



使用**SnapVault** 进行备份复制

NetApp solutions for SAP

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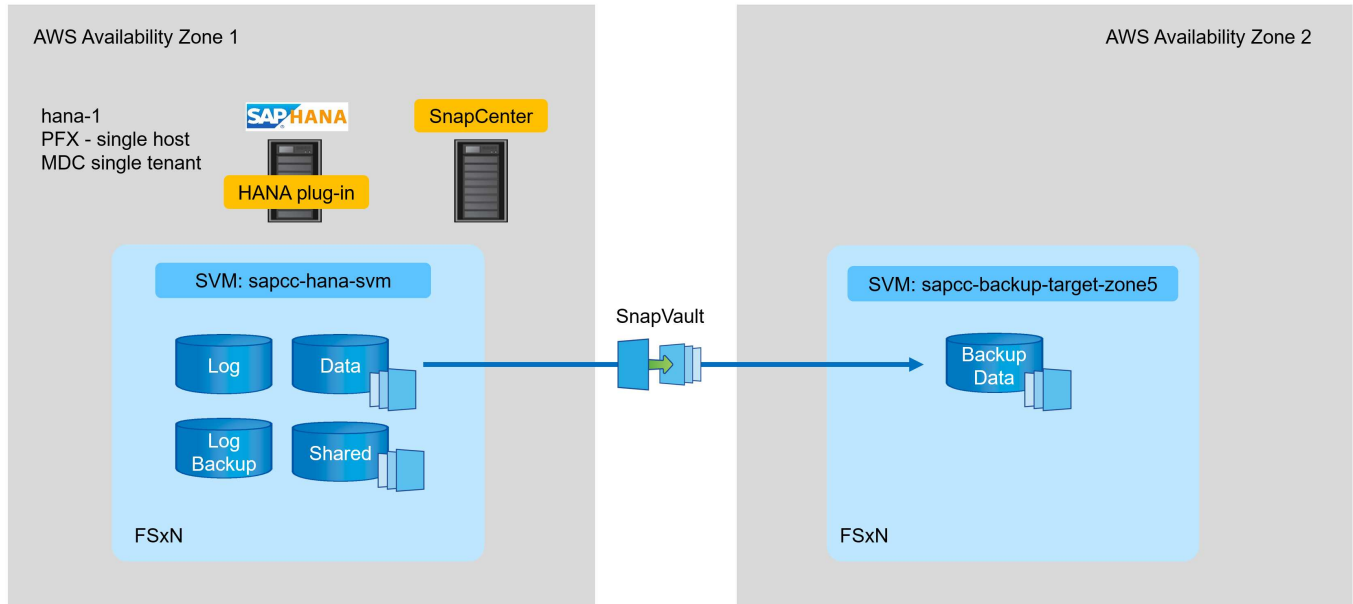
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使用SnapVault 进行备份复制

概述—使用SnapVault 备份复制

在我们的实验室设置中、我们会在第二个AWS可用性区域中使用第二个FSX for ONTAP 文件系统来展示HANA数据卷的备份复制。

如第章所述“数据保护策略”，复制目标必须是另一可用性区域中的第二个FSx for ONTAP文件系统，才能防止主FSx for ONTAP文件系统发生故障。此外、应将HANA共享卷复制到二级FSX for ONTAP 文件系统。



配置步骤概述

必须在适用于ONTAP 的FSX层上执行几个配置步骤。您可以使用NetApp Cloud Manager或FSX for ONTAP 命令行执行此操作。

1. 适用于ONTAP 文件系统的对等FSX。必须为适用于ONTAP 文件系统的FSX建立对等关系、才能在彼此之间进行复制。
2. 对等SVM。SVM必须建立对等关系、才能在彼此之间进行复制。
3. 创建目标卷。在目标SVM上创建卷、卷类型为`DP`。要用作复制目标卷、必须键入`DP`。
4. 创建SnapMirror策略。此选项用于创建类型为`vault`的复制策略。
 - a. 向策略添加规则。此规则包含SnapMirror标签以及二级站点备份的保留。您必须稍后在SnapCenter 策略中配置相同的SnapMirror标签、以便SnapCenter 在包含此标签的源卷上创建Snapshot备份。
5. 创建SnapMirror关系。定义源卷和目标卷之间的复制关系并附加策略。
6. 初始化SnapMirror。此时将开始初始复制、在此复制中、完整的源数据将传输到目标卷。

