Module 4
SVM DR

Disaster-recovery solution

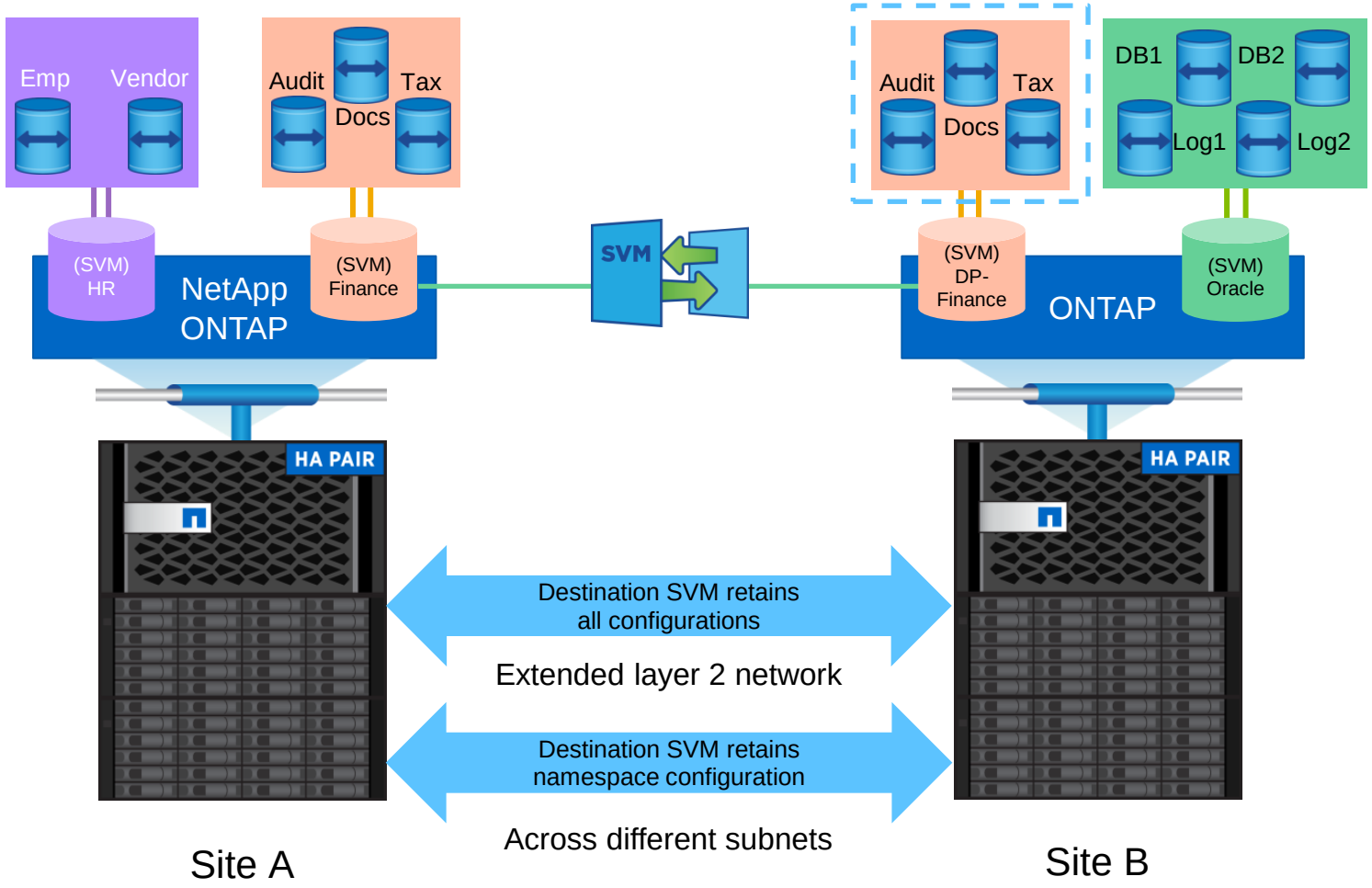
About this module

This module focuses on enabling you to do the following:

- Summarize the requirements and options for replication of storage VM (storage virtual machine, also known as SVM) data and configuration
- Prepare an SVM for data protection
- Perform an SVM initial data transfer
- Demonstrate a manual SVM update
- Manually update an SVM disaster-recovery relationship
- Configure regularly scheduled SVM updates

