

**SVMTOOL PowerShell CLI**

Toolbox for Storage Virtual Machine

Clustered DataONTAP

August, 2018

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Welcome

About this Document

This document contains your Infrastructure Operation Manuals for your Clustered Data ONTAP to implement SVM Disaster Recovery with the svmtool PowerShell Script.

It also describe Migration process and Backup/Restore process

Thank you for choosing the NetApp storage system and Advanced Consulting Services installation.

# Introduction SVM DR

## Introduction

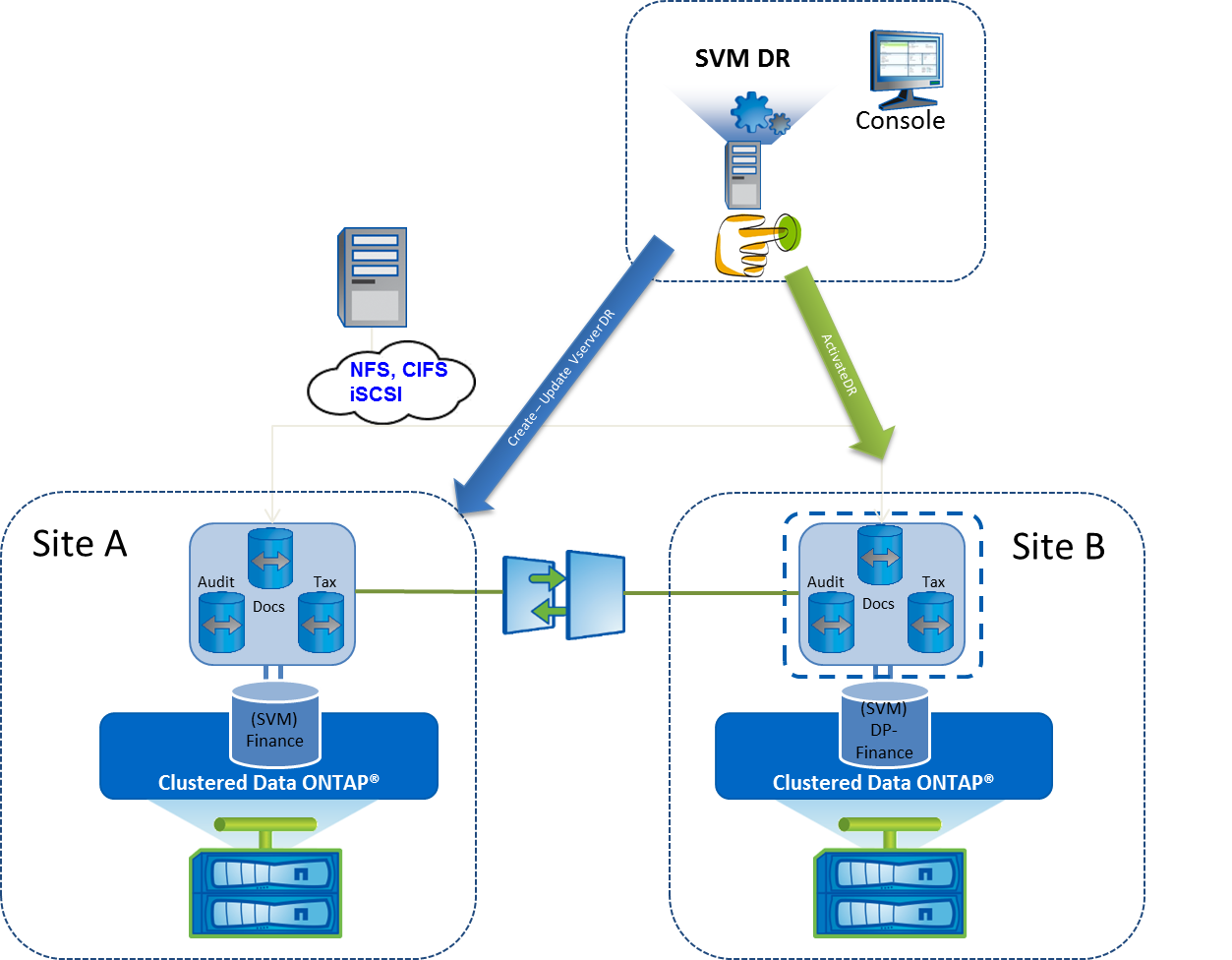
As Storage Virtual Machine – Disaster Recovery (SVM – DR) feature for Metrocluster (source or destination or both) is planned for future releases of ONTAP the svmtool PowerShell script has been developed by NetApp Professional Services (PS) to provide DR solution at SVM level. The script allows to create a complete disaster recovery plan for a Data ONTAP Storage Virtual Machine.

With SVM DR you can safeguard information by creating Storage Virtual Machine units on the Disaster destination storage system, which remain inactive unless a disaster occurs. With SVM DR you can perform checks to ensure that the storage system and network are ready for disaster recovery. You must ensure that the destination storage system can support the disaster recovery SVM DR.

The script is compatible with MetroCluster on source, destination or both

The script can also work inside the same Cluster to create DR SVM between nodes

Figure 1) SVMTOOL DR Script view.



The svmtool Powershell script must be installed on a window Server. It is recommended to install the script on a windows server on the same location has the destination Site (Site B) in the diagram.

## Prerequisites

You must check the following restrictions before to use the script: This script is supported for DataONTAP 8.3 and later Download the Beta Release here build for Microsoft .Net FrameWork 3.5 on Microsoft Windows 2008 R2 or later.

The PowerShell Version is 3.0 or later need to be available and the PowerShell NetApp ToolKit v4.5.1 (NaToolkit versoin 4.3.0.0) is needed or later

(Download PSTK here https://mysupport.netapp.com/tools/info/ECMLP2310788I.html?productID=61926)

## Checking and preparing the storage system

To allow the svmtool script to access to the storage system HTTPS or HTTP and SSH must be open between the Windows host running the svmtool script and each storage system involve in the SVM DR replications.

You must ensure that the destination storage system can support the disaster recovery SVM DR. Verify that the destination storage system has enough storage space to hold the source SVM DR volumes. On the source storage system, enter the volume show command to see the volumes that the SVM is using. Enter the **aggr show** command on the destination storage system to check available space on each aggregate.

A cluster peer relation must have been established between each Clustered Data ONTAP involved in the SVM DR replications. Enter the **cluster peer show** command on any cluster to check the cluster peer configuration.

The credential used to log into both controllers must have admin role.

## Supported Feature and Restrictions

The script supports the following protocols NFS, CIFS and iSCSI. However, the current script release doesn’t support quota replication and FC protocol. The script features are listed in the next table.

|  |  |
| --- | --- |
| **Supported Protocols** | **SVM DR** |
| Support NFS Protocol | ✓ |
| Support CIFS Protocol | ✓ |
| Support iSCSI Protocol | ✓ |
| Support FCP Protocol | 🗶 |

|  |  |
| --- | --- |
| **Supported Network Services Cluster Replication** | **SVM DR** |
| DNS Client Setup Replication | ✓ |
| NIS Client Setup Replication | ✓ |
| LDAP Client Setup Replication | ✓ |

|  |  |
| --- | --- |
| **Supported NAS Cluster Object Replication** | **SVM DR** |
| Export policy rules replication | ✓ |
| CIFS shares replication | ✓ |
| CIFS ACL replication | ✓ |
| CIFS HomeDir Replication | ✓ |
| CIFS NetBios Alias Replication | ✓ |
| Quota Replication\* | ✓ |
| Snapshot Policy Replication\* | ✓ |
| Storage Efficiency Policy Replication\* | ✓ |
| QOS Policy Group Replication | ✓ |
| Antivirus Vscan Configuration Replication | ✓ |
| FPolicy Configuration Replication | ✓ |
| CIFS Local User and Local Group | ✓ |
| CIFS Symlink Replication | 🗶 |
| Name Mapping Replication | ✓ |
| Local Unix User and Group Replication | ✓ |
| Vserver Role and Vserver User Replication | ✓ |

1. (\*) Require a Local SVMDB flat files database to replicate Quota and Snapshot-Policy.

|  |  |
| --- | --- |
| **Supported SAN Cluster Object Replication** | **SVM DR** |
| SAN igroup replication\* | ✓ |
| SAN LUN replication\* | ✓ |
| SAN LUN serial number replication\* | ✓ |
| SAN LUN mapped replication\* | ✓ |

1. (\*) only for iSCSI protocol is supported by SVMTOOL.