卷复制配置完成后、您必须按如下所示在SnapCenter 中配置备份复制：

1. 将目标SVM添加到SnapCenter。

2. 为Snapshot备份和SnapVault 复制创建新的SnapCenter 策略。
3. 将此策略添加到HANA资源保护中。
4. 现在、您可以使用新策略执行备份。

以下各章将更详细地介绍各个步骤。

在ONTAP 文件系统的FSX上配置复制关系

有关SnapMirror配置选项的追加信息、请参见ONTAP 文档、网址为 "[SnapMirror复制工作流\(netapp.com\)](https://netapp.com)"。

- ONTAP 文件系统的源FSx: FSxId00fa9e3c784b6abbb
- 源SVM: sAPCC-HANA-SVM
- ONTAP 文件系统的目标FSX: FSxId05f7f00af49dc7a3e
- 目标SVM: sAPCP-backup-target-zone5

适用于ONTAP 文件系统的对等FSX

```

FsxId00fa9e3c784b6abbb::> network interface show -role intercluster
      Logical      Status      Network      Current      Current
Is
Vserver      Interface  Admin/Oper  Address/Mask      Node      Port
Home
-----
----
FsxId00fa9e3c784b6abbb
      inter_1      up/up      10.1.1.57/24
FsxId00fa9e3c784b6abbb-01
                                     e0e
true
      inter_2      up/up      10.1.2.7/24
FsxId00fa9e3c784b6abbb-02
                                     e0e
true
2 entries were displayed.

```

```
FsxId05f7f00af49dc7a3e::> network interface show -role intercluster
```

	Logical	Status	Network	Current	Current
Is					
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port
Home					
-----	-----	-----	-----	-----	-----

FsxId05f7f00af49dc7a3e	inter_1	up/up	10.1.2.144/24		
FsxId05f7f00af49dc7a3e-01					e0e
true					
	inter_2	up/up	10.1.2.69/24		
FsxId05f7f00af49dc7a3e-02					e0e
true					

2 entries were displayed.

```
FsxId05f7f00af49dc7a3e::> cluster peer create -address-family ipv4 -peer
-peer-
-addr 10.1.1.57, 10.1.2.7
```

Notice: Use a generated passphrase or choose a passphrase of 8 or more characters. To ensure the authenticity of the peering relationship, use a phrase or sequence of characters that would be hard to guess.

Enter the passphrase:

Confirm the passphrase:

Notice: Now use the same passphrase in the "cluster peer create" command in the other cluster.



`peer-addr`是目标集群的集群IP。

```

FsxId00fa9e3c784b6abbb:> cluster peer create -address-family ipv4 -peer
-addr 10.1.2.144, 10.1.2.69
Notice: Use a generated passphrase or choose a passphrase of 8 or more
characters. To ensure the authenticity of the peering relationship, use a
phrase or sequence of characters that would be hard to guess.
Enter the passphrase:
Confirm the passphrase:
FsxId00fa9e3c784b6abbb:>
FsxId00fa9e3c784b6abbb:> cluster peer show
Peer Cluster Name          Cluster Serial Number Availability
Authentication
-----
FsxId05f7f00af49dc7a3e    1-80-000011             Available      ok

```

对等SVM

```

FsxId05f7f00af49dc7a3e:> vserver peer create -vserver sapcc-backup-
target-zone5 -peer-vserver sapcc-hana-svm -peer-cluster
FsxId00fa9e3c784b6abbb -applications snapmirror
Info: [Job 41] 'vserver peer create' job queued

```

```

FsxId00fa9e3c784b6abbb:> vserver peer accept -vserver sapcc-hana-svm
-peer-vserver sapcc-backup-target-zone5
Info: [Job 960] 'vserver peer accept' job queued

```

```

FsxId05f7f00af49dc7a3e:> vserver peer show
Peer Peer Peering
Remote
Vserver Vserver State Peer Cluster Applications
Vserver
-----
sapcc-backup-target-zone5
peer-source-cluster
peered FsxId00fa9e3c784b6abbb
snapmirror
sapcc-hana-svm

