

Quick Start - Virtual Server *iDataAgent* (Xen)

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Terminology

INTRODUCTION

The Virtual Server iDataAgent provides a unified protection and recovery vehicle for all virtual machine data in your enterprise. In addition to complete protection of entire virtual machines for disaster recovery, the Virtual Server iDataAgent also provides more granular backup and recovery options that operate seamlessly with your virtual machine protection. Added options for automatic data discovery, deduplication, and reporting help ensure all your virtual machine data is easily traceable and retrievable whenever the need arises.

KEY FEATURES

The Virtual Server iDataAgent offers the following key features:

COMPLETE VIRTUAL MACHINE PROTECTION

The Virtual Server iDataAgent backs up a complete image of each virtual machine. This is accomplished by creating a snapshot of the virtual machine's disk, which includes the complete state of the virtual machine at the time of backup. Subsequently, the virtual machine disk can be easily restored and mounted back onto the host computer. The virtual machine is then ready for use.

GRANULAR RECOVERY OF VIRTUAL MACHINE DATA

In some cases, it may not be desirable to recover an entire virtual disk for a contained subset of data. For such circumstances, the Virtual Server iDataAgent provides the facility to restore individual files from a virtual disk. This negates the need to install a separate File System iDataAgent on each virtual machine or recover an entire virtual server disk for a mere subset of needed files. **VMware** backups also provide the facility to recover entire volumes with similar benefits.

MINIMAL LOAD ON HOST RESOURCES

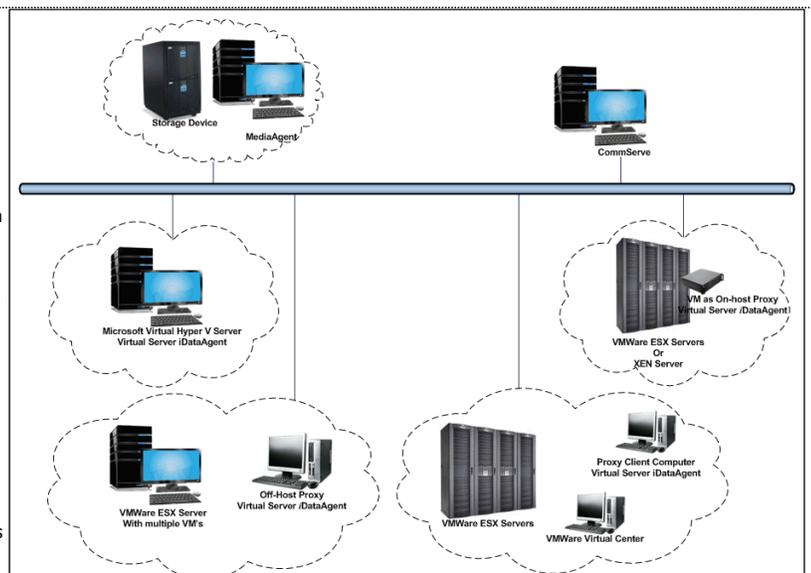
The Virtual Server iDataAgent is designed to ensure data protection and recovery operations consume as few resources on the host computer as possible. This is accomplished by placing the iDataAgent in the most resource-efficient location possible for mounting and transfer of data.

For **VMware**, the iDataAgent is installed on a proxy computer that can communicate with the Virtual Center or ESX Server being backed up. This proxy computer handles all the mounting and transfer of data from the host computer to the backup media. The proxy computer can be a separate physical machine, which is useful if the host computer already has a significant load placed on it through everyday operations. Alternatively, a virtual machine on the ESX Server or Virtual Center can be configured as the proxy computer if sufficient resources are available on the host and a separate, designated physical computer is not desired.

Similarly, for **Xen**, a proxy computer is also used. This proxy computer is always a virtual machine residing on the Xen server and is reserved specifically for data protection operations.

For **Microsoft Virtual Servers** and **Hyper-V**, the iDataAgent is installed directly on the host computer and utilizes Microsoft's embedded resource management capabilities to ensure backup and restore operations consume as few resources as possible.

The diagram on the right illustrates the combination of installations available for each virtualization vendor.



AUTOMATIC PROTECTION OF VIRTUAL MACHINES

WHERE TO GO NEXT

VMware

Walks you through the process of installing and configuring the Virtual Server iDataAgent for VMware.

Microsoft Hyper-V

Walks you through the process of installing and configuring the Virtual Server iDataAgent for Microsoft Hyper-V.

Xen

Walks you through the process of installing and configuring the Virtual Server iDataAgent for Xen.

In any virtual environment, virtual machines are added or moved on a frequent basis. This rate of change can make it difficult to track whether newly created or moved virtual machines have been protected. The Virtual Server iDataAgent solves this problem by providing several options for automatically discovering virtual machines. The discovery process can add all new or moved virtual machines or a select group of virtual machines satisfying certain criteria to the backup content.

BLOCK LEVEL DEDUPLICATION

Deduplication provides a smarter way of storing data by identifying and eliminating the duplicate items in a data protection operation.

Deduplication at the data block level compares blocks of data against each other. If virtual machines contains blocks of data that are identical to each other, block level deduplication eliminates storing the redundant data and reduces the size of the data in storage. This dramatically reduces the virtual machine backup data copies on both the disk and tapes.

TERMINOLOGY

The Virtual Server iDataAgent documentation uses the following terminology:

VENDOR	The virtualization software being used (such as Hyper-V, VMware, or Xen).
DISK-LEVEL	Backup and restore operations for virtual server disks.
VOLUME-LEVEL	Backup and restore operations of volumes within a virtual server disk (such as a C: drive)
FILE-LEVEL	Backup and restore operations of individual files and folders within a virtual server disk, such as documents and images.
GUEST HOST	A virtual machine.
GUEST OS	The operating system running on the virtual machine (such as Windows or Linux).
PROXY COMPUTER	A physical computer separate from the host computer on which the iDataAgent is installed. This computer facilitates most of the data movement from the host computer to the backup media. In some cases, this computer may be a virtual machine installed on the host computer. Such computers are referred to as a Proxy Virtual Machine .

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System Requirements - Virtual Server iDataAgent (Xen)

System Requirements | Supported Features

The following requirements are for the Virtual Server iDataAgent:

XEN REQUIREMENTS

VERSIONS OF XENSERVICES SUPPORTED

Citrix XenServer 5.5
Citrix XenServer 5.6
Citrix XenServer 6.0
Citrix XenServer 6.1
Citrix XenServer 6.2

GUEST OPERATING SYSTEM

The Agent can be installed on the following Operating Systems:

Microsoft Windows Server 2003 32-bit and x64 Editions with a minimum of Service Pack 1
Microsoft Windows Server 2008 32-bit and x64 Editions
Microsoft Windows Server 2008 R2 x64 Edition

HARD DRIVE

HARD DRIVE SPACE REQUIRED ON STORAGE REPOSITORIES

Xen Virtual Server agent requires hard disk space to create snapshots of Virtual machines that are being backed up. Ensure that the storage repository has sufficient temporary space for snapshots during a backup job. The size required for a snapshot depends on the type of Storage Repository, and could be as large as the size of the virtual machine being backed up.

