Module 7: Data Tiering in Cloud Volumes ONTAP

Exercise 1: Tier Backup Data to Azure Blob Storage

In this exercise, you tier data from NetApp Cloud Volumes ONTAP to Azure Blob Storage, which is the object storage in Azure.

Objectives

This exercise focuses on enabling you to do the following:

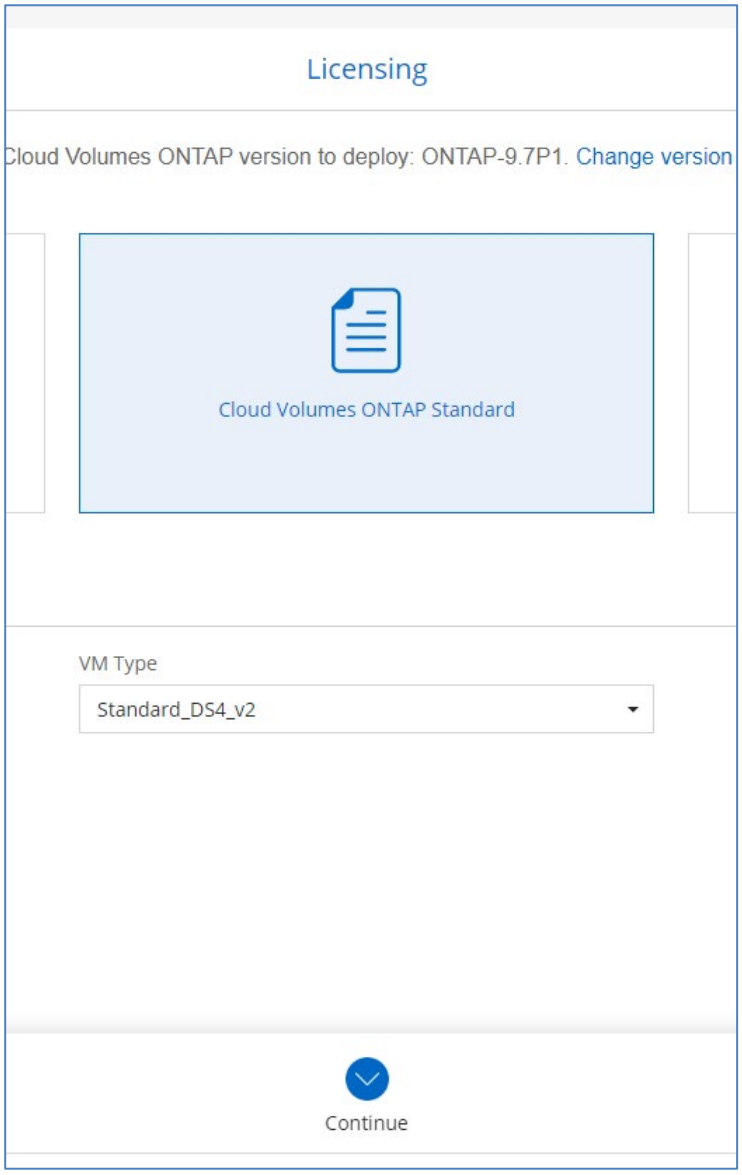
- Use NetApp Cloud Manager to configure data tiering
- Verify that data is tiered to Azure Blob Storage