```

创建目标卷

您必须创建类型为`DP`的目标卷、以将其标记为复制目标。

```
FsxId05f7f00af49dc7a3e::> volume create -vserver sapcc-backup-target-zone5
-volume PFX_data_mnt00001 -aggregate aggr1 -size 100GB -state online
-policy default -type DP -autosize-mode grow_shrink -snapshot-policy none
-foreground true -tiering-policy all -anti-ransomware-state disabled
[Job 42] Job succeeded: Successful
```

创建 SnapMirror 策略

SnapMirror策略和添加的规则用于定义保留和SnapMirror标签、以确定应复制的快照。稍后创建SnapCenter策略时、必须使用相同的标签。

```
FsxId05f7f00af49dc7a3e::> snapmirror policy create -policy snapcenter-
policy -tries 8 -transfer-priority normal -ignore-atime false -restart
always -type vault -vserver sapcc-backup-target-zone5
```

```
FsxId05f7f00af49dc7a3e::> snapmirror policy add-rule -vserver sapcc-
backup-target-zone5 -policy snapcenter-policy -snapmirror-label
snapcenter -keep 14
```

```
FsxId00fa9e3c784b6abbb::> snapmirror policy showVserver Policy
Policy Number          Transfer
Name      Name          Type    Of Rules Tries Priority Comment
-----
FsxId00fa9e3c784b6abbb
      snapcenter-policy vault          1      8  normal  -
      SnapMirror Label: snapcenter                                Keep:      14
                                                                Total Keep: 14
```

创建SnapMirror关系

现在、源卷和目标卷之间的关系已定义、XDP类型以及我们先前创建的策略也已定义。

```
FsxId05f7f00af49dc7a3e::> snapmirror create -source-path sapcc-hana-
svm:PFX_data_mnt00001 -destination-path sapcc-backup-target-
zone5:PFX_data_mnt00001 -vserver sapcc-backup-target-zone5 -throttle
unlimited -identity-preserve false -type XDP -policy snapcenter-policy
Operation succeeded: snapmirror create for the relationship with
destination "sapcc-backup-target-zone5:PFX_data_mnt00001".
```

初始化SnapMirror

使用此命令将开始初始复制。这是从源卷到目标卷的所有数据的完整传输。

```
FsxId05f7f00af49dc7a3e::> snapmirror initialize -destination-path sapcc-
backup-target-zone5:PFX_data_mnt00001 -source-path sapcc-hana-
svm:PFX_data_mnt00001
Operation is queued: snapmirror initialize of destination "sapcc-backup-
target-zone5:PFX_data_mnt00001".
```

您可以使用`snapmirror show`命令检查复制的状态。

```
FsxId05f7f00af49dc7a3e::> snapmirror show
```

Progress		Source		Destination		Mirror	Relationship	Total
Last	Path	Type	Path	State	Status	Progress	Healthy	
Updated								
-----	-----	-----	-----	-----	-----	-----	-----	

	sapcc-hana-svm:PFX_data_mnt00001							
		XDP	sapcc-backup-target-zone5:PFX_data_mnt00001	Uninitialized				
					Transferring	1009MB	true	
02/24 12:34:28								


```
FsxId05f7f00af49dc7a3e::> snapmirror show
```

Progress

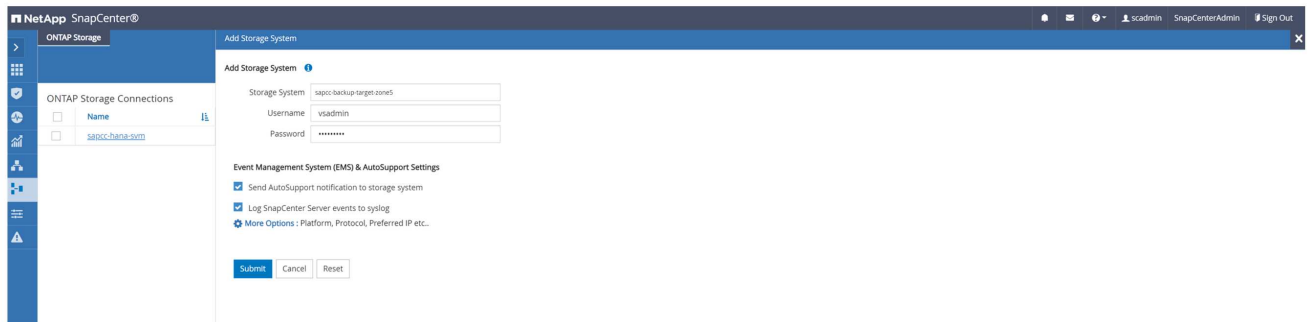
Source	Destination	Mirror	Relationship	Total		
Last						
Path	Type	Path	State	Status	Progress	Healthy
Updated						

sapcc-hana-svm:PFX_data_mnt00001						
	XDP	sapcc-backup-target-zone5:PFX_data_mnt00001				
		Snapmirrored				
			Idle		-	true -

