

Exercise 3: Creating a Flash Pool Aggregate

In this exercise, you convert an aggregate with only HDDs into a Flash Pool aggregate to increase performance.

Objectives

This exercise focuses on enabling you to convert an aggregate to a Flash Pool aggregate.

Case Study

Sales at Zarrot Industries are growing rapidly. The company website is under a heavy load and would benefit from faster I/O. Mr. Zarrot has purchased some SSD drives for the NetApp system to improve I/O performance. Only data that is actively used should be stored in the SSD drives. You need to enable automatic tiering of data by adding the SSDs to an existing aggregate with HDDs to create a Flash Pool aggregate.

Lab Equipment

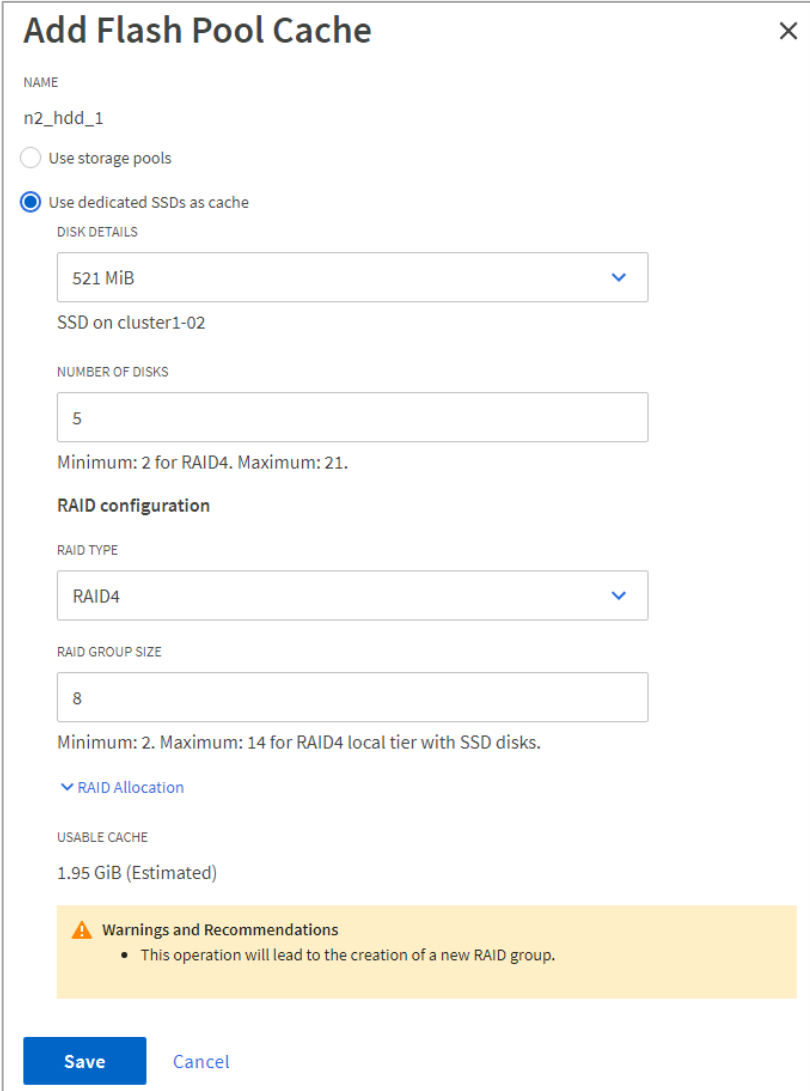

Use the following equipment to complete the exercise:

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!

Task 1: Convert an Aggregate to a Flash Pool Aggregate

Step	Action
1-1	Open a connection to ONTAP System Manager for cluster1.
1-2	Navigate to Storage > Tiers .

