Module 4: Part 2
Cloud Manager Features

Exercise 2: Working with Snapshot Copies and FlexClone Software

In this exercise, you explore how ONTAP Snapshot copies and FlexClone software work.

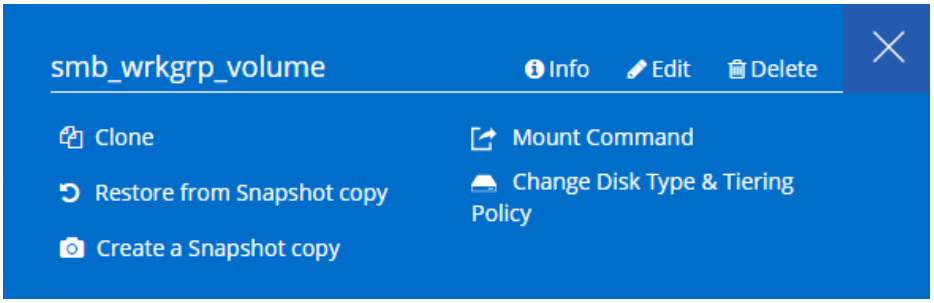
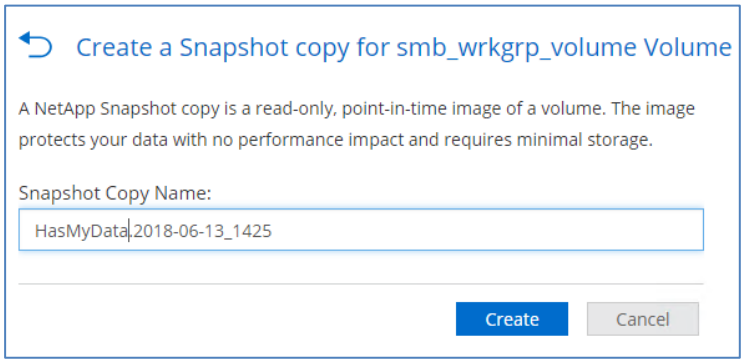
Objectives

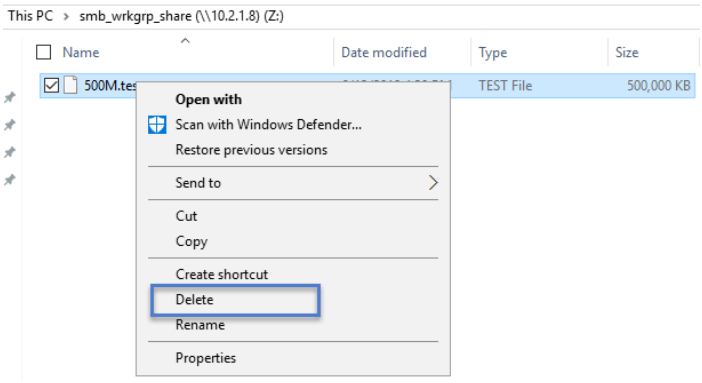
This exercise focuses on enabling you to do the following:

- Create a Snapshot copy
- Restore a volume to a previous state using a Snapshot copy
- Create a clone

