

Exercise 6: Managing NAS Storage VMs

In this exercise, you use best practice tools to manage storage VMs (storage virtual machines, also known as SVMs) that have NAS protocols enabled.

Objectives

This exercise focuses on enabling you to do the following:

- Migrate and rehome a NAS data LIF
- Manage volume tiering policies

Case Study

The NetApp cluster node needs to be brought down so that a new expansion controller board can be installed. To avoid disturbing the NAS clients that are actively using the system, you can move the logical network interface through which the clients access the system to a different node in the cluster. Temporarily migrate the LIF to another network port, or rehome the LIF if the move is permanent.

Modify the Fabric Pool volume tiering policy so that user data is moved from the performance tier to the cloud tier without waiting for the user data to cool first.

Lab Equipment

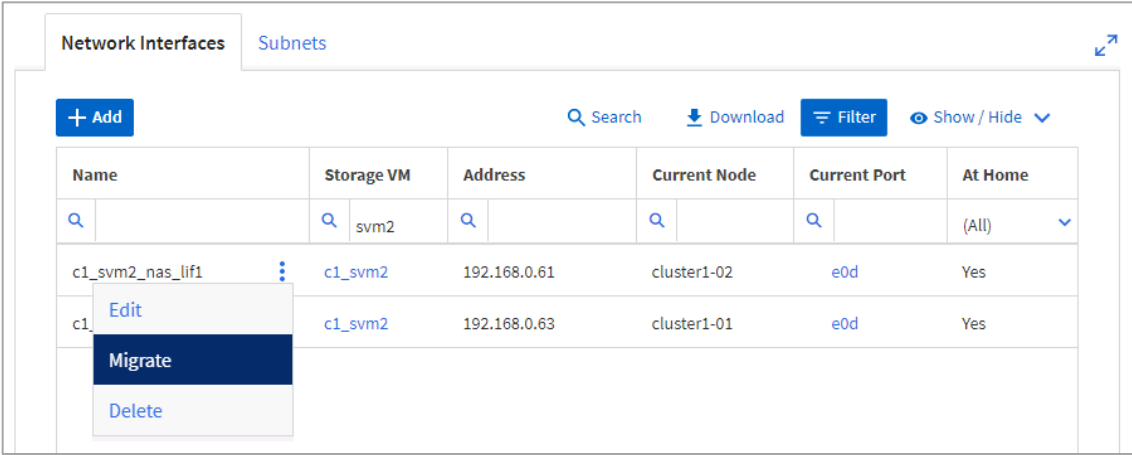
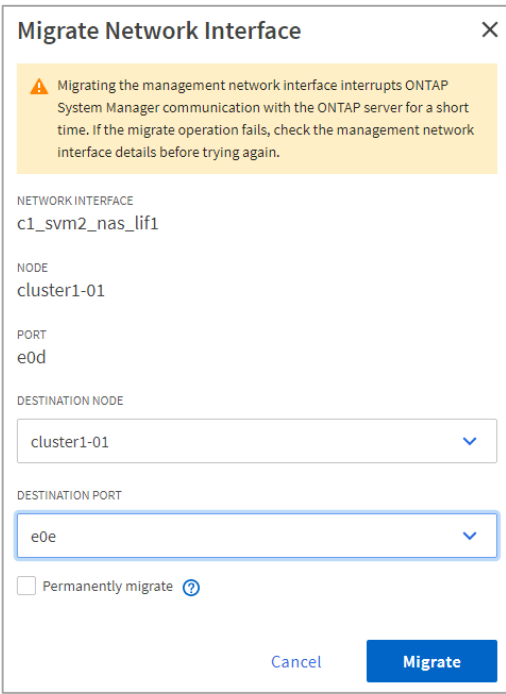

Use the following equipment to complete the exercise:

System	Host Name	IP Addresses	User Name	Password
Windows Server	jumphost	192.168.0.5	DEMO\Administrator	Netapp1!
ONTAP cluster-management LIF (cluster1)	cluster1	192.168.0.101	admin (case sensitive)	Netapp1!
ONTAP cluster-management LIF (cluster2)	cluster2	192.168.0.102	admin (case sensitive)	Netapp1!