Lesson 1
SVM DR overview

SVM DR

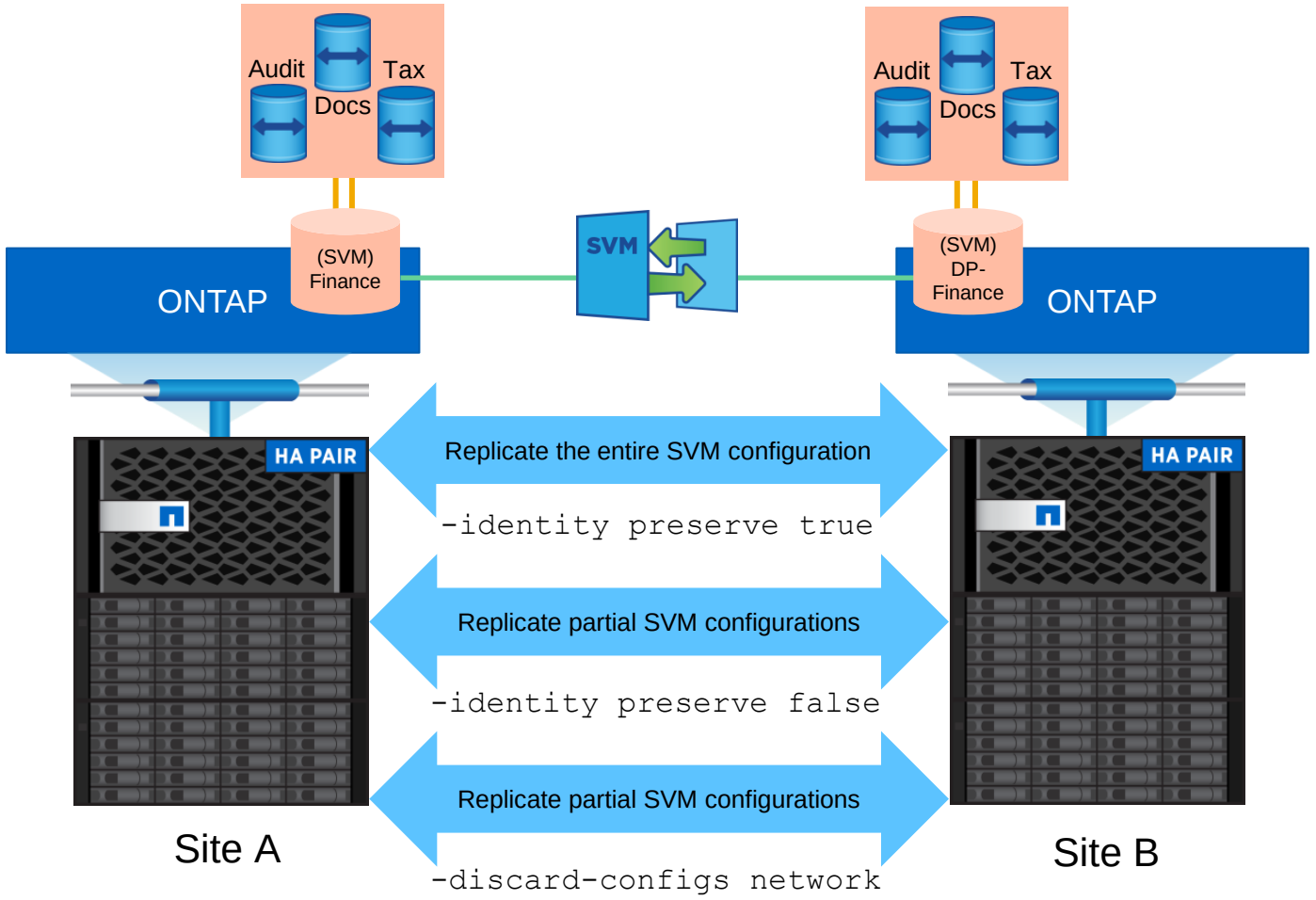


- Simple predefined steps for failover
- Easy, automated management
- Assured protection for SVM data

- Protected SVM namespace, not just volumes
- Automated setup and provisioning
- Automated change management
- Familiar SnapMirror CLI commands
- RESTful API to configure relationships

Options for replicating configurations in SVM DR

Using the `-identity preserve` option



- Easily preserve the SVM identity across networks.
- To replicate the entire SVM configuration, use `-identity-preserve true`.
- To replicate partial SVM configurations, use `-identity-preserve false`.
- Start the destination SVM to provide read-only access to clients.
- To exclude network settings, use `-discard-configs network`.

Configurations replicated in SVM DR relationships

Configuration		-identity-preserve true		
		Without -discard -configs network	With -discard -configs network	-identity-preserve false
Network	NAS LIFs	Yes	No	No
	SAN LIFs	No	No	No
	Firewall policies	Yes	Yes	No
	Routes	Yes	No	No
	Broadcast Domain	No	No	No
	Subnet	No	No	No
	IPspace	No	No	No
Role-based access control (RBAC)	Security certificates	Yes	Yes	No
	Login user, public key, role, and role configuration	Yes	Yes	Yes
	Secure Sockets Layer (SSL)	Yes	Yes	No

Configurations replicated in SVM DR relationships

Configuration		-identity-preserve true		
		Without -discard -configs network	With -discard -configs network	-identity-preserve false
iSCSI		No	No	No
FC		No	No	No
SMB	SMB server	Yes	Yes	No
	Local groups and local user	Yes	Yes	Yes
	Server options	Yes	Yes	Yes
	Server security	Yes	Yes	No
	Home directory, share	Yes	Yes	Yes
NFS	NFS server	Yes	Yes	No
	Export policies	Yes	Yes	No
	Export policy rules	Yes	Yes	No
Storage quality of service (QoS)	QoS policy group	Yes	Yes	Yes