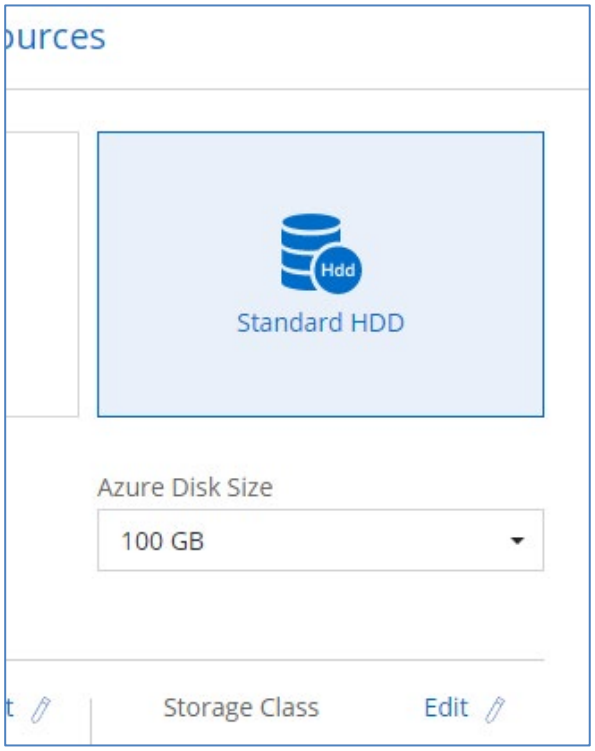
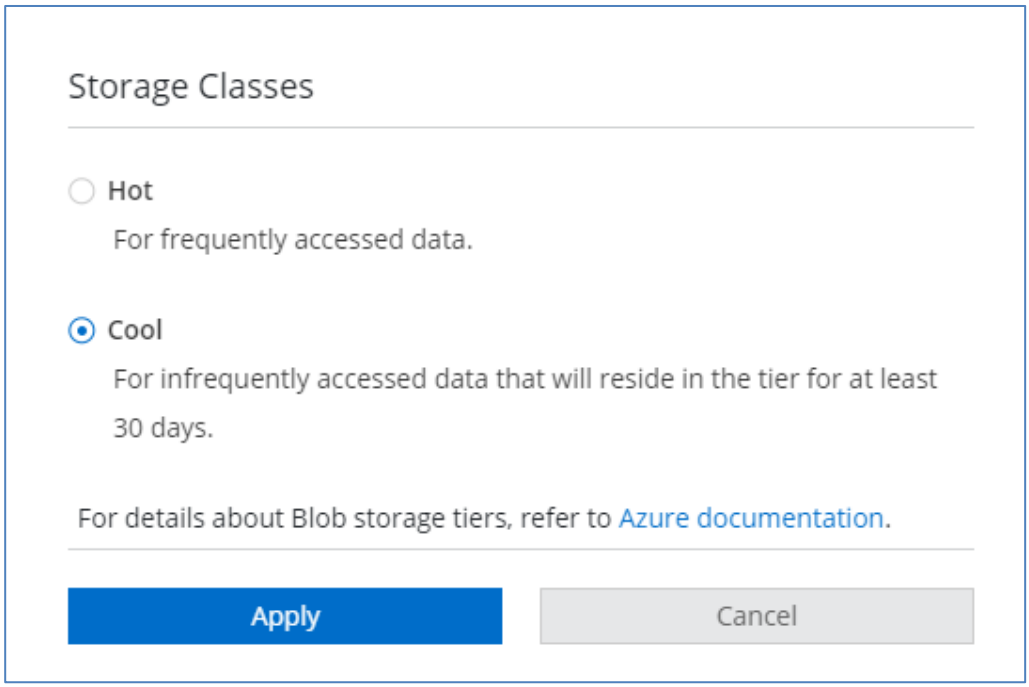
Task 1: Setup an Eligible Cloud Volumes ONTAP for Tiering

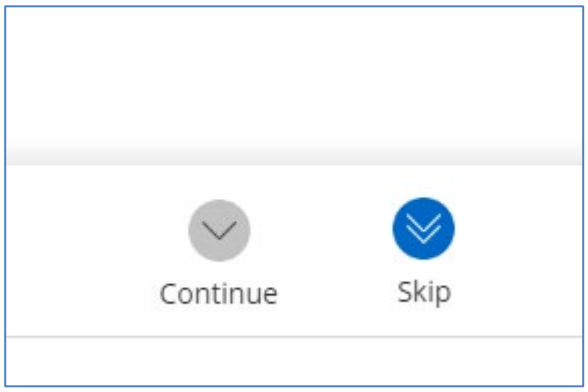
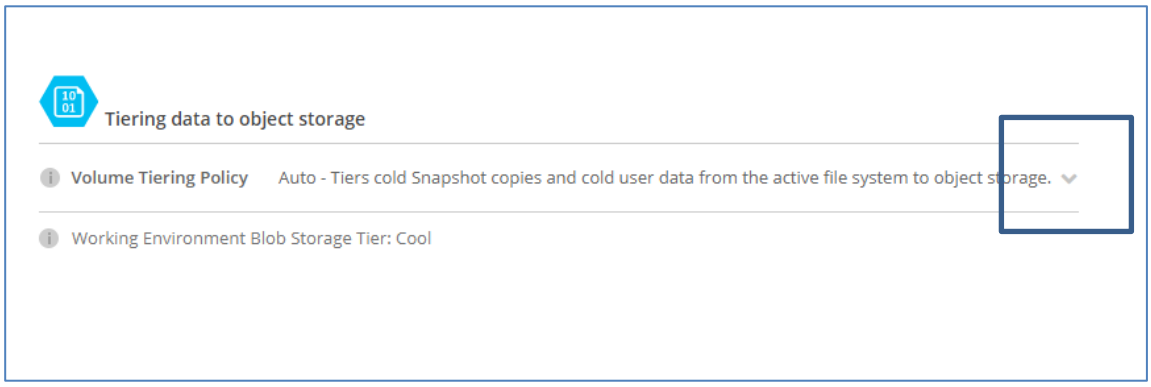
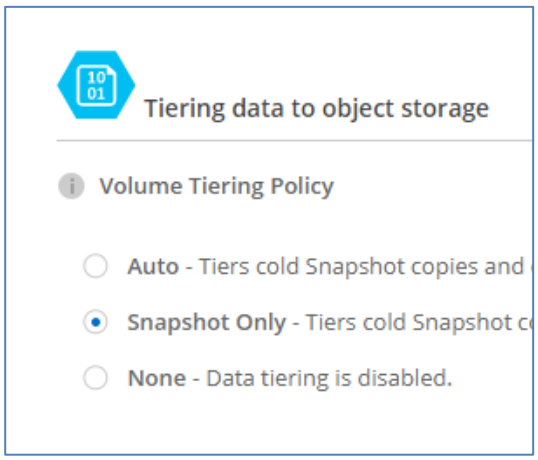
In this task, you setup a Cloud Volumes ONTAP environment to tier to.