Task 1: Migrate and Rehome a NAS Data LIF

Step	Action
1-1	Log in to NetApp ONTAP System Manager for cluster1 .
1-2	From the System Manager Dashboard menu, select Network > Overview .

Step	Action																												
1-3	<p>In the Network Interfaces pane, use the Filter function to display only network interfaces that belong to c1_svm2.</p> <div><div>Network InterfacesSubnets</div><div><div>+ Add</div><div>SearchDownloadFilterShow / Hide</div><table><thead><tr><th>Name</th><th>Status</th><th>Storage VM</th><th>IPspace</th><th>Address</th><th>Home Node</th><th>Home</th></tr></thead><tbody><tr><td><input type="text"/></td><td></td><td><input type="text" value="svm2"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td></tr><tr><td>c1_svm2_nas_lif1</td><td>✓</td><td>c1_svm2</td><td>Default</td><td>192.168.0.61</td><td>cluster1-02</td><td>e0c</td></tr><tr><td>c1_svm2_nas_lif2</td><td>✓</td><td>c1_svm2</td><td>Default</td><td>192.168.0.63</td><td>cluster1-01</td><td>e0c</td></tr></tbody></table></div></div>	Name	Status	Storage VM	IPspace	Address	Home Node	Home	<input type="text"/>		<input type="text" value="svm2"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	c1_svm2_nas_lif1	✓	c1_svm2	Default	192.168.0.61	cluster1-02	e0c	c1_svm2_nas_lif2	✓	c1_svm2	Default	192.168.0.63	cluster1-01	e0c
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c1_svm2_nas_lif2	✓	c1_svm2	Default	192.168.0.63	cluster1-01	e0c																							
1-4	<p>Use the Show / Hide menu to include the Current Node, Current Port, and At Home columns in the display.</p> <div><div>Network InterfacesSubnets</div><div><div>+ Add</div><div>SearchDownloadFilterShow / Hide</div><div><div><div><div>Name</div><div>Status</div><div>Storage VM</div><div>Address</div><div>Current Node</div><div>Current</div></div><div><input type="text"/></div><div><input type="text" value="svm2"/></div><div><input type="text"/></div><div><input type="text"/></div><div><input type="text"/></div><div><input type="text"/></div></div><div><div>c1_svm2_nas_lif1</div><div>c1_svm2</div><div>192.168.0.61</div><div>cluster1-02</div><div>e0d</div></div><div><div>c1_svm2_nas_lif2</div><div>c1_svm2</div><div>192.168.0.63</div><div>cluster1-01</div><div>e0d</div></div></div><div><div><div><div>Address</div><div>At Home</div><div>Current Node</div><div>Current Port</div><div>Home Node</div><div>Home Port</div><div>IPspace</div><div>Portset</div><div>Protocols</div><div>Status</div><div>Storage VM</div><div>Subnet</div><div>Type</div></div><div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div><div><input checked="" type="checkbox"/></div><div><input type="checkbox"/></div><div><input type="checkbox"/></div></div></div></div></div></div>																												