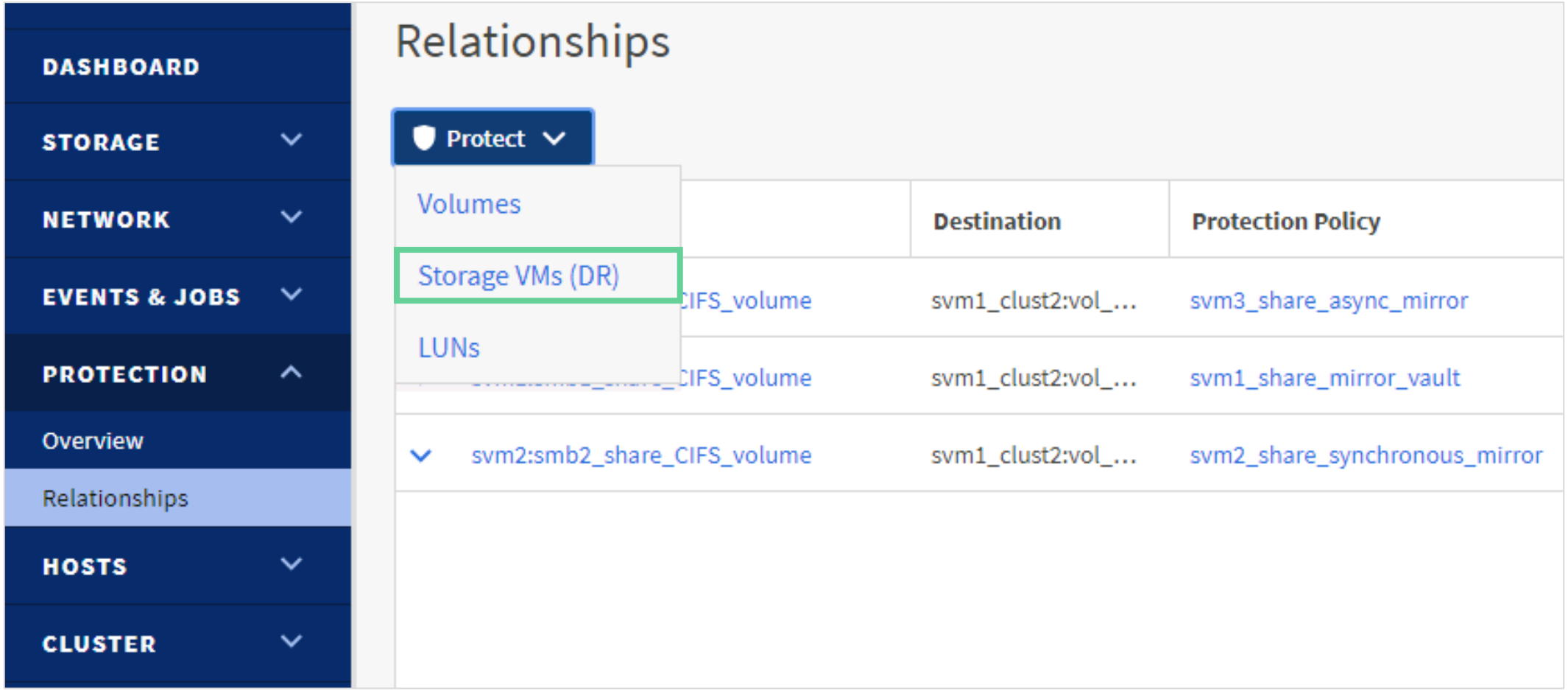
Configurations replicated in SVM DR relationships

Configuration		-identity-preserve true		
		Without -discard -configs network	With -discard -configs network	-identity-preserve false
Volume	Object	Yes	Yes	Yes
	Snapshot copies, Snapshot policy, and autodelete policy	Yes	Yes	Yes
	Efficiency policy	Yes	Yes	Yes
	Quota policy and quota policy rule	Yes	Yes	Yes
Root volume	Namespace	Yes	Yes	Yes
	User data	No	No	No
	Quotas	No	No	No
LUN	Object	Yes	Yes	Yes
	Initiator groups (igroups)	No	No	No
	Port sets	No	No	No