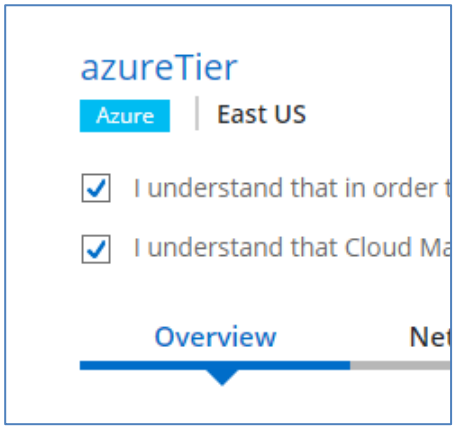
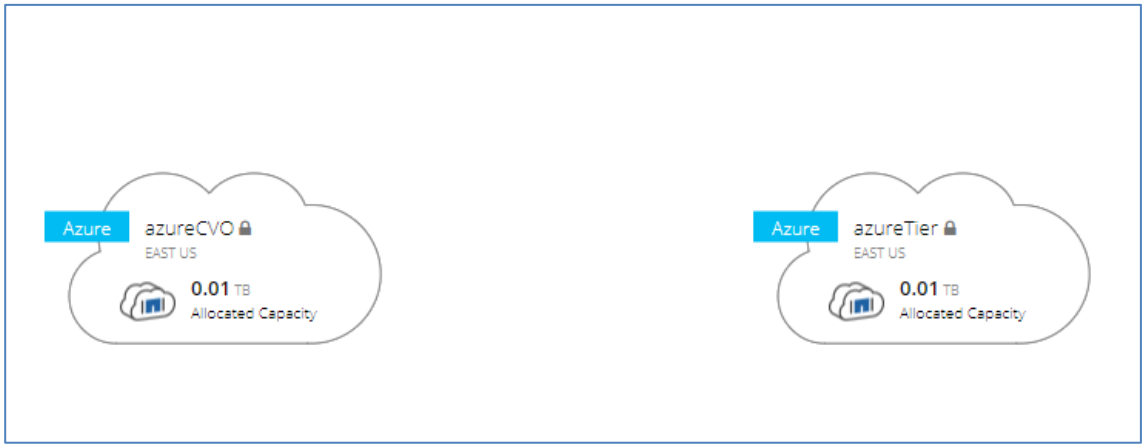
Step	Action
1-1	The subnet in which Cloud Volumes ONTAP resides must be configured for Private Google Access. Private Google Access enables virtual machine (VM) instances with only internal (private) IP addresses (no external IP addresses) to reach the public IP addresses of Google APIs and services. You enable Private Google Access at the subnet level. When enabled, instances in the subnet that have only private IP addresses (like the Cloud Volumes ONTAP instance in the exercises) can send traffic to Google APIs and services (to a bucket for tiering) through the default route (0.0.0.0/0) with a next hop to the default internet gateway.
1-2	In Cloud Manager, click **Create Cloud Volumes ONTAP**. 
1-3	In the Define Your Working Environment, do the following: a. For the Select Provider, choose **Microsoft Azure**. b. For the Select Type, choose **Cloud Volumes ONTAP**. c. Click **Continue**.
1-4	In the Details & Credentials, do the following: a. For the Working Environment Name (Cluster Name), enter **azureTier**. b. For the Password and Confirm Password, enter **HappyCloud123**. c. Click **Continue**.
1-5	For the Services, leave the defaults and click **Continue**.

Step	Action
1-6	For the Location & Connectivity, do the following: a. Azure Region, choose **East US**. b. For the VNet, choose **NetApp-VNet | NetApp-RG**. c. For the Subnet, choose **BackEnd**. (10.2.1.0/24) d. **Check the box** for "I have verified network connectivity between the Cloud Manager server and the selected VNet." e. Click **Continue**.
1-7	In the Cloud Volumes ONTAP License & NetApp Support Site Account, leave Pay-As-You-Go selected. Leave all other entries blank.
1-8	Click **Continue**.
1-9	For the Preconfigured Packages, select **Create my own configuration**.

Step	Action
1-10	For the Licensing, choose **Cloud Volumes ONTAP Standard**. Leave the default VM Type. 
1-11	NOTE: You need Cloud Volumes ONTAP Standard in order to use tiering.
1-12	Click **Continue**.

Step	Action
1-13	On the Underlying Storage Resources page, do the following: a. For the disk type, choose **Standard HDD**. b. For the Azure Disk Size, click the drop down menu and choose **100 GB**. c. For the Storage Class, click **Edit**. 
1-14	For the Storage Classes, select **Cool**, then click **Apply**. 

