Restoring a Virtual Machine in VMware

Overview

Sometimes a VMware Virtual Machine is deleted on accident or content in the VM is deleted or edited, but the end user wants to restore it. A VMware Virtual Machine can be restored by using FlashArray Volume Snapshots. This guide will walk you through the process of restoring one Virtual Machine in an ESXi 6.x Environment using this method.

How to Restore the Virtual Machine

Please follow the steps outlined below to successfully restore a virtual machine from a Pure Storage FlashArray snapshot:

1. Identify the VMware datastore that contained the problematic VM before the issue was identified. This can be accomplished in multiple places by using the ESXi host CLI, from the vCenter GUI, the FlashArray CLI, or the FlashArray GUI.

2. Here are some Examples:

   Please note that they are different from the Snapshot and VM example below. This is an example of correlating a Datastore to FlashArray Volume

   vCenter GUI

   i. Navigate to the Datastore Tab and select the Datastore you want, then click on the Configure Tab and Device Backing Option

   ii. Here you'll see that the Device Backing is naa.624a937098d1ff126d20469c000199eb

   iii. On the array, you will be looking for the Volume with the Serial 98d1ff126d20469c000199eb.

This article is for restoring a virtual machine from a Pure Storage FlashArray snapshot of a VMFS Datatrace only. This does not apply to VMs on vVols, other third party snapshot recovery processes or a Pure Storage FlashBlade.
FlashArray GUI

A little less specific vs using the FlashArray CLI. You'll need to know the name of the Volume or have need to look at a few volumes.

i. Log into the FlashArray GUI, go to the storage tab and then the volumes tab.

ii. From here, click on the Volume you want to confirm correlates to that datastore

iii. Here I'm looking at the FlashArray Volume that correlates to the device backing of naa.624a937098d1ff126d20469c000199eb

iv. Note the Serial matches: 98d1ff126d20469c000199eb

The easiest way to do this is from the ESXi CLI and FlashArray CLI.

ESXi CLI:

Locate the Datastore via esxcfg-scsidevs

[root@ESXi-4:-~] esxcfg-scsidevs -m
naa.624a937073e940225a2a52bb0003ae71:3 /vmfs/devices/disks/naa.
624a937073e940225a2a52bb0003ae71:3 5b6b537a-4d4d8368-9e02-0025b521004f 0 ESXi-4-Boot-Lun
naa.624a9370bd45220559f42910001edc7:1 /vmfs/devices/disks/naa.
624a9370bd45220559f42910001edc7:1 5b6b537a-4d4d8368-9e02-0025b521004d 0 sn1-405-25-Content-Library-Datastore
naa.624a9370bd45220559f42910001edc8:1 /vmfs/devices/disks/naa.
624a9370bd45220559f42910001edc8:1 5b6b537a-4d4d8368-9e02-0025b521004d 0 sn1-405-25-Datastore-1-LUN-150
naa.624a937098d1ff126d20469c000199ea:1 /vmfs/devices/disks/naa.
624a937098d1ff126d20469c000199ea:1 5b6b537a-4d4d8368-9e02-0025b521004d 0 sn1-405-21-ISO-Repository
naa.624a937098d1ff126d20469c000199eb:1 /vmfs/devices/disks/naa.
624a937098d1ff126d20469c000199eb:1 5b6b537a-4d4d8368-9e02-0025b521004d 0 sn1-405-21-Datastore-1-LUN-100
naa.624a937098d1ff126d20469c0001aad1:1 /vmfs/devices/disks/naa.
624a937098d1ff126d20469c0001aad1:1 5b6b537a-4d4d8368-9e02-0025b521004d 0 prod-sn1-405-c12-21-SRM-Placeholder
naa.624a937098d1ff126d20469c0001ae66:1 /vmfs/devices/disks/naa.
624a937098d1ff126d20469c0001ae66:1 5b6b537a-4d4d8368-9e02-0025b521004d 0 prod-sn1-405-
ESXi CLI:
Locate the Datastore via esxcfg-scsidevs

```
c12-21-SRM-Datastore-1
naa.624a937098d1ff126d20469c00024c2e:1 /vmfs/devices/disks/naa.624a937098d1ff126d20469c00024c2e:1 5b96f277-04c3317f-85db-0025b521003c 0 Syncrep-sn1-405-prod-srm-datastore-1
naa.624a937098d1ff126d20469c00024c33:1 /vmfs/devices/disks/naa.624a937098d1ff126d20469c00024c33:1 5b96f28b-57edeb0-0ce59-0025b521004d 0 Syncrep-sn1-405-dev-srm-datastore-1
naa.624a9370bd452205599f42910003f8d8:1 /vmfs/devices/disks/naa.624a9370bd452205599f42910003f8d8:1 5ba8fb3-d5f7b06e-5286-0025b521004f 0 Syncrep-sn1-405-prod-srm-datastore-2
```

