 0 goto Abort
```

```
REM Exit clean
set CV_ERRORLEVEL=0
goto Exit
```

```
:Abort
echo An error occurred during batch file execution.
set CV_ERRORLEVEL=1
goto Exit
```

```
:Exit
@echo off
@echo ERRORLEVEL=%ERRORLEVEL%
@echo CV_ERRORLEVEL=%CV_ERRORLEVEL%
```

=====