|  |  |
| --- | --- |
| **Supported Other Cluster Object Replication** | **SVM DR** |
| Support Job Cron Schedule replication | ✓ |
| Support Management LIF replication (DataONTAP 8.3) | ✓ |

|  |  |
| --- | --- |
| **Supported Options** | **SVM DR** |
| Create a new SVMTOOL | ✓ |
| Update an existing SVMTOOL | ✓ |
| Activate an existing SVMTOOL | ✓ |
| Remediation with Resync or Resync Reverse of SVMTOOL | ✓ |
| Provisioning New Volumes during Update | ✓ |
| Can be used with SnapManager snapshots (option LastSnapshot) | ✓ |
| Can be used to manage Failover | ✓ |
| Can be used to test Failover | ✓ |
| Can be used in a double DR site scenario | ✓ |
| Can be used with Metrocluster as source, destination or both | ✓ |
| Two differents DR destination | ✓ |
| DR inside the same cluster, between HA pair in different rooms | ✓ |
| Use Version Flexible SnapMirror replication when necessary (by example: build a DR from 9.X to 8.3.2). Use VFR with ONTAP 9.X on source and destination | ✓ |
| Migrate an SVM with preserve identity  (For CIFS, IP and Server Name will be the same, so users will only have to reconnect just by refreshing explorer or double-click on folder)  (For NFS, MSID are preserved, the failover will be transparent)  **MSID cannot be preserved if destination Cluster is a Metrocluster** | ✓ |
| Select subset of sources volumes that will be replicated | ✓ |

# Cluster Data ONTAP svmtool User Guide

## Install svmtool PowerShell Script

### Check Prerequisites

Verify the PowerShell Version is 2.0 or later

PS C:\> $PSVersionTable.PSVersion

Major Minor Build Revision

----- ----- ----- --------

2 0 -1 -1

Verify if the NetApp PowerShell Took Kit has been installed on your computer

PS C:\> Get-Module -ListAvailable

ModuleType Name ExportedCommands

---------- ---- ----------------

Manifest DataONTAP {}

Major Minor Build Revision Verify if the PowerShell NetApp ToolKit is in version 3.2.1.68 or Later

PS C:\> Get-NaToolkitVersion

----- ----- ----- --------

3 2 1 68

Check the PowerShell Execution Policy and verify if it is set to **Unrestricted**.

PS C:\> Get-ExecutionPolicy

UnRestricted

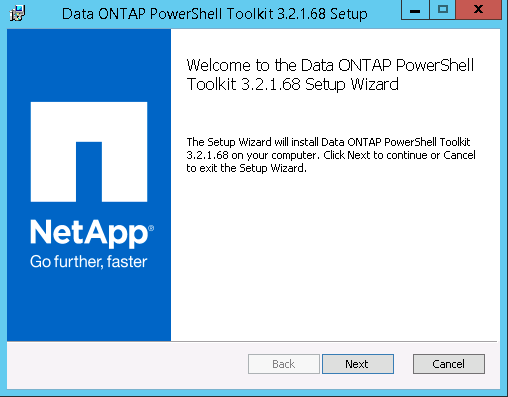
If it is not the case then use the PowerShell cmdlet **Set-ExectionPolicy** to modify the Execution Policy.

PS C:\> Set-ExecutionPolicy UnRestricted

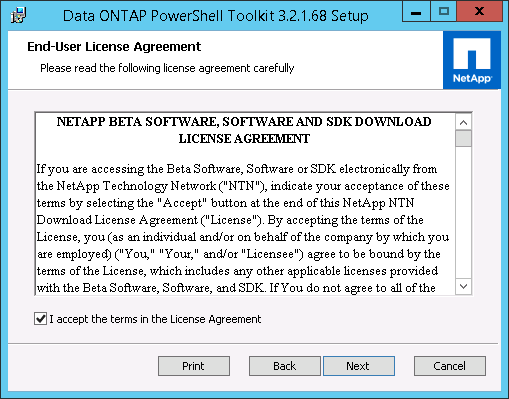
### Install NetApp PowerShell Toolkit

To Install the Data ONTAP PowerShell Toolkit, complete the following steps:

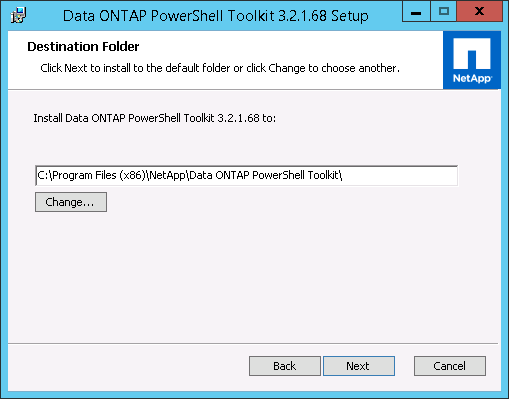
1. Download the toolkit installer from the [NetApp Communities](https://communities.netapp.com/community/products_and_solutions/microsoft/powershell) site.
2. To access the download link, login is required. With a valid NetApp Support site login, you automatically have access to the NetApp Communities website. If you do not have a NetApp Communities account, you must create one on the [NetApp Support site](file:///C:\Users\masson\Documents\Client\NATIXIS\NAS%20Inter\SVMDR-v096\support.netapp.com).
3. Run the Data ONTAP Windows installation package.
4. On the Welcome page of the setup wizard, click next.



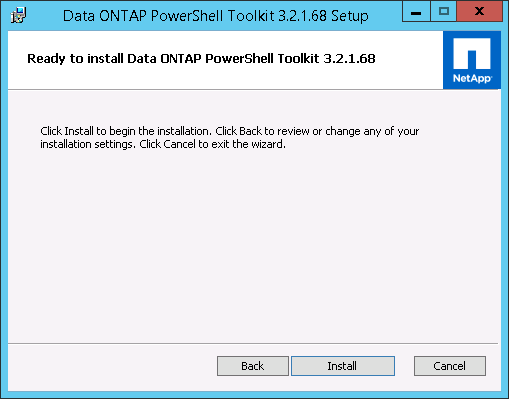
1. Accept the ELUA and click Next.



1. Verify the installation path and click Next.



1. Click Install.



1. Click Finish.

### Install the script

Copy the script file anywhere on your favorite directory before you run the script, review the code to be sure that you trust it. Scripts have the same effect as any executable program. To run an unsigned script:

1. Save the script file on your computer in the directory **C:\Script\VserverDR**
2. Click Start, click My Computer, and locate the saved script file.
3. Right-click the script and then click Properties.
4. Click Unblock.

### Display the script version

To display the current script version, use the following options

PS C:\Script\VserverDR> svmtool.ps1 -version

0.9.12

### Display the script manual

To display the script manual user the following options

PS C:\Script\VserverDR> svmtool.ps1 –help [-examples|-full|-detailed]

NAME

svmtool

SYNOPSIS

The svmtool script allow to manage cDOT SVM DR until Data ONTAP 8.3

CONFIGURATION

The default svmtool configuration file is [C:\Scripts\SVMTOOL\etc\default\svmtool.conf]

SYNTAX

svmtool <-options> [-help] [-debug <level>]

options:

-Instance <name> -Setup

Create a new configuration instance. The script support more than one configuration.

name is the name of the configuration instance. The script support more than one configuration

you can list all your configurations instance with -ListInstance and use -RemoveInstance

to remove instance configuration

-ListInstance [-ResetPassword]

Will display all available instance.

optional argument -ResetPassword allow you to reset the login and password for all associated controller.

-ConfigureDR -Instance <name> -Vserver <name> [-DRfromDR]

Create a vserver DR with same setting as the orignial vserver on PRIMARY\_CLUSTER the name of the vserver DR

is enter during the first configuration.

Option -DRfromDR must be used to configure a new instance with a SVM DR activated as source.