FlashArray CLI

```
pureuser@sn1-405-c12-21> purevol list
Name                                                        Size  Source
Created                  Serial
prod-sn1-405-21-Datastore-1-LUN-100                         15T   -       2018-08-22 09:07:13 PDT 98D1FF126D20469C000199EB
prod-sn1-405-21-Prod-Cluster-RDM-FileShare-1                10T   -       2018-08-24 20:24:02 PDT 98D1FF126D20469C00019AB
prod-sn1-405-21-srm-placeholder                              100G  -       2018-09-04 16:08:15 PDT 98D1FF126D20469C0001AAD1
```

Similar to the GUI, we can match the datastore uuid to the FlashArray volume Serial number to confirm this is the datastore and volume we need to work with.

3. Now that you have the Datastore and Volume mapping, Determine the snapshot on the FlashArray that you would like to perform the restore from:

   Please note that from this point we have a different datastore and array being used as an example.

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4. After the snapshot has been identified create a new volume from the snapshot:

```
pureuser@slc-405> purevol copy slc-production.4674 slc-production-recovery
```

<table>
<thead>
<tr>
<th>Name</th>
<th>Size</th>
<th>Source</th>
<th>Created</th>
<th>Serial</th>
</tr>
</thead>
<tbody>
<tr>
<td>slc-production-recovery</td>
<td>500G</td>
<td>slc-production</td>
<td>2017-01-17 11:26:56 MST</td>
<td>309582CAEE2411F900011243</td>
</tr>
</tbody>
</table>

5. Confirm the new volume has been created based off of the snapshot listed:

```
pureuser@slc-405> purevol list slc-production-recovery
```

<table>
<thead>
<tr>
<th>Name</th>
<th>Size</th>
<th>Source</th>
<th>Created</th>
<th>Serial</th>
</tr>
</thead>
<tbody>
<tr>
<td>slc-production-recovery</td>
<td>500G</td>
<td>slc-production</td>
<td>2017-01-17 11:26:18 MST</td>
<td>309582CAEE2411F900011243</td>
</tr>
</tbody>
</table>

6. Map the newly created volume to the ESXi host you would like to deploy the virtual machine you are restoring:

```
pureuser@slc-405> purevol connect --hgroup ESXi-HG slc-production-recovery
```

<table>
<thead>
<tr>
<th>Name</th>
<th>Host Group</th>
<th>Host</th>
<th>LUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>slc-production-recovery</td>
<td>ESXi-HG</td>
<td>slc-esx-1</td>
<td>253</td>
</tr>
</tbody>
</table>

7. Perform a rescan on the ESXi host that the newly created volume was presented to complete presentation of the LUN.

8. Add the recovery LUN as a datastore to the ESXi host(s) you plan on performing the recovery on:
9. While creating the datastore ensure you choose the: **Assign a new signature** option.

![Datastore Creation Screenshot](image1)

10. Once the datastore creation has completed you will note that the datastore name will be in the following format: 'snap-hexNumbers-originalDatastoreName'. The image below is an example of what this specific restore datastore looks like:

![Datastore Name Example](image2)

11. With the recovery datastore highlighted, locate the 'Actions' wheel and click on 'Register VM...' to locate our VM that needs to be restored.

![Register VM Screenshot](image3)
12. After you have located the VM in need of restoration step through the VMware prompts to add the VM to the ESXi host inventory.

While registering the recovery virtual machine to the ESXi host, and the original VM is still live on the ESXi host, ensure you rename the recovery VM. If you do not you will have two VMs with the same name and need to look at the underlying datastore properties to determine which VM is the recovery and which is the original.

13. Once the recovery VM is listed in the ESXi host inventory proceed with powering on the VM and ensuring it contains the required data and is accessible as expected. If the original VM is still in the ESXi host inventory ensure it is powered off to ensure no conflicts encountered.

When powering on the recovery VM you may be asked if the VM has been 'Copied' or 'Moved'. If the original VM is already destroyed and no longer in inventory you can safely choose 'I moved it'. If the original VM is not deleted and going to be around for additional time then you will need to select the: 'I copied it' option so that there is not a conflict in UUIDs between VMs.

14. Once the recovery VM has been powered on and data integrity is confirmed, you can now storage vMotion the VM from the 'snap-hexNumber-OriginalDatastoreName' to the original datastore (if the original datastore will still be used). Otherwise, if the customer is going to destroy the old datastore you can simply rename the recovery datastore and use it as needed.

15. If the customer decides to keep the original datastore, and the storage vMotion of the recovery VM has been completed, you can now safely unmap and clean-up the recovery volume as needed. If they are going to keep the newly created recovery datastore no clean-up is required and you can simply rename the LUN as needed.

References

- VMFS Snapshots and the FlashArray Part VII: Restoring a VM