VMWORLD 2007

HANDS-ON LABS

Leveraging VMware® Consolidated Backup for Disaster Recovery

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Contents

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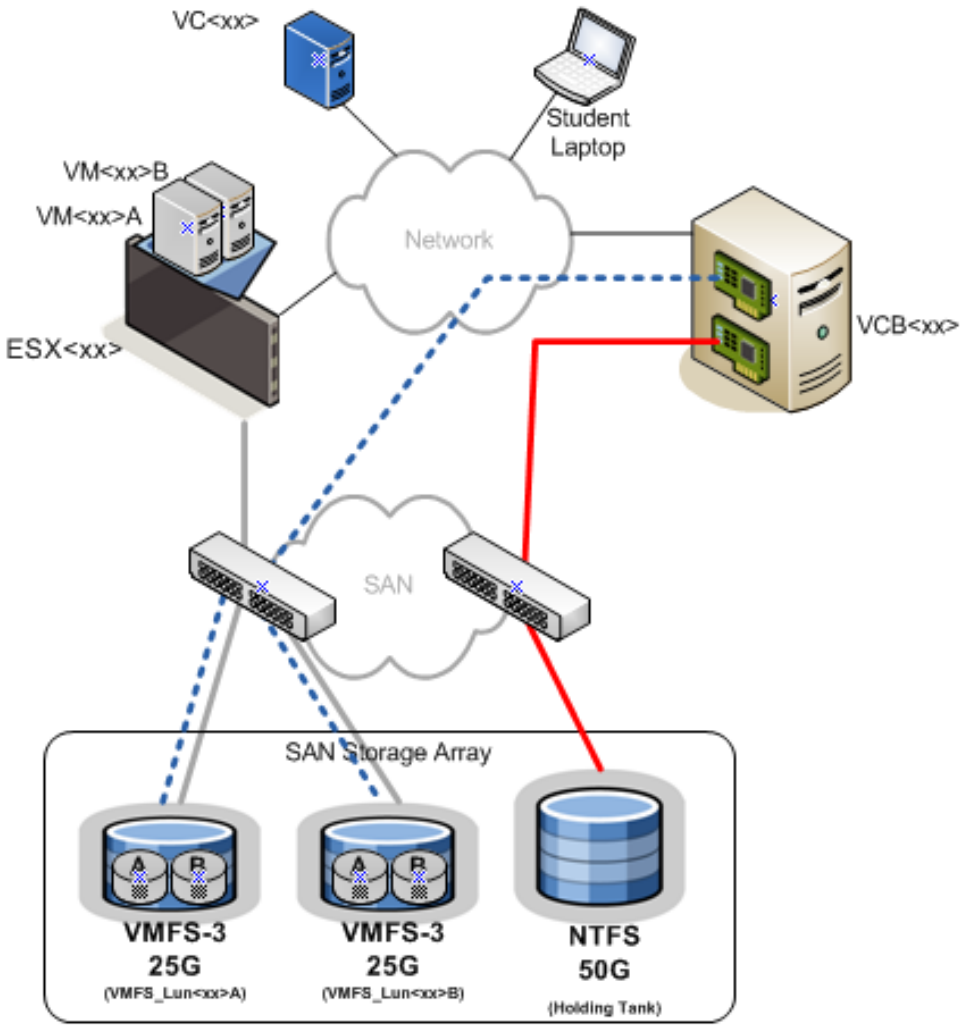
Lab 1 - Lab Introduction

This lab is designed for the student who has minimal knowledge of VMware® Consolidated Backup (VCB). The intent is to demonstrate the capabilities of VMware Consolidated Backup by performing installation, configuration, image level, and file-level backups. You will be guided through a restore process of a backup performed by VCB as well.

The diagram below shows a graphical representation of how each lab set is configured. There are 24 individual lab sets in this lab. Each set has its own ESX Server host, VirtualCenter Server, VCB Proxy Server, workstation (laptop), and presentation of storage (3 LUNS).



Each lab set will have its own credentials used to log in and view their set of servers.

Lab 1 – Minimum Requirements

Consolidated Backup Software and Hardware Requirements

Requirements for VMware Consolidated Backup include:

- One or more VCB proxy systems running Microsoft Windows 2003 SP1. The VCB proxy needs to be connected to the VirtualCenter Server managing your ESX Server cluster or to a single ESX Server system if you are not using VirtualCenter and have only one ESX Server system. To connect to Fibre Channel (FC) SAN, the VCB proxy needs a FC host bus adapter (HBA).
- Backup software that Consolidated Backup supports. For a list of supported third-party backup packages, see the *VMware Infrastructure 3 Backup Software Compatibility Guide*.
- Backup hardware, such as a tape system.
- One or more ESX Server 3.x systems.
- Fibre Channel SAN storage hosting VMFS or RDMs. The VCB proxy needs to have access to SAN LUNs.

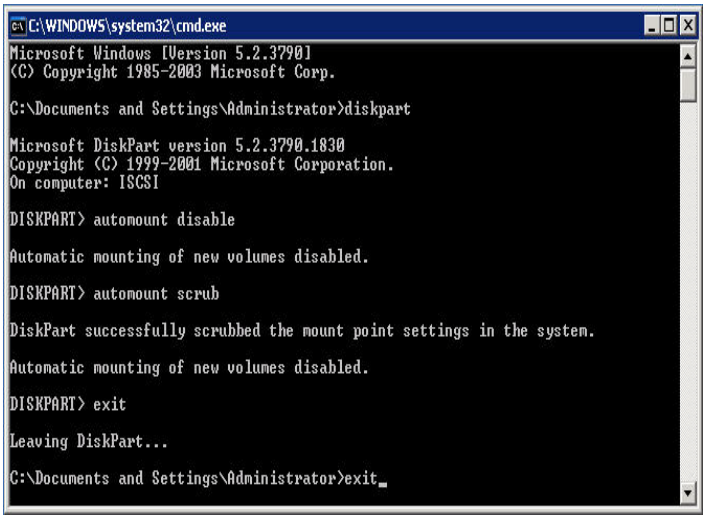
Note: If you are using VCB 1.03, you must be using VirtualCenter 2.02 and ESX 3.02

Verify Requirements and Pre-Requisites

Verify all the requirements listed here have been met prior to installing VCB on the server.

A. Verify that you are logged into the laptop and can see the desktop. (Laptops are set up to auto logon.)
B. Establish an "RDP" session to the VCB Proxy machine **vcb*xx***, where *xx* is the lab station number to which you are assigned.
   - Username is **student*xx***, where *xx* is the lab station number to which you are assigned.
   - Password is **vmware.**
     Note: The rest of the steps in this lab will be performed from the VCB Proxy Server using the RDP Session.
C. Verify VCB setup file is located in folder on desktop.
D. Verify that you see two 25 GB disks and one 50 GB disk. 1 disk should be an NTFS volume named **Holding_Tank*xx***, where *xx* is the lab station number to which you are assigned, and the other (2) 25 GB LUNs are healthy unknown partitions.
E. Launch the Virtual Infrastructure Client and log in to VirtualCenter. The VirtualCenter name is **vc*xx***, where *xx* is the lab station number to which you are assigned.
F. Username is **student*xx***, where *xx* is the lab station number to which you are assigned.
G. Password is **vmware**.
H. Verify you can see one ESX host named **ESX*xx***, where *xx* is the lab station number to which you are assigned. Also, verify there are two running virtual machines on the ESX Server host named **VM*xx*A**, and **VM*xx*B**, where *xx* is the lab station number to which you are assigned.
I. Verify the VCB Proxy is running Windows 2003SP1 or higher.
J. Verify the VCB Proxy has a Host Bus Adaptor and a Network Interface Card.

Lab 2 – VCB Installation



Step 1 – Disabling Automatic Drive Letter Assignment

All versions of Windows, except Windows 2003 Enterprise Edition and Windows 2003 Datacenter Edition, automatically assign drive letters to each visible NTFS and file FAT volume. For Consolidated Backup, change this default behavior so that volumes are not mounted on the proxy automatically.

Note: We are running Windows 2003 R2 Enterprise edition on this lab. Therefore, there is no need to run the commands provided in this section.

A. Shut down the VCB Proxy.
B. Disconnect the Windows Proxy from the SAN.
C. Boot the VCB Proxy and log in with an account that has administrative privileges.
D. Open a command line interface.
E. Run the `diskpart` utility by typing

```
Diskpart
```

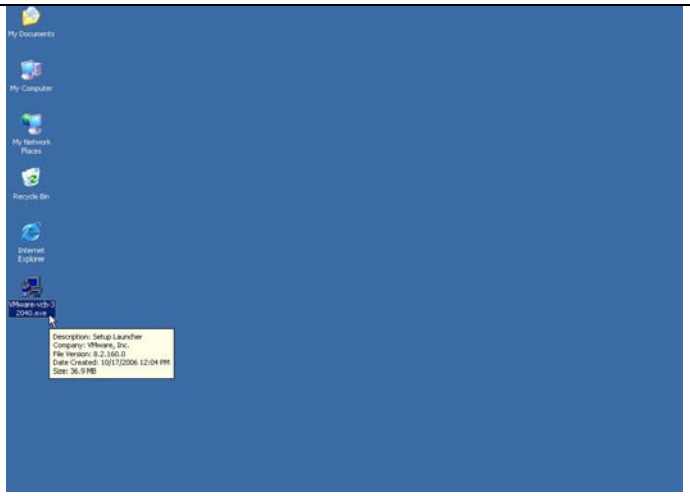
F. Disable the automatic drive letter mapping by typing:

```
automount disable
```

G. You can clean out previously mapped entries stored in the registry by typing:

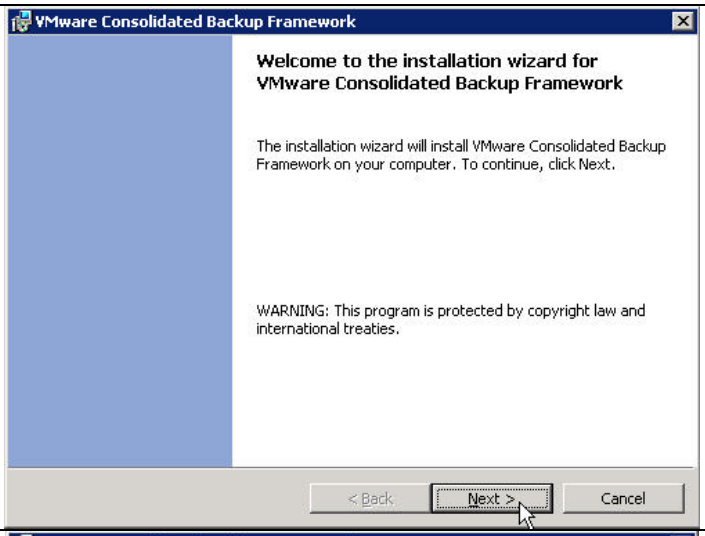
```
automount scrub
```

H. Type **`exit`** and press **Enter**.
I. Type **`exit`** again to quit the command prompt session.
J. Shut down the VCB Proxy.
K. Re-connect the Windows Proxy to the SAN.
L. Boot the VCB Proxy.