-CorrectQuotaError

Allow to Correct Source Quota Error before to save replicate the Quota rules configuration in SVMTOOL\_DB

-ShowDR -Vserver <name> -Instance <name> [-Lag] [-Schedule]

Show vserver DR status. You can use -Lag options to display snapmirror lags and -Schedule to see each

snapmirror schedule of each relation

-UpdateDR -Instance <name> -Vserver <name>

Update all SnapMirror relations and SVM configuration objects from the primary vserver to the secondary vserver

You can use the -LastSnapshot switch to update snapmirror releations with the last snapshot

-DeleteDR -Instance <name> -Vserver <name>

Delete the vserver DR on the SECONDARY\_CLUSTER

-ActivateDR -Instance <name> -Vserver <name> [-ForceActivate]

Activate the vserver DR on the SECONDARY\_CLUSTER

option -ForceActivate must be used in case of real disaster on Source site, to force activation of DR

-Resync -Instance <name> -Vserver <name>

Resync all SnapMirror relations of the vserver from PRIMARY\_CLUSTER to SECONDARY\_CLUSTER

-ResyncReverse

Resync all SnapMirror relations of the vserver from SECONDARY\_CLUSTER to PRIMARY\_CLUSTER

-UpdateReverse

Update all SnapMirror relations and SVM configuration objects from the secondary vserver to the primary vserver

You can use the -LastSnapshot switch to update snapmirror releations with the last snapshot

-ReActivate

ReActivate the source Vserver. This must be done after a Resync or ResyncReverse

Update all SnapMirror relations and SVM configuration objects from the secondary vserver to the primary vserver

You can use the -LastSnapshot switch to update snapmirror releations with the last snapshot

-CleanReverse -Instance <name> -Vserver <name>

Remove all broken Reverse SnapMirror relations

-MirrorSchedule <Schedule\_name> -Instance <name> -Vserver <name>

This option allow to specifed snapmirror schedule for all snapmirror relations. Schedule value can be hourly,

daily, weekly or all other cluster cron value

-MirrorScheduleReverse <Schedule\_name> -Instance <name> -Vserver <name>

This option allow to specifed snapmirror schedule for all snapmirror relations in reverse mode. Schedule value can be hourly,

daily, weekly or all other cluster cron value

-RootAggr <name>

This option allow to specifed the default root aggregate for the vserver DR. If not specified svmtool

will ask for it

-DataAggr <name>

This option allow to specifed the default data aggregate for the vserver DR. If not specified svmtool

will ask for it

-ResetPassword -Instance <name>

This option allow the svmtool command to ask for new cDOT credentials

-HTTP

Use HTTP instead of HTTPS to establish a connection to clustered Data ONTAP storage controller

-Timeout

Change de default Connect Timeout in seconds

### Setup the script.

The script can manage different configurations instance files. For example if you have 2 datacenters with ClusterA in Datacenter A and ClusterB Datacenter B, the ClusterB in DataCenter B may be the DR of ClusterA from DataCenter A and Vice Vera. In this situation you will require to create two separate instances for each cluster relations

* first configuration instance for ClusterA in Datacenter A
* and another instance for the clusterB Datacenter B.

**Create a new configuration instance file:**

C:\> svmtool.ps1 -Instance ClusterA -Setup

Please Enter your default Primary Cluster Name: []: ClusterA

Please Enter you default Secondary Cluster Name: []: ClusterB

Please enter your local SVMTOOL DB directory: [C:\SVMTOOLDB]:

Default Primary Cluster Name: [ClusterA]

Default Secondary Cluster Name: [ClusterB]

SVMTOOL Configuration DB directory: [E:\SVMTOOLDB]

Apply new configuration [y/n/q]: y

In this example we create a configuration instance file for the **clusterA** with a secondary Cluster call **ClusterB**. The SVMTOOL Configuration DB directory is use to backup all Quota and Volume options that cannot not be replicated on the destination SVM DR until all SnapMirror relations are broken. This SVMTOOL Configuration DB is then used by the options **ActivateDR** and **ReActivateDR** to apply Quota and Volume options on all destination volume after the break. We can have one DB for each instance. The Best Practices is to have on DB for each instance on each destination Site.

**Display configuration instance files:**

C:\> svmtool.ps1 –ListInstance

CONFBASEDIR [C:\Scripts\SVMTOOL\etc\]

Instance [ClusterA]: CLUSTER PRIMARY [ClusterA]

Instance [ClusterA]: CLUSTER SECONDARY [ClusterB]

Instance [default]: SVMTOOL LOCAL DB [E:\SVMTOOLDB]

Instance [ClusterB]: CLUSTER PRIMARY [ClusterB]

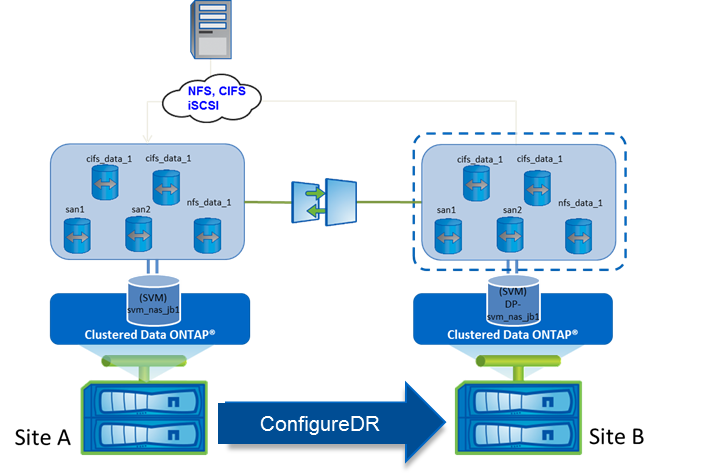
Instance [ClusterB]: CLUSTER SECONDARY [ClusterB]

Instance [default]: SVMTOOL LOCAL DB [F:\SVMTOOLDB]

## Create a new Disaster Recovery Storage Virtual Machine

The SVMTOOL allows to automatically setup up a DR relationship between a Source SVM on a given site to a Destination SVM residing on a remote site. Upon a disaster, the Destination SVM should be brought online manually or by executing the same script with different option. The option **ConfigureDR** is the option used to create the Destination SVM DR.

Figure 2) Create a new SVM DR.



With **ConfigureDR** option the script will automatically:

Get the primary SVM configuration (Site A)

Create the same SVM DR (Site B)

Create destination volumes (Site B)

Create SnapMirror Relations to destination and the required Vserver Peer relation

Create destination LIFs (Site B) with same or different IP Addresses

Modify Junction Path each volume (Site B)

Create services NFS, CIFS, iSCSI (Site B)

Create Export Policy (Site B)

Create Shares and ACL (Site B)

Create SAN igroups (Site B)

Map all LUN (Site B)

Change LUN Serial Numbers (Site B)

Update volume MSID if needed on Site B

With the option **AlwaysChooseDataAggr**, the script will ask you for each volume to choose an aggregate on destination where to create its replicate.

With the option **SelectVolume**, the script allows to select only part of source volumes that will be replicated on destination SVM.

**Create a new Disaster Recovery Storage Virtual Machine**:

PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 -ConfigureDR

Please Enter a Valid Vserver DR name for SVM\_NAS1 []::svm\_nas1\_dr

Do you whant to Bakcup Quota for svm\_nas\_jb [svm\_nas1\_DR]: [y/n]: y

Vserver DR Name : [svm\_nas1\_dr]

QuotaDR : [true]

Apply new configuration [y/n/q]: y

This option will create a new SVM DR call svm\_nas1\_dr on the secondary site. You can choose to replicate quota information using SVMTOOL Configuration DB.

You can run ConfigureDR several times without any risk.

Each time, it will update necessary information based on differences between source and destination (like an **UdapteDR**)

The main difference of the **ConfigureDR** step is that this step is an interactive step (whereas **UpdateDR** which is a non-interactive step which can be automated/scripted)

Running **ConfigureDR** allow you to update User password, Vscan and Fpolicy server.

But also update volume MSID if needed.

If both source and destination run ONTAP 9.X, you are also able with **ConfiguredDR** plus **XDPPolicy** argument to change the policy used for any Version Flexible relationship. By default, it uses **MirrorAllSnapshots** policy, but you can use your own pre-existing policy available.

Now during **ConfigureDR** and **UpdateDR**, CIFS shares access-control are created and updated. Previously, we need to wait to run **ActivateDR** to apply all access-control on all CIFS shares. Now this step is automatically done during **ConfigureDR** and **UpdateDR**.