117 MB minimum of hard disk space for software/ 498 MB recommended
100 MB of additional hard disk space for log file growth
775 MB of temp space required for install or upgrade (where the temp folder resides)

MEMORY

A minimum of 2.0 GB RAM is required.

PROCESSOR

All Windows-compatible processors supported

PERIPHERALS

DVD-ROM drive
Network Interface Card

MISCELLANEOUS

NETWORK

TCP/IP Services configured on the computer.

ALLOCATION UNIT SIZE OF THE NTFS VOLUMES

The cluster size or the allocation unit size of an NTFS volume in a virtual machine must be multiple of 1024 bytes. You can set the cluster size before formatting a volume. The default cluster size is 4096 bytes.

NOTES ON VIRTUAL SERVER iDATAAGENT INSTALLATIONS FOR XEN

- Ensure that the virtual machine where you have installed the Virtual Server iDataAgent has a xencenter name that is the same as its short host name.
- .NET Framework 3.5 with Service Pack 1 must be installed prior to performing disk level backups.

- Xen tools version 5.5 or 6.0 must be installed.

XEN TOOLS

The following services must be running on the proxy virtual machine prior to performing backups:

- COM+ System Application
- COM+ Event System
- Remote Procedure Call (RPC)
- Virtual Disk Service
- Citrix tools for Virtual Machines

Virtualization State of the VMs backed up should be Optimized. This state is visible in XenCenter console, on the General tab of the VMs.

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

DEPLOYMENT CONSIDERATIONS - VIRTUAL SERVER iDATAAGENT (XEN)

Protection for Xen virtual machines (VMs) is provided by a dedicated virtual machine on the master Xen server for a Xen pool. The Xen VM where the Virtual Server iDataAgent is installed (also referred to as the **proxy**) provides all backup and restore services for the Xen pool and the storage repository (datastore) for the Xen pool.

The Virtual Server iDataAgent on the proxy (also referred to as the **VSA agent for Xen**) communicates with and is managed by an existing CommServe system and MediaAgent in the network.

The proxy virtual machine must meet the requirements listed in System Requirements - Virtual Server iDataAgent (Xen).

To deploy and configure a Xen proxy, perform the following high-level steps. As needed, detailed information for individual steps is provided in linked topics.

1. For each Xen pool, identify a virtual machine that can serve as the proxy for that pool. You must have a proxy in each pool.
2. If the first proxy does not have direct access to all virtual machine storage repositories (SRs) to be backed up, identify additional proxies on Xen servers that have direct access to the storage repositories. If storage repositories are shared across all Xen servers, this step is not required.
3. Ensure that Xen Tools from Citrix are installed on the proxy.

For more information, see System Requirements - Virtual Server iDataAgent (Xen).

4. Ensure that the XenCenter display name matches the short host name of the proxy virtual machine. If the names are not the same, protection operations fail.

For more information, see System Requirements - Virtual Server iDataAgent (Xen).

5. Reboot the proxy for host name changes to take effect.
6. Install the Virtual Server iDataAgent on each proxy VM.

Each proxy backs up VMs in the same Xen pool that have access to the same storage repository.

For more information, see Getting Started - Xen Deployment.

7. From the CommCell Console, configure a Xen instance and all Xen servers in the pool. Provide root credentials to the Xen servers to ensure that the proxy can query the Xen servers for backups. Enter details for all Xen servers, not just the master.

For more information, see Getting Started - Xen Configuration.

8. On the **Content** tab of the subclient properties, identify the virtual machines in the Xen pool to be backed up. For each proxy, exclude virtual machines whose snapshots cannot be directly attached to that proxy; those virtual machines must be covered by subclients for other proxies.

In addition to space on the library, the storage repository where virtual machines reside must contain sufficient space to hold temporary snapshot files used for the backup. The required space can be equal to the sum of the sizes of all VMs being backed up simultaneously; for example, if a 100GB VM and a 200GB VM are being backed up at the same time, up to 300GB space is required on the storage repository. This temporary space is released when the backup is complete and the snapshot is deleted.

9. On each proxy, run backup jobs to protect virtual machines in the Xen pool for the proxy.

For more information, see Getting Started - Xen Backup.

10. When you run a restore, select a destination client that has direct access to the destination storage repository on the **Restore Options for All Selected Items** dialog.

For more information, see Getting Started - Xen Restore.

Getting Started - Xen Deployment

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The Virtual Server iDataAgent is used to protect Xen virtual machine data. Follow the steps given below to install the Virtual Server iDataAgent.

INSTALLATION

The software can be installed using one of the following methods:

METHOD 1: INTERACTIVE INSTALL

Use this procedure to install directly on dedicated virtual machine on the XEN Server. This dedicated virtual machine is referred to as the Client computer in this install procedure.

METHOD 2: INSTALL SOFTWARE FROM COMMCELL CONSOLE

Use this procedure to install remotely on a dedicated virtual machine on the XEN Server.

WHERE TO INSTALL

Install the Virtual Server iDataAgent on any virtual machine residing on the master of the Xen server pool.

METHOD 1: INTERACTIVE INSTALL

1. Run **Setup.exe** from the **Software Installation Disc** on dedicated virtual machine on the XEN Server.

Ensure that the virtual machine is residing on the master of the server pool.

2. Select the required language.

Click **Next**.

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

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

4. Select **I accept the terms in the license agreement**.

Click **Next**.

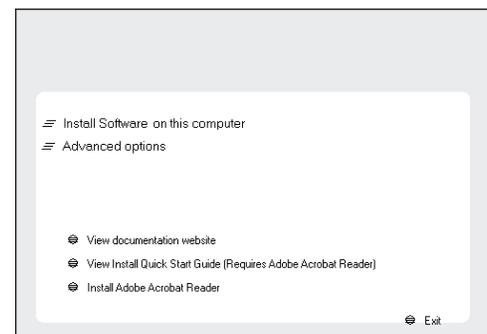
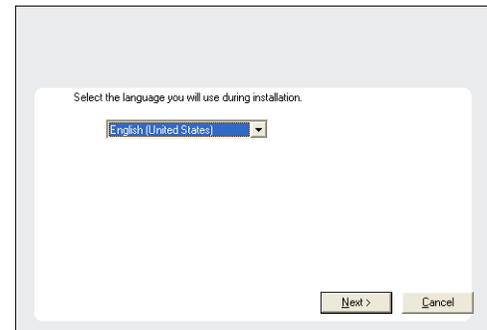
BEFORE YOU BEGIN

Download Software Packages

Download the latest software package to perform the install.