Lesson 2
SVM DR requirements and configuration

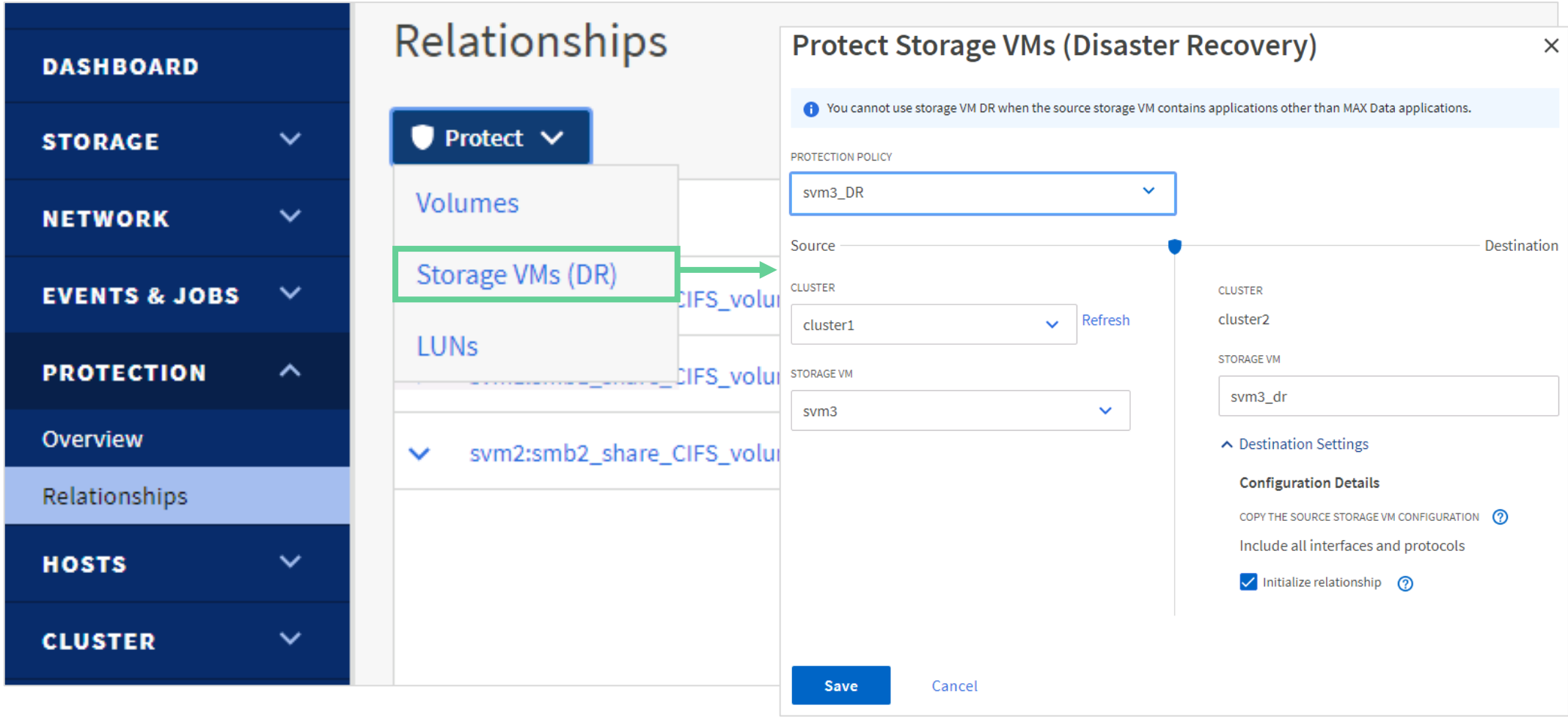
Configure SVM DR relationships in ONTAP System Manager