**Display the new Disaster Recovery Storage virtual Machine:**

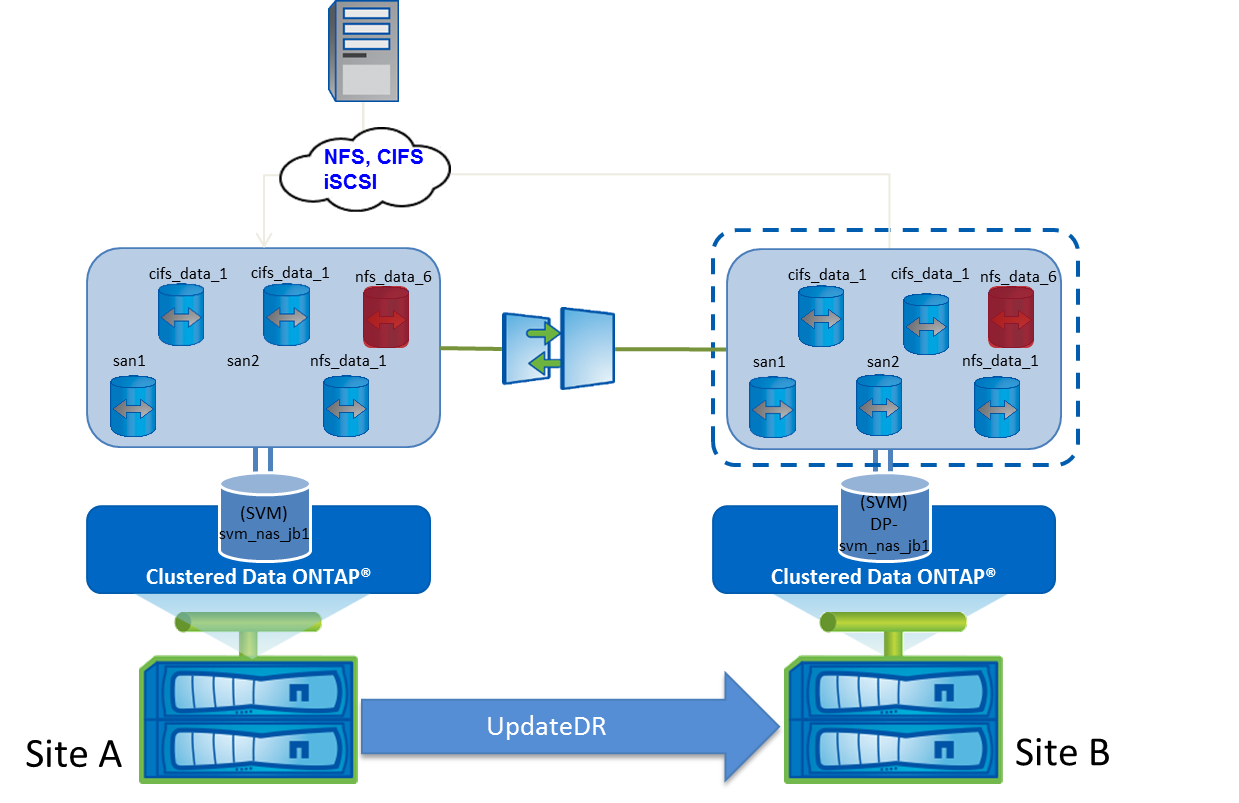
PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –ShowDR

## Update a Disaster Recovery Storage Virtual Machine

This option will update the volumes into sync between source and destination SVM. Suppose after executing **ConfigureDR** options to Create and Initialize Destination SVM DR Relationship and before executing ActivatedDR to ‘**Failover to Destination DR SVM**’ if user created volumes in source then that volumes should be copied to destination before activation of destination SVM. Also corresponding configurations (export policies, rules etc) should be copied to destination. In this case user can execute this workflow.

Use **UpdateDR** option to update the destination SVM DR. With this option the script will execute a SnapMirror update, which put the volumes into sync between source and destination SVM. Also corresponding configurations (export policies, rules etc) should be copied to destination.

Figure 3) Update SVMS DR Script.



With **UpdateDR** option the script will automatically create all missing destination volumes (Site B) if **DataAggr** option is specified, create all missing SnapMirror relations, update Junction Path (Site B), Update services (NFS, CIFS, iSCSI) (Site B), update export policy (Site B), Update CIFS Shares and ACL (Site B), Update SAN igroups (Site B), Update LUN Mapping (Site B), Update LUN Serial Numbers (Site B), Update all Snapmirror Relations (Site B).

**Update Disaster Recovery Storage Virtual Machine**:

PS C:\> svmtool.ps1 -Instance ClusterA -vserver svm\_nas1 –UpdateDR –DataAggr aggr01\_sas\_01

**Schedule UpdateDR**:

The **UpdateDR** option must be run frequently depending of your SLA using your internal Windows scheduler or other network scheduling tools like VTOM or Ctrl-M. The **UpdateDR** option can be easily integrated in to any scheduler because it supports return code to handle errors with True or False status that can be handle by the reported by the scheduler.

The option **DataAggr** can be added to allow SVMTOOL to automatically create any missing volumes on SVM DR in the aggregate specified with the **DataAggr**. With the option **LastSnapshot** the script can be used to run the SnapMirror update from the last available snapshot instead of creating a new (Easy to integrate with any SnapManagers or other consistency snapshot tools).

Examples create a simple batch script to integrate svmtool in a scheduler.

@echo off

set /a EXIT=0

echo "Execution started"

echo "RUN SVMTOOL UPATE"

powershell -NonInteractive -NoProfile -InputFormat none -Command "C:\Scripts\VserverDR\svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –UpdateDR ; exit $LastExitCode"

set /a EXIT=%ERRORLEVEL%

echo Command complete.

goto end

:end

exit /b %EXIT%

If it is not possibility to schedule **UpdateDR** option from a scheduler (Windows or other) then it recommended doing a setup of each SnapMirror relations scheduler depending of your SLA. To setup the SnapMirror relations scheduler for each SnapMirror relations you can use the **MirrorSchedule** option.

Example to schedule an hourly SnapMirror update of each SVMTOOL relations of svm\_nas1 runs:

PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –MirrorSchedule hourly

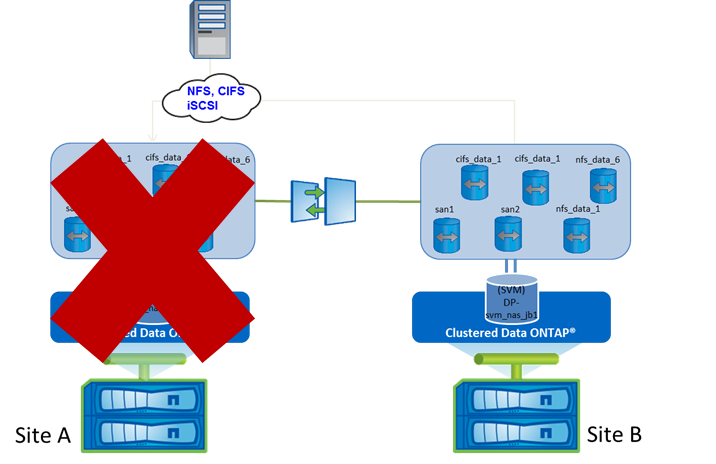
Whoever if you cannot schedule **UpdateDR** frequently it is recommended to run the **UpdateDR** manually as often as possible to check any miss configuration synchronization between SVMs.

## Activate a Disaster Recovery Storage Virtual Machine

On the event of a disaster when the source cluster (Site A) becomes unavailable, you must activate the destination cluster to serve data to the clients. Use the option **ActivateDR** during a disaster to easily activate your SVM DR on remote site (Site B) with all required cluster objects.

The following illustration depicts the SVM DR setup when the disaster occurs, and the destination cluster is activated.

Figure 4) Activate SVMS DR Script.



With **ActivateDR** option the script will automatically break all SnapMirror relations on Site B then start all LIFs (Site B) and all required network storage services (NFS, CIFS, iSCSI) on Site B. This option will activate the secondary SVM upon disaster / failure happens to the primary cluster. In this phase, the SVM DR relationship is in Broken-off state

The **ActivateDR** option supports return code for errors with a true or false status and error messages are display on the console and log file. The **ActivateDR** option must be run for each SVM DR that need to be restart on Site B.

**Activate a Disaster Recovery Storage Virtual Machine:**

PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –ActivateDR

These options will activate the SVM DR svm\_nas1\_dr on the secondary site B.

After executing the activate DR option the production can be restarted from the Site B.

## Reactivate the original Storage Virtual Machine after a Disaster Recovery.

This step is the most critical part because you must resynchronize data in the right direction after the Disaster. When the source Cluster becomes available on Site A the cluster administrator of the source cluster must resynchronize the data from the destination and reactivate the source. After reactivating the source, the cluster administrator can protect the new source SVM for disaster recovery. The following illustration depicts the configuration and data flow during the reactivation phase of the source SVM.

When the source cluster and SVM is completely destroyed, the cluster administrator of the source cluster has to recreates the cluster and source SVM using **ConfigureDR** using a temporary new instance.