System Requirements

Verify that the computer in which you wish to install the software satisfies the System Requirements.



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

Click **Next**.

If Windows Firewall is disabled on this computer, select this option to add the CommCell programs and services to Windows firewall exclusion list.

This option enables CommCell operations across the firewall, if the firewall is enabled at a later time.

11. Verify the default location for software installation.

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

Click **Next**.

- Do not install the software to a mapped network drive.
- Do not use the following characters when specifying the destination path:

/ : * ? " < > | #

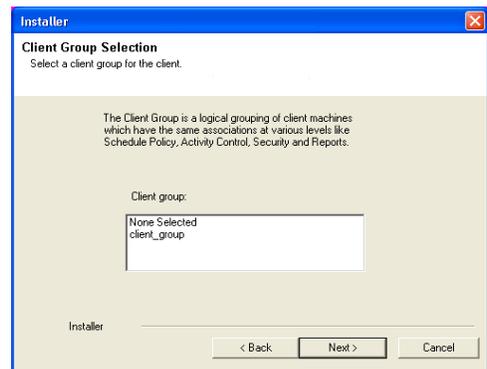
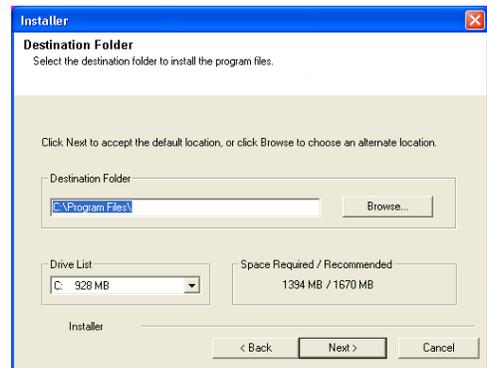
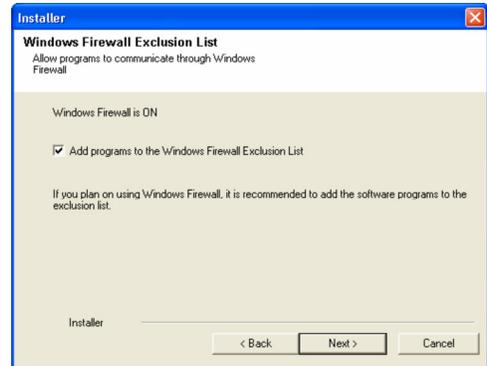
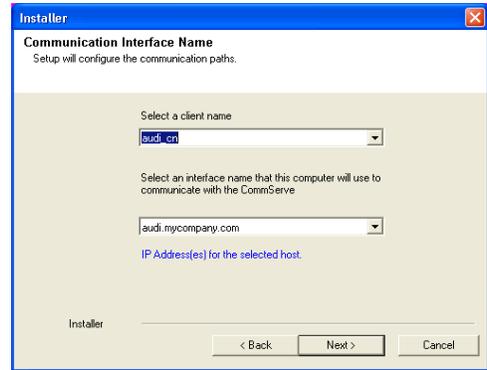
It is recommended that you use alphanumeric characters only.

12. Select a Client Group from the list.

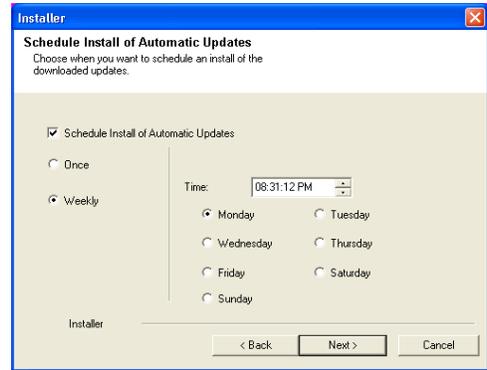
Click **Next**.

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

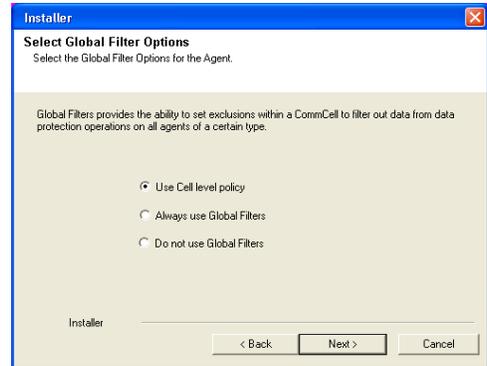
13. Click **Next**.



14. Click **Next**.



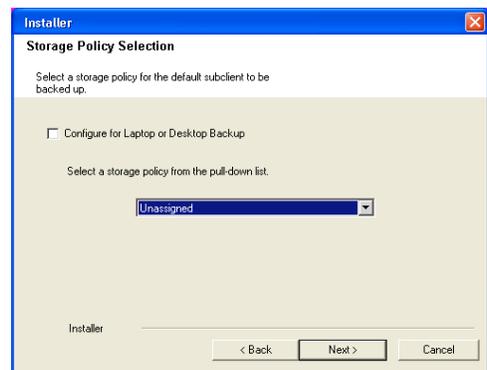
15. Select a **Storage Policy**.
Click **Next**.



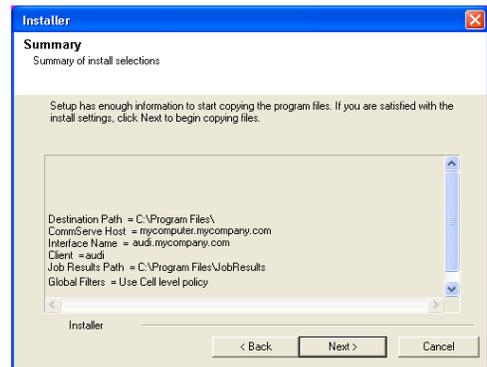
If you do not have Storage Policy created, this message will be displayed.
Click **OK**.

You can create the Storage Policy later in step 19.

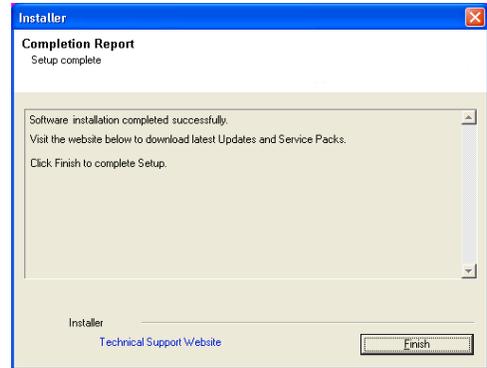
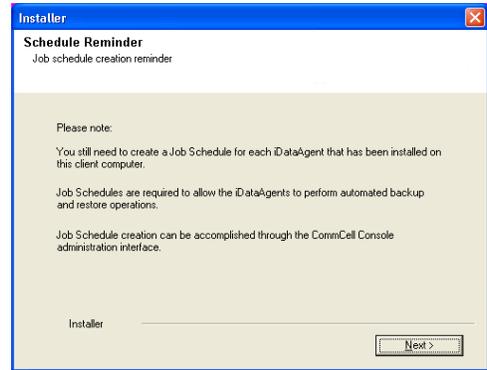
16. Click **Next**.