Task 1: Create a Snapshot Copy

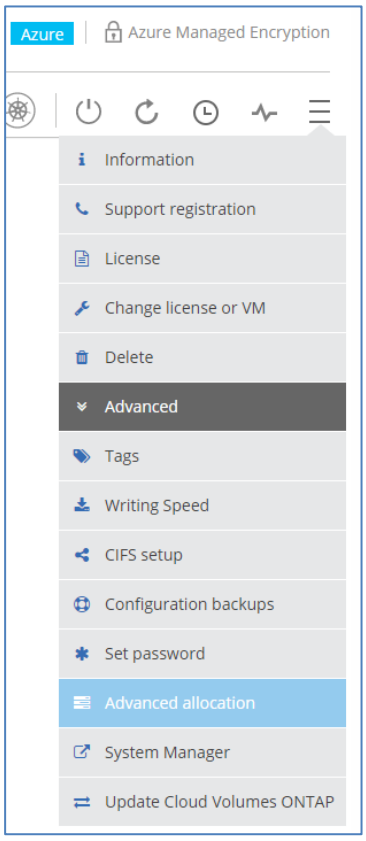
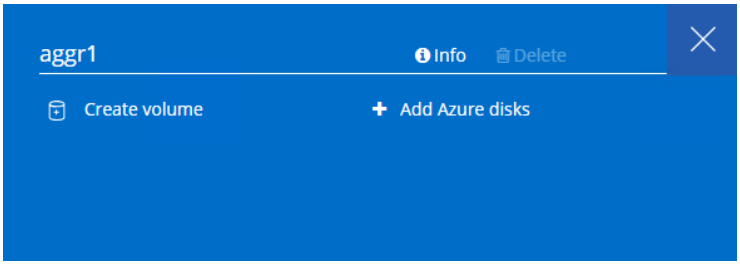
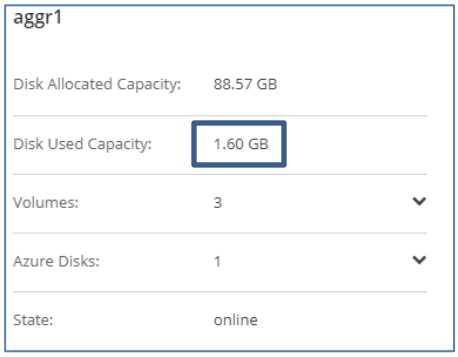
In this task, you create a Snapshot copy of the volume that contains data from a previous exercise. You then delete the data from the volume.

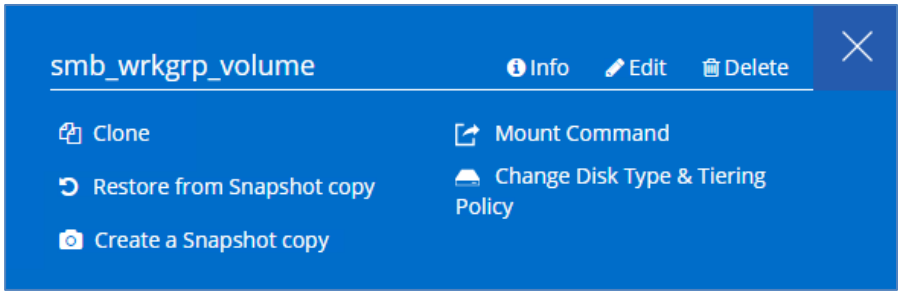
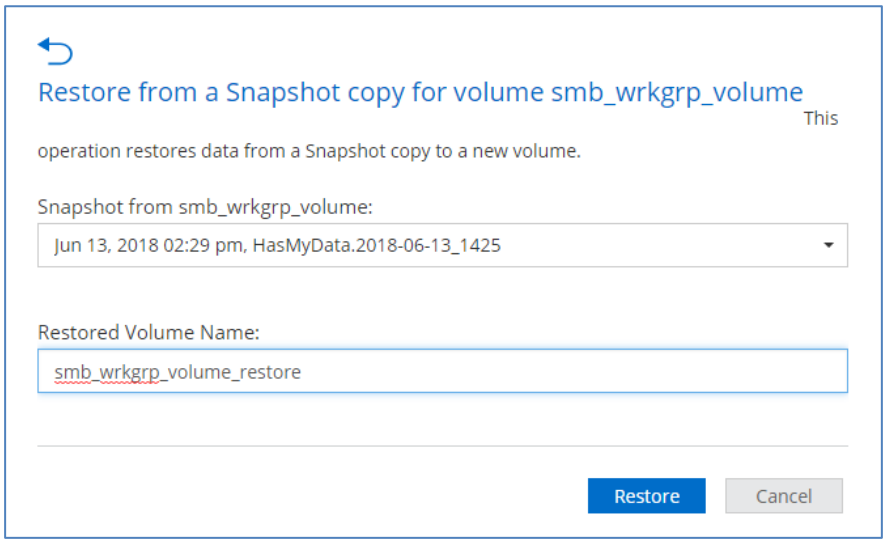
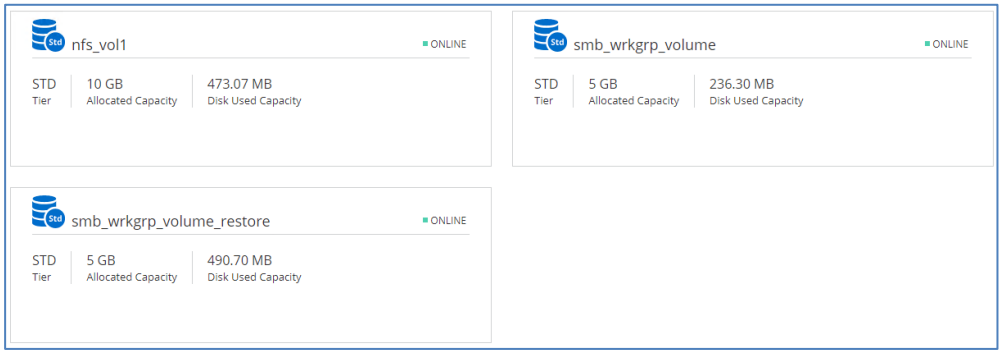
Step	Action
1-1	Return to Cloud Manager.
1-2	In the Volumes tab, select the smb_wrkgrp_volume menu, and click **Create a Snapshot copy**. 
1-3	Enter the Snapshot Copy Name: **HasMyData.**<*prepopulated-date-information*>, and click **Create**. 
1-4	On the W2K16-jumphost Windows Server, open File Explorer.
1-5	Click the **smb_wrkgrp_share**.