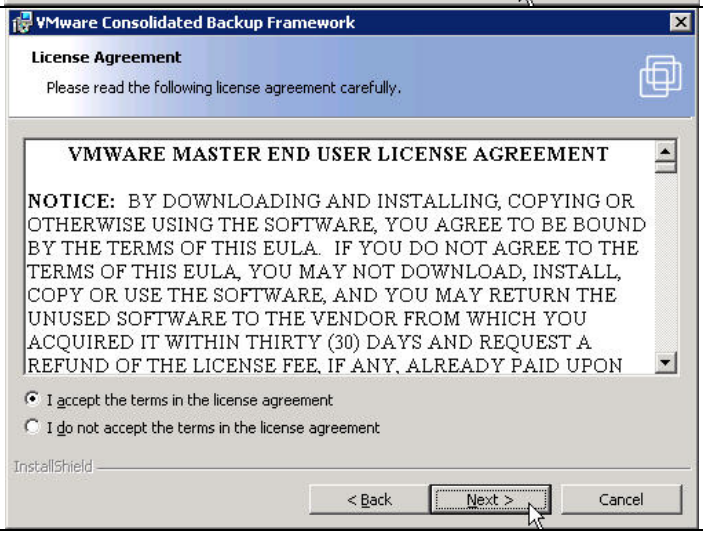
Step 2 - Installing the Framework

A. Double click the folder called `VCB 1.03` located on the desktop.
B. Launch the setup by double-clicking on the file named **`VMware vcb-51389.exe`**.



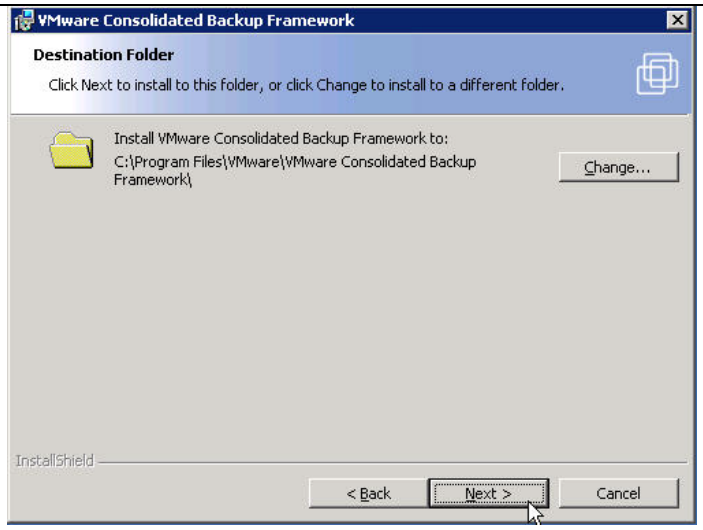
Step 3 – Welcome to the Installation Wizard

A. Begin the installation of the Framework by clicking **Next.**



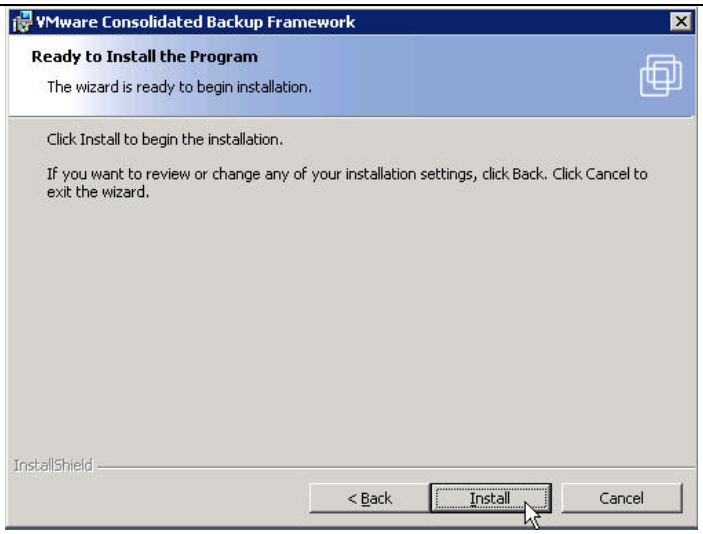
Step 4 – Accept the EULA

A. Accept the End User License Agreement by clicking the radio button next to “I accept the terms in the license agreement” and click **Next**.



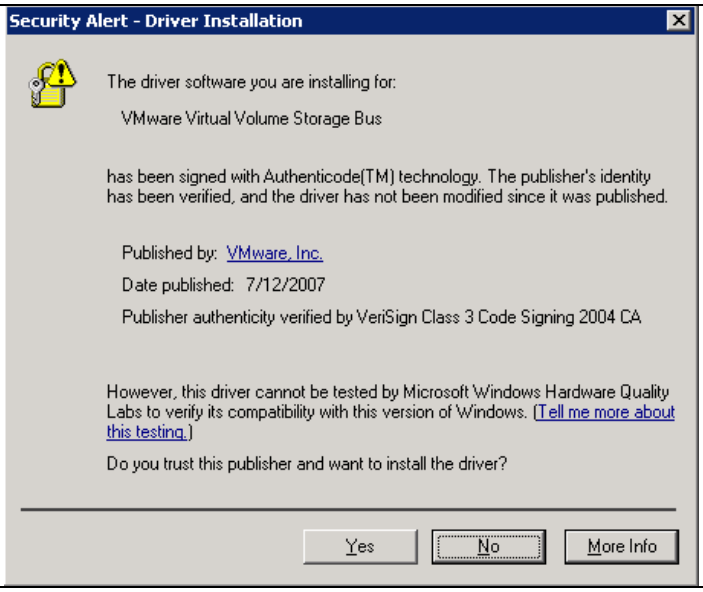
Step 5 – Choose Destination Folder

A. Choose your destination folder and click **Next**.



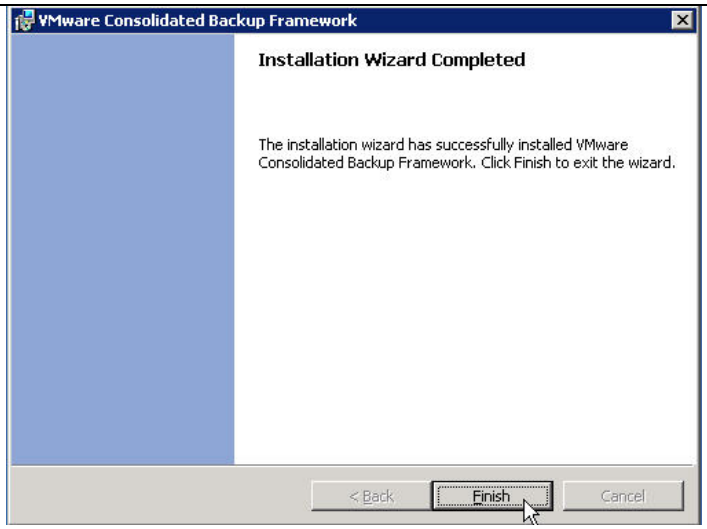
Step 6 – Begin the Installation

A. Continue the installation by clicking **Install**.



Step 7 – Install the VMware Virtual Volume Storage Bus driver

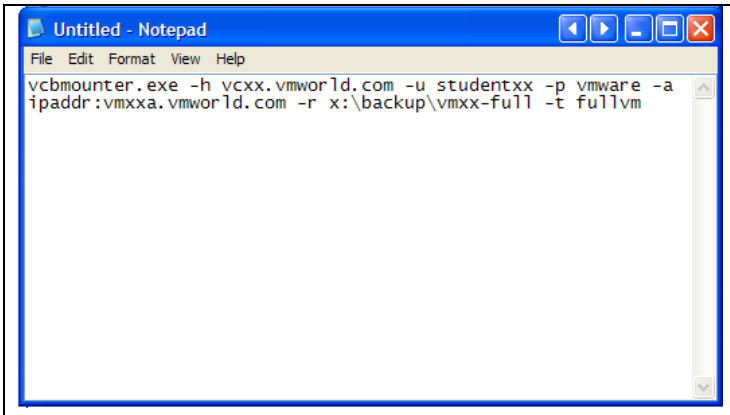
A. Acknowledge that you wish to install the driver by clicking **Yes**.



Step 8 – Completing the Install Wizard

A. Finish the installation wizard by clicking **Finish**.

Lab 3 – Perform a Full Image Backup



Step 1 – Create vcb-full-image-backup file

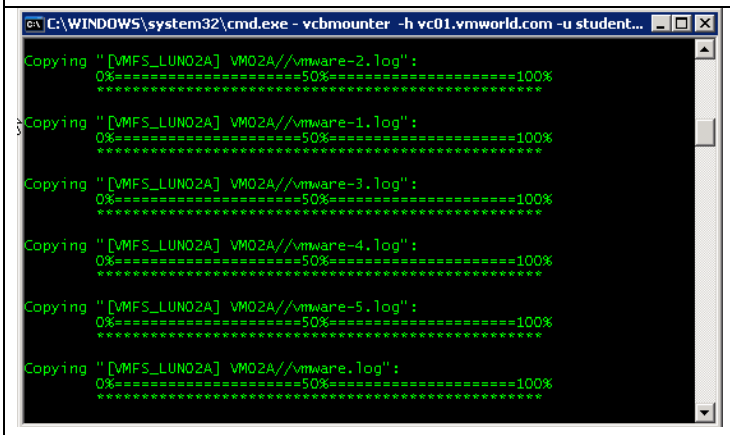
A. Open Notepad by clicking **Start**, **Run**, typing **Notepad**, and pressing **Enter.**
B. Type command (all one line)

```
vcbmounter.exe
-h vcxx.vmworld.com
-u studentxx -p vmware
-a ipaddr:vmxxa.vmworld.com
-r x:\backup\vmxxa-full
-t fullvm -m san
```

C. Save the file with file in **`c:\program files\vmware\vmware`** consolidated backup framework:

File name: `vcb-full-image-backup.bat`
File type: ANSI

D. Exit Notepad.



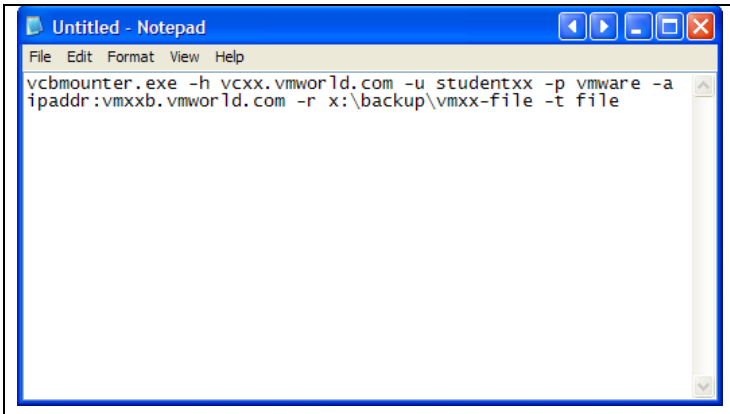
Step 2 - Run vcb-full-backup script

A. From a command prompt, navigate to **`c:\Program Files\VMware\VMware`** Consolidated Backup Framework and run

```
vcb-full-image-backup.bat
```

NOTE: Ignore the "Unsetting unknown path…" and "Could not log out" error messages.