将备份SVM添加到SnapCenter

要将备份SVM添加到SnapCenter、请执行以下步骤：

1. 在SnapCenter 中配置SnapVault 目标卷所在的SVM。



2. 在更多选项窗口中、选择全闪存FAS 作为平台、然后选择二级。

More Options

Platform

All Flash FAS

☒ Secondary

Protocol

HTTPS

Port

443

Timeout

60

seconds

☐ Preferred IP

Save

Cancel

SVM现在可在SnapCenter 中使用。

NetApp SnapCenter®

scadmin

SnapCenterAdmin

Sign Out

Dashboard

Resources

Monitor

Reports

Hosts

Storage Systems

Settings

Alerts

ONTAP Storage

Type

ONTAP SVMs

Search by Name

New

Delete

ONTAP Storage Connections

	Name	IP	Cluster Name	User Name	Platform	Controller License
☐	sapcc-backup-targetzone5	10.1.2.31		vsadmin	AFF	Not applicable
☐	sapcc-hana-svm	198.19.255.9		vsadmin	AFF	✓

为备份复制创建新的SnapCenter 策略

您必须按如下所示配置备份复制策略：

1. 请为此策略提供一个名称。

NetApp SnapCenter®

scadmin

SnapCenterAdmin

Sign Out

Dashboard

Resources

Monitor

Reports

Hosts

Storage Systems

Settings

Alerts

Global Settings

Policies

Users and Access

Roles

Credential

Software

SAP HANA

Search by Name

New

Edit

Copy

Details

Delete

Name	Backup Type	Schedule Type	Replication
BlockIntegrityCheck	File Based Backup	Weekly	
LocalSnap	Data Backup	Hourly	

2. 选择Snapshot备份和计划频率。每天通常用于备份复制。

New SAP HANA Backup Policy

1 Name

2 Settings

3 Retention

4 Replication

5 Summary

Provide a policy name

Policy name

LocalSnapAndSnapVault

Details

Replication to backup volume

3. 选择Snapshot备份的保留。

New SAP HANA Backup Policy

1 Name

2 Settings

3 Retention

4 Replication

5 Summary

Select backup settings

Backup Type

☒ Snapshot Based
 ☐ File-Based

Schedule Frequency

Select how often you want the schedules to occur in the policy. The specific times are set at backup job creation enabling you to stagger your start times.

☐ On demand
 ☐ Hourly
 ☒ Daily
 ☐ Weekly
 ☐ Monthly

这是在主存储上创建的每日Snapshot备份的保留期限。先前已在SnapVault 目标上使用add rule命令在ONTAP 级别配置二级备份的保留。请参见《在适用于ONTAP 文件系统的FSX上配置复制关系》(xref)。

New SAP HANA Backup Policy

1 Name

2 Settings

3 Retention

4 Replication

5 Summary

Retention settings

Daily retention settings

☒ Total Snapshot copies to keep

3

☐ Keep Snapshot copies for

14

days

4. 选择Update SnapVault 字段并提供自定义标签。

此标签必须与ONTAP 级别的`add rule`命令中提供的SnapMirror标签匹配。

9

New SAP HANA Backup Policy

1 Name

2 Settings

3 Retention

4 Replication

5 Summary

Summary

Policy name

LocalSnapAndSnapVault

Details

Replication to backup volume

Backup Type

Snapshot Based Backup

Schedule Type

Daily

Daily backup retention

Total backup copies to retain : 3

Replication

SnapVault enabled , Secondary policy label: Custom Label : snapcenter , Error retry count: 3