Step 1: Start the SVM DR relationship creation process

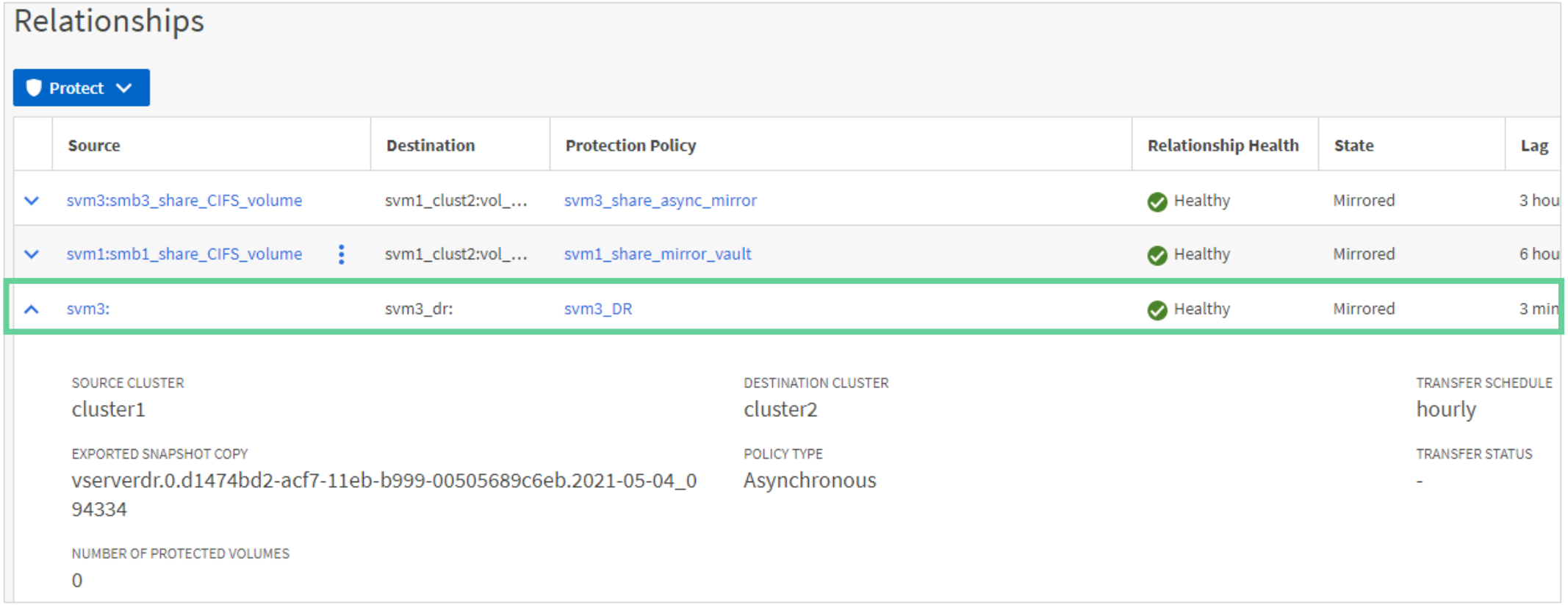


Configure SVM DR relationships in ONTAP System Manager

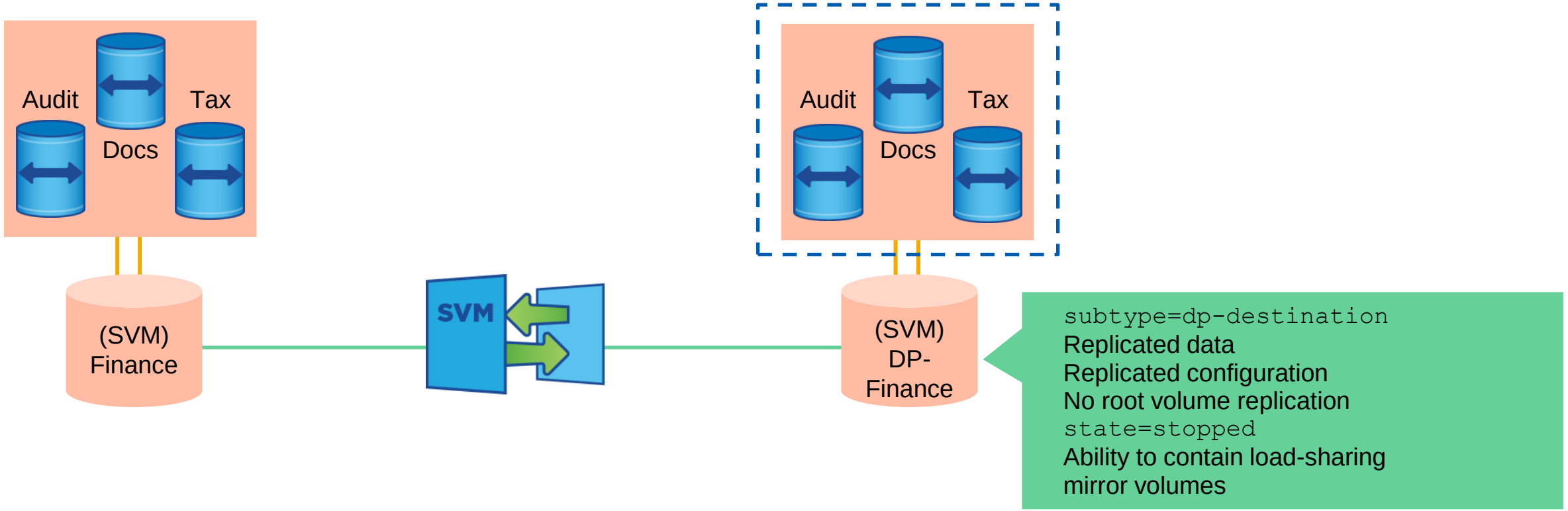
Step 2: Configure the SVM DR relationship