Lab 4 – Perform a File Level Backup



Step 1 – Create vcb-pre-backup file

NOTE: Make sure you are still on the VCB Proxy Server.

A. Create a new file with Notepad, and enter (all one line)

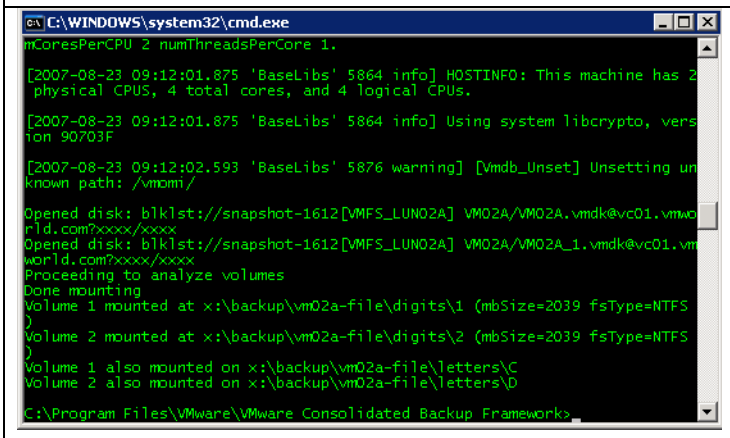
```
vcbmounter.exe
-h vcxx.vmworld.com
-u studentxx -p vmware
-a ipaddr:vmxxb.vmworld.com
-r x:\backup\vmxxb-file -t
file
```

B. Save the file with file in **`c:\program files\vmware\vmware`** consolidated backup framework:

File name: `vcb-pre-backup.bat`
File type: ANSI

C. Exit Notepad.

NOTE: The command entered in the text file will normally be integrated into your backup software. It is shown here for demonstration only



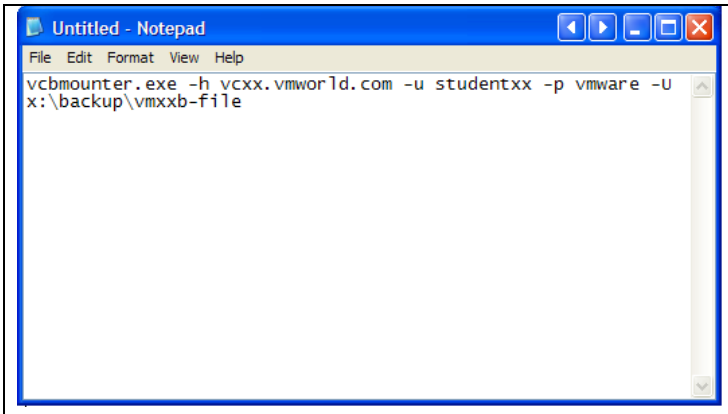
Step 2 – Run the vcb-pre-backup file

A. Open a command line by clicking **Start**, **Run**, typing **cmd,** and pressing **Enter**.
B. Change Directory to:

```
c:\program files\vmware\vmware
consolidated backup framework
```

C. Run **`vcb-pre-backup.bat`**
D. Wait until it has finished.

Lab 5 – Create a Post Backup Batch File



Step 1 – Create a post backup batch file

Once the backup has been completed, the mount point created earlier in the **`vcb-pre-backup.bat`** file *will need to be removed*. This can be performed by performing the following steps:

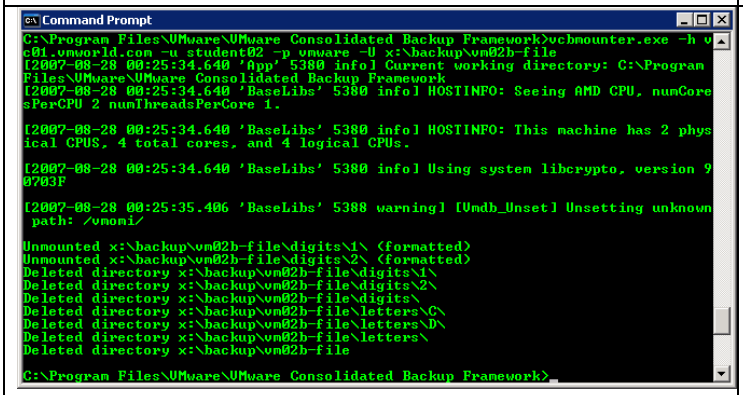
A. Open Notepad.
B. Type (all one line)

vcbmounter.exe –h vcxx.vmworld.com –u Administrator –p vmware –U x:\backup\vmxxb-file

C. Save the file with file in **`c:\program files\vmware\vmware`** consolidated backup framework:

File name: `vcb-post-backup.bat`
File type: ANSI

D. Exit Notepad.



Step 2 – Run the vcb-post-backup file

A. Open a command line by clicking **Start**, **Run**, typing **`cmd`**, and pressing **Enter**.
B. Change Directory to:

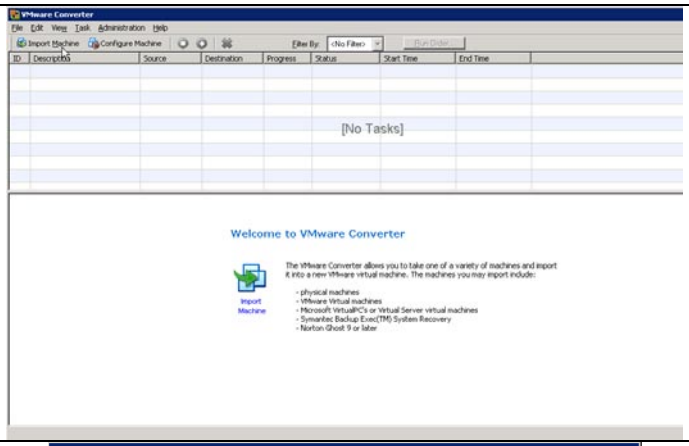
`c:\program files\vmware\vmware consolidated backup framework`

C. Run **`vcb-post-backup.bat`**
D. Wait until it has finished.

Lab 6 – Restore a Virtual Machine Using VMware Converter

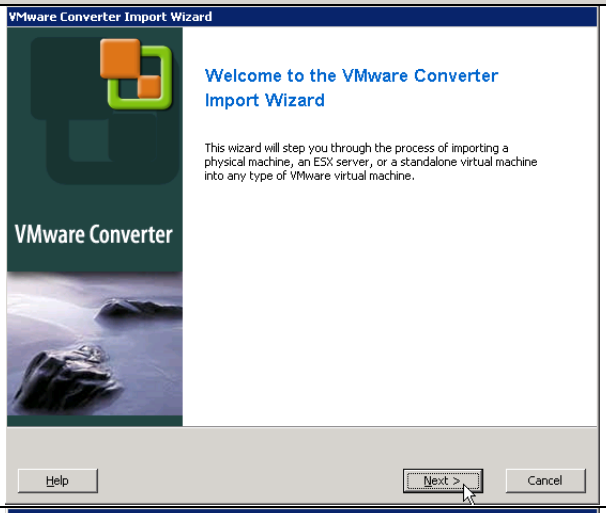
Step 1 – Launch VMware Converter

A. Double click the VMware Converter icon on your Desktop.



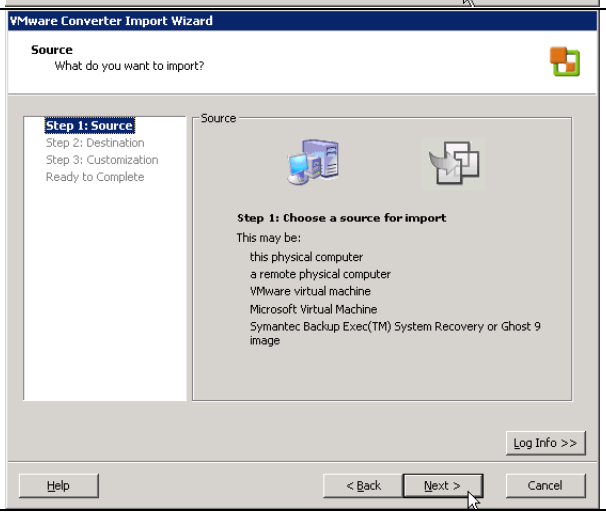
Step 2 – Import Machine

A. Click **Import Machine**.



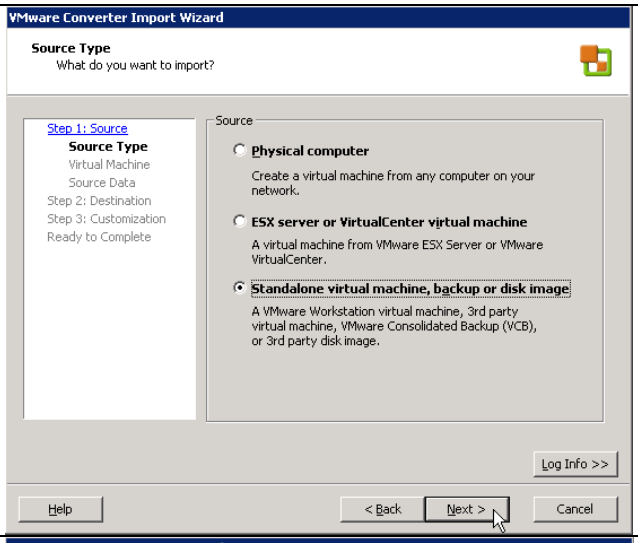
Step 3 – VMware Converter Import Wizard

A. Click **Next** to begin the process of importing a VCB backup.



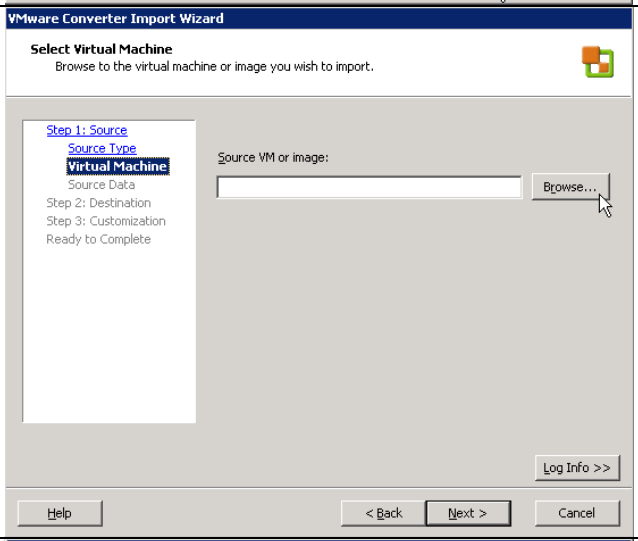
Step 4 – Choose a source

A. Click **Next** to choose a source for import.



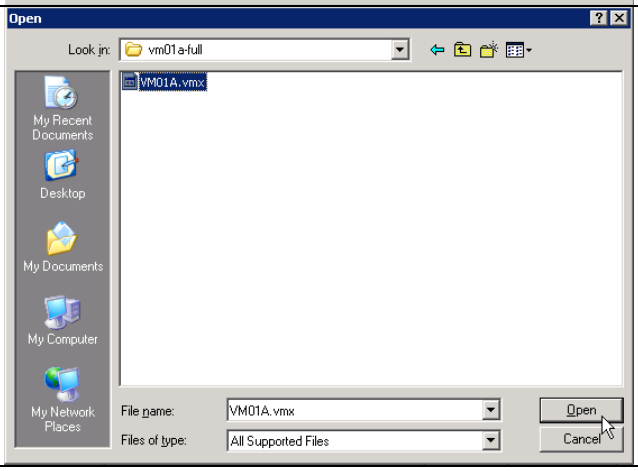
Step 5 – Choose a source (cont'd)

