An IBM Proof of Technology

Discovering the Value of Tivoli Storage Manager v5.5

Protecting Microsoft Exchange with FilesX Lab

Created for **Tech**Works

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Contents

Introduction

This lab will have the student explore protecting Microsoft Exchange 2007 using FilesX.

Lab Requirements

These labs are written using IBM ® Storage Manager v5.5 on a Microsoft® Windows® 2003 operating system. The only requirement is the virtual machine used to perform the labs, VMware Workstation v5 or later (or VMware Player or VMware Server v1 in some circumstances) and sufficient resources on your host machine to run the virtual machine (2 GB RAM is recommended). All software needed for the labs is included within the VMware image itself.   The location of all necessary files will be indicated in the lab as required.

This lab uses the *TSM Demo II* VMware Image.

Lab Objectives

Upon completion of this lab you will be able to:

- Configure a MS Exchange backup using FilesX

- Perform volume restores, file level restores and CDP restores on MS Exchange and understand the different recovery scenarios offered by each.

- Using FilesX Exchange IMR, retrieve individual messages from the backup of the MS Exchange EDB.

Preparing for the Lab

Start the Windows 2003 Virtual Machine

__ 1. If the VMware image is not already running, click the **Manage Snapshots for Virtual Machine** icon at the top of the page.

__ 2. Select the Snapshot named **Snap1- FilesX Backups** and click the **Go To** button at the bottom of the panel. If you get a message to confirm you want to restore this snapshot, click **Yes**.
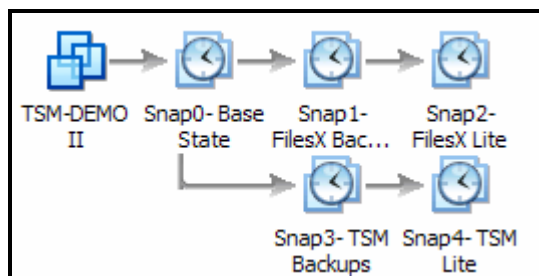
__ 3. On the left side of the screen click on **Start this virtual machine**. This will open a virtual Windows 2003 Server. If you are prompted to install drivers, click **OK**.

__ 4.   When the **Welcome to Windows** screen appears, left-click somewhere in the *middle* of the virtual screen. Use **CTRL+ALT+Insert** to get a sign-on screen for the virtual machine.

__ 5.   Log on to the virtual machine. The default ID is **Administrator**, and the password is **smartway**.

__ 6.   While your cursor is within the virtual machine's window, use the **CTRL+ALT+Enter** key combination to put the host in full screen mode.

Exercise 1 – Configuring MS Exchange Backups within FilesX

Introduction

In this exercise you will review the configuration of FilesX backups of MS Exchange.

Start Exchange and review the Exchange Infrastructure.

__ 1. Double-click on the **Services Control** folder on the desktop of the virtual machine.

__ 2. Double-click the **Make_Exchange_Active.cmd** file. This will stop all other applications then start MS Exchange. It will set the Exchange services to automatically start. Wait until this script completes.

__ 3. Start the MS Exchange management application using the **Start** button → **All Programs** → **Microsoft Exchange Server 2007** → **Exchange Management Console**. The application takes a minute or two to begin.

__ 4. You may receive a warning that this trial version of Exchange will expire in the near future. Click **OK**.

__ 5. If you are not already there, expand the main navigation tree at the **Server Configuration** node and click on **Mailbox**. You will see that there are 2 storage groups, the first with a *Mailbox Database* and the other with a *Public Folder Database*. Note the database file path for each is on the E: volume.

__ 6. Right-click on the **First Storage Group** and select **Properties**. You will see that the log and system paths are on the F: volume. You will also note that circular logging is disabled (in other words, archive logging is enabled).

__ 7. **Minimize** the management console.

Review the Exchange backup policies in FilesX

__ 1. Start the Fastback Xpress Manager using the **Start** button → **All Programs** → **XpressRestore** → **Xpress Manager** menu path. If you receive any errors stating the interface was unable to initiate, simply wait 2-3 minutes and try again.

__ 2. Log in as **administrator** with a password of **smartway** in the domain **demodomain**.

__ 3. Expand the **Client Groups** node on the main navigation tree.

__ 4. Click on the **MSEX Client Group**. You will see that the F: and E: volumes are selected since they contain the Exchange databases and logs.

__ 5. Within the client group selection page, expand the navigation tree next to **Exchange 2000** (since Exchange was not started when FilesX started, the version is incorrectly identified as MSEX 2000 instead of MSEX 2007).