Monitor SVM DR relationships from ONTAP System Manager

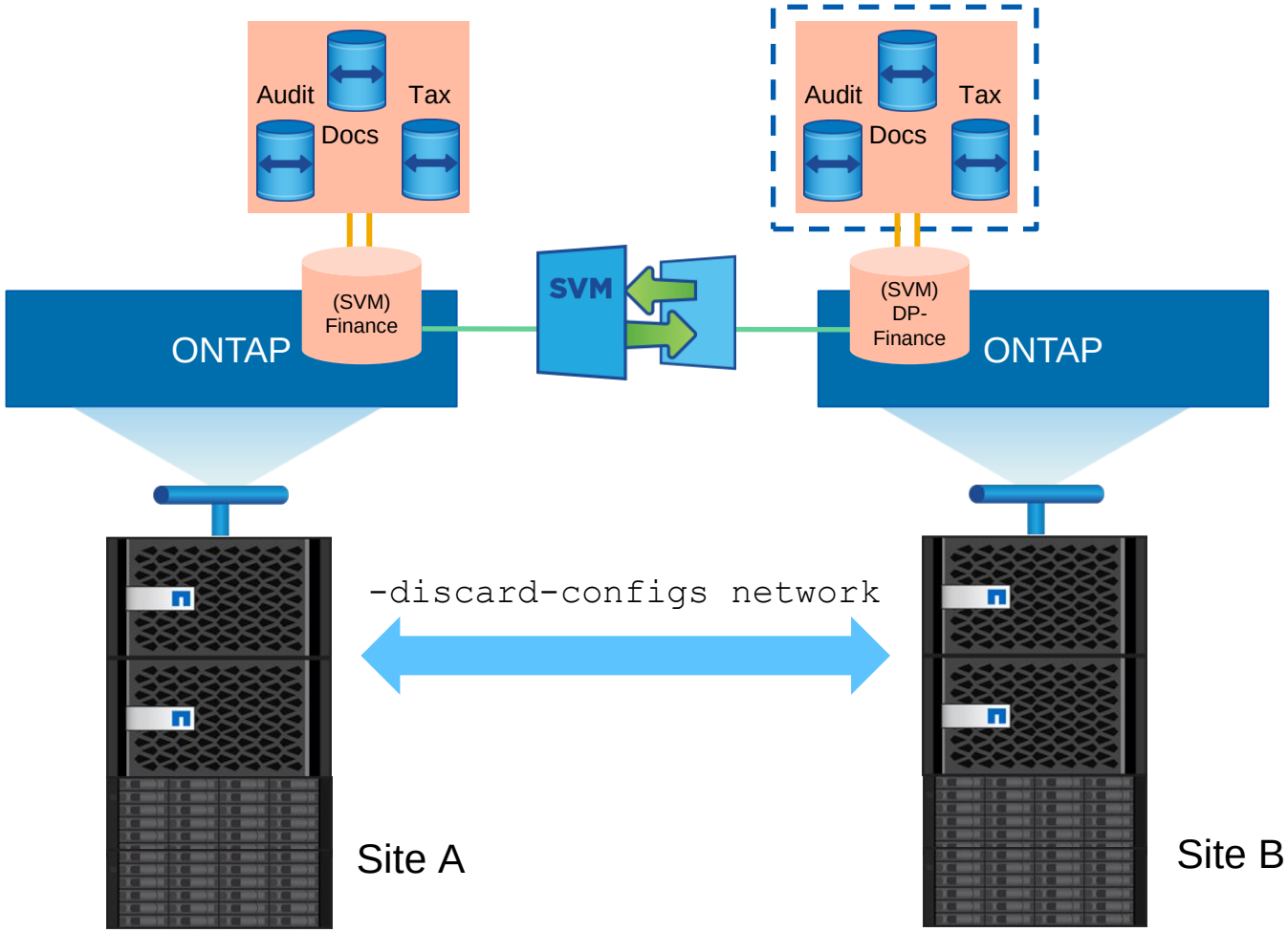


SVM DR requirements



Replicate a configuration without LIFs

`-identity-preserve=true` and `-discard-configs network`



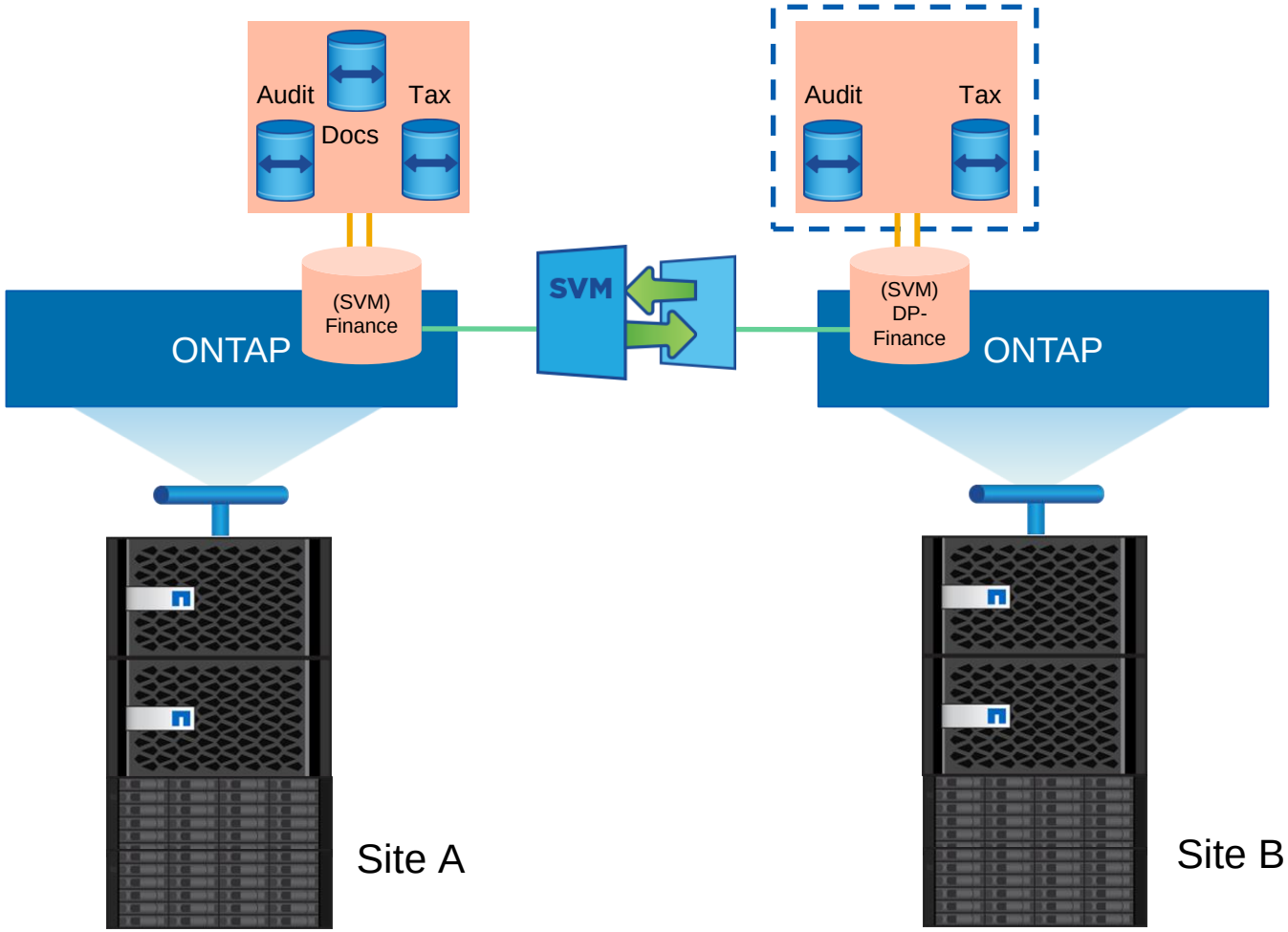
Requirements:

- The source and destination clusters are in different network subnets.
- The destination SVM must have the same NAS configuration as the source SVM, except for the LIFs.
- In all SVM DR relationships, the destination must be reconfigured.
- The destination SVM is not required to provide read-only access. (Read-only access is possible with `-identity-preserve false`.)