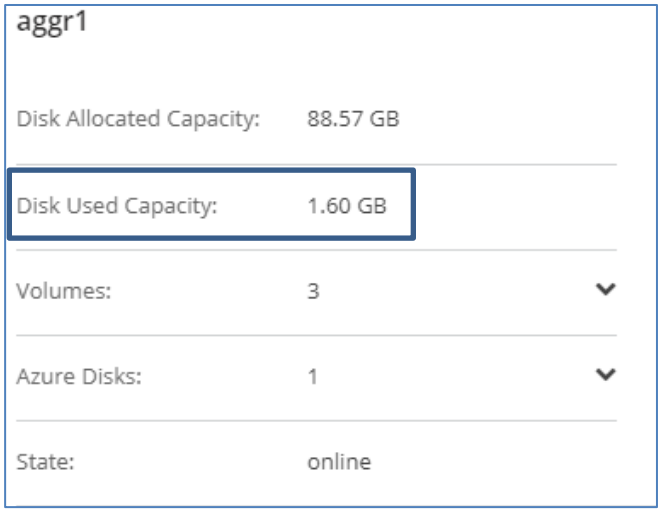
Step	Action
1-6	Right-click the **500M.test** file, and select **Delete**. 
1-7	In the Are you sure you want to permanently delete this file? dialog box, click **Yes**.

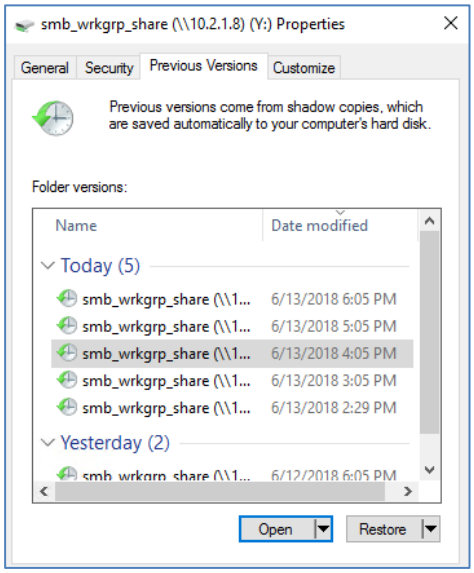
Task 2: Restore a Volume Using a Snapshot Copy

Step	Action
2-1	Return to Cloud Manager.