__ 6.   Expand the tree next to **First Storage Group**. You will see that we can choose to select the entire Exchange environment, just a storage group or the individual volumes. The resulting snapshot will not be any different. The reason we selected the volumes in this demo system is so you will not receive large numbers of warnings as different applications are stopped and started.

__ 7.   In the main navigation tree, expand the **Job Schedules** node.

__ 8.   Click on **MSEX BU Schedule**. You will see the schedule is set to run once a day at a specific time.

__ 9.   Click on the **Application Aware** button. You will see that we are choosing to preserve the consistency of application data. Since we are running on Windows 2003 with Exchange 2007, we can choose to use VSS application quiescing. You can also see that the Exchange logs are purged after a successful backup. Click **OK**.

__ 10.   In the main navigation tree, expand the **Policies** node. Click on **MSEX BU Policy** (note the icon for this policy indicates it is paused). You will see that the MS Client Group is bound to the MS BU Schedule with this policy. We also have a catalog job within the policy to catalog the contents of the snapshot after it completes.

__ 11.   Click on the **Pre/Post Processes** tab. You will see that we do not need to specify any custom Pre- or Post- scripts to ensure data integrity of MS Exchange, since all the necessary logic is included within FilesX itself.

Exercise 2 – Protecting Exchange with Snapshot Backups

Introduction

In this exercise you will backup MS Exchange using FilesX and walk through a series of recovery scenarios.

Take a Snapshot Backup of MS Exchange

__ 1.   Right-click on the **MSEX BU Policy** and select **Run Full Snapshot**. Click **Yes** when asked to validate your request.

__ 2.   Click on the **Snapshot Monitor** tab above the main navigation tree. You will see that two snapshots are invoked (one for the E: volume, one for F:). These backups will take 3-4 minutes to complete. When they are complete, you will see that the checkmark icon becomes solid Green, indicating the catalog process has also completed.

__ 3.   **Start a web browser** using one of the icons on the system bar.

__ 4.   Go to the favorite/bookmark for the **Demo Exchange** environment. When prompted, log in as **BobMailUser** with a password of **smartway**. You will see that Bob has 2 messages from another user (Sue Mail User) in his inbox. These were there before our backup was run, so will be included within that backup.

__ 5.　Start a new message by clicking on the **New** icon above the messages.

__ 6.　In the *to field*, type **SueMailUser**.

__ 7.　In the *Subject* field, type "**After Backup Message #1**". **Type any text you wish** in the body of the note.

__ 8.　Send the note by clicking the **Send** icon in the upper left of the window.

__ 9.　Send a second note to SueMailUser with a subject of "**After Backup Message #2**".

__ 10.　**Close** the Web Browser.

__ 11.　Re-open the **Web Browser** and go to the **Demo Exchange** favorite/bookmark.

__ 12.　This time, log in as **SueMailUser** with a password of **Smartway**. You should see 4 messages, 2 that existed prior to our backup and two that were sent afterwards.

__ 13.　**Send 2 messages to BobMailUser** with the subjects of "After Backup Message #1" and "After Backup Message #2".

__ 14.　**Close** the web browser.

Perform a restore of both database and log volumes

__ 1.　Restore or restart the **Exchange Management Console**.

__ 2.　Right-click on the **Mailbox Database** and select **Dismount Database**. Click **Yes** when asked for confirmation.

__ 3.　Right-click on the **Public Folder Database** and select **Dismount Database**. Click **Yes** when asked for confirmation. We now have no open file handles on the E: and F: drives.

__ 4.　Restore **Xpress Manager**.

__ 5.　Right-Click on the **snapshot of the E:** drive and select the R**estore →Snapshot Volume Restore** option.

__ 6.　At the destination panel, expand **tsm-demo** and click on **E:** (the original location). Click **Apply** then the **appropriate responses** at the multiple confirmation and warning messages.

__ 7.　Using the same methodology, restore the **F:** volume snapshot to **F:**. You can run both restores at the same time. These restores will take 3-4 minutes.

__ 8.　Return to the **Exchange Management Console** and Mount the **Mail Database** and **Public Folder Database**. These tasks will take a minute or two.

__ 9.　Using your web browser, review the contents of both the **BobMailUser** and **SueMailUser** mailboxes. You will see mailboxes were returned to the state they were in before the snapshot backups. Since we restored both the database and log volumes all activity since the backup was lost.