A. Select **Standalone virtual machine, backup, or disk image** and click **Next**.



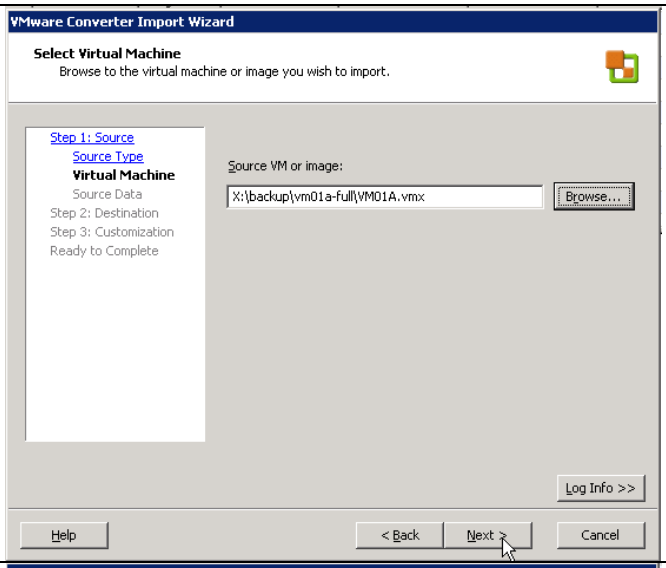
Step 6 – Select Virtual Machine

A. Click **Browse** to select the Source VM or image, and click **Next**.



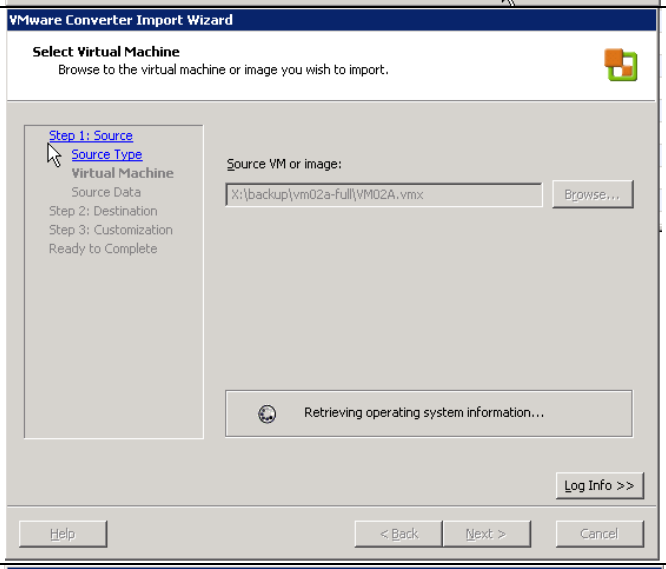
Step 7- Select Virtual Machine (cont'd)

A. Select **x:**, then go into the backup folder, inside vm01a-full, and choose **vm01a.vmx** and click **Open**.



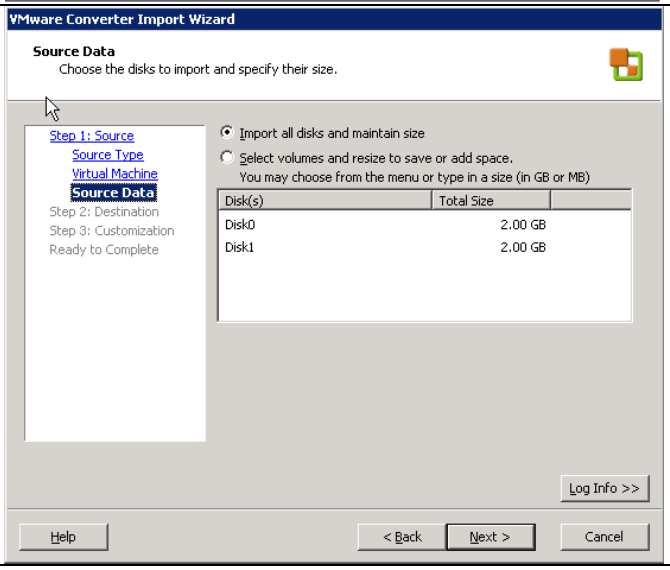
Step 8 - Select Virtual Machine (cont'd)

A. Click **Next**.



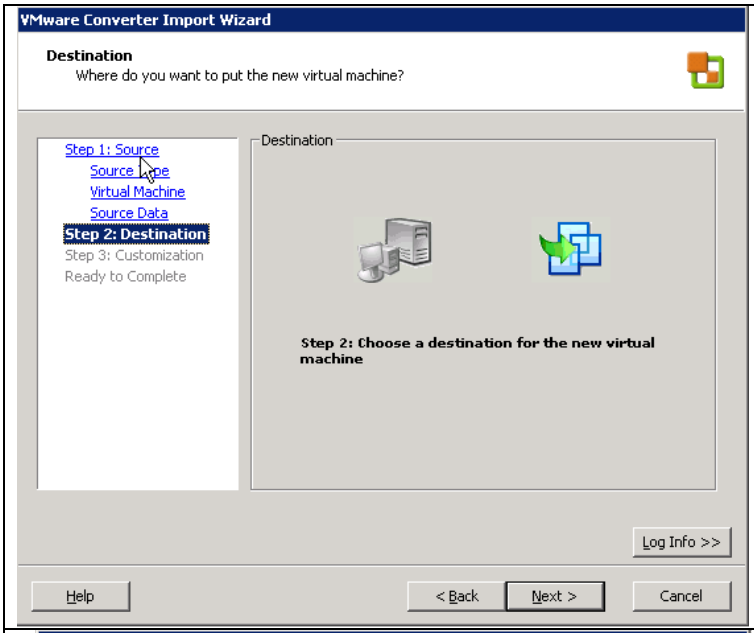
Step 9 – Select Virtual Machine (cont'd)

The operation system information is retrieved at this point.