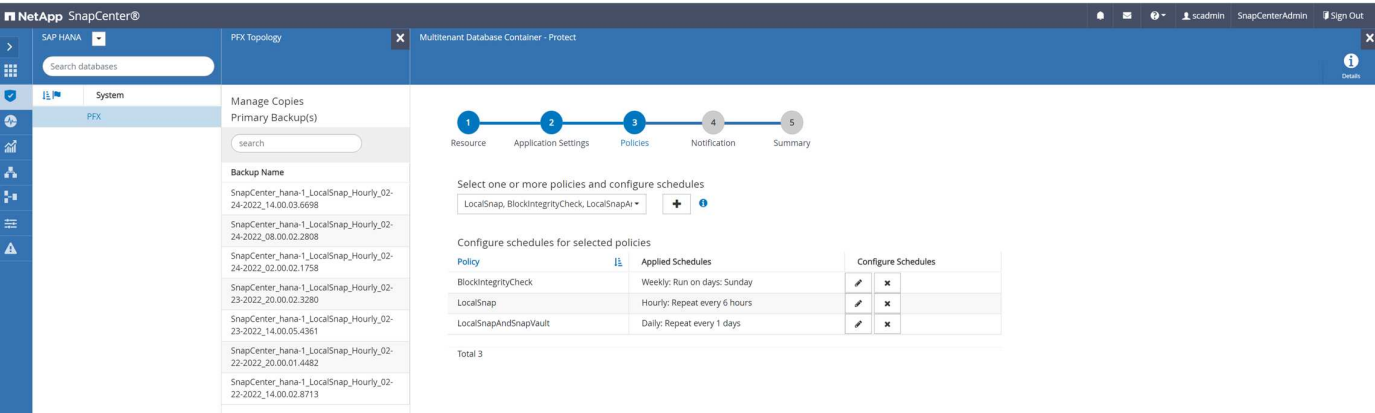
将策略添加到资源保护中

The screenshot shows the SAP NetApp SnapCenter interface for configuring a Multitenant Database Container. The breadcrumb trail indicates the current step is 'Policies' within the 'Notification' section. The 'Select one or more policies and configure schedules' section displays a list of policies: 'LocalSnap', 'BlockIntegrityCheck', and 'LocalSnapAndSnapVault'. The 'BlockIntegrityCheck' policy is selected. Below this, a table shows the configured schedules for the selected policies. The 'BlockIntegrityCheck' policy is configured with a weekly schedule on Sundays, and the 'LocalSnap' policy is configured with a daily hourly schedule. The total number of policies configured is 2.

Policy Name	Frequency	Configure Schedules
BlockIntegrityCheck	Weekly: Run on days: Sunday	☐ ☐
LocalSnap	Hourly: Repeat every 6 hours	☐ ☐