Selective protection in SVM DR

Per-volume protection

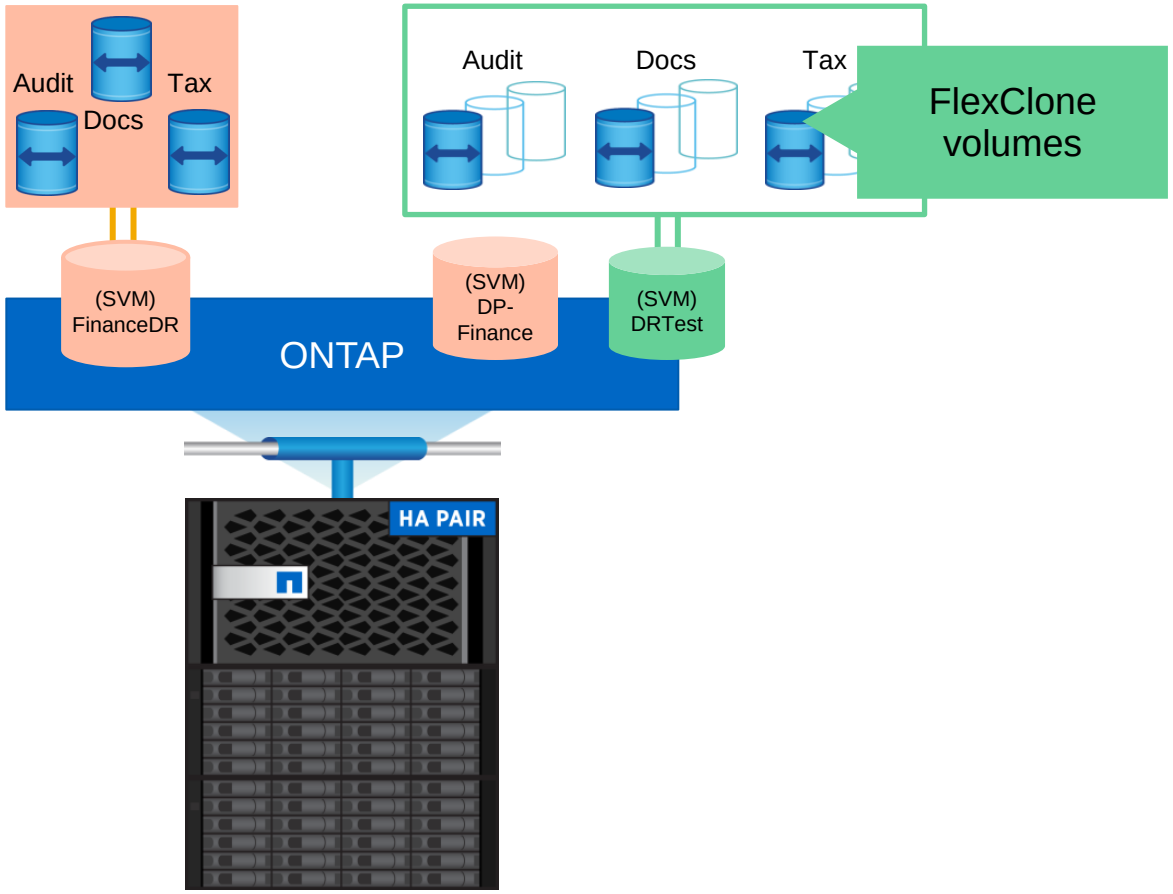
> volume modify -volume docs -vserver-dr-protection unprotected



- Save capacity by excluding volumes from disaster recovery.
- Specify one or more volumes for exclusion.
- Retain all of the benefits that are applicable for whole-SVM disaster recovery.