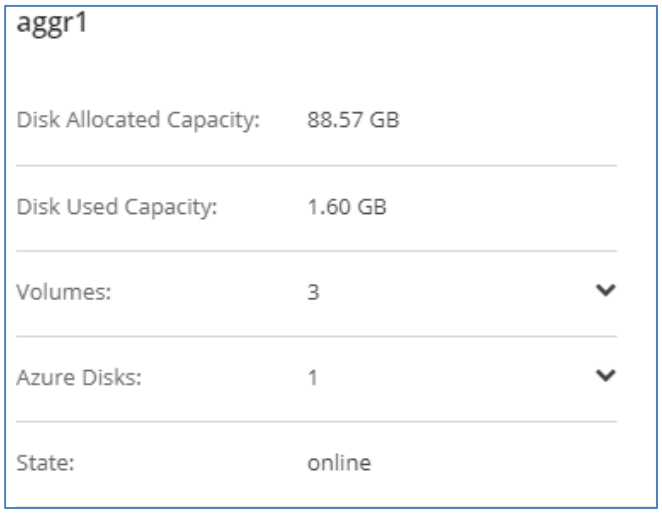
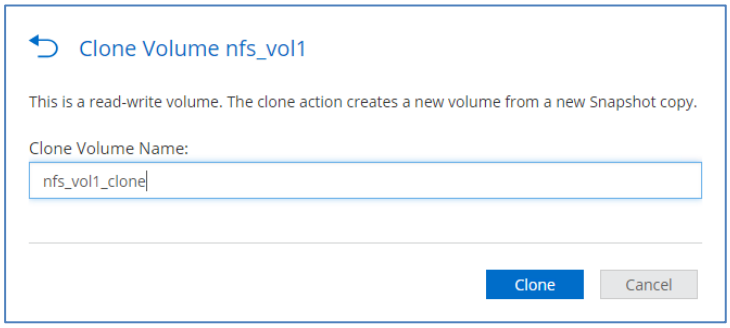
Step	Action
2-2	Before you restore the volume from a Snapshot copy, review the current space being used in the aggregate: a. In the Working Environment menu double click on your Cloud Volume, click **Advanced,** and then click **Advanced allocation**.  b. In the aggr1 menu, click **Info**.  c. Record the current Disk Used Capacity:_____ 

Step	Action
2-3	In the Volumes tab, select the **smb_wrkgrp_volume** menu, and click **Restore from Snapshot copy**. 
2-4	For the Snapshot from smb_wrkgrp_volume, select the **HasMyData** Snapshot copy, and click **Restore**. 
2-5	View that the new smb_wrkgrp_volume_restore is created nearly instantaneously. 

Step	Action
2-6	View the current disk used capacity on aggr1, and note that the used disk capacity is almost the same as it was before. A small increase is due to some metadata for the new volume. 
2-7	Click **Close** and return to the Volume tab.
2-8	Copy the mount command for the **smb_wrkgrp_volume_restore** volume.
2-9	Mount this restore volume to the W2K16-jumphost Windows Server. Hints: When mapping, you use “Connect using different credentials” and you remember that the password for SMBWRKGRP\wrkgrp_user is HappyCloud123.
2-10	Now copy the **500M.test** file from **smb_wrkgrp_share_clone_for_smb_wrkrgp_volume_restore** to the original share **smb_wrkgrp_share**.
2-11	Disconnect the cloned share (**smb_wrkgrp_share_clone_for_smb_wrkrgp_volume_restore)** in the Windows Server, and delete the smb_wrkgrp_volume_restore volume in Cloud Manager.

Step	Action
2-12	If your client is a Windows computer, as it was in the exercise you just completed, another method of restoring files is to use the Windows native Previous Version feature. This feature integrates with NetApp Snapshot copies. Following are the steps: a. Right-click the Windows share, and select **Properties**. b. In the Properties window, select **Previous Versions**. c. Notice that these versions are the NetApp Snapshot copies of the share (you have an hourly Snapshot schedule set by default, as you see in the following image).  d. You can choose to Open, so that a new File Explorer is opened with that particular version of the share, or you can restore the current share with this version. The safest method to not accidentally overwrite newer data is to open a File Explorer with a previous version (Snapshot copy) and copy the specific files that you need from there.

Task 3: Create a FlexClone Volume

Step	Action
3-1	Return to Cloud Manager.
3-2	If you are not already within your AzureCVO working environment, on the Working Environments page, double-click the **AzureCVO** icon.
3-3	Click the menu icon, and then click **Advanced > Advanced allocation**.
3-4	View the current disk use for aggr1 (select **aggr1**, and click **Info)**, and record the Disk Used Capacity: _____ 
3-5	Click the **Volumes** tab.
3-6	Select **nfs_vol1,** and then click **Clone**.
3-7	Leave the default Clone Volume Name, and click **Clone**. 
3-8	Verify that the cloned volume is created almost instantaneously.
3-9	Select **nfs_vol1_clone,** and then click **Mount command**.
3-10	Click **Copy**.
3-11	Return to the Secure Shell (SSH) session for the Linux client (the example in this guide used PuTTY).