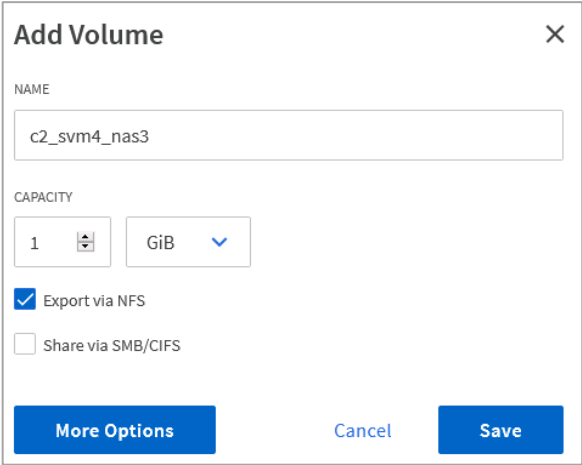
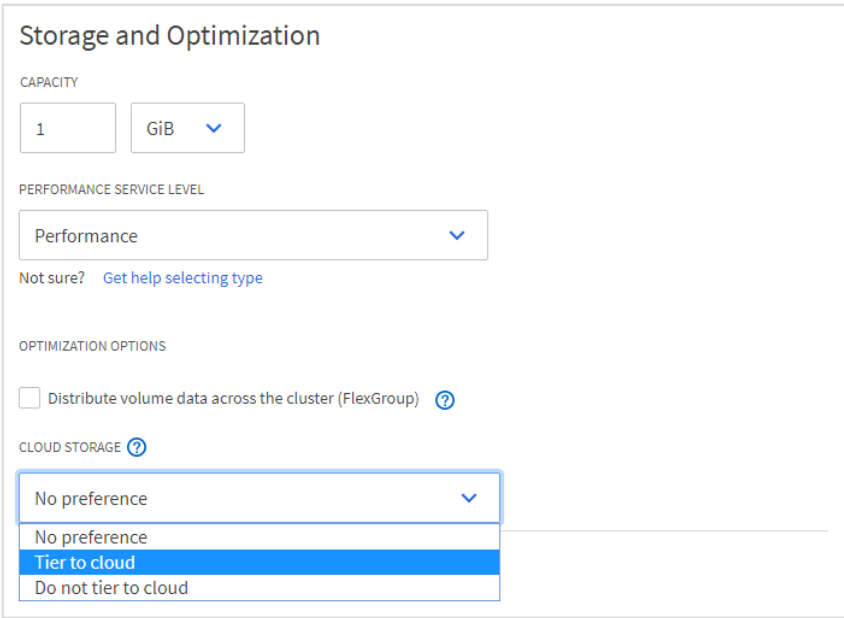
Step	Action
1-5	<p>Position your cursor over c1_svm2_nas_lif1, then from the More menu, select Migrate.</p> 
1-6	Note the current port at the top of the Migrate Network Interface dialog box.
1-7	<p>In the Migrate Network Interface dialog box, specify the following settings:</p> <ul style="list-style-type: none"> Destination Node: cluster1-01 Destination Port: e0e 
1-8	<p> If you select the Permanently migrate checkbox, you rehome the LIF on the destination port. For now, leave the Permanently migrate checkbox not selected.</p>
1-9	Click Migrate .