Step	Action
1-15	Click **Continue**.
1-16	On the Write Speed & WORM, leave the Write Speed to Normal and click **Continue**.
1-17	On the Create Volume page, click **Skip**. 
1-18	On the Create Volume - Usage Profile, Disk Type & Tiering Policy, click the drop down for Volume Tiering Policy. 
1-19	In the Volume Tiering Policy, select **Snapshot Only**. 
1-20	Click **Continue**.

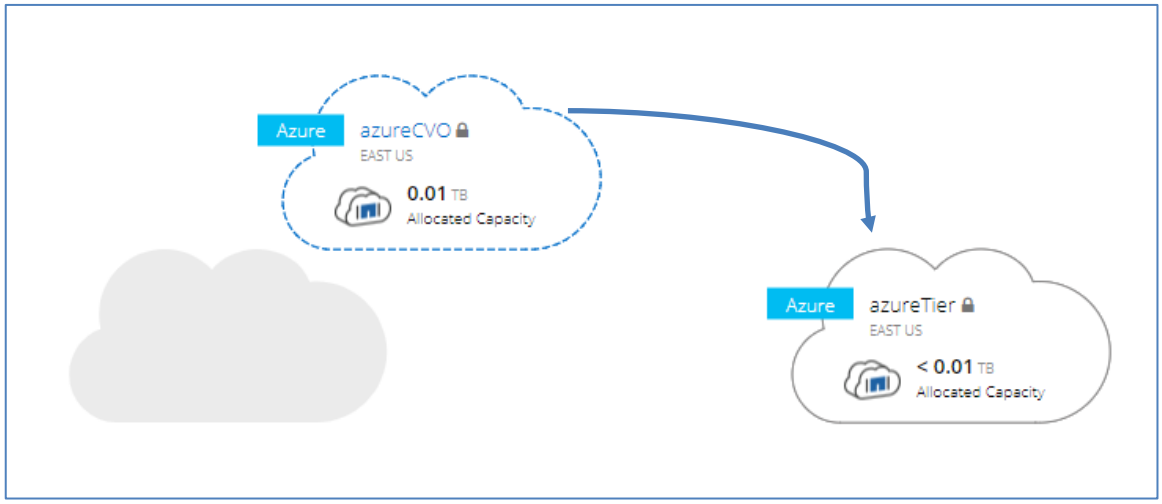
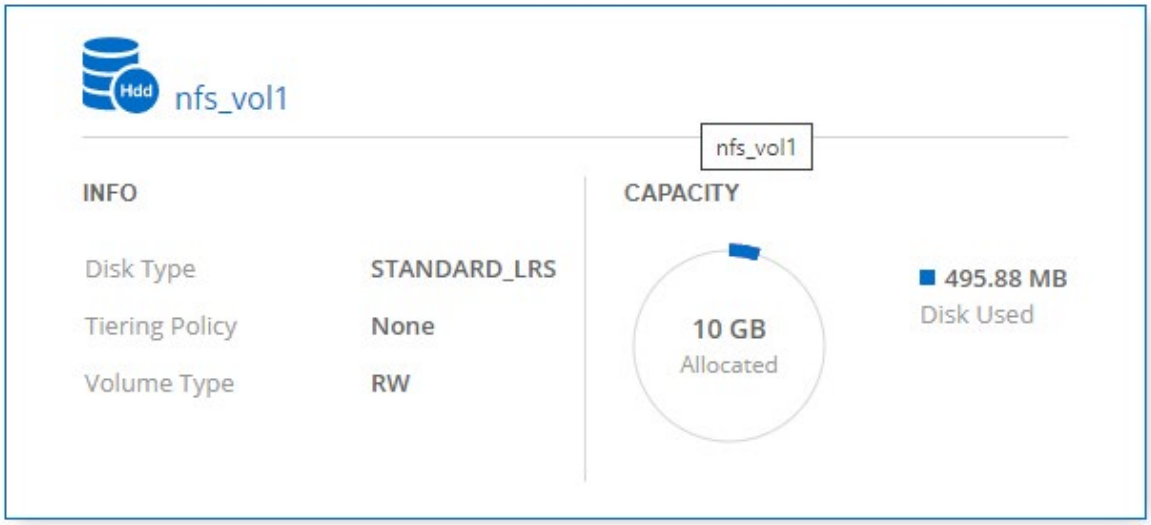
Step	Action
1-21	On Review & Approve, select both I Understand selections and click **GO** 
1-22	Once the new working environment is finished installing, you should have two working environments, **azureCVO** and **azureTier**. 
1-23	

