Single File Restores using VSC Backup and Recovery and vCenter Functionality

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1 Introduction to Administrator operated Single File Restore

This document provides the procedures for Single File Restores from backups created by the NetApp® Virtual Storage Console (VSC) Backup and Recovery Module. The existing Single File Restore workflow implemented in the B/R capability involves the owner of the Virtual Machine and has a requirement for both a Restore Agent and a mail server. What if the owner does not have access to a mail server, does not want to install Restore Agents in the VMs or single file restores are performed by the Virtual Infrastucture (VI) administrators? This document outlines the Single File Restore process for VI administrators using the NetApp VSC.

Terms used;

VSC (Virtual Storage Console) - This is the vSphere client plug-in for VMware vCenter provided from NetApp

SMVI (SnapManager for Virtual Infrastructure) - Formerly a standalone product, this is now the Backup and Recovery capability of VSC

Source VM – This is the VM from which you want to copy files to restore

Target VM – This the VM to which you want to restore files. It might be a production VM or a “proxy” VM which the VI admins own and manage. A proxy VM may be used if the production VM’s OS does not support hot add or hot removal of disks or if the owner does not want to edit the production VM settings.

This document covers 2 methods of performing a SFR. The first method still involves starting a SFR session within the VSC console but then leverages either a powershell script or manual mounting of the FlexCloned VMDK files to the VM, speeding the process.

The second method has the storage administrator perform a “Mount” of the selected backup rather than the SFR wizard and from there the files are accessed.

Either option is simpler and may suit your companies restore needs better.

2 Method 1: Using the SFR Function of VSC

2.1 Mounting the SMVI created Backup

The VSC Backup and Recovery capability has a “Single File Restore” function which creates a Flexclone of the backup, connects it to the ESX host where the VM resides and connects the VMs VMDK from the FlexClone datastore to the running VM. This effectively provides a readable/writable copy of the backup which allows easy access to the data contained within it.

a) Select the VM that you need to recover a file from and click on the “NetApp” tab from the Hosts or VMs and Templates view in the vSphere client and select Single File Restore.

b) Select Add and provide the required information from the dropdowns

c) Select the backup from which you wish to copy files to restore.

d) Select Finish and tasks are created for adding the Datastore, renaming the Datastore and adding the VMDK to the VM.

2.2 File Level Restore procedure

The next step is to transfer the files from the backup we connected to the target VM. There are two options for completing this step.

2.2.1 SRF Online Disk Powershell

a) Connect to the target VM via RDP

b) Download the PowerShell script called Diskonline.x.x.ps1 from the NetApp Communities.

c) Within the VM, double-click the SFR Online Disks icon. When complete, the FlexClone copies of the disks are available as new drives in Windows Explorer.

d) Using Windows Explorer, simply drag and drop the desired files and folders to the desired destinations.

2.2.2 Manually Online Disks

a) Connect to the target VM via RDP.

b) Check Windows Explorer for the new disk file. Windows 2008 will tend to automount and letter a new drive. If the drive has a letter, skip to Step 8.

c) If the new drive does not yet show up in Windows Explorer, open computer management (different process for each version of Windows) and select “Disk Management”.

d) Here you should see a new disk set in the offline state.

e) Right click the drive and set it to “Online”.

f) Wait a moment while the drive is moved to online and a drive letter is assigned to it.

g) If no drive letter is assigned, right click the partition and assign a drive letter.

h) Using Windows Explorer, simply drag and drop the desired files and folders to the desired destinations.

2.3 Cleaning up

The exact cleanup procedure is slightly different depending on the version of Windows OS to which you are restoring files. For Windows 7 and Windows 2008, the drive can simply be removed, but for older OSes, the drive should be offlined before removal, and for Windows 2000, the VM needs to be shut down befoe the drives can be removeed.

a) Once the files have been restored, close all Explorer windows.

b) In the “Disk Management” window, right click on the mounted disk and set it to offline. Although this isn’t necessary for Windows 7 and Windows 2008, it is still a good procedure to follow.

c) From the vSphere client, click on the active SFR session for the target VM.

d) Select Delete.