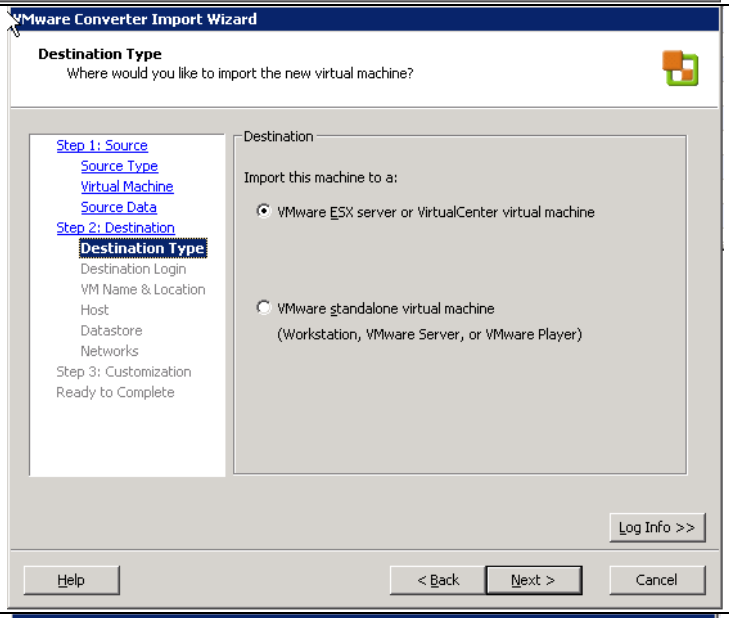
Step 10 – Source Data

A. The default selection is to **Import all disks and maintain size**.
B. Accept the default, and click **Next**.



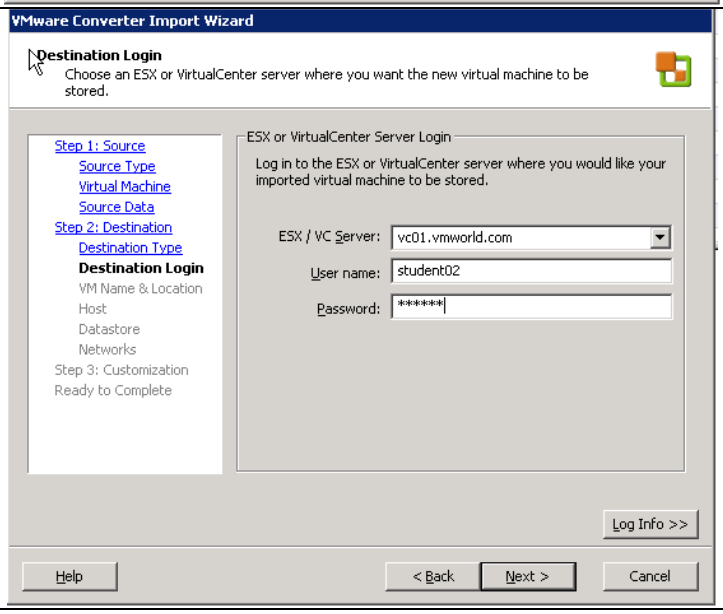
Step 11 – Choose a destination

A. The next step is to decide where the new virtual machine will be placed.
B. Click **Next** to continue.



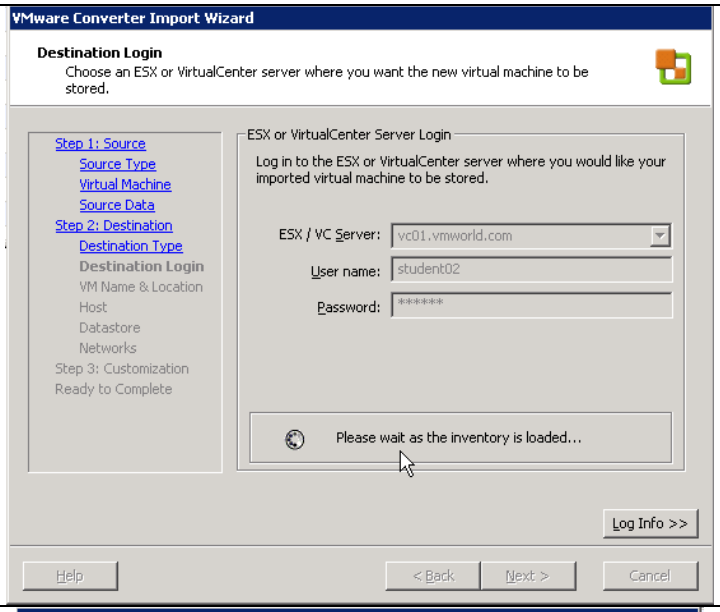
Step 12 – Destination Type

A. Select **VMware ESX server or VirtualCenter virtual machine** and click **Next**.



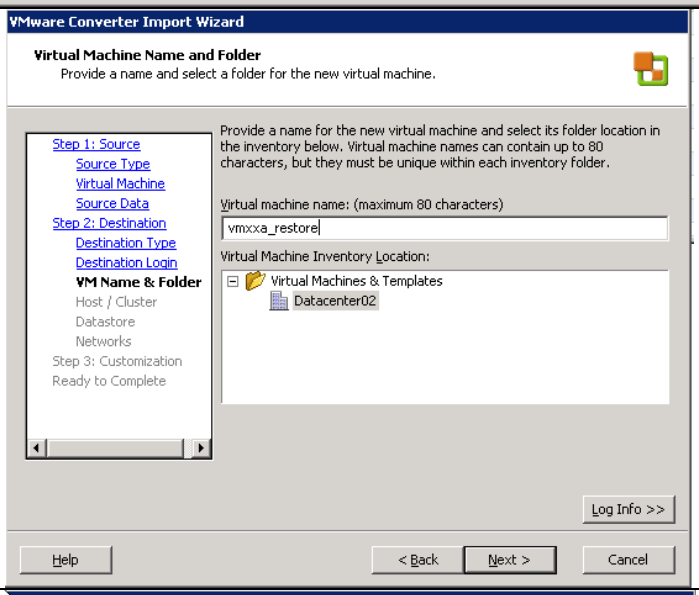
Step 13 – Destination Login

A. Type **`vcxx.vmworld.com`** for the ESX/VC Server.
B. Type **`studentxx`**, where *xx* is the lab number set you were assigned in the User name field.
C. Type **`vmware`** for the password.
D. Click **Next**.



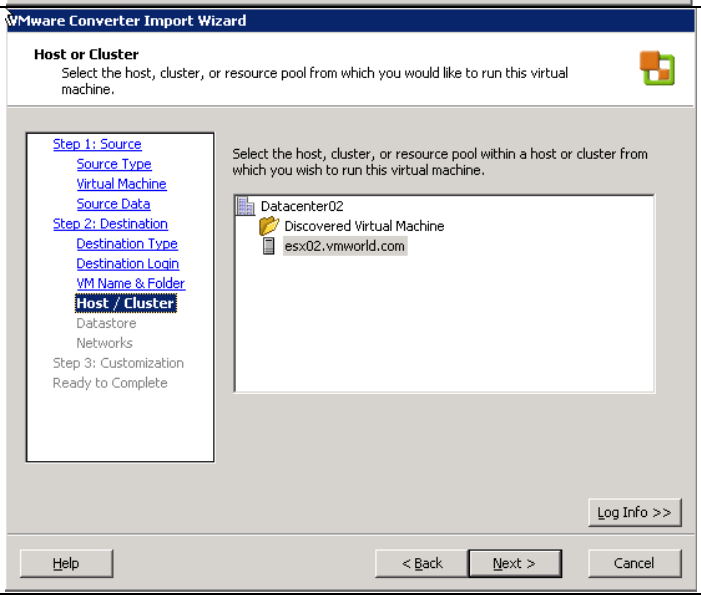
Step 14 – Destination Login (cont'd)

The inventory is loaded.



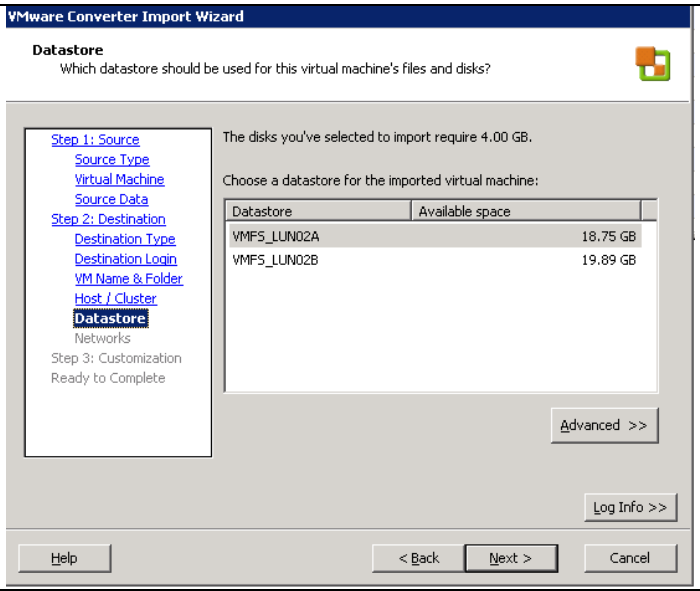
Step 15 – Virtual Machine Name and Folder

A. Type **`vmxxa_restore`** for the virtual machine name, where *xx* is the lab set number you were assigned.
B. Highlight **Datacenter*xx***, where *xx* is the lab set number you were assigned, and click **Next**.



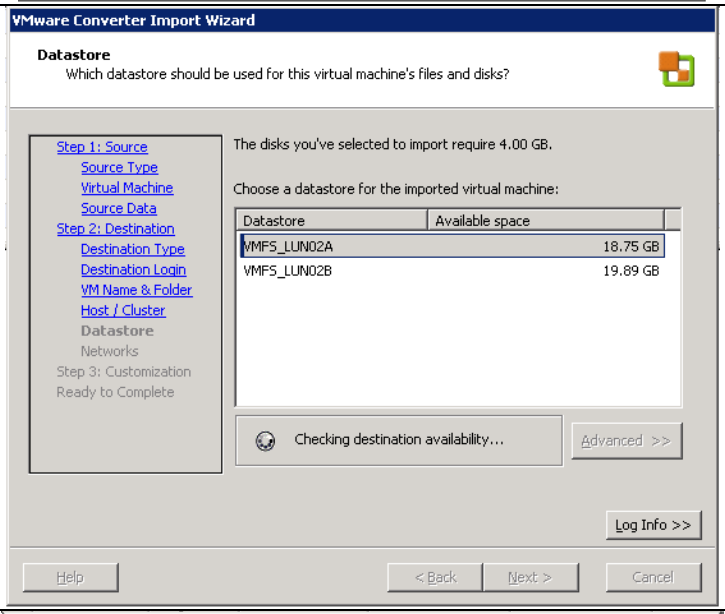
Step 16 – Host or Cluster Selection

A. Click **esx*xx*.vmworld.com,** where *xx* is the lab set number you were assigned, and click **Next**.



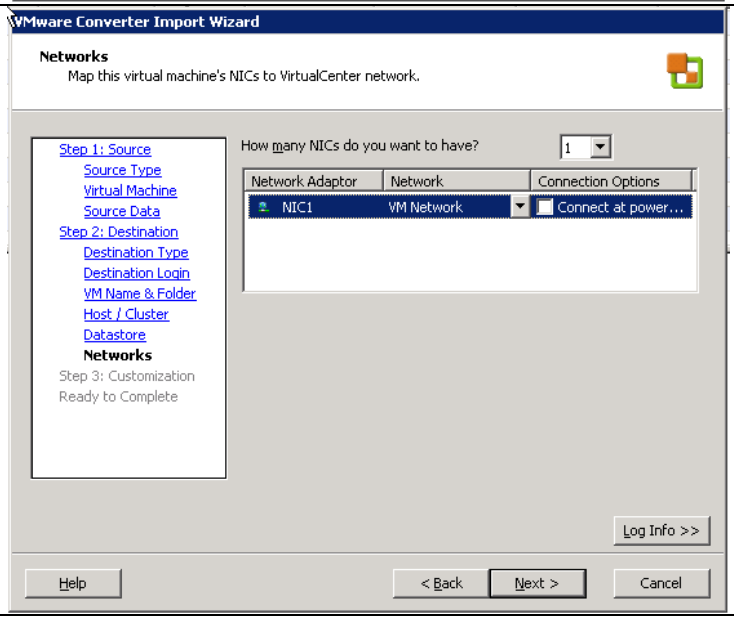
Step 17 - Specify the Datastore for the virtual machine

A. Highlight the **VMFS_LUNXXA** datastore and click **Next**.



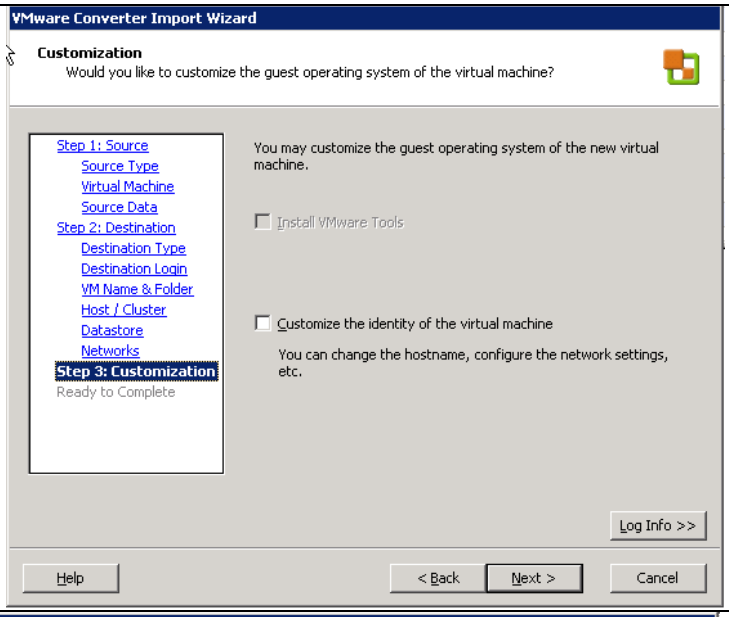
Step 18- Specify the Datastore for the virtual machine (continued)

A. The source and destination are checked. No action is required on your part.



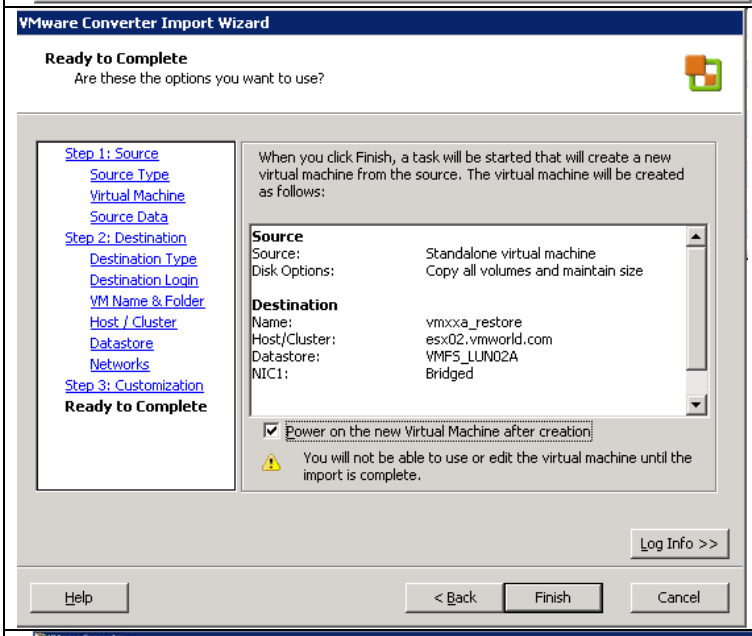
Step 19 - Networks

A. Uncheck the box to **Connect at Power on**, since the original virtual machine we backup up earlier is still powered on and connected to the network.
B. Click **Next**.