Step	Action																																																															
1-3	<div>From the Tiers page, select n2_hdd_1.</div> <div><div>Tiers<div>Card View</div></div><div><div>Local TiersCloud TiersStorage Pools</div><div><div>+ Add</div><div><div>SearchDownloadShow / HideFilter</div></div><table><thead><tr><th>Name</th><th>Status</th><th>Type</th><th>Capacity</th><th>U...</th><th>L...</th><th>D...</th><th>IOP!</th><th>L</th></tr></thead><tbody><tr><td>n1_hdd_1</td><td>Online</td><td>HDD</td><td><div>2.03 GiB used and reserved15.5 GiB available</div>17.6 GiB</td><td>0 Byte:</td><td>26.8 M</td><td>1.65 to</td><td>0</td><td></td></tr><tr><td>n1_hdd_2</td><td>Online</td><td>HDD</td><td><div>20.6 MiB used and reserved14 GiB available</div>14.1 GiB</td><td>0 Byte:</td><td>4.42 M</td><td>1.57 to</td><td>0</td><td></td></tr><tr><td>n1_hdd_4</td><td>Online</td><td>HDD</td><td><div>252 KiB used and reserved42.2 GiB available</div>42.2 GiB</td><td>0 Byte:</td><td>0 Byte:</td><td>1 to 1</td><td>0</td><td></td></tr><tr><td>n1_ssd_3</td><td>Online</td><td>SSD</td><td><div>168 KiB used and reserved2.64 GiB available</div>2.64 GiB</td><td>0 Byte:</td><td>0 Byte:</td><td>1 to 1</td><td>0</td><td></td></tr><tr><td>n2_hdd_1</td><td>Online</td><td>HDD</td><td><div>2.03 GiB used and reserved15.5 GiB available</div>17.6 GiB</td><td>0 Byte:</td><td>27.3 M</td><td>1.65 to</td><td>0</td><td></td></tr><tr><td>n2_hdd_4</td><td>Online</td><td>HDD</td><td><div>280 KiB used and reserved56.2 GiB available</div>56.3 GiB</td><td>0 Byte:</td><td>0 Byte:</td><td>1 to 1</td><td>0</td><td></td></tr></tbody></table></div></div></div>	Name	Status	Type	Capacity	U...	L...	D...	IOP!	L	n1_hdd_1	Online	HDD	<div>2.03 GiB used and reserved15.5 GiB available</div> 17.6 GiB	0 Byte:	26.8 M	1.65 to	0		n1_hdd_2	Online	HDD	<div>20.6 MiB used and reserved14 GiB available</div> 14.1 GiB	0 Byte:	4.42 M	1.57 to	0		n1_hdd_4	Online	HDD	<div>252 KiB used and reserved42.2 GiB available</div> 42.2 GiB	0 Byte:	0 Byte:	1 to 1	0		n1_ssd_3	Online	SSD	<div>168 KiB used and reserved2.64 GiB available</div> 2.64 GiB	0 Byte:	0 Byte:	1 to 1	0		n2_hdd_1	Online	HDD	<div>2.03 GiB used and reserved15.5 GiB available</div> 17.6 GiB	0 Byte:	27.3 M	1.65 to	0		n2_hdd_4	Online	HDD	<div>280 KiB used and reserved56.2 GiB available</div> 56.3 GiB	0 Byte:	0 Byte:	1 to 1	0	
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1-4	<div>From the More menu, select Add Flash Pool Cache to begin converting an HDD aggregate into a Flash Pool aggregate.</div> <div><div>n2_hdd_1All Tiers</div><div><div>OverviewDisk InformationVolumes</div><div><div><div>STATUS<div>Online</div></div><div>NODE<div>cluster1-02</div></div><div>TYPE<div>HDD (7 disks)</div></div><div>RAID<div>RAID-DP</div></div><div>FABRICPOOL<div>Disabled</div></div><div>FLASH POOL<div>Disabled</div></div><div>SNAPLOCK<div>Disabled</div></div><div>MIRROR<div>Disabled</div></div></div><div><div>Capacity<div><div>2.03 GiB<div>USED AND RESERVED</div></div><div>15.5 GiB<div>AVAILABLE</div></div><div>2.02 GiB<div>COMMITTED</div></div></div><div><div>0%20%40%60%80%100%</div><div>1.65 to 1 Data Reduction<div>27.3 MiB logical used</div></div></div></div><div><div>More</div><div><div>Rename</div><div>Edit RAID Configuration</div><div>Add Flash Pool Cache</div><div>Tier to Local Bucket</div></div></div></div></div></div></div>																																																															