3 Method 2: Using the “Mount” function of VSC

3.1 Mounting the SMVI created Backup

The VSC Backup and Recovery capability has a “Mount” function which creates a Flexclone of the backup and connects it to an ESX host of choice. This effectively provides a readable/writable copy of the backup which allows easy access to the data contained within it.

a) Enter the the “Restore” section of the VSC Backup and Recovery capability. Alternatively, click on the “NetApp” tab from the datastore view in the vSphere client.

b) Select the backup from which you wish to copy files to restore.

c) Right click on the selected backup and select “Mount” from the dropdown list. See image below.

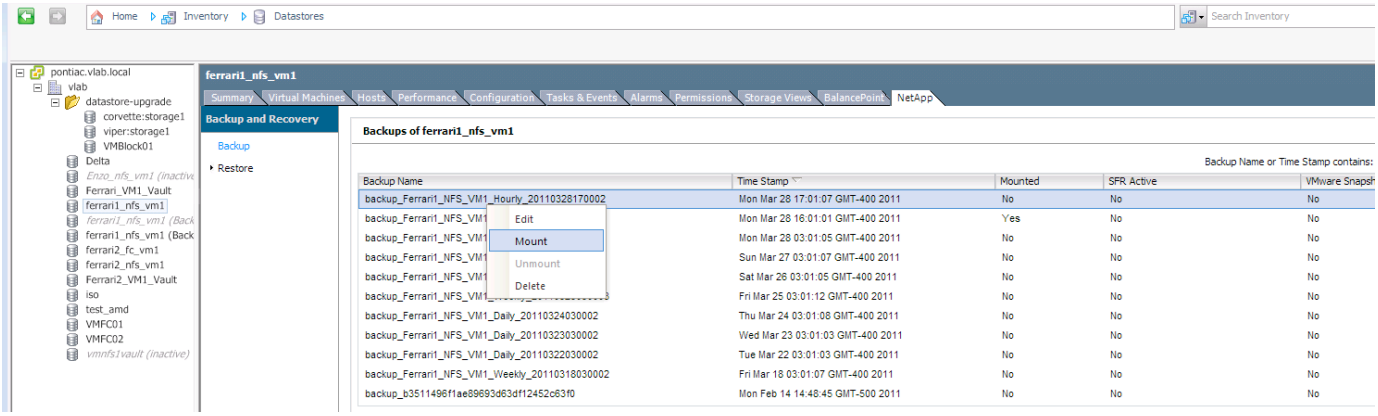


Figure 1 -Mount Option – Note the Inventory view and the backup selection

d) From the “Mount Backup” wizard, select the ESX host to which you want to mount the backup. This host should be the same host on which the target VM (the VM to which you wish to restore the files) is currently running. If you are not sure which ESX host to select, don’t worry. You can always VMotion the VM to that host later.

e) In the “Recent Tasks” area of the vSphere client, you should now see either “Create NAS Datastore” or “Rescanning HBA” in the task section.

f) In the datastore inventory view for the selected ESX host, you should now see a new datastore named (Backup…..). This is the FlexClone copy of the selected backup and is readable/writable.

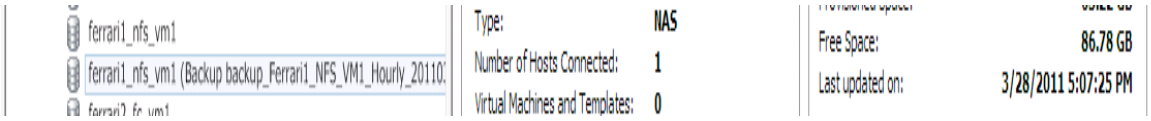


Figure 2 -Mounted Backup - Note the naming format

3.2 File Level Restore procedure

Within the vSphere client, select the VM to which you wish to restore the file (the target VM). Ideally, this “target” VM is Windows 2008 or newer or Windows 7 or newer. These operating systems support hot add and hot removal of disk devices which allows you to restore files to the target VM with no reboot or outage to the target VM.