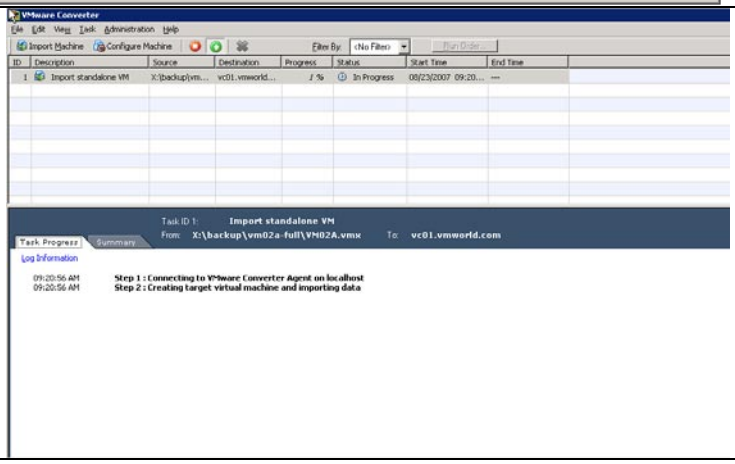
Step 20 - Customization

A. Here you are given the opportunity to customize the identity of the virtual machine. For purposes of our lab, we will not customize the identity.
B. Click **Next**.



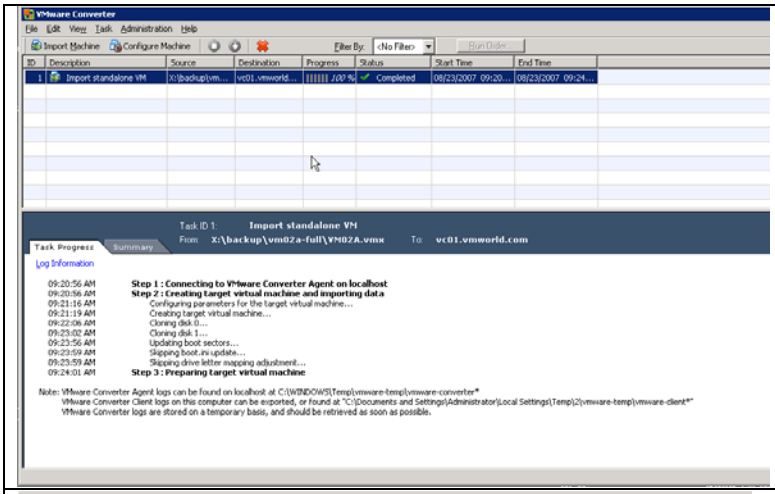
Step 21 – Ready to Complete

A. At this point, you can verify the source and destination choices you made earlier.
B. Check the box **Power on the new Virtual Machine after creation**, and click **Finish**.



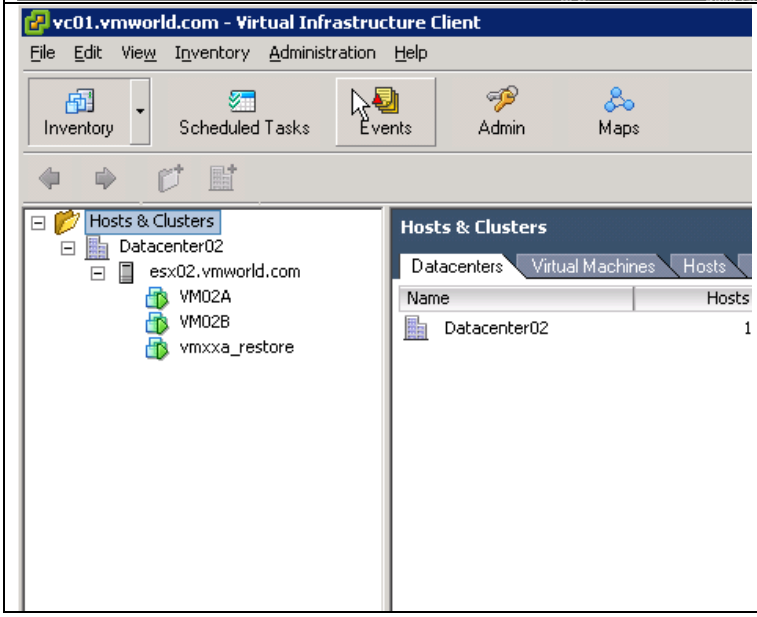
Step 22 – VMware Converter in Progress

A. VMware Converter now begins the import process. This process will take a couple minutes.



Step 23 - Import Complete

A. Once the import is complete, you will see a status of **Completed**.



Step 24– Verify VM Restore Process

A. Connect to VirtualCenter using the VI Client.
B. You should see **vm*xx*a_restore** powered on**,** where *xx* is the lab set number you were assigned.

Process Complete!

Optional Exercise– Configuring the Consolidated Backup Framework

```
/*
 * Generic configuration file for VMware Consolidated Backup (VCB).
 */

/*
 * Directory where all the VM backup jobs are supposed to reside in.
 * For each backup job, a directory with a unique name derived from the
 * backup type and the VM name will be created here.
 * If omitted, BACKUPROOT defaults to c:\\mnt.
 *
 * Make sure this directory exists before attempting any VM backups.
 */
// BACKUPROOT="C:\\mnt";

/*
 * URL that is used by "mountvm" to obtain the block list for a
 * disk image that is to be mounted on the backup proxy.
 *
 * Specifying this option is mandatory. There is no default
 * value.
 */
HOST="bu02.eng.vmware.com";

/*
 * Port for communicating with all the VC SDK services.|
 * Defaults to 902
 */
// PORT="902";

/*
 * Username/password used for authentication against the mountvm server.
 * Specifying these options is mandatory.
 */
USERNAME="root";
PASSWORD="xxx";

/*
 * SNAPSHOT_POLICY determines how disk snapshots for backup are being created:
 * +) "automatic"
 *    A snapshot is being generated automatically by the Legato Networker
 *    Interoperability Module right before backup and it is being removed
 *    automatically right after backup.
 * +) "manual" -
 *    Exactly one snapshot named "_VCB-BACKUP_" must already exist for
 *    each protected VM. The snapshot is mounted/unmounted on the proxy,
 *    but the snapshot is neither created nor deleted by the Legato Networker
 *    Interoperability Module. - This can be used to have external tools
 *    manage backup snapshot.
 * +) "createonly"
 *    The Legato Networker Interoperability Module will create the snapshot
 *    for each VM right before it gets backed up, but will not remove the
 *    snapshot after unmounting.
 * +) "deleteonly"
 *    The Legato Networker Interoperability Module assumes that the snapshot
 *    named "BACKUP" has been created beforehand. The snapshot will be deleted
 *    automatically after backup.
 *
 *    This is useful when Legato Networker should still be used in the protected
 *    VM to get application-consistent snapshots that are obtained from within
 *    the VM. See README-legato.html for more details.
 *
 * The default option is "automatic"
 *
 */
//SNAPSHOT_POLICY="automatic";
```

Step 1 – Configure the Consolidated Backup Framework

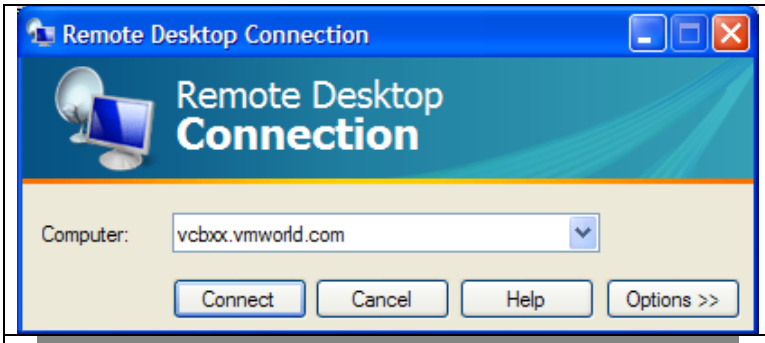
Essential configuration for Consolidated Backup is stored in a configuration file called **config.js**. It is located in a subdirectory named **config** within the installation directory for Consolidated Backup

A. Using Notepad, open the file **config.js**. It is located in **c:\Program Files\VMware\VMware Consolidated Backup Framework\config**. The default configuration is shown here.
B. Modify the entry **`BACKUPROOT=…`** to read **`BACKUPROOT=e:\\mnt`** (Remember to remove the comments/slashes at the beginning of the line).
C. Modify the entry **`HOST=…`** to read **`HOST="vcxx.vmworld.com",`** where *xx* is the lab station number to which you are assigned.
D. Modify the entry **`USERNAME=…`** to read **`USERNAME="Administrator".`**
E. Modify the entry **`PASSWORD=…`** to read **`PASSWORD="vmware".`**

NOTE: Once you have modified this file in your own environment, you would now install your third-party backup software and compatible module to integrate with VCB. We will not be previewing any third-party software in the lab, but felt it was necessary to mention this step.

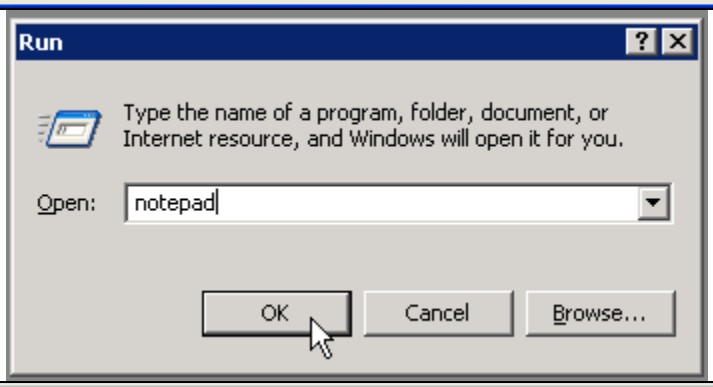
Optional Exercise – Restore a Virtual Machine that Already Exists Using vcbRestore

This lab consists of performing a restore of a virtual machine to a different location than where it was originally backed up. This does not change any attributes of the virtual machine itself, but rather stores the virtual machine in a different location.