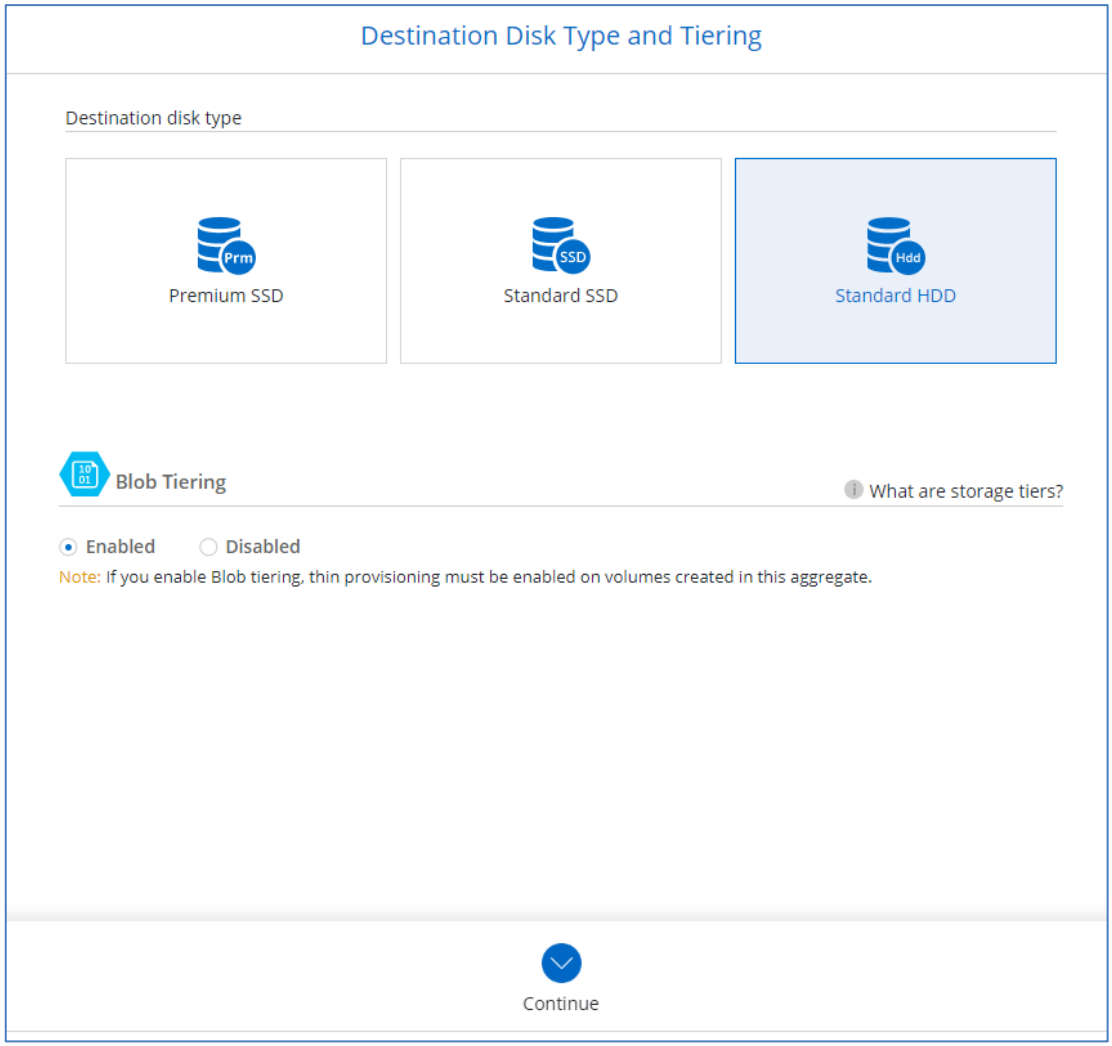
Task 2: Create the Tiering Relationship

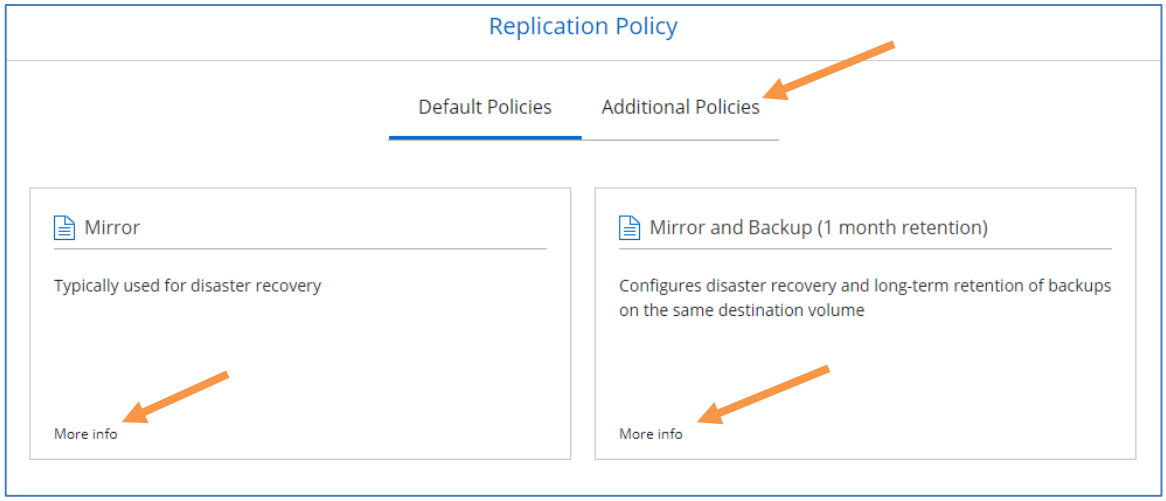
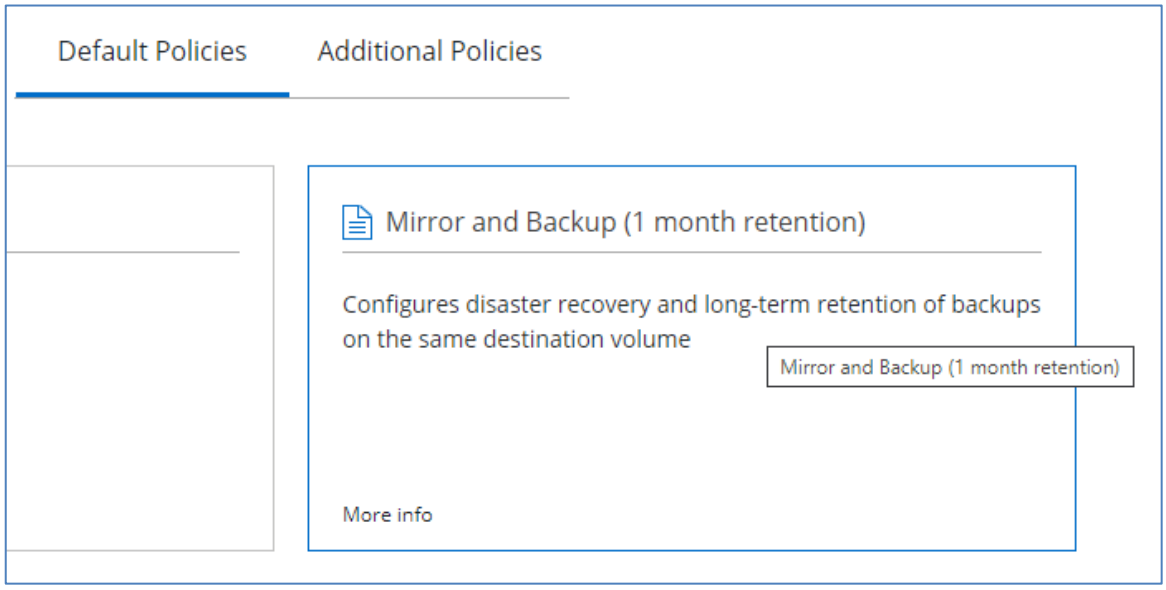
In this task, you configure your tiering relationship between azureCVO and azureTier using SnapMirror technology.