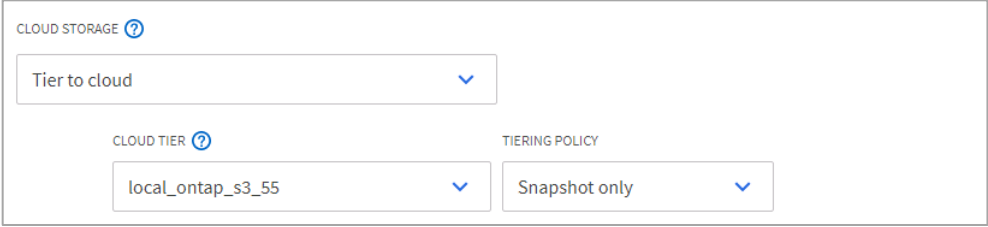
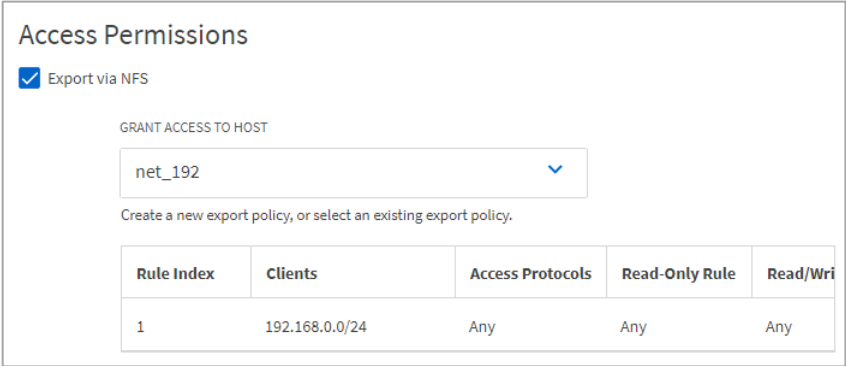
Step	Action																		
1-10	<p>Verify that the LIF is now hosted on port e0e of node cluster1-01.</p> <div><div>Network InterfacesSubnets</div><div><div>+ AddSend All Interfaces HomeSearchDownloadFilterShow / Hide</div><table><thead><tr><th>Name</th><th>Storage VM</th><th>Address</th><th>Current Node</th><th>Current Port</th><th>At Home</th></tr></thead><tbody><tr><td>c1_svm2_nas_lif1</td><td>c1_svm2</td><td>192.168.0.61</td><td>cluster1-02</td><td>e0e</td><td>No</td></tr><tr><td>c1_svm2_nas_lif2</td><td>c1_svm2</td><td>192.168.0.63</td><td>cluster1-01</td><td>e0d</td><td>Yes</td></tr></tbody></table></div></div>	Name	Storage VM	Address	Current Node	Current Port	At Home	c1_svm2_nas_lif1	c1_svm2	192.168.0.61	cluster1-02	e0e	No	c1_svm2_nas_lif2	c1_svm2	192.168.0.63	cluster1-01	e0d	Yes
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c1_svm2_nas_lif2	c1_svm2	192.168.0.63	cluster1-01	e0d	Yes														
1-11	<div><div><div>i</div></div><div>The warning icon indicates that the LIF is not running on its home port.</div></div>																		
1-12	<p>From the c1_svm2_nas_lif1 More menu, select Revert.</p> <div><div>Network InterfacesSubnets</div><div><div>+ AddSend All Interfaces HomeSearchDownloadFilterShow / Hide</div><table><thead><tr><th>Name</th><th>Storage VM</th><th>Address</th><th>Current Node</th><th>Current Port</th><th>At Home</th></tr></thead><tbody><tr><td>c1_svm2_nas_lif1</td><td>c1_svm2</td><td>192.168.0.61</td><td>cluster1-02</td><td>e0e</td><td>No</td></tr><tr><td>c1_svm2_nas_lif2</td><td>c1_svm2</td><td>192.168.0.63</td><td>cluster1-01</td><td>e0d</td><td>Yes</td></tr></tbody></table><div><div>Edit</div><div>Migrate</div><div>Revert</div><div>Delete</div></div></div></div>	Name	Storage VM	Address	Current Node	Current Port	At Home	c1_svm2_nas_lif1	c1_svm2	192.168.0.61	cluster1-02	e0e	No	c1_svm2_nas_lif2	c1_svm2	192.168.0.63	cluster1-01	e0d	Yes
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c1_svm2_nas_lif2	c1_svm2	192.168.0.63	cluster1-01	e0d	Yes														
1-13	<p>Click Revert to confirm the movement of the LIF, which is again hosted on its home port.</p>																		
1-14	<p>Start a PuTTY session with cluster1.</p>																		
1-15	<p>Verify the current location of the data LIFs:</p> <pre>network interface show -vserver c1_svm2</pre> <p>Sample output:</p> <pre>cluster1::> network interface show -vserver c1_svm2 Vserver Logical Interface Status Network Address/Mask Current Node Current Port Is Home ----- c1_svm2 c1_svm2_nas_lif1 up/up 192.168.0.61/24 cluster1-02 e0d true c1_svm2 c1_svm2_nas_lif2 up/up 192.168.0.63/24 cluster1-01 e0d true 2 entries were displayed.</pre>																		