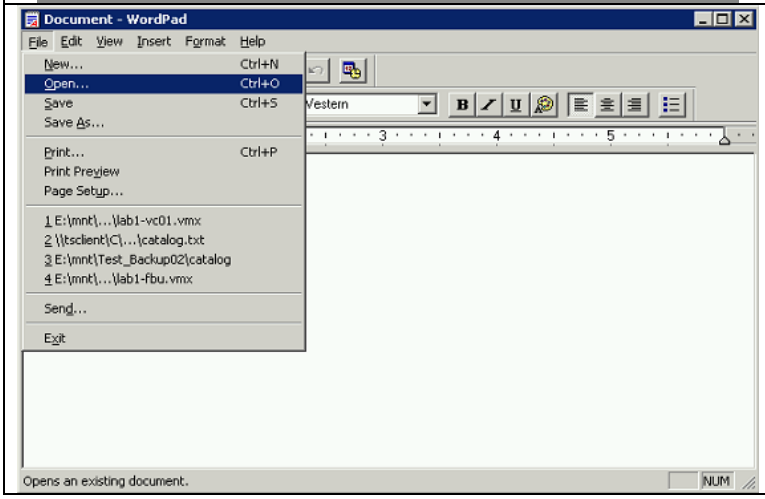


Step 1 - Connect to the VCB Proxy Machine

A. Verify all steps performed here are on the VCB Proxy server.

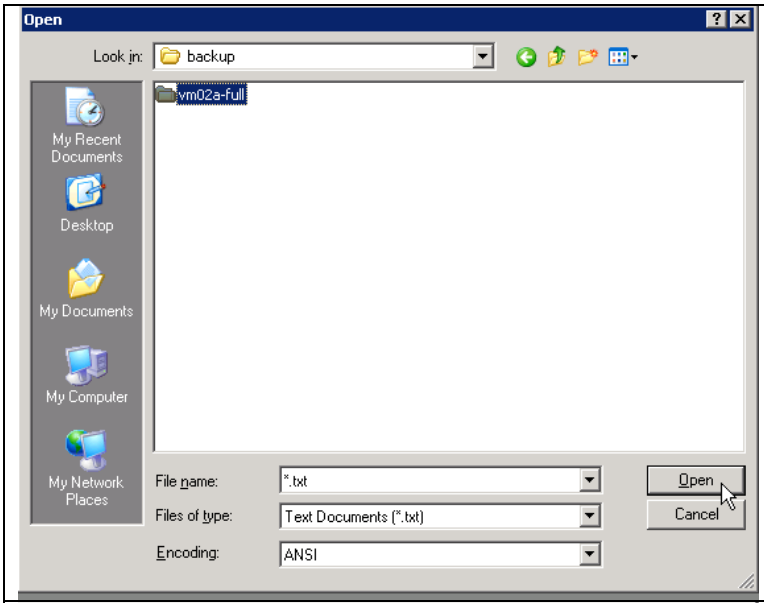


Step 2 - Open Notepad



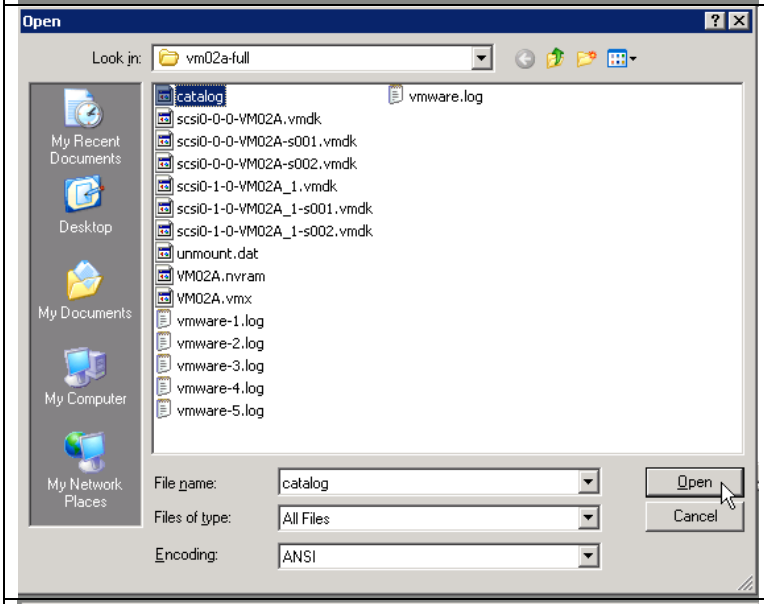
Step 3 - Open Catalog

A. Click **File**, then **Open**.



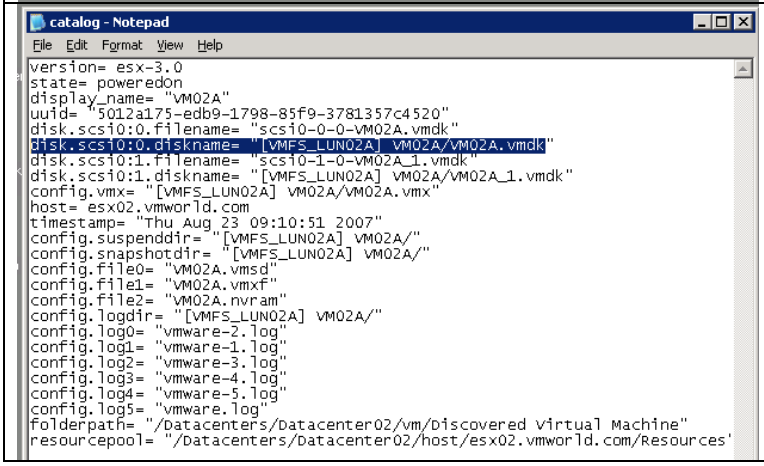
Step 4 - Open Catalog (continued)

A. Navigate to **Holding Tank** partition (Drive letter X)
B. Double-click the **backup** directory.
C. Select the **vmxxa-full** directory and click **Open**.



Step 5 - Open Catalog (continued)

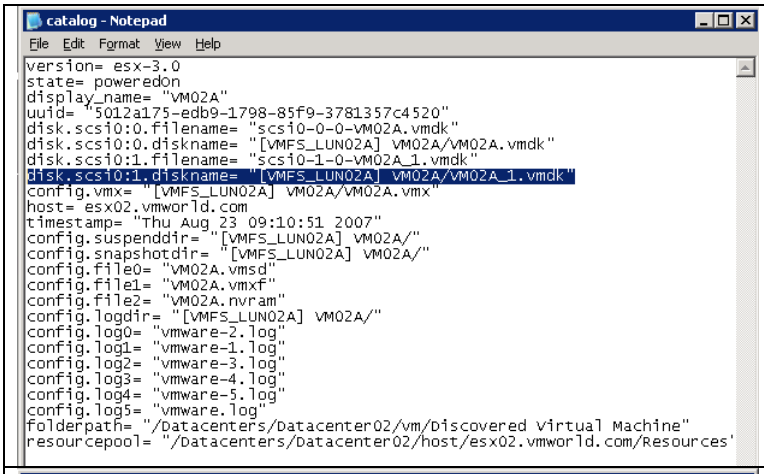
A. Change Files of Type to **All Files.**
B. Highlight **Catalog** and click **Open**.

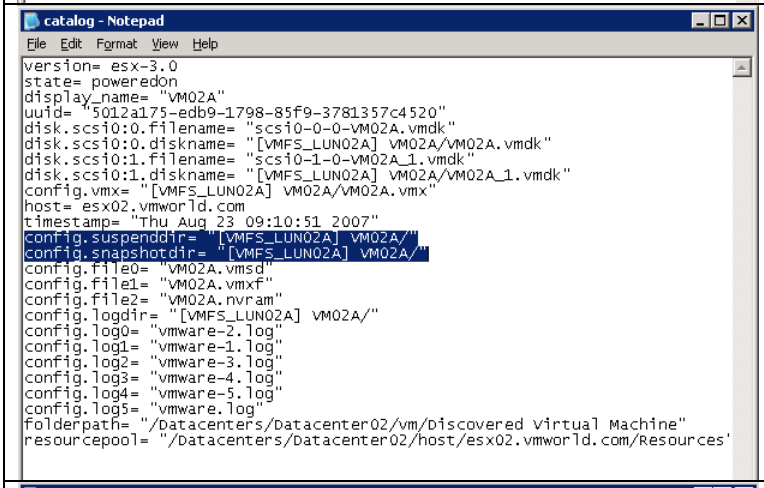


Step 6 - Modify Catalog

A. Each line that mentions the datastore **VMFS_LUNxx** must be modified.
B. Change **VMxxA/VMxxA.vmdk** to **Restored_VMXX/Restored_VMXX.vmdk**

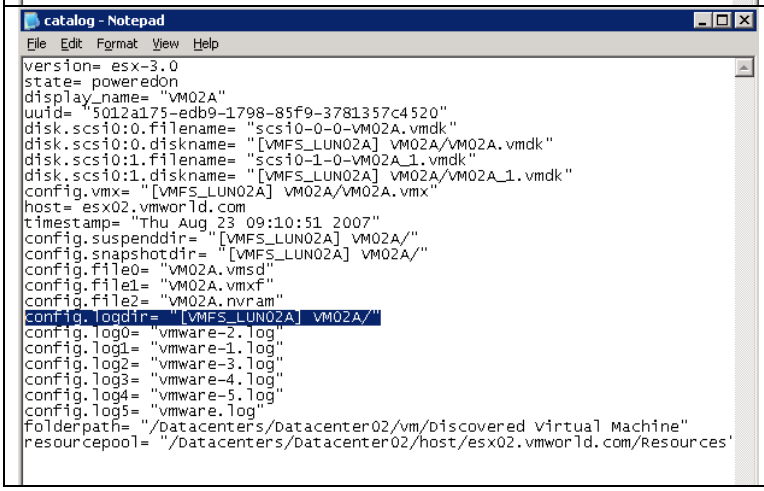
where *XX* is your lab station number.