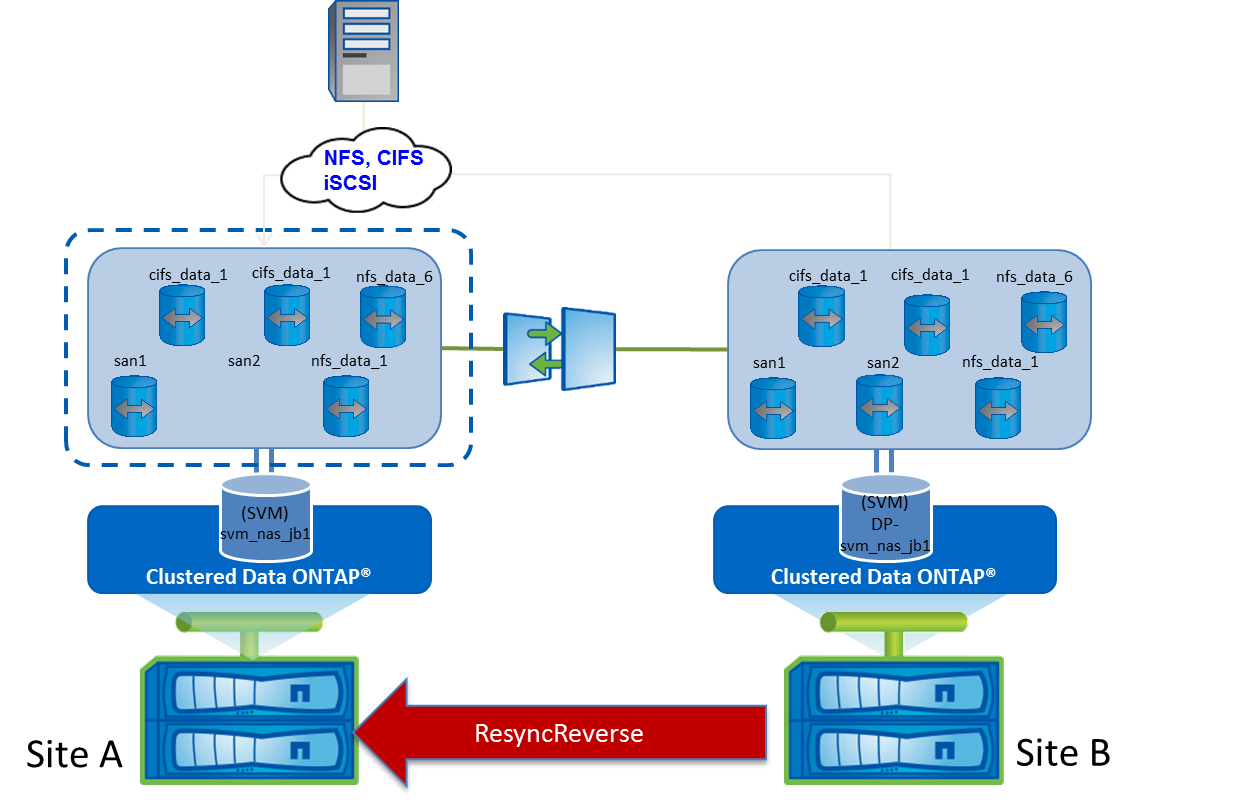
If the source cluster is not completely destroyed but is unavailable you can reactivate the existing source SVM, resynchronize the data from the destination SVM DR, and start serving data from the source cluster. The script will resynchronize the information from the destination SVM DR and activates the source SVM (flow diagram needed) when using the following steps:

* Run **ResyncReverse** to resynchronize from the destination SVM DR to the source SVM. This task can be executed even if the production is still running on the destination SVM DR.
* Run **UpdateReverse** to update the data and cluster objects from destination SVM DR to the source SVM. This task can be run even if the production is still running on the destination SVM DR.
* Stop the Production on the destination SVM DR.
* Run a last **UpdateReverse** to update last data from the destination SVM DR to the source SVM.
* Run **Activate** to restart the source SVM
* Restart the Production on the Source SVM

### Run ResyncReverse

Use **ResyncReverse** after a disaster to resynchronize your data from the SVM DR (Site B) to the original SVM (Site A).

Figure 5) ResyncReverse svmtool script.



With **ResyncReverse** option the script will automatically: Resync all snapmirror relation from the DR to the primary no mistake possible. The script will always ask a confirmation before erase data.

**Warning**: This option must only be used after a real disaster. If the vserver DR has been activate for a test only then use the resync option instead to resynchronize all snapmirror in the opposite direction. See Chapter 2.6 Test a SVM DR Disaster PLAN for more details.

**Resynchronize the original Storage Virtual Machine after a Disaster Recovery:**

PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –ResyncReverse

Do you want to erase data on vserver [svm\_nas1][ClusterA][y/n]: y

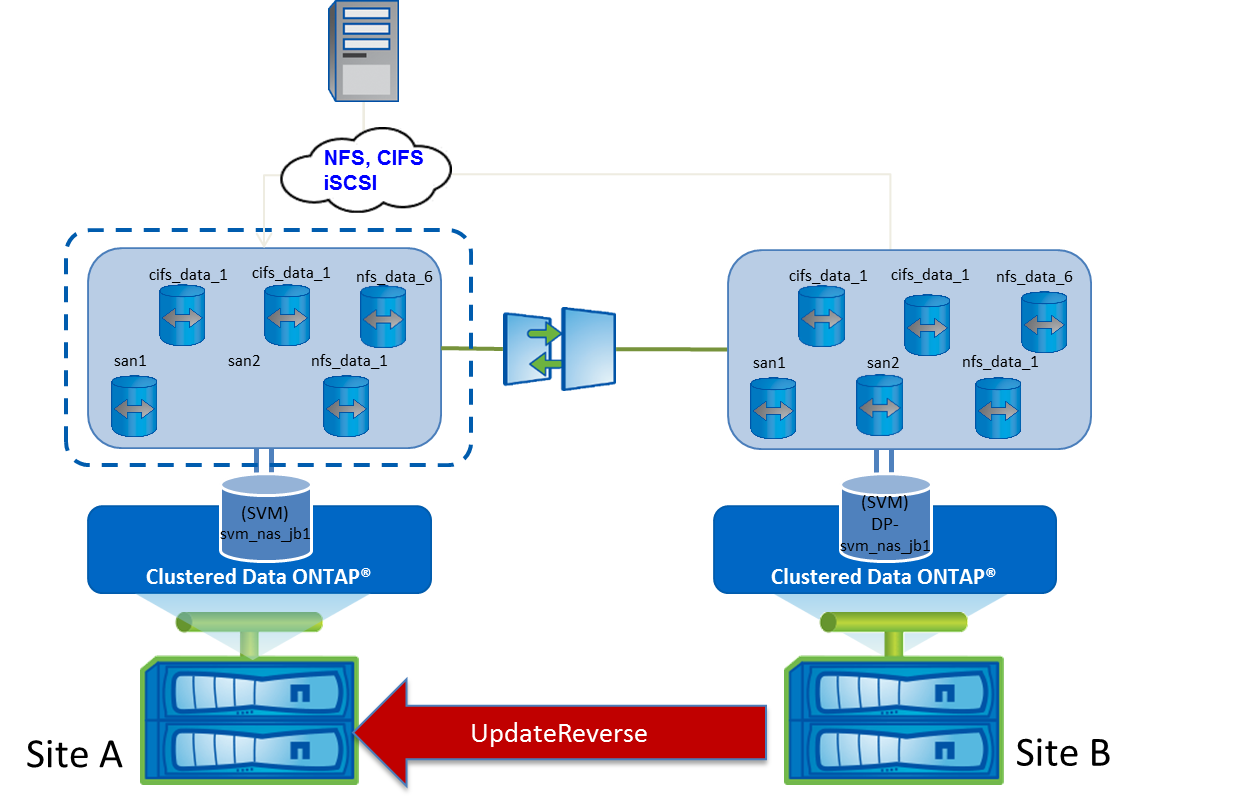
The script asks for confirmation before to erase data.

These options resync data from svm\_nas1 to the original primary vserver svm\_nas1.

### Run UpdateReverse

Use **UpdateReverse** after a disaster to update your original SVM on Site A from you SVM DR on Site B.

Figure 6) UpdateReverse svmtool script.



With **UpdateReverse** option the script will automatically create all missing primary volumes (Site A), create all missing Snapmirror Relations, Update primary Junction Path, Update services (NFS, CIFS, iSCSI) (Site A), Update Export Policy (Site A), Update CIFS Shares and ACL (Site A), Update SAN igroups (Site A), Update LUN Mapping (Site A), Update LUN Serial Numbers (Site A) Update all reverse Snapmirror Relations.