17. Click **Next**.



18. Click **Finish**.

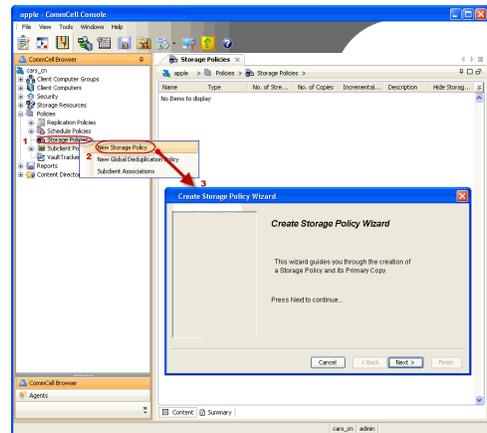


If you already have a storage policy selected in step 15, click the **Next** button available on the bottom of the page to proceed to the **Configuration** section.

If you do not have Storage Policy created, continue with the following step.

19. Create a Storage Policy:

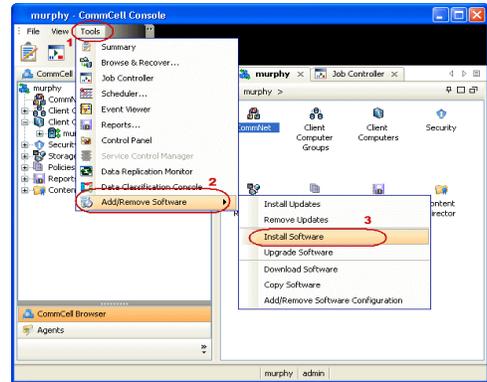
1. From the CommCell Browser, navigate to **Policies**.
2. Right-click the **Storage Policies** and then click **New Storage Policy**.
3. Follow the prompts displayed in the Storage Policy Wizard. The required options are mentioned below:
 - Select the Storage Policy type as **Data Protection and Archiving** and click **Next**.
 - Enter the name in the **Storage Policy Name** box and click **Next**.
 - From the **Library** list, click the name of a disk library to which the primary copy should be associated and then click **Next**.
Ensure that you select a library attached to a MediaAgent operating in the current release.
 - From the **MediaAgent** list, click the name of a MediaAgent that will be used to create the primary copy and then click **Next**.
 - For the device streams and the retention criteria information, click **Next** to accept default values.
 - Select **Yes** to enable deduplication for the primary copy.
 - From the **MediaAgent** list, click the name of the MediaAgent that will be used to store the Deduplication store.
Type the name of the folder in which the deduplication database must be located in the Deduplication Store Location or click the Browse button to select the folder and then click **Next**.
 - Review the details and click **Finish** to create the Storage Policy.



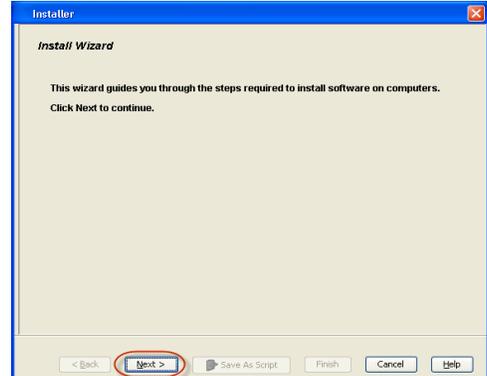
METHOD 2: INSTALL SOFTWARE FROM COMMCELL CONSOLE

1. From the CommCell Browser, select **Tools | Add/Remove Software | Install Software**.

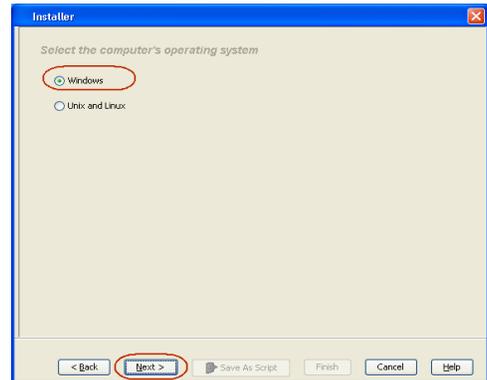
2. Click **Next**.



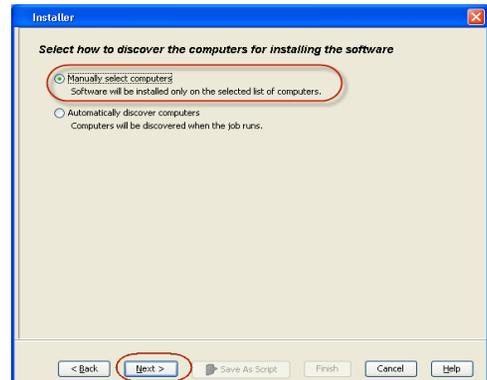
3. Select **Windows**.
Click **Next**.



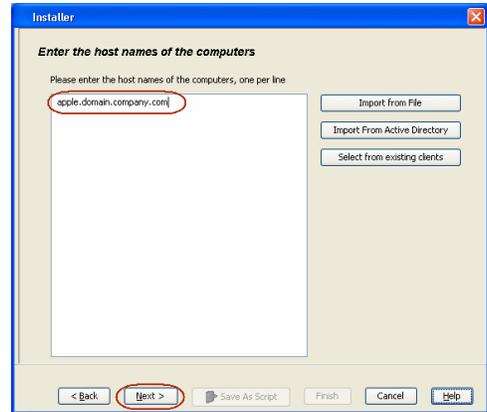
4. Select **Manually Select Computers**.
Click **Next**.



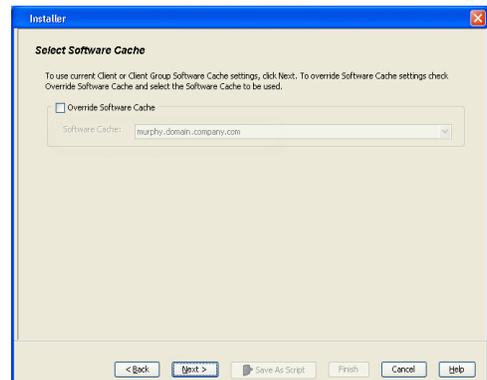
5. Enter the fully qualified domain name of the dedicated virtual machine on the XEN Server.
For example: `apple.domain.company.com`
The Virtual Server iDataAgent will be installed on this computer.
Click **Next**.