Step	Action																					
1-16	<p>Reassign the home port of c1_svm2_nas_lif1 to port e0f, and leave the home node as cluster1-01:</p> <pre>network interface modify -vserver c1_svm2 -lif c1_svm2_nas_lif1 -home-port e0f</pre>																					
1-17	<p>Review the home port again:</p> <pre>network interface show -vserver c1_svm2</pre> <p>Sample output:</p> <pre>cluster1::> net int show -vserver c1_svm2</pre> <table><thead><tr><th>Vserver</th><th>Logical Interface</th><th>Status Admin/Oper</th><th>Network Address/Mask</th><th>Current Node</th><th>Current Port</th><th>Is Home</th></tr></thead><tbody><tr><td>c1_svm2</td><td>c1_svm2_nas_lif1</td><td>up/up</td><td>192.168.0.61/24</td><td>cluster1-02</td><td>e0d</td><td>false</td></tr><tr><td></td><td>c1_svm2_nas_lif2</td><td>up/up</td><td>192.168.0.63/24</td><td>cluster1-01</td><td>e0d</td><td>true</td></tr></tbody></table> <p>2 entries were displayed.</p>	Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home	c1_svm2	c1_svm2_nas_lif1	up/up	192.168.0.61/24	cluster1-02	e0d	false		c1_svm2_nas_lif2	up/up	192.168.0.63/24	cluster1-01	e0d	true
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	c1_svm2_nas_lif2	up/up	192.168.0.63/24	cluster1-01	e0d	true																
1-18	<p>Answer the following questions:</p> <ul style="list-style-type: none">Did the LIF move? _____What is the status of the LIF home? _____																					
1-19	<p>Issue a <code>revert</code> command, which sends the LIF to its new home port:</p> <pre>network interface revert *</pre>																					
1-20	<div></div> <p>The asterisk (*) wildcard is a positional parameter that represents the LIF name. The <code>revert</code> command reverts all LIFs that are not on their home ports.</p>																					
1-21	<p>Review the status of the LIFs again:</p> <pre>network interface show -vserver c1_svm2</pre> <p>Sample output:</p> <pre>cluster1::> net int show -vserver c1_svm2</pre> <table><thead><tr><th>Vserver</th><th>Logical Interface</th><th>Status Admin/Oper</th><th>Network Address/Mask</th><th>Current Node</th><th>Current Port</th><th>Is Home</th></tr></thead><tbody><tr><td>c1_svm2</td><td>c1_svm2_nas_lif1</td><td>up/up</td><td>192.168.0.61/24</td><td>cluster1-02</td><td>e0f</td><td>true</td></tr><tr><td></td><td>c1_svm2_nas_lif2</td><td>up/up</td><td>192.168.0.63/24</td><td>cluster1-01</td><td>e0d</td><td>true</td></tr></tbody></table> <p>2 entries were displayed.</p>	Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home	c1_svm2	c1_svm2_nas_lif1	up/up	192.168.0.61/24	cluster1-02	e0f	true		c1_svm2_nas_lif2	up/up	192.168.0.63/24	cluster1-01	e0d	true
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	c1_svm2_nas_lif2	up/up	192.168.0.63/24	cluster1-01	e0d	true																

Task 2: Manage Volume Tiering Policies

Step	Action
2-1	Log in to System Manager for cluster2 .
2-2	From the System Manager Dashboard menu, select Storage > Volumes .
2-3	Click Add .