**Warning**: This option must only be used after a **ResyncReverse** only. If it is not the case the script will fail

**Update the original Storage Virtual Machine after a Disaster Recovery:**

PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –UpdateReverse

These options resync data from **svm\_nas1** to the original primary vserver **svm\_nas1**.

### Stop to production

Before reactivating the original primary SVM (Site A) you must stop all data access to the secondary SVMTOOL (Site B).

Use your internal procedure to stop all access.

**Run last UpdateReverse to copy last write and cluster metadata:**

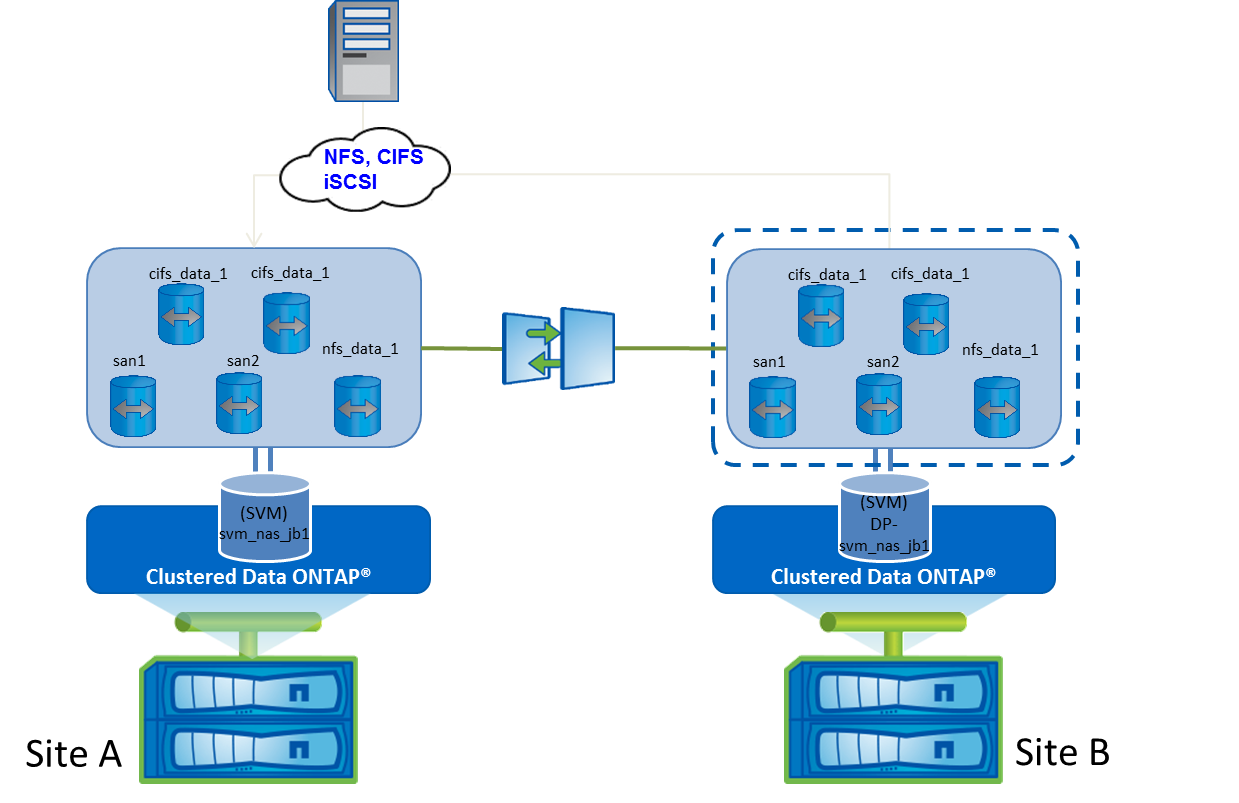
PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –UpdateReverse

These options resync data from **svm\_nas1** to the original primary vserver **svm\_nas1**.

### Run Reactivate

Use **Reactivate** after a disaster to reactivate the original SVM on Site A. This option must be used only after a **ResyncReverse**. If it is not the case the script will fail.

Figure 7) UpdateReverse svmtool script.



**Reactivate the original Storage Virtual Machine after a Disaster Recovery:**

PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –ReActivate

These options will reactivate the SVM DR svm\_nas1 on the primary site.

After executing the reactivate DR option the production is ready to be restarted from the primary Site A.

### ReStart the production on primary

The production can now be restarted on the original Storage Virtual Machine.

## Test a SVM DR Disaster PLAN

When implemented a Disaster Recovery Plan it is important to have the possibility to test the activation of your Disaster Recover Site without modify the source data.

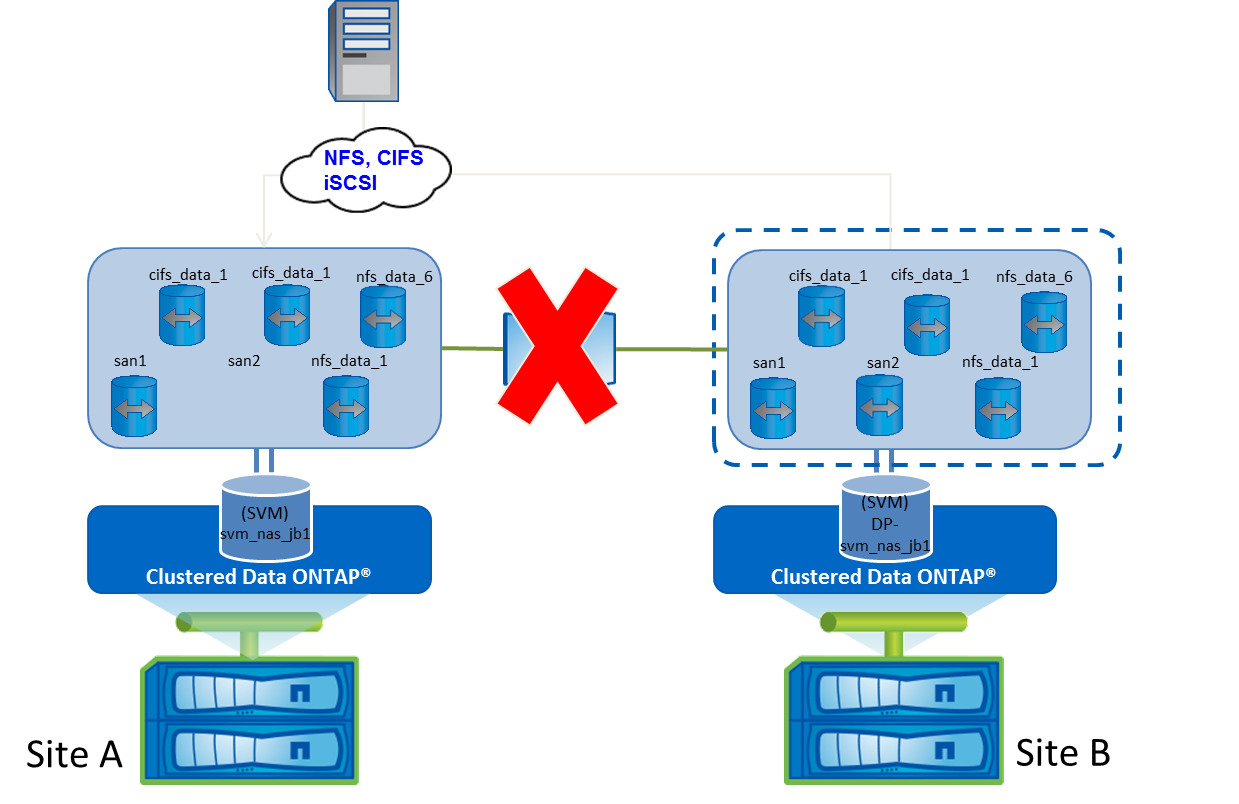
This scenario has been covered by the svmtool script the test which offer the possibility to resync the data from the source. To run a SVM DR Disaster test plan scenario you must follow the following steps

* Stop the production on the source SVM (option)
* Run **ActivateDR** (you can choose interactively the options stop or not the source SVM)
* Run **Resync** to resynchronize data after the test.
* Run **Reactivate** to active the source SVM

### Run ActivateDR to test a SVM Disaster

With **ActivateDR** option the script will automatically break all SnapMirror relations on Site B then start all LIFs (Site B) and all required network storage services (NFS, CIFS, iSCSI) on Site B. This option will activate the secondary SVM upon disaster / failure happens to the primary cluster. In this phase, the SVM DR relationship is in Broken-off state. If the primary SVM is still running on the source, the script will ask for a confirmation to stop source SVM (option).