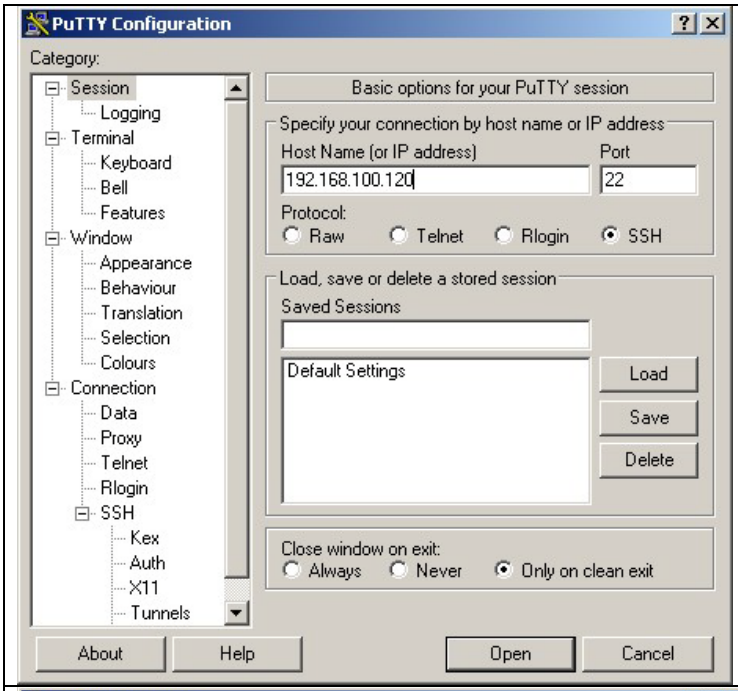
Step 7 - Modify Catalog (continued)

A. Change **VMxxA/** to **Restored_VMXXA/** on both lines that begin with **config**.



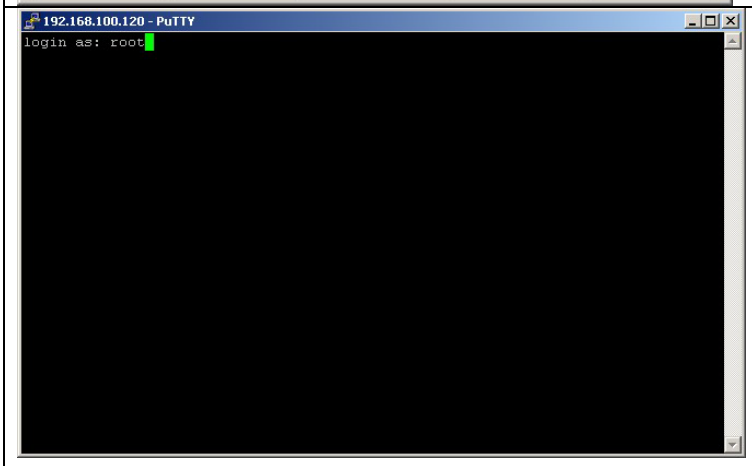
Step 8 - Modify Catalog (continued)

A. Change **VMxxA/** to **Restored_VMXXA/** where *XX* is your Lab station number.
B. Save the file as **catalog_RESTORE.**
C. Exit Notepad.



Step 9 – Establish a SSH session to the ESX Server Host

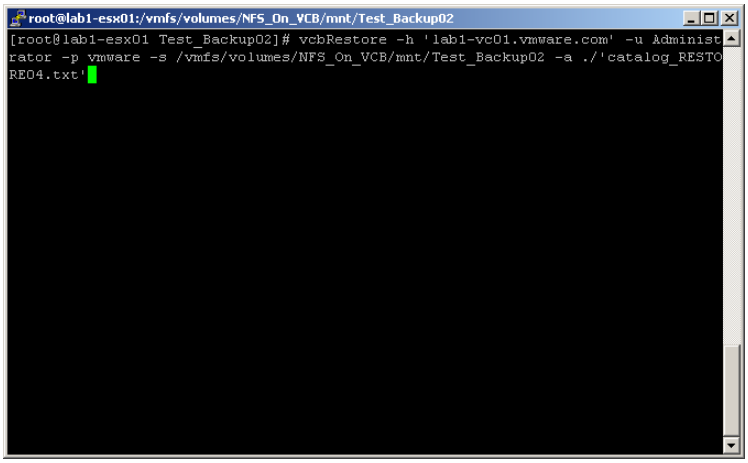
A. Double click Putty on your Desktop
B. Enter your ESX Server host's IP address
C. Click **Open**.



Step 10 – Authenticating to ESX Server

A. Login as your root user.
B. Enter your password and press **Enter**.

Note: You need to be able to access the catalog file and the full virtual machine backup you did earlier from the ESX Server host. The recommendation is to access them through either a CIFS share or a NFS mount.



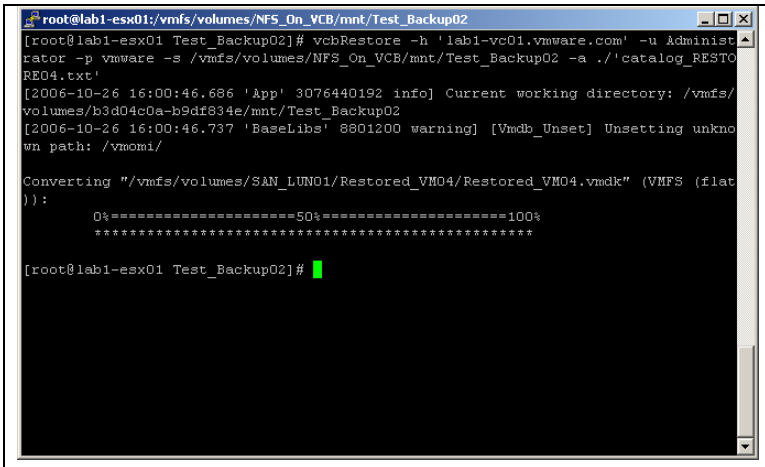
Step 11 – Restoring the Virtual Machine

A. From the console operating system, type (all one line)

```
vcbRestore –h
'vcxx.vmworld.com' –u
Administrator –p vmware –s
/mnt/SMB_on_VCB/mnt/vmXXa-
full –a ./catalog_RESTORE.txt
```

where *XX* is your lab station number.

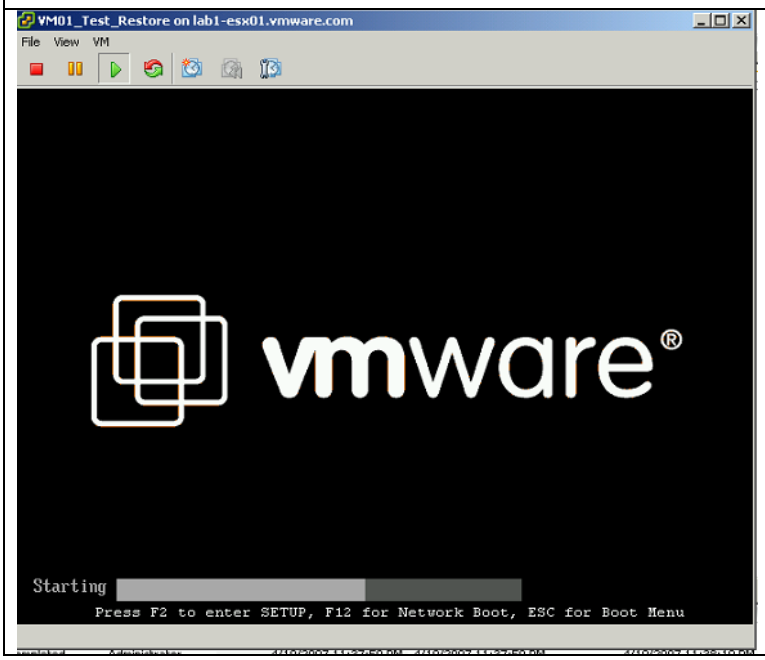
B. Press **Enter**.



Step 12 – Restoring the Virtual Machine (continued)

A. Once the **vcbrestore** command has finished, type **`exit`**.

Note: If the virtual machine you just restored did not exist in VirtualCenter, modifying the catalog file would not have been necessary.

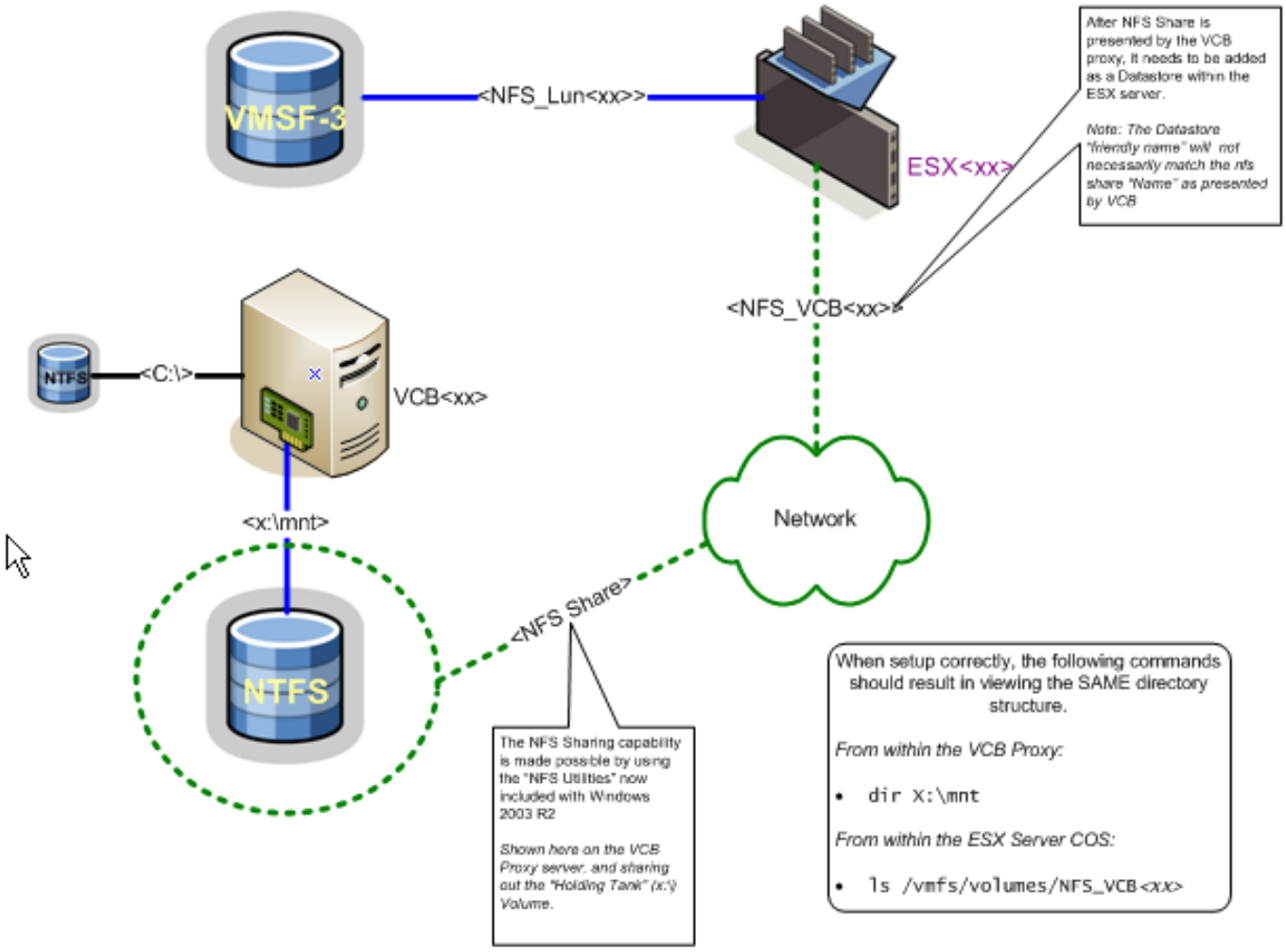


Step 13 – Power on the Virtual Machine

A. Log into VirtualCenter and power on the new virtual machine.
B. Choose **create** for the new UUID transfer option.

Optional Exercise – Setting up NFS on Windows 2003 R2 Enterprise.

Windows 2003 R2 now has the ability to create and present NFS shares to other clients. VI3 has the ability to utilize NFS datastores. In our lab, we have an NFS share on the VCB Proxy. For those that may be interested in this concept, a diagram is provided below to show the relationship between the various components.



NOTES

VMWORLD 2007