Step	Action
2-4	<p>In the Add Volume dialog box, specify the following settings:</p> <ul style="list-style-type: none"> • Name: c2_svm4_nas3 • Capacity: 1 GiB • Export via NFS: <selected> (default) • Share via SMB/CIFS: <unselected> 
2-5	Click More Options .
2-6	<p>Scroll to the Storage and Optimization section, and then from the Cloud Storage menu, select Tier to cloud.</p> 

Step	Action
2-7	<p>Observe the default cloud tier name and volume tiering policy.</p> 
2-8	<p>Scroll to the Access Permissions section, and then specify the following settings:</p> <ul style="list-style-type: none"> Export via NFS: <selected> (default) Grant Access to Host: net_192 
2-9	Click Save .
2-10	On the Volumes page, click c2_svm4_nas3 .

Step	Action						
2-11	<p>On the volume Overview tab, observe the local tier in which the volume is placed and the assigned tiering policy.</p> <div><h3>Volumes</h3><div><div><div>+ Add</div><div>Delete</div><div>Protect</div><div>More</div></div><div>SearchFilter</div></div><table><thead><tr><th><input type="checkbox"/></th><th>Name</th><th></th></tr></thead><tbody><tr><td><input type="checkbox"/></td><td>c2_svm4_nas1</td><td rowspan="8"><div>c2_svm4_nas3All Volumes</div><div>EditMore</div><div>OverviewSnapshot CopiesSnapMirrorBack Up to CloudSecurityFile System</div><div>Quota Reports</div></td></tr></tbody></table></div>	<input type="checkbox"/>	Name		<input type="checkbox"/>	c2_svm4_nas1	<div>c2_svm4_nas3All Volumes</div> <div>EditMore</div> <div>OverviewSnapshot CopiesSnapMirrorBack Up to CloudSecurityFile System</div> <div>Quota Reports</div>
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<input type="checkbox"/>	c2_svm4_nas2						
<input checked="" type="checkbox"/>	c2_svm4_nas3						
<input type="checkbox"/>	c2_svm4_root						
<input type="checkbox"/>	c2_svm5_root						
<input type="checkbox"/>	sm_svm_s3_127_root						
<input type="checkbox"/>	svm5_LUN						
<input type="checkbox"/>	svm5_NS						

STATUS

Online

STYLE

FlexVol

MOUNT PATH

/c2_svm4_nas3

TIERING POLICY

Snapshot_only

COOLING PERIOD (DAYS)