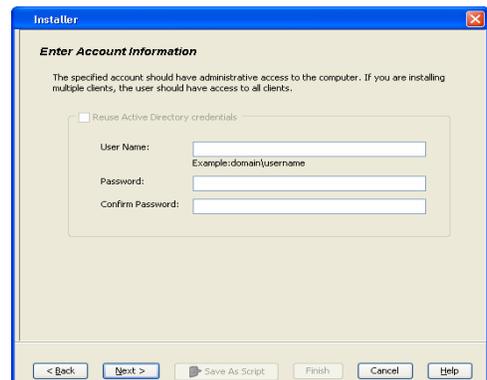
6. Click **Next**.



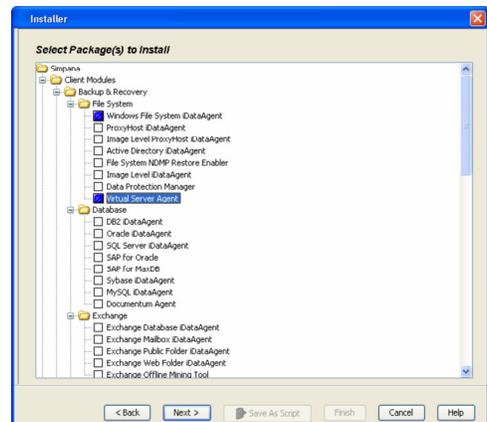
7. Specify **UserName** and **Password**.
Click **Next**.



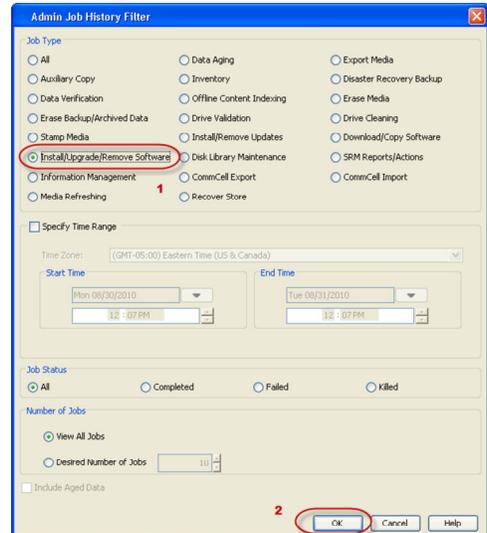
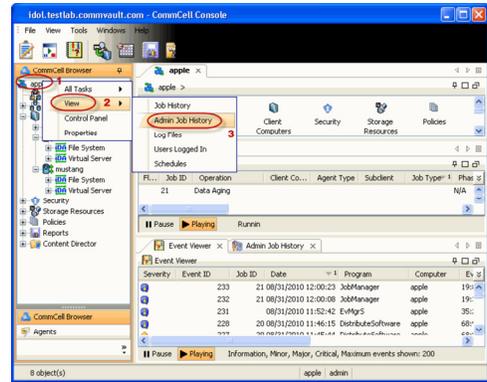
8. Select **Virtual Server Agent**.
Click **Next**.



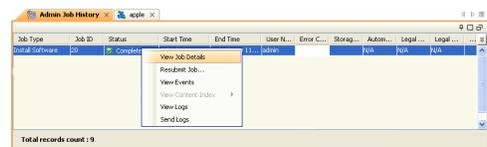
9. Click **Next**.



14. Select **Install/Upgrade/Remove Software**.
Click **OK**.



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



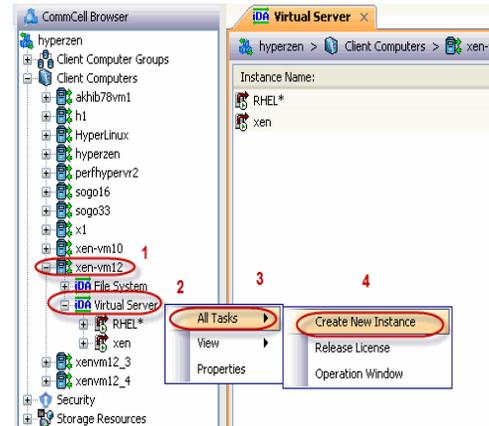
Getting Started - Xen Configuration

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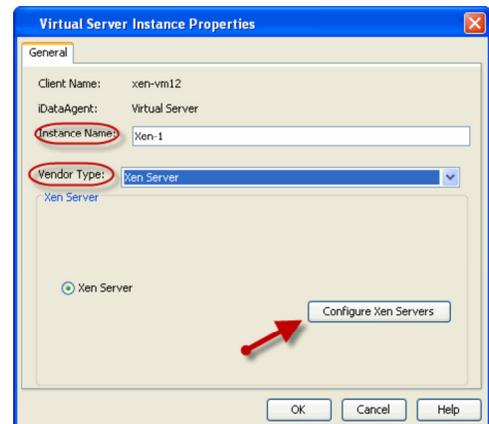
CONFIGURATION

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

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

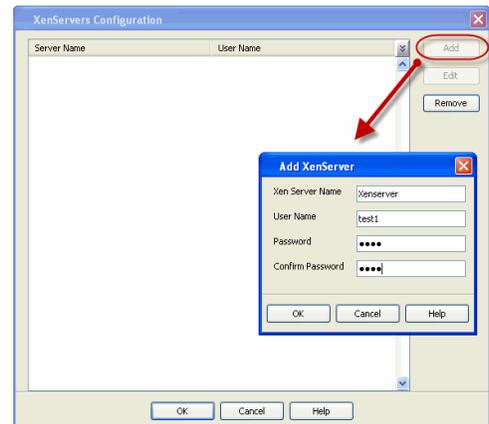


- Enter the **Instance Name**.
 - Select Xen from Vendor Type menu.
 - Click **Configure Xen Servers**.



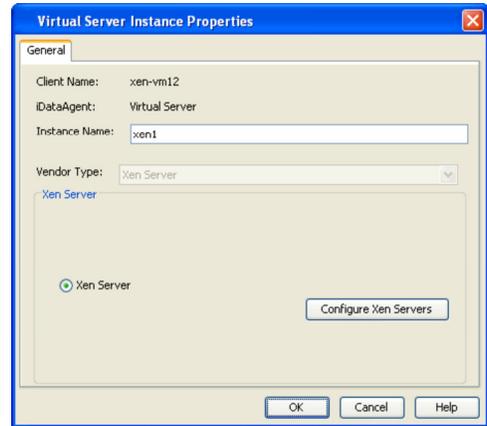
- Click Add.
 - Enter **Xen Server Name**, **User Name** and **Password** for the Master server of the pool.
It is recommended to provide the actual root credential.
 - Click **Ok**.