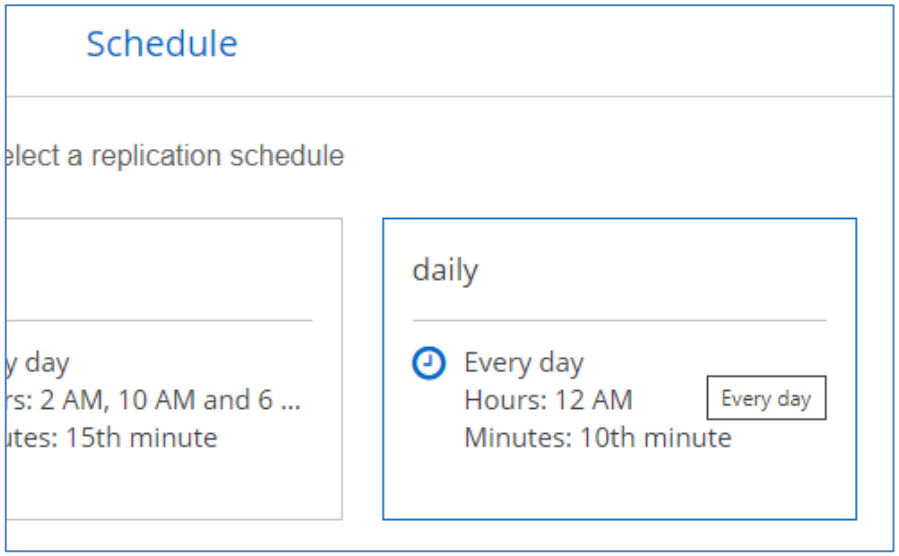
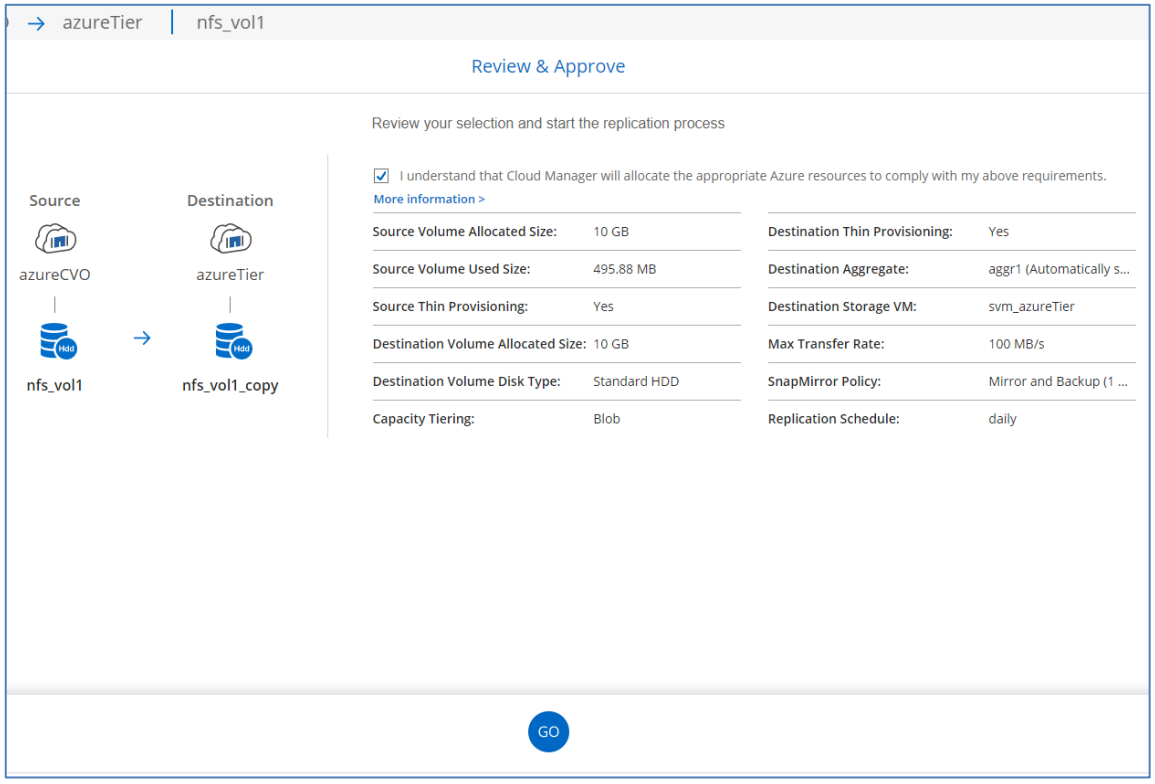
Step	Action
2-1	On your rhel77priv instance, login and remove all files in the /mnt/nfs_vol besides the 500m.test file. Example output: `[demoadmin@rhel77priv nfs_vol1]$ rm 250m.test`

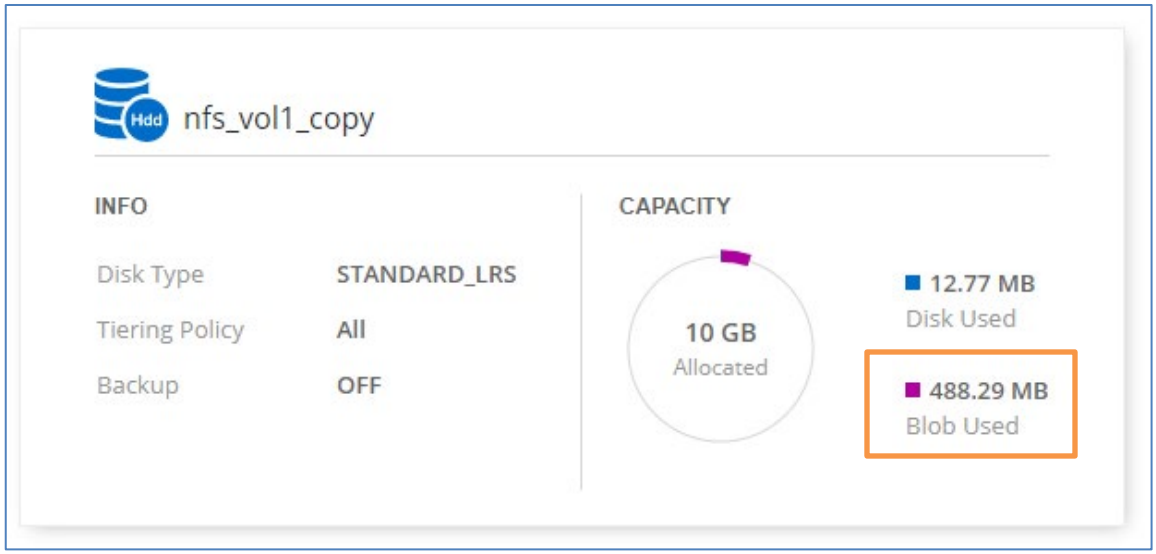