a) Select “Edit Settings” on the “Summary” tab of the VM, or alternatively, right click on the VM and select “Edit Settings” from the dropdown menu.

b) From the VM properies popup on the “Hardware” tab, select “Add…”.

c) From the “Add Hardware” wizard, select “Hard Disk”.

d) On the “Select a Disk” dialog page, select the “Use an existing virtual disk” radio button.

e) On the “Select Existing Disk” page, click the “Browse” button.

f) From the “Browse Datastores” utility, navigate to the mounted backup (datastore) you created in section 1.1 above.

g) Within the mounted datastore, navigate to the VM from which you want to copy files for restore (source VM).

h) Inside the VM folder, select the VMDK from which you want to copy files for restore and then select “Next” from the “Add Hardware” wizard.

i) Note the number of the existing hard disk file(s). The new disk will have “adding” displayed next to it as per the image below. Take note of what the next number will be.

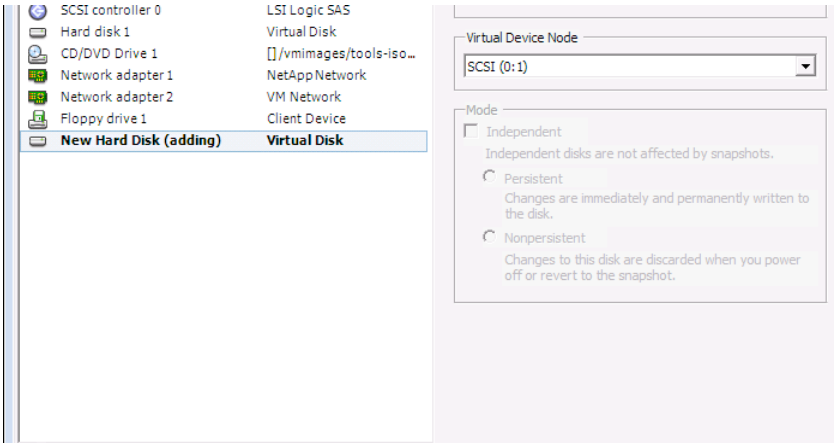
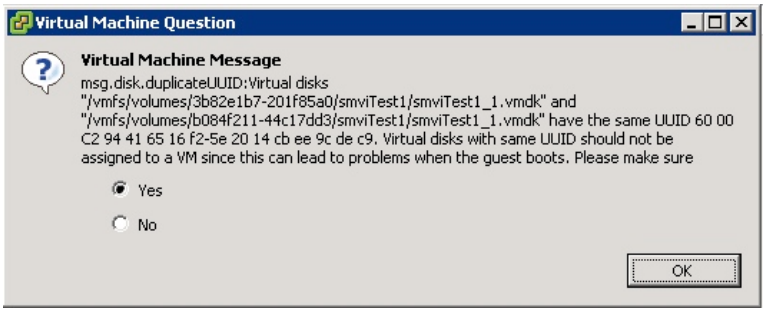


Figure 3 -Adding a Mounted VMDK - Note in this case the new disk will be number 2

j) When the disk isbeing added, if you are running vSphere 4.1 you will get a popup message complaining about matching UUIDs on the disks. Select “Yes” here.



3.3 Transfering the files

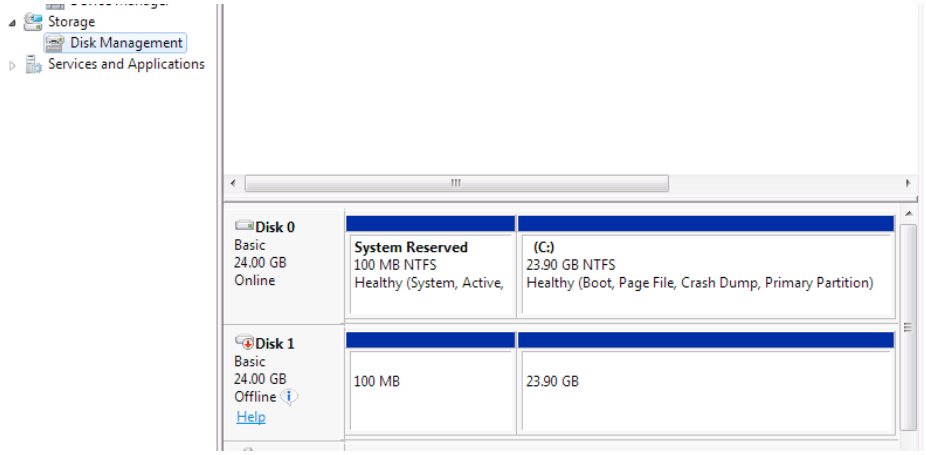
The next step is to transfer the files from the backup we connected to the target VM.