Figure 8) SVM DR activate for a test.



**To test the Activate a Disaster Recovery Storage Virtual Machine:**

PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –ActivateDR

Do you want to disable the primary vserver [svm\_nas1][ClusterA] [y/n] ?: n

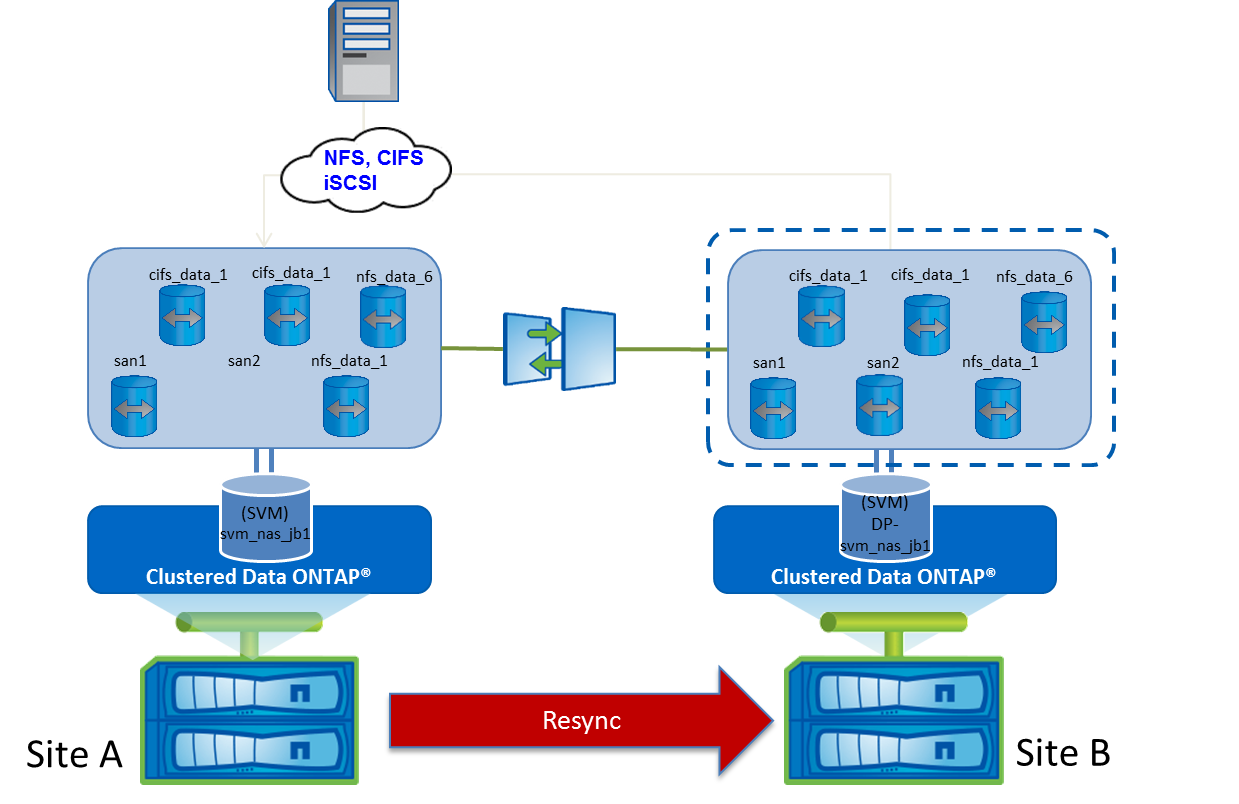
Do You really want to activate SVM\_DR [svm\_nas1\_DR] from secondary cluster [ClusterB] [y/n] ?: y

1. In this example the SVM DR is started without stopping the source SVM.

### Run Resync after a SVM Disaster Test

Use **Resync** after a disaster recover test plan to resynchronize your data from the source SVM (Site A) to the destination SVM (Site B). In this scenario

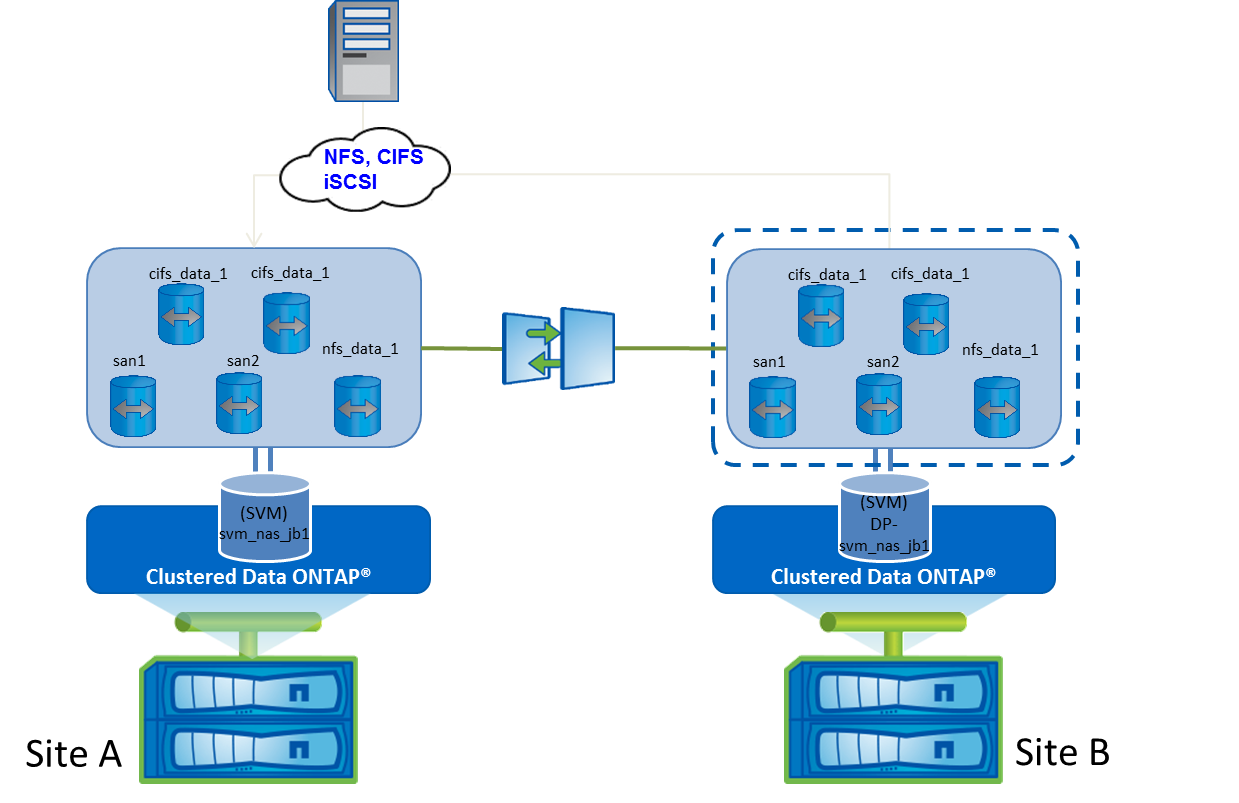
Figure 9) Resync svmtool script.



### Run Reactivate after a SVM Disaster test

Use **Reactivate** after a disaster to reactivate the original SVM on Site A. This option must be used only after a **Resync** or **ResyncReverse**. If it is not the case the script will fail.

Figure 10) Reactivate svmtool script.