Total 2

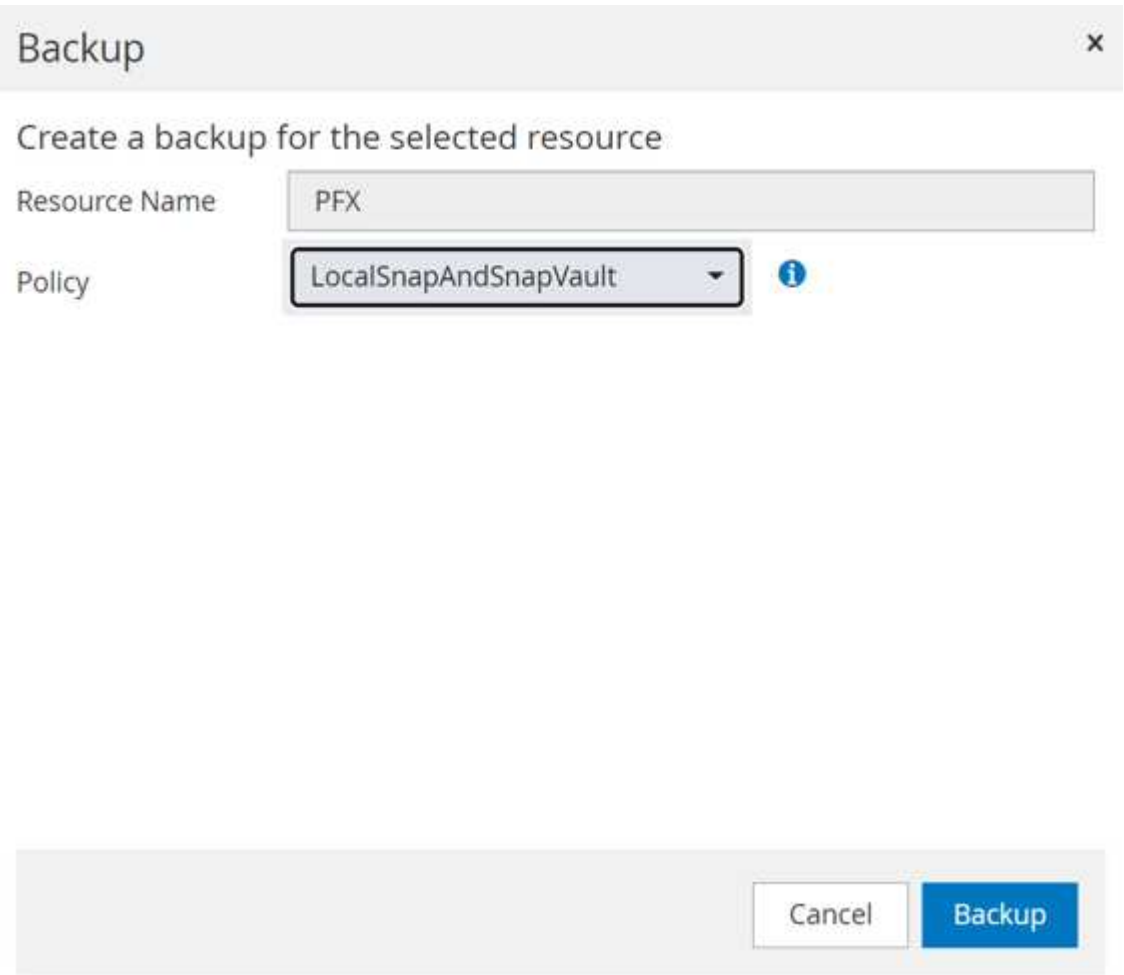
我们在设置中定义了每日计划。



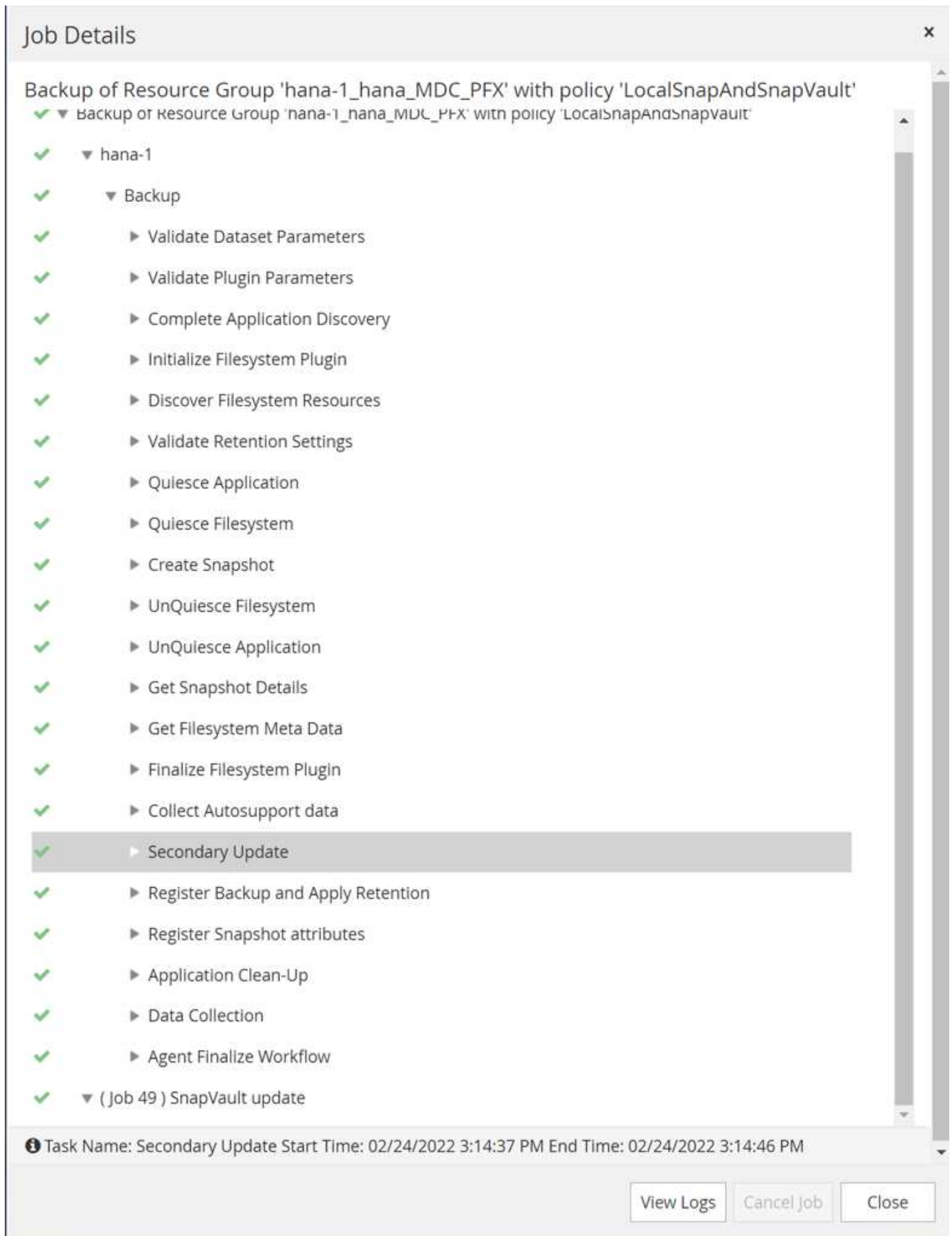
使用复制创建备份

创建备份的方式与创建本地Snapshot副本的方式相同。

要使用复制创建备份、请选择包含备份复制的策略、然后单击备份。



在SnapCenter 作业日志中、您可以看到二级更新步骤、该步骤将启动SnapVault 更新操作。将更改的块从源卷复制到目标卷。



在适用于ONTAP 的FSX文件系统上、使用SnapCenter 策略中配置的SnapMirror标签`SnapCenter`在源卷上创

建Snapshot。

```
FsxId00fa9e3c784b6abbb:> snapshot show -vserver sapcc-hana-svm -volume
PFX_data_mnt00001 -fields snapmirror-label
vserver          volume          snapshot
snapmirror-label
-----
-----
-----
sapcc-hana-svm PFX_data_mnt00001 SnapCenter_hana-1_LocalSnap_Hourly_03-31-
2022_13.10.26.5482 -
sapcc-hana-svm PFX_data_mnt00001 SnapCenter_hana-1_LocalSnap_Hourly_03-31-
2022_14.00.05.2023 -
sapcc-hana-svm PFX_data_mnt00001 SnapCenter_hana-1_LocalSnap_Hourly_04-05-
2022_08.00.06.3380 -
sapcc-hana-svm PFX_data_mnt00001 SnapCenter_hana-1_LocalSnap_Hourly_04-05-