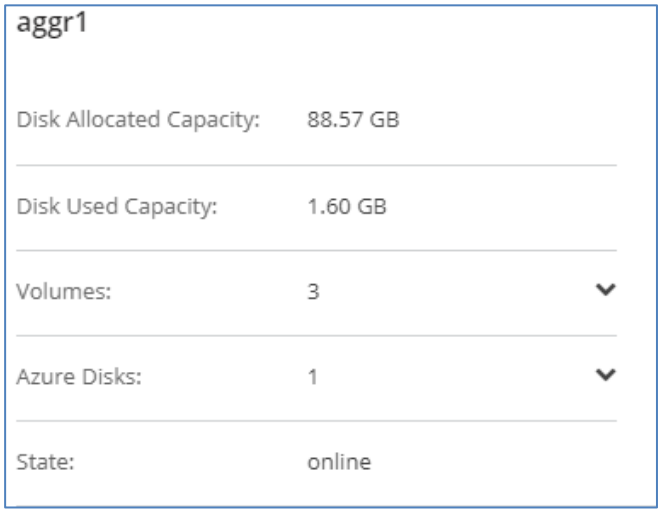
Step	Action

3-12	Create a directory for the NFS mount:
	`[demoadmin@rhel74priv ~]$ sudo mkdir /mnt/nfs_vol1_clone`
	`[sudo] password for demoadmin: HappyCloud123`

3-13	Return to the SSH session, and right-click to paste the command:
	a. Add **sudo** to the beginning of the command.
	b. Replace <dest_dir> with **/mnt/nfs_vol1_clone**.
	c. Press **Enter**.
	Example command:
	`[demoadmin@rhel74priv ~]$ sudo mount 10.2.1.8:/nfs_vol1 /mnt/nfs_vol1_clone`
	`[sudo] password for demoadmin: HappyCloud123`

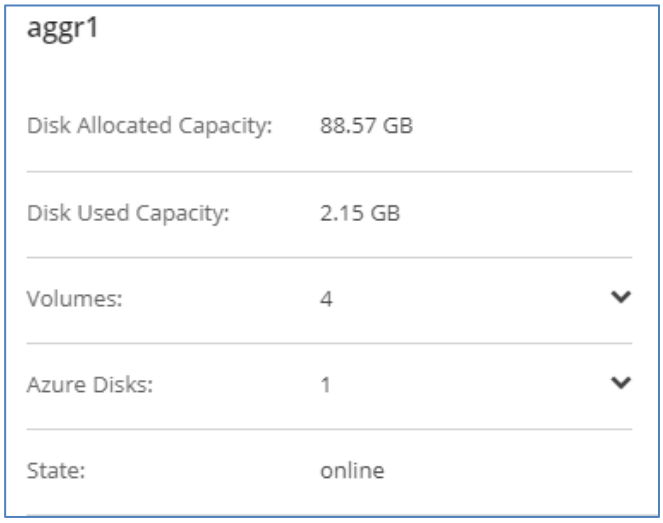
3-14	Enter the command: `[demoadmin@rhel74priv ~]$ cd /mnt/nfs_vol1_clone`

3-15	Verify that you see the 500M.test file that was in the nfs_vol1 volume:
	`[demoadmin@rhel74priv ~]$ ll -h`
	Example Output:
	`total 4.0K`
	`-rw-rw-r--. 1 demoadmin demoadmin 243 Apr 29 13:04 500m.test`

3-16	Return to Cloud Manager
3-17	Click the menu icon, and then click **Advanced > Advanced allocation**.
3-18	View the current disk use for aggr1 (select **aggr1**, and click **Info**), and compare it to the Disk Used Capacity that you recorded earlier in this task. You see that only marginally more space is used due to volume metadata, and that the Disk Used Capacity did not go up by 1GB. 

Step	Action
3-19	Return to the Linux SSH session.

3-20	Write new data to the cloned volume:
	`[demoadmin@rhel74priv nfs_vol1_clone]$`
	`curl https://cvoadminazure.s3.amazonaws.com/DR-templates/250M.test > 250m.test`
	`  % Total  % Received % Xferd  Average Speed  Time  Time  Time  Current`
	`  Dload  Upload  Total  Spent  Left  Speed`
	`100  243  0  243  0  0  626  0 --:--:-- --:--:-- --:--:--  626`

3-21	Return to Cloud Manager, view the Disk Used Capacity, and verify that it has increased due to the new data written to the clone. 
3-22	Click the **Volumes** tab.
3-23	Select **nfs_vol1_clone**, and then click **Delete**.
3-24	In the warning dialog boxes, click **OK**.

End of Exercise