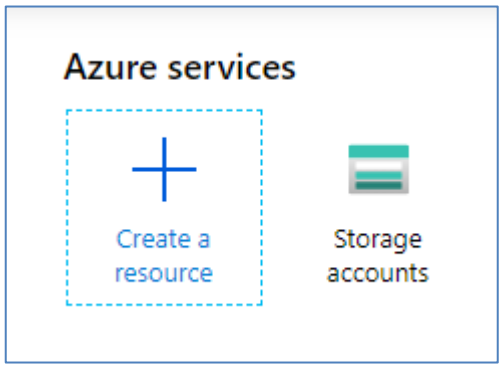
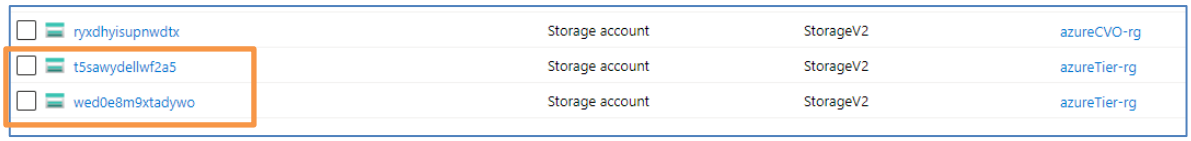
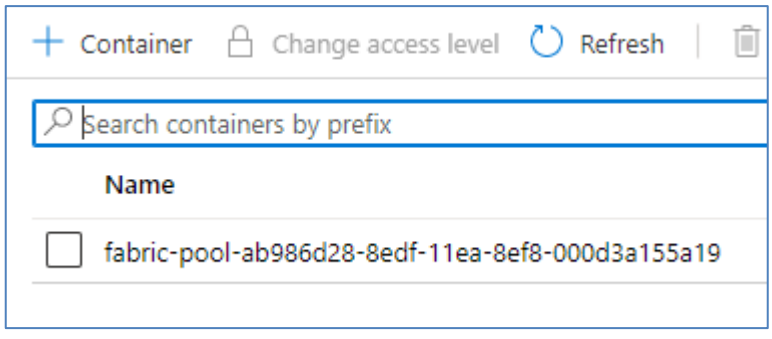
2-2	Your output should be as follows after removing all files besides the 500m.test file.
	`[demoadmin@rhel77priv nfs_vol1]$ ll -h`
	`total 491M`
	`-rw-rw-r--. 1 demoadmin demoadmin 489M May  5 17:15 500m.test`