Repeat this step for all the remaining servers in the Xen Server Pool.

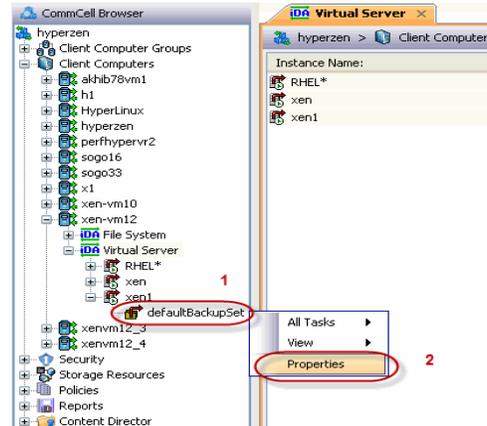


- Click **OK** to save the instance.

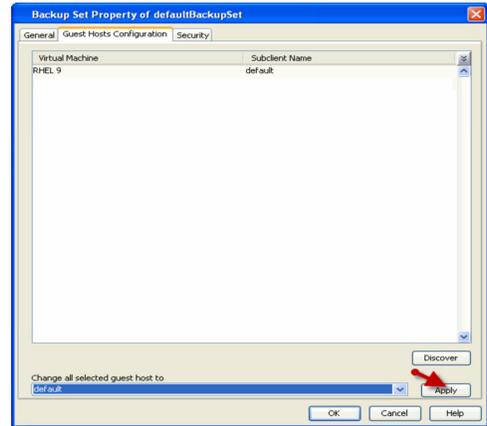
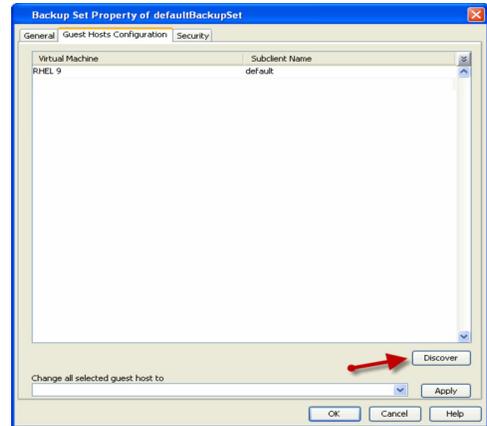
5.
 - From the CommCell Browser, right-click the **Default Backup Set**.
 - Click **Properties**.



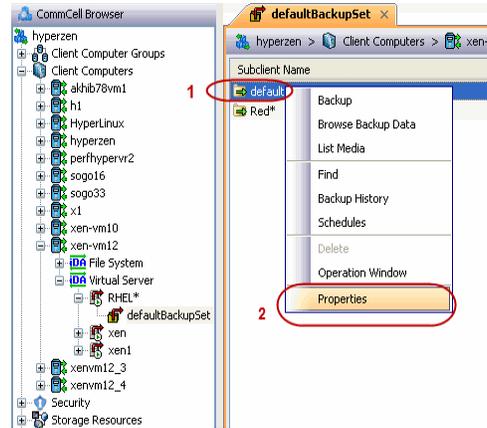
6. Click **Discover**, on the **Guest Hosts Configuration** tab. Discovery process might take several minutes to complete.



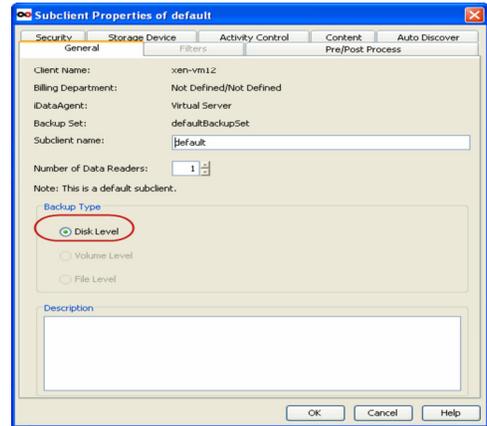
7.
 - Select the default subclient from **Change all selected guest hosts to** list.
 - Click **Apply**.
 - Click **OK**.



8.
 - From the CommCell Browser, navigate to the **Subclient**.
 - Click **Properties**.

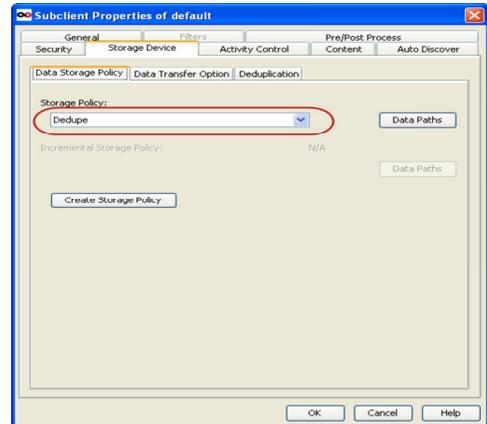


9. Select **Disk-Level** from the Backup Types.



10. Click **Storage Device** tab. Ensure that a Storage Policy is selected. Click **Ok**.

If you do not have Storage Policy created, continue with **Step 11**.

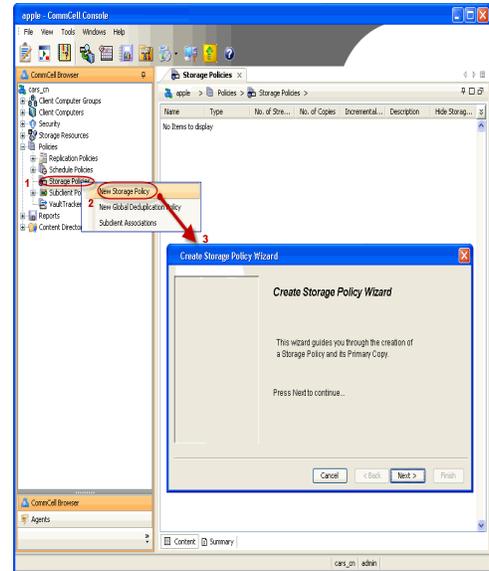


11. Create a Storage Policy:
 1. From the CommCell Browser, navigate to **Policies**.
 2. Right-click the **Storage Policies** and then click **New Storage Policy**.
 3. Follow the prompts displayed in the Storage Policy Wizard. The required options are mentioned below:
 - Select the Storage Policy type as **Data Protection and Archiving** and click **Next**.
 - Enter the name in the **Storage Policy Name** box and click **Next**.
 - From the **Library** list, click the name of a disk library to which the primary copy should be associated and then click **Next**.
Ensure that you select a library attached to a MediaAgent operating in the current release.
 - From the **MediaAgent** list, click the name of a MediaAgent that will be used to create the primary copy and then click **Next**.
 - For the device streams and the retention criteria information, click **Next** to accept default values.