2022_14.00.01.6482 -
sapcc-hana-svm PFX_data_mnt00001 SnapCenter_hana-1_LocalSnap_Hourly_04-14-
2022_20.00.05.0316 -
sapcc-hana-svm PFX_data_mnt00001 SnapCenter_hana-1_LocalSnap_Hourly_04-28-
2022_08.00.06.3629 -
sapcc-hana-svm PFX_data_mnt00001 SnapCenter_hana-1_LocalSnap_Hourly_04-28-
2022_14.00.01.7275 -
sapcc-hana-svm PFX_data_mnt00001 SnapCenter_hana-
1_LocalSnapAndSnapVault_Daily_04-28-2022_16.21.41.5853

snapcenter
8 entries were displayed.
```

在目标卷上、将创建一个同名Snapshot副本。

```
FsxId05f7f00af49dc7a3e:> snapshot show -vserver sapcc-backup-target-zone5
-volume PFX_data_mnt00001 -fields snapmirror-label
vserver          volume          snapshot
snapmirror-label
-----
-----
-----
sapcc-backup-target-zone5 PFX_data_mnt00001 SnapCenter_hana-
1_LocalSnapAndSnapVault_Daily_04-28-2022_16.21.41.5853 snapcenter
FsxId05f7f00af49dc7a3e:>
```