Development and testing in SVM DR

Cloning data protection volumes



Destination cluster

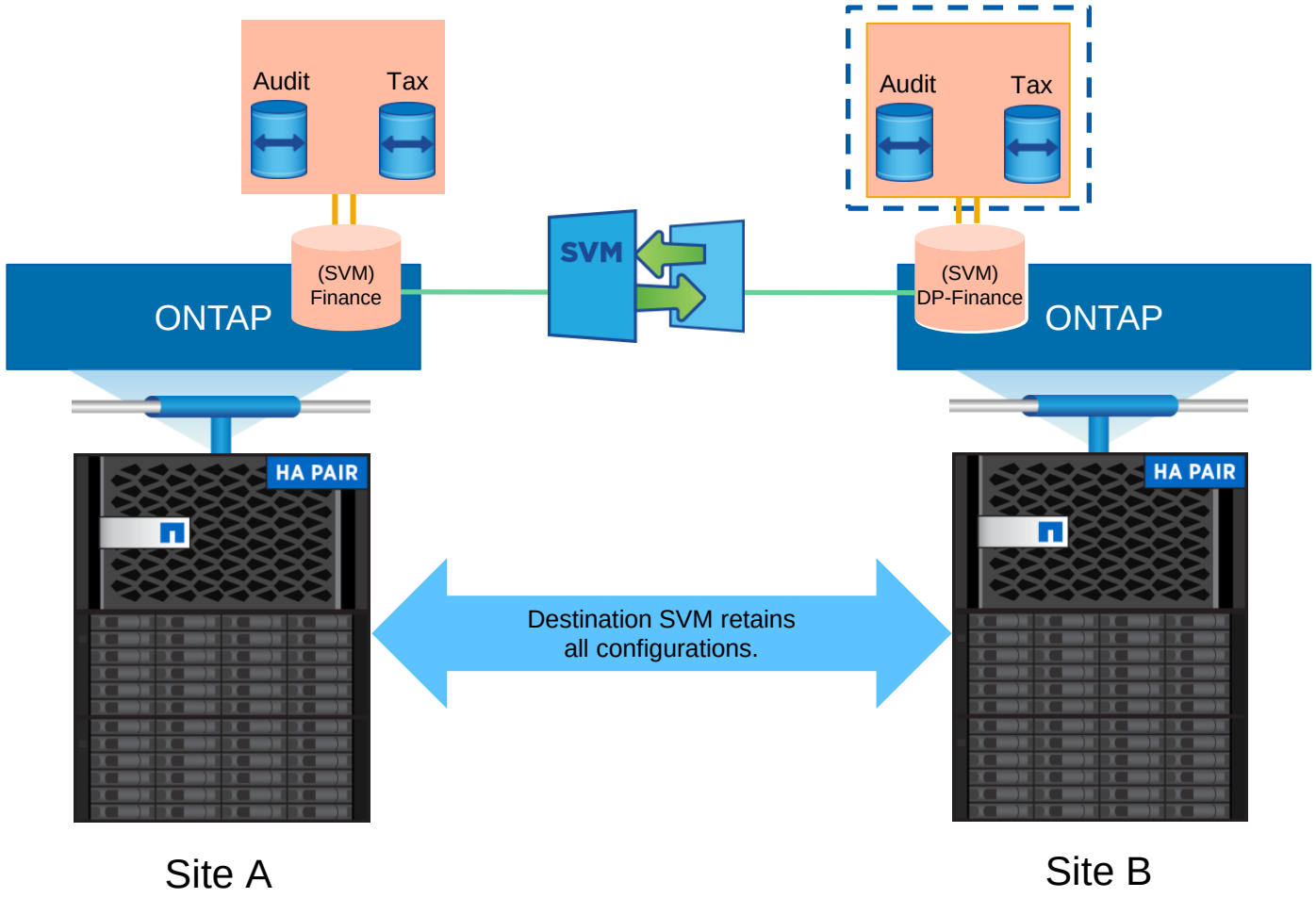
- You can create clones of SVM DR data protection volumes in the DR test SVM.
- You must manually set up the DR test SVM configuration, including the namespace and the network.
- During testing, data protection continues to run.
- If a disaster occurs during testing, the DR test SVM contains all scheduled updates (even if the DR test clones are out-of-date.)

Test SVM DR without breaking the SnapMirror relationship

1. In a SnapMirror relationship, select the volumes to be tested:
   `destination::> snapmirror show -expand`
2. On the destination cluster, create an SVM of subtype `default`:
   `destination::> vserver create -vserver <clone_vserver> -subtype default`
   (**Note**: You must create the LIFs and export polices to enable NFS traffic.)
3. Use the parent volume and the parent Snapshot copy to create a clone on the destination cluster:
   `destination::> vol clone create -vserver <clone_vserver> -flexclone <flexclone_volume> -type RW -parent-vserver <SVM-DR Destination vserver> -parent-volume <parent_volume> -junction-active true -foreground true -parent-snapshot <parent_snapshot>`
4. Mount the FlexClone volume to a junction path:
   `destination::> vol mount -vserver <clone_vserver> -volume <flex_cone_volume> -junction-path /<flex_cone_volume_mountpath>`
5. Mount the FlexClone volume to a test client. The volume should be visible on the client.

Convert a volume SnapMirror relationship to an SVM DR relationship

Cloning data protection volumes



One benefit of a volume SnapMirror relationship is that the relationship can be easily converted to an SVM DR relationship.

Resources

- ONTAP release notes

  https://library.netapp.com/ecm/ecm_download_file/ECMLP2492508

- *ONTAP Data Protection Power Guide*

  https://docs.netapp.com/ontap-9/topic/com.netapp.doc.pow-dap/Data%20protection.pdf

- *NetApp Technical Report TR-4015: SnapMirror Configuration and Best Practices Guide for ONTAP*

- *NetApp Technical FAQ: SnapMirror for SVM (SVM DR)*

Module summary

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Complete an exercise

Module 4: SVM DR

Exercise 1:
Configuring SVM DR

Duration: 60 minutes

Knowledge check

Module 4: SVM DR

Knowledge check

Which option do you use with the volume modify command to exclude SVM volumes from replication?

a. `-vserver-dr-protection disabled`

b. `-vserver-dr-protection false`

c. `-vserver-dr-protection off`

d. `-vserver-dr-protection unprotected`

Knowledge check

Which option do you use with the volume modify command to exclude SVM volumes from replication?

a. `-vserver-dr-protection disabled`

b. `-vserver-dr-protection false`

c. `-vserver-dr-protection off`

d. `-vserver-dr-protection unprotected`

Knowledge check

You want to replicate an entire SVM configuration. The source and destination SVMs are on different subnets. Which set of options do you use when configuring the SnapMirror relationship?

a. `-identity-preserve true` and `-discard-configs network`

b. `-identity-preserve false` and `-discard-configs network`

c. `-identity-preserve true` and `-discard-configs true`

d. `-identity-preserve false` and `-discard-configs true`

Knowledge check

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