Perform a restore of just the database volume snapshot

__ 1. Restart the Web Browser and send 2 messages from **BobMailUser to SueMailUser** and 2 messages from **SueMailUser to BobMailUser**, just as you had previously.

__ 2. Restore or restart the **Exchange Management Console**.

__ 3. Right-click on the **Mailbox Database** and select **Dismount Database**. Click **Yes** when asked for confirmation.

__ 4. Right-click on the **Public Folder Database** and select **Dismount Database**. Click **Yes** when asked for confirmation. We now have no open file handles on the E: and F: drives.

__ 5. Restore **Xpress Manager**.

__ 6. Right-Click on the snapshot of the **E:** drive and select the **Restore → Snapshot Volume Restore** option.

__ 7. At the destination panel, expand **tsm-demo** and click on **E:** (the original location). Click **Apply** then the appropriate response at the multiple confirmation and warning messages.

__ 8. Return to the **Exchange Management Console** and Mount the **Mail Database**. You will receive an error! What happened? When you took the snapshot backup, FilesX had instructed MS Exchange to purge its transaction logs. Now, when you attempt to mount the backup copy of the database, the logs are from a later point in time with the earlier logs missing.

Merging the contents of the log volume

__ 1. Launch Expr**ess Mount** by double-clicking its icon on the system tray (see picture). The window may start in the background.

__ 2. Xpress Mount must locate the Xpress Restore repositories from which to read the snapshots. Click the **Refresh** button. Restore **Xpress Mount** from its icon. The repository on TSM-DEMO@DemoDomain will be displayed. You can also select the policy, host, volume and date of the snapshot you wish to mount.

__ 3. In the volume field, select the **F:** volume. In the *Date* field, you can choose the **Last snapshot**.

__ 4. Click the **Mount** button.

__ 5. You will be asked where to mount the snapshot. Just leave **I:** selected and click **OK**. A message will be showing indicating the mount has taken place.

__ 6. Restart or restore **Windows Explorer.** Navigate to the **I:** drive.

__ 7. Navigate to the Exchange Log/System directory for the First Storage Group (**I:\Exchange\First Storage Group\).**

__ 8. Select both the **Log** and **System** folders (CTRL-Click to select multiple items), **right-click** and **Copy** them.

__ 9.	Go to the live Exchange Log/System directory for the first storage group on the F: drive (**F:\Exchange\First Storage Group**), **right-click** and **Paste** those directories. When warned that you may overwrite files, click **Yes to All**. This will merge the contents of the live Log/System directories with the previous contents before the logs were purged.

__ 10.	Perform the same task for the Second Storage Group (copy the contents of **I:\Exchange\Second Storage Group** to **F:\Exchange\Second Storage Group**).

__ 11.	Return to the **Exchange Management Console** and try to mount the **Mail Database** again. This time, it should work.

__ 12.	Check the contents of both the **BobMailUser** and **SueMailUser** mailboxes. You should now see the contents of the mailboxes up to the current point in time, even after the mailbox database was restored from a previous backup. It is recommended that another backup be taken to prune any unneeded log files.

Note: If you attempt this method of merging log files, you will need all of the log files from the time of the original backup to the time of failure. For example, if you restored a snapshot backup from a previous time and there have been 3 backups since that time, you would most likely need to copy the contents of the Log and System directories from the most recent backup, the next most recent and so forth until you arrive at the time of the snapshot you restored.. If you wish to keep an up to the minute backup of Exchange, it is possible to take normal snapshot backups of the Database volumes and CDP backups of the Log volumes. That way you have a backup of the most recent contents of the log directory. If you lose the Exchange server in its entirety, you would restore the database volume and log volumes from its snapshot backups, then merge its contents from the CDP backup.

Perform an Instant Restore the Exchange Database and Log Volumes

__ 1.	Return to the **Exchange Management Console** and dismount both the **Mailbox Database** and the **Public Folder Database**.

__ 2.	Bring up the Windows Service control applet using the **Start** button → **Administrative Tools** → **Services** menu pathway.

__ 3.	Within the **Services** control applet, scroll down until you find the **XpressClient** service and stop it.

__ 4.	Start **Windows Explorer** and expand **My Computer** so all drives are listed. Do not select any specific drive at this point.

__ 5.	Invoke the **Xpress Mount** client using its icon on the system tray. **Position** Xpress Mount so that the list of drives in Windows Explorer is visible.