新的Snapshot备份也会列在HANA备份目录中。

Backup Catalog						Backup Details					
Database: SYSTEMDB						ID:	1651162926424				
☐ Show Log Backups ☐ Show Delta Backups						Status:	Successful				
Status	Started	Duration	Size	Backup Type	Destination Ty...	Backup Type:	Data Backup				
✓	Apr 28, 2022, 4:22:06 PM	00h 00m 15s	5.50 GB	Data Backup	Snapshot	Destination Type:	Snapshot				
✓	Apr 28, 2022, 2:00:26 PM	00h 00m 15s	5.50 GB	Data Backup	Snapshot	Started:	Apr 28, 2022, 4:22:06 PM (UTC)				
✓	Apr 28, 2022, 8:00:35 AM	00h 00m 15s	5.50 GB	Data Backup	Snapshot	Finished:	Apr 28, 2022, 4:22:21 PM (UTC)				
✓	Apr 15, 2022, 5:00:44 PM	00h 06m 59s	5.50 GB	Data Backup	Snapshot	Duration:	00h 00m 15s				
✓	Apr 14, 2022, 8:00:32 PM	00h 00m 16s	5.50 GB	Data Backup	Snapshot	Size:	5.50 GB				
✓	Apr 5, 2022, 2:00:29 PM	00h 00m 15s	5.50 GB	Data Backup	Snapshot	Throughput:	n.a.				
✓	Apr 5, 2022, 8:00:39 AM	00h 00m 15s	5.50 GB	Data Backup	Snapshot	System ID:	SnapCenter_hana-1_LocalSnapAndSnapVault_Daily_04-28-2022_16.21.41.5853				
✓	Mar 31, 2022, 2:00:29 PM	00h 00m 15s	5.50 GB	Data Backup	Snapshot	Comment:					
✓	Mar 31, 2022, 1:10:57 PM	00h 00m 16s	5.50 GB	Data Backup	Snapshot	Additional Information:	<ok>				
✓	Feb 22, 2022, 12:55:21 PM	00h 00m 21s	3.56 GB	Data Backup	File	Location:	/hana/data/PFX/mnt00001/				
						Host	Service	Size	Name	Source Type	EBID
						hana-1	nameserver	5.50 GB	hdb00001	volume	SnapCent...

在SnapCenter 中、您可以通过单击拓扑视图中的存储副本来列出复制的备份。

NetApp SnapCenter®

SAP HANA

Search databases

System

PFX

PFX Topology

Manage Copies

Local copies

8 Backups
0 Clones

Vault copies

1 Backup
0 Clones

Secondary Vault Backup(s)

search

Count

End Date

SnapCenter_hana-1_LocalSnapAndSnapVault_Daily_04-28-2022_16.21.41.5853

1

Remove Protection

Back Up Now

Modify

Production

Details

Configure Database

Refresh

Summary Card

10 Backups

9 Snapshot based backups

1 File-based backup

0 Clones

从二级存储还原和恢复

要从二级存储还原和恢复、请执行以下步骤：

要检索二级存储上所有备份的列表、请在SnapCenter 拓扑视图中单击存储副本、然后选择一个备份并单击还原。

NetApp SnapCenter®

SAP HANA

Search databases

System

PFX

PFX Topology

Manage Copies

Secondary Vault Backup(s)

Backup Name	Count	End Date
SnapCenter_hana-1_LocalSnapAndSnapVault_Daily_04-28-2022_16.21.41.5853	1	04/28/2022 4:22:40 PM

Remove Protection

Back Up Now

Modify

Production

Details

Configure Database

Refresh

Summary Card

10 Backups

9 Snapshot based backups

1 File-based backup

0 Clones

Local copies

8 Backups

0 Clones

Vault copies

1 Backup

0 Clones

还原对话框将显示二级位置。

Restore from SnapCenter_hana-1_LocalSnapAndSnapVault_Daily_04-28-2022_16.21.41.5853

1 Restore scope

2 Recovery scope

3 PreOps

4 PostOps

5 Notification

6 Summary

Select the restore types

☒ Complete Resource

☐ Tenant Database

Choose archive location

sapcc-hana-svm:PFX_data_mnt00001

sapcc-backup-target-zone5:PFX_data_mnt00

The newer tenants added on the host after the backup was created cannot be restored and will be lost after restore operation.

Configure an SMTP Server to send email notifications for Restore jobs by going to [Settings>Global Settings>Notification Server Settings.](#)

Previous

Next

进一步的还原和恢复步骤与先前在主存储上对Snapshot备份所述的步骤相同。

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