2 days

Capacity

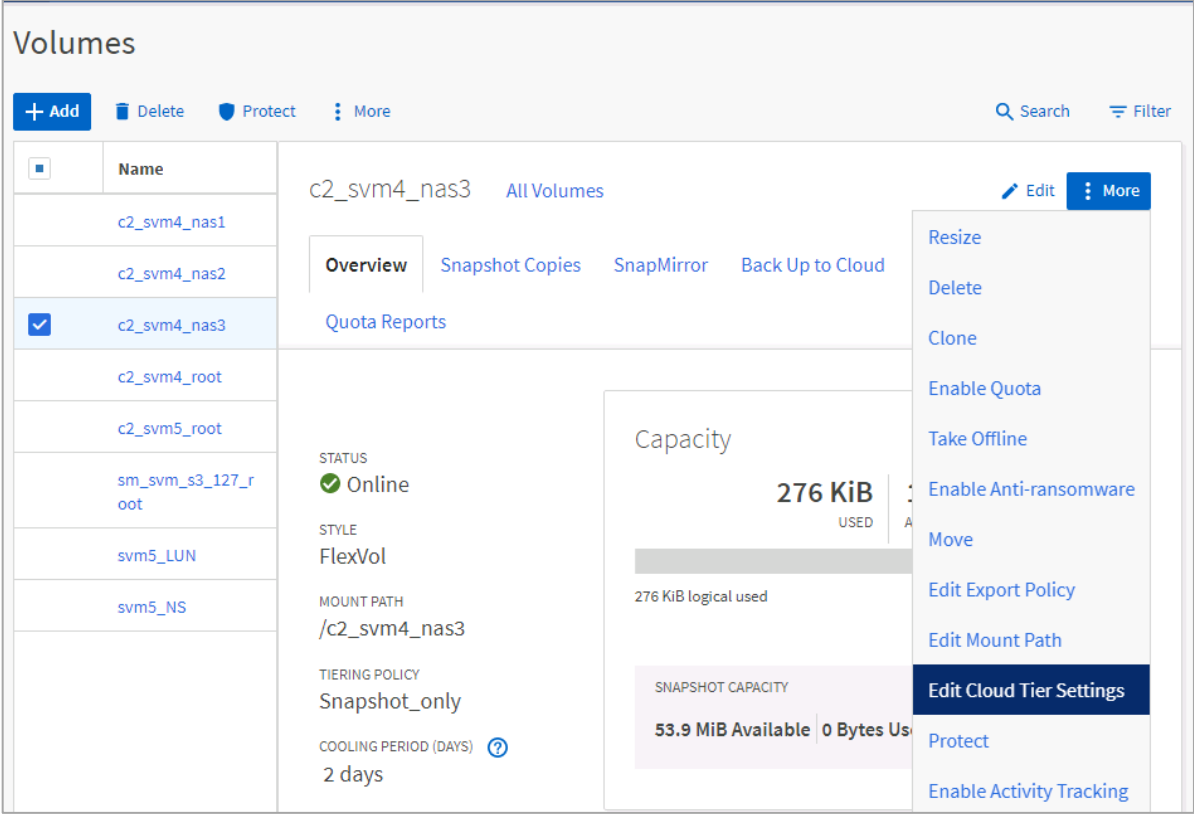
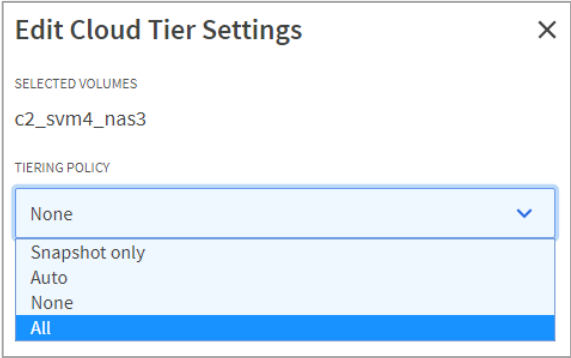
276 KiB1 GiB1.05 GiB

USEDAVAILABLESIZE

276 KiB logical used

SNAPSHOT CAPACITY

53.9 MiB Available0 Bytes Used

Step	Action
2-12	<p>Click More, and then select Edit Cloud Tier Settings.</p> 
2-13	<p>In the Edit Cloud Tier Setting window, from the Tiering Policy menu, select All.</p> 
2-14	<p>Click Save.</p>

Step

Action

2-15

Verify that the tiering policy is set to All so that the ONTAP software does not wait for user data blocks to cool in the FabricPool performance tier before moving them to the FabricPool cloud tier.

Volumes

+ Add

Delete

Protect

More

Search

Filter

Name

c2_svm4_nas1

c2_svm4_nas2

✓

c2_svm4_nas3

c2_svm4_root

c2_svm5_root

sm_svm_s3_127_r
oot

svm5_LUN

svm5_NS

c2_svm4_nas3

All Volumes

Edit

More

Overview

Snapshot Copies

SnapMirror

Back Up to Cloud

Security

File System

Quota Reports

STATUS

✓

Online

STYLE

FlexVol

MOUNT PATH

/c2_svm4_nas3

TIERING POLICY

All

STORAGE VM

c2_svm4

Capacity

296 KiB

1 GiB

1.05 GiB

USEDAVAILABLESIZE

296 KiB logical used

SNAPSHOT CAPACITY

53.9 MiB Available

0 Bytes Used

End of exercise