Step	Action
1-5	<p>Expand the Flash Pool aggregate with the following settings:</p> <ul style="list-style-type: none"> • Use dedicated SSDs as cache: <selected> • Disk Details: 521MiB • Number of Disks: 5 • RAID Type: RAID4 • RAID Group Size: 8 
1-6	<p> The RAID policies for the SSD RAID group (or groups) are independent from the policies for the HDD RAID groups within a Flash Pool aggregate. For example, an SSD RAID group in a Flash Pool aggregate can be configured with RAID 4 and a group size of 8. The HDD RAID groups in the same Flash Pool aggregate can use RAID DP with a group size of 16.</p>
1-7	Click Save .

Step	Action
1-8	<div>Verify that the aggregate has Flash Pool enabled.</div> <div><div>n2_hdd_1All TiersMore</div><div><div>OverviewDisk InformationVolumes</div><div><div><div><div>STATUS</div><div>Online</div></div><div><div>NODE</div><div>cluster1-02</div></div><div><div>TYPE</div><div>Flash Pool (12 disks)</div></div><div><div>RAID</div><div>RAID-DP</div></div><div><div>FABRICPOOL</div><div>Disabled</div></div><div><div>FLASH POOL</div><div>Enabled</div></div><div><div>SNAPLOCK</div><div>Disabled</div></div><div><div>MIRROR</div><div>Disabled</div></div></div><div><div>Capacity</div><div><div>2.03 GiB</div><div>USED AND RESERVED</div></div><div><div>15.5 GiB</div><div>AVAILABLE</div></div><div><div>2.02 GiB</div><div>COMMITTED</div></div><div><div><div></div><div>0%20%40%60%80%100%</div></div><div><div>1.65 to 1 Data Reduction</div><div>27.3 MiB logical used</div></div></div></div></div></div></div>

Step

Action

1-9

Click the **Disk Information** tab, and verify that the aggregate contains a mix of HDD and SSD drives.

n2_hdd_1

All Tiers

More

Overview

Disk Information

Volumes

Show / Hide

Name	Disk Sta...	Disk Type	Usable S...	Used As	Plex Name	Plex State	RAID Gr...	RAID Type
NET-1.52	Normal	FCAL	3.93 GiB	Dparity	Plex0	Online	rg0	RAID-DP
NET-1.61	Normal	FCAL	3.93 GiB	Parity	Plex0	Online	rg0	RAID-DP
NET-1.53	Normal	FCAL	3.93 GiB	Data	Plex0	Online	rg0	RAID-DP
NET-1.62	Normal	FCAL	3.93 GiB	Data	Plex0	Online	rg0	RAID-DP
NET-1.63	Normal	FCAL	3.93 GiB	Data	Plex0	Online	rg0	RAID-DP
NET-1.76	Normal	FCAL	3.93 GiB	Data	Plex0	Online	rg0	RAID-DP
NET-1.77	Normal	FCAL	3.93 GiB	Data	Plex0	Online	rg0	RAID-DP
NET-1.54	Normal	SSD	521 MiB	Dparity	Plex0	Online	rg1	RAID-DP
NET-1.55	Normal	SSD	521 MiB	Parity	Plex0	Online	rg1	RAID-DP
NET-1.64	Normal	SSD	521 MiB	Data	Plex0	Online	rg1	RAID-DP
NET-1.65	Normal	SSD	521 MiB	Data	Plex0	Online	rg1	RAID-DP
NET-1.66	Normal	SSD	521 MiB	Data	Plex0	Online	rg1	RAID-DP

Showing 1 - 12 of 12 Disks

←

1

→

End of exercise