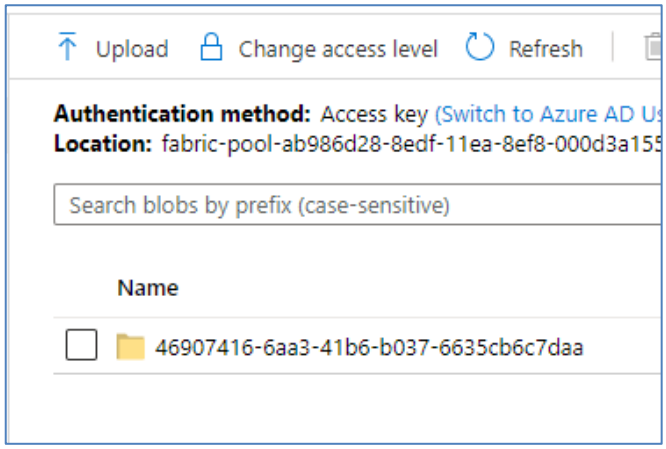
Step	Action
2-3	Return to Cloud Manager, select the Working Environments tab at the top.
2-4	Drag the **azureCVO** Working Environment on top of **azureTier**. 
2-5	For the Source Volume Selection, choose **nfs_vol1**. 

Step	Action
2-6	On the Destination Disk Type and Tiering, Select **Standard HDD** and Blob Tiering is **enabled**. 
2-7	Click **Continue**.
2-8	On the Destination Volume Name, leave the defaults and click **Continue**.
2-9	On the Max Transfer Rate, leave the default and click **Continue**.

Step	Action
2-10	On the Replication Policy, take some time to explore the different Policies to choos from by clicking **More info**. 
2-11	Under Default Policies, choose **Mirror and Backup (1 month retention)**. 

Step	Action
2-12	Under Schedule, choose **daily**. 
2-13	On the Review & Approve page, select the check box for I understand, review your details. 
2-14	Click **GO**.

Step	Action
2-15	When the relationshipt has finished, doulble click on the azureTier Working Environment and note the Blob Used capacity. 
2-16	Return to the Azure Portal Home, and click on Storage Accounts. 
2-17	Choose one of the two storage accounts for azureTier-rg. 
2-18	Click **Containers**.
2-19	Find the one that says **fabric-pool-xxxx-xxxx…** 

Step	Action
2-20	Click on your fabric pool. 
2-21	Note: There are several files here. Take a moment to review the information on this page regarding the Access tier, Blob type, Size and Lease state.
2-22	Go back to Cloud Manager, remove the Snapmirror relationship and delete the azureTier Working Environment.
2-23	By deleting the azureTier Working environment, you also have deleted the Azure Blob.

End of Exercise