- Select **Yes** to enable deduplication for the primary copy.
- From the **MediaAgent** list, click the name of the MediaAgent that will be used to store the Deduplication store.

Type the name of the folder in which the deduplication database must be located in the Deduplication Store Location or click the Browse button to select the folder and then click **Next**.

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



Getting Started - Xen Backup

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PERFORM A BACKUP

After configuring the subclient, you can run a full backup of the virtual machines on your Xen server.

WHAT GETS BACKED UP

The following data is backed up by the Virtual Server iDataAgent:

- Virtual Machines
- Associated Virtual Disks

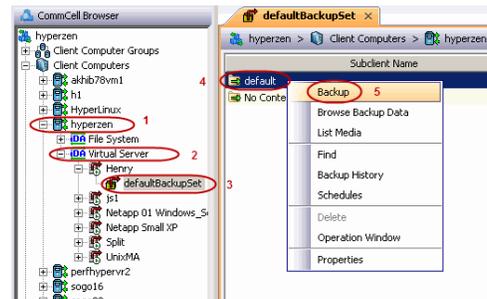
WHAT DOES NOT GET BACKED UP

The following data is not backed up by the Virtual Server iDataAgent:

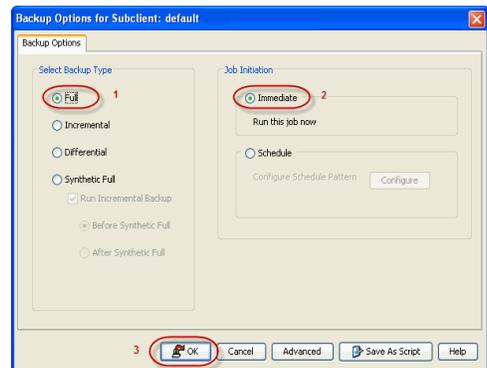
- Xen templates
- Virtual machines containing more than one disk with the same name

The following section provides step-by-step instructions for running your first backup immediately.

- From the CommCell Console, navigate to **Client Computers | Virtual Server**
 - Right-click the **Subclient** and click **Backup**.



- Select **Full** as backup type and **Immediate** to run the job immediately.
 - Click **OK**.



- You can track the progress of the job from the **Job Controller** or **Event Viewer** window of the CommCell console.



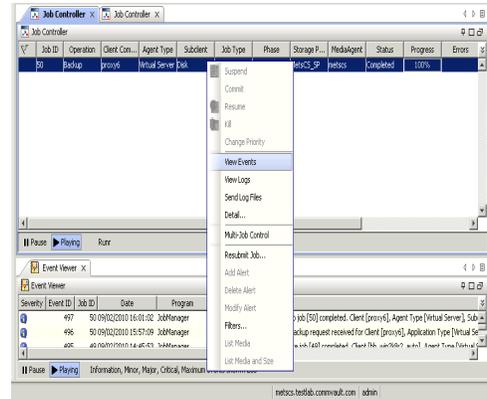
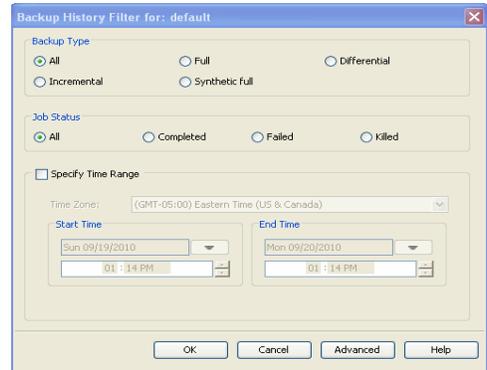
- Once job is complete, view the details of job from the **Backup History**. Right-click the subclient and select **Backup History**.



- Click **OK**.

6. You can view the following details about the job by right-clicking the job:

- Items that failed during the job
- Items that succeeded during the job
- Details of the job
- Events of the job
- Log files of the job
- Media associated with the job



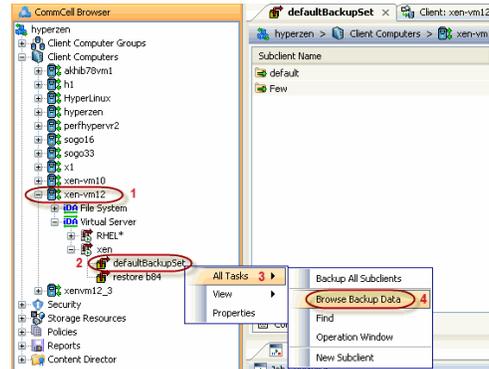
Getting Started - Xen Restore



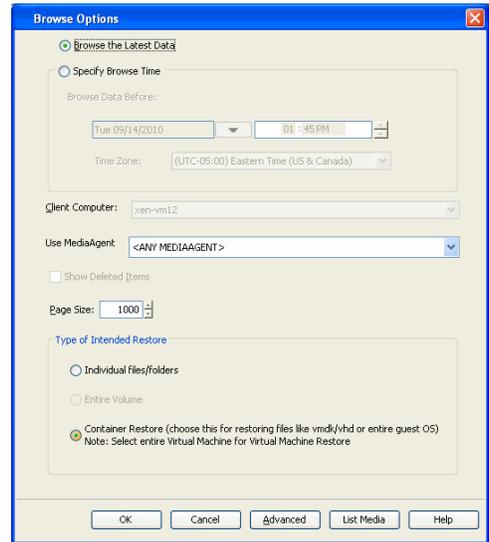
PERFORM A RESTORE

It is recommended that you perform a restore operation immediately after your first full backup to understand the process. The following section describes the steps involved in restoring a virtual machine.

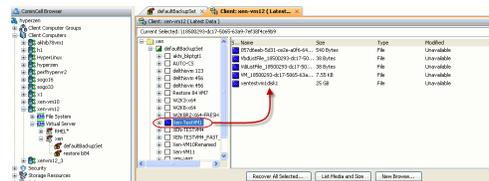
- From the CommCell Console, navigate to **<Client> | Virtual Server**.
 - Right-click the backup set that contains the data you want to restore and click **All Tasks | Browse Backup Data**.



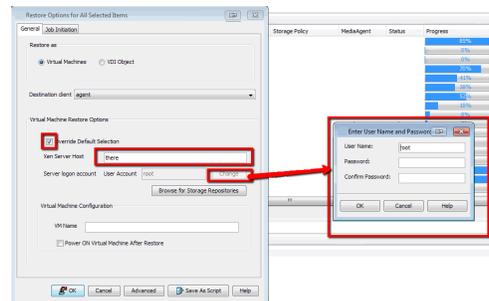
- Click **OK**.