a) Connect to the target VM via RDP.

b) Check Windows Explorer for the new disk file. Windows 2008 will tend to automount and letter a new drive. If the drive has a letter, skip to Step 8.

c) If the new drive does not yet show up in Windows Explorer, open computer management (different process for each version of Windows) and select “Disk Management”.

d) Here you should see a new disk set in the offline state. See the image below.



f) Wait a moment while the drive is moved to online and a drive letter is

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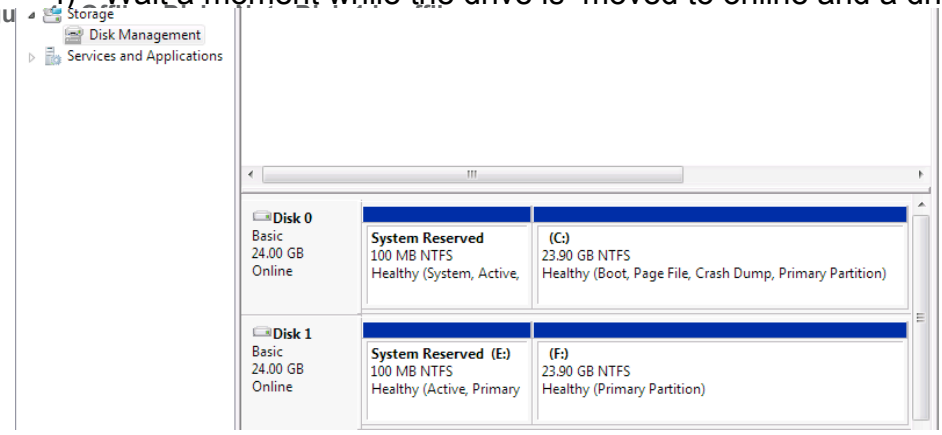

Figure 5 - Online Disk - Note the drive letter 'F' has been assigned

g) If no drive letter is assigned, right click the partition and assign a drive letter.

h) Using Windows Explorer, simply drag and drop the desired files and folders to the desired destinations.

3.4 Cleaning up

The exact cleanup procedure is slightly different depending on the version of Windows OS to which you are restoring files. For Windows 7 and Windows 2008, the drive can simply be removed, but for older OSes, the drive should be offlined before removal, and for Windows 2000, the VM needs to be shut down befoe the drives can be removeed.

a) Once the files have been restored, close all Explorer windows.

b) In the “Disk Management” window, right click on the mounted disk and set it to offline. Although this isn’t necessary for Windows 7 and Windows 2008, it is still a good procedure to follow.

c) From the vSphere client, click on “Edit Settings” for the target VM.

d) Select the mounted hard disk as noted in section 1.2 above and click “Remove”.

e) Leave the radio button on the “Remove from virtual machine” selection

f) In the datastore inventory view, click the NetApp tab and select “Restore”.

g) Locate the mounted backup and right click on the backup.

Select “Unmount”.

4 Conclusion

These Single File Restore process provides VI Administrators a means to quickly restore individual files back to running VMs without the use of agents or a mail server.

5 Feedback

Send an e-mail to keitha@netapp.com with questions or comments concerning this document.

6 Version History

Version	Date	Document Version History
Version 1.0	March 2011	Original document
Version 1.1	March 2011	Updated with Powershell Script and SFR methodology

Vesion 1.2	November 2011	Included original process in document as well