__ 6.	Click the **Dismount All** button.

__ 7.	In the Volume field, select **E:**. In the Date, select **Last snapshot**.

__ 8.	At the bottom of the Xpress Mount GUI, start an *Instant Restore* by clicking the **Restore** button.

__ 9.	When warned the volume will be overwritten, click **Yes** to continue.

__ 10. Select **E:** to act as the destination of the Instant Restore. Click **OK**.

__ 11. Do the same steps to start a restore of the **F:\ volume over F:** (do *not* wait for the previous restore to complete.

__ 12. **Monitor** the messages in the Instant Restore box. You will notice that the E: and F: volumes are dismounted and the snapshots from within the repository are mounted for access while it is being restored. You will also see the E: and F: drives disappear and then reappear in Windows Explorer as the originals were dismounted then the snapshots were mounted. Once they are mounted, go to the next step.

__ 13. While the restore is still taking place, return to the **Exchange Management Console** and mount both the **Mail Database** and the **Public Folder Database**. The mount of the database will take significantly longer than before (the performance of this laptop-based virtual machine is significantly taxed by this exercise).

__ 14. Once they are mounted, use a web browser to check the contents of **one or both of the mailboxes**. Since we had restored both the DB and Log volumes to the same point-in-time, all activity since the snapshot was taken has been lost. You could have also done an instant restore of the database volume and a merge of the log/system folders to restore to the point of failure.

Exercise 3 – Performing Individual Message Recoveries

Introduction

In this exercise you will use Xchange Restore to mount a backed up Exchange Mail Database and recover individual messages. We will also explore the search capability of Xchange Restore.

Restore Individual messages from a previous backup

__ 1. Using a Web Browser, log into **SueMailUsers** Exchange mailbox.   **Delete all messages** in the inbox and empty the **Deleted Items** folder.

__ 2. Close the **Web Browser**.

__ 3. Using **Xpress Mount**, mount the last snapshot of the **E:** volume to **I:**.

__ 4. Start Xchange Restore using the **Start** button → **All Programs** → **Xchange Restore** → **Xchange Restore 2007** menu pathway.

__ 5. Click the **Open EDB** icon (see picture):

__ 6. Navigate to **E:\Exchange\First Storage Group\Data** and open **Mailbox Database.edb**. You will see 3 mailboxes, including the 2 we have been using in previous exercises.

__ 7. Expand the navigation tree next to **Sue Mail User**.

___ 8. Click on the **Inbox**. You will see that the two messages we have removed from the active Exchange environment are here in the backup copy.

___ 9. Click the **Open Profile** icon (see picture) to log into Exchange with a pre-defined Outlook Profile:

___ 10. There is only one profile defined on this system (**ADMINISTRATOR**). That profile has been granted access to the SueMailUser and BobMailUser mailboxes. Click **OK**.

___ 11. You will be asked at each mailbox if you wish to open it. Reply **Yes each time**.

___ 12. In the new navigation tree, expand **Sue Mail User** and click on the **Inbox**. It should be empty.

___ 13. Right-click on **Sue Mail User** and select **New Folder**. When Prompted, create a folder named **Restored Data**.

___ 14. **Select** the messages from the backup and **drag** to the new folder. You will see a Copy Progress box pop-up. When the messages are copied, click on **Close**.

___ 15. Start a **Web Browser** and check the contents of the **SueMailUser**'s mailbox. You should find the new folder and its restored contents.

___ 16. Close the **Web Browser**.

Search for Specific Messages

___ 1. Return to **Xchange Restore**.

___ 2. Above the upper navigation tree, select the **Find** tab.

___ 3. In the Find page, click the **Browse** button.

___ 4. Check the boxes next to **Bob Mail User** and **Sue Mail User**. Click **OK**.

___ 5. In the *Search for word(s):* field enter **before**.

___ 6. Click the **More>>** button. You will see you can enter even more criteria to limit the search.

___ 7. Click the **Find** button. You will see that all of the "Before Backup" messages were found in both the recipient's inbox and the sender's outgoing mail file.

___ 8. In the lower navigation tree for the active Exchange environment, right-click on **SueMailUser** and create a folder named **Before Backup Messages**.

___ 9. **Drag-n-drop** all messages from the search results to the new folder. Click **Close** when complete.

___ 10. Log in to **SueMailUser**'s mailbox and check the new folder. You will see all of the messages are restored, even those that are duplicate.

Note: In this exercise we restored message directly to an active Exchange server using an Outlook profile that had been previously defined and given authority to access the mailboxes we wished to work with. We could have also restored the messages to an existing Outlook .PST file or sent them via a Simple Mail Transfer Protocol (SMTP) server to an e-mail recipient.

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