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



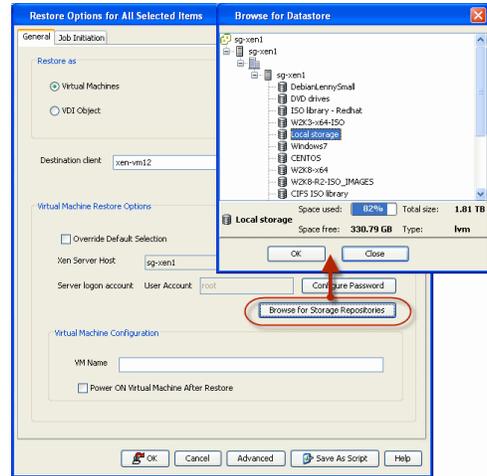
- Select **Override Default Selection**.
 - Enter the **Xen Server Host**. This host should be the Master Server of the Xen pool.
 - Click **Change**.
 - Enter the user name and password of the Xen Server Host. The credentials entered should be the **root** credentials.



- Click **Browse for Storage Repositories**.
 - Select a storage repository from the available set of storage devices.

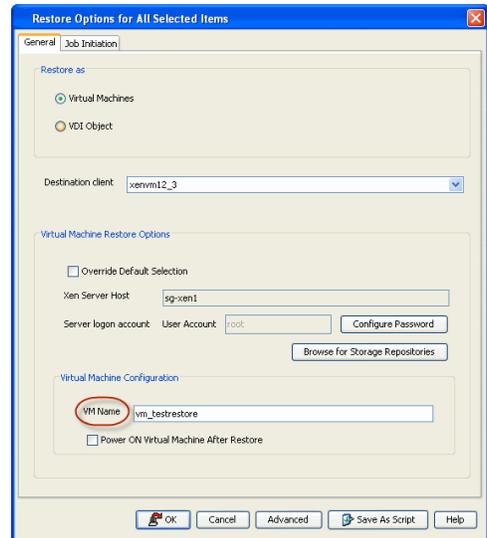
- Click **OK**.

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

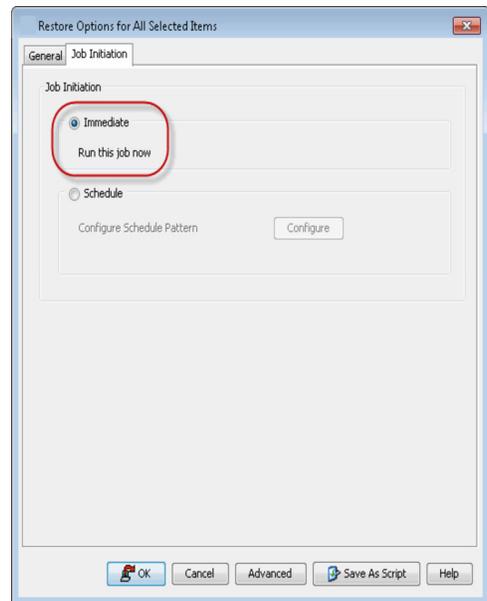


6. Enter the **VM Name** for the virtual machine.

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



6.
 - Click the **Job Initiation** tab.
 - Select **Immediate** to run the job immediately.
 - Click **OK**.

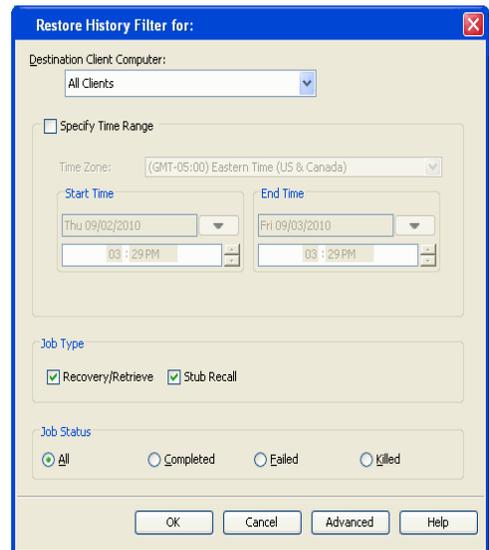
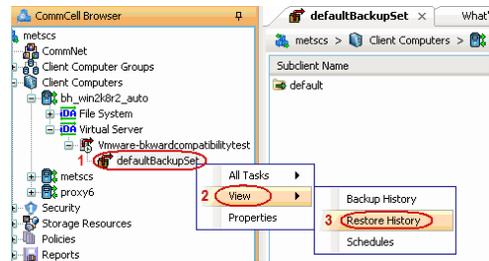
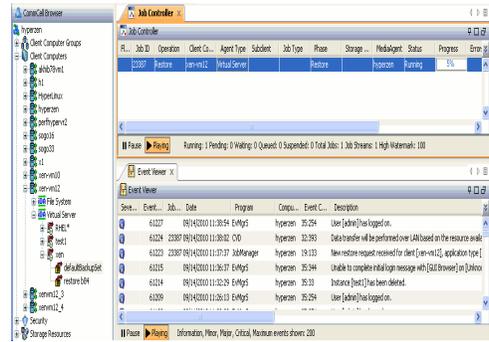


7. You can monitor the progress of the restore job in the **Job Controller** or **Event Viewer** window of the CommCell Console.

8. Once the restore job has completed, right-click the entity (e.g. agent, instance) and click **View | Restore History**.

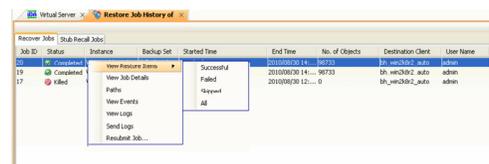
If the entity chosen is the client computer, click **View | Job History**.

9. Click **OK**.

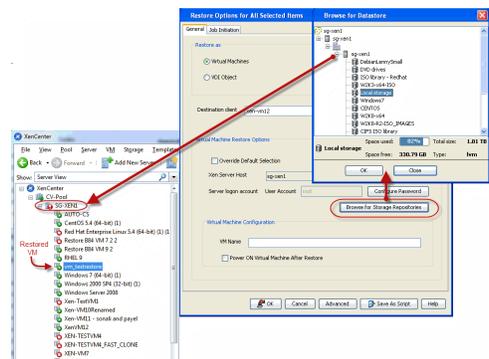


10. You can view the following details about the job by right-clicking the job:

- View Restore Items
- View Job Details
- View Events of the restore job.
- View Log files of the restore job.



11. Once the virtual machine is restored, it is automatically mounted to the Xen Server Host you specified.



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

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