**Reactivate the original Storage Virtual Machine after a Disaster Recovery:**

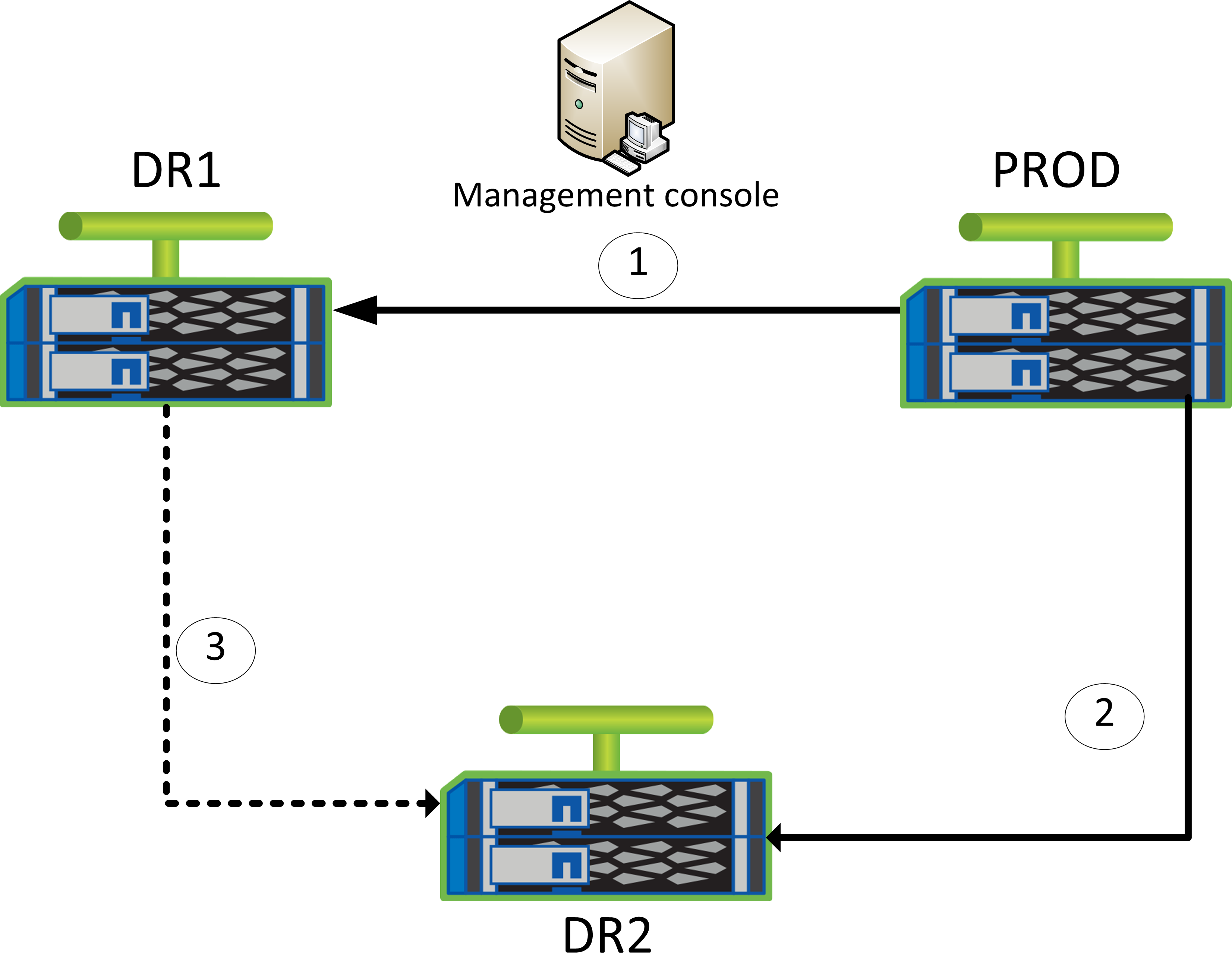
PS C:\> svmtool.ps1 -Instance ClusterA -Vserver svm\_nas1 –ReActivate

These options will reactivate the SVM DR svm\_nas1 on the primary site.

After executing the reactivate DR option the production is ready to be restarted from the primary Site A.

## Double DR sites Scenario

SVMTOOL can be used for this kind of DR scenario with two different DR sites to keep at least one DR copy:



In that kind of scenario, we have the following SVMTOOL instances:

* **Prod to DR1** (default instance)
* **Prod to DR2** (default instance)
* **DR1 to DR2**: this instance is only create/active in case of disaster or maintenance on Prod. The objective of this SVMTOOL Instance is to keep at least one DR copy on external site for all kind of event on Production site.

For this scenario, creation process of the **DR1 to DR2** Instance and recreation/resync of other Instances after Prod is repair include new option to identify a “DR from DR” Instance and allow a creation without new baseline copy, but based on available common snapshots between **DR1** and **DR2**.

### Create Instance DR1 to DR2

This instance must be created only after an **ActivateDR** on the **PROD to DR1** Instance, with the following options:

**–ConfigureDR –Instance <instance name> –Vserver <vserver name> -DRfromDR**

Once created all other operations available through SVMTOOL are applicable to this new Instance without any restriction.

### Reactivate Instance PROD to DR1

Once Prod is ready and after **ResyncReverse** and **UpdateReverse,** Prod can be reactivate using the following options:

**–ReActivate –Instance <Instance name> -Vserver <Vserver name> [–ForceRecreate]**

The **–ForceRecreate** optional parameter will only be used in the case Prod was destroy and recreated/restored

Once reactivated the **Prod to DR1** Instance is totally available to all SVMTOOL operations.

### Recreate Instance PROD to DR2

After Prod repaired and reactivated using **ReActivate** on the PROD to DR1 Instance, the PROD to DR2 Instance must be recreated with the following options:

**–Resync –Instance <instance name> -Vserver <vserver name> -ForceRecreate -DRfromDR**

Once reactivated the **Prod to DR2** Instance is totally available to all SVMTOOL operations.

## Rename a source volume under control of the script

Once a volume is under the control of the script, it can by rename directly

Follow this procedure to rename a volume which controlled by the script:

1. **Release this volume from the script**

Run a **ConfigureDR** with option **SelectVolume**

Answer **No** when the script prompt you to choose if this volume need to be replicated

Example of renaming volume CIFS**:**

PS C:\Users\masson\Documents\GitHub\SVMTOOL> .\svmtool.ps1 -Instance COT2-COT3 -vserver PSLAB\_DR -ConfigureDR -SelectVolume

Vserver PSLAB3 already exist on 10.65.176.31

Export Policy [CIFS\_POLICY] already exist

Export Policy [default] already exist

Export Policy [transition\_export\_policy\_1] already exist

Export Policy [transition\_readonly] already exist

Sis Policy [default] already exist and identical

Sis Policy [inline-only] already exist and identical

Sis Policy [testom] already exist and identical

Network Interface [lif\_PSLAB\_N1] already exist

Check Local Unix User

Modify Local Unix User [demofr] [3001] [3000] [] on [PSLAB3]

Modify Local Unix User [ftp] [65533] [65533] [FTP Anonymous - Transitioned from 10.65.176.29] on [PSLAB3]

Modify Local Unix User [nobody] [65535] [65535] [] on [PSLAB3]

Modify Local Unix User [pcuser] [65534] [65534] [] on [PSLAB3]

Modify Local Unix User [root] [0] [1] [] on [PSLAB3]

Modify Local Unix User [tcornolo] [1000] [1000] [Thierry CORNOLO - Transitioned from 10.65.176.29] on [PSLAB3]

Modify Local Unix User [testomu] [2001] [2000] [test om] on [PSLAB3]

Modify Local Unix User [testomu2] [2002] [100] [test om 2] on [PSLAB3]

Check Local Unix Group

Check User Mapping

No NIS service found on Vserver [PSLAB\_DR]

Set NFS Services Attributes on [PSLAB3]

WARNING: IsNfsv41PnfsStripedVolumesEnabled parameter is not available on Data ONTAP 8.3 and later.

No ISCSI services in vserver [PSLAB\_DR]

No igroup found on cluster [10.65.176.30]

Does volume [CIFS 1024 GB /CIFS] need to be replicated on destination ? [y/n]: n

Then answer **No** to next questions asking you if you want to remove the associated SnapMirror relationship

[CIFS] was previously selected for replication

Do you want to remove destination volume [CIFS] and associated Snapmirror Relationship on [PSLAB3] [y/n]: n

For all other volumes not affected by renaming, answer **Yes** to the replication question (unless these volumes were already excluded from the script control and you still don't want to add them)

The end of the ConfigureDR execution remains identical (see [Create a new Disaster Recovery Storage Virtual Machine](#_Create_a_new))

1. **Rename volume**

From ONTAP CLI rename volume with:

**::> volume rename -vserver <SVM> -volume <old name> -newname <new name>**

Then update the associated SnapMirror relationship from the destination with:

**::> snapmirror update <SVM>:<new name>**

1. **Add new volume under script control**

Depending on how you operate the script:

* **Full Mode** : All volumes are replicated by the script
* **Selected** **Mode** : Only selected volumes are replicated by the script

Add renamed volume into the script with:

**ConfigureDR** for **Full Mode**

In that case, everything will be automatic (no interaction with user) and all volumes (renamed or not) are integrated by the script and replicated

Or

**ConfigureDR** plus **SelectVolume** option and eventually plus **AlwaysChooseDataAggr** for **Selected Mode**

In that case, you will need to answer **Yes** when the script will prompt you to choose if your renamed volume need to be replicated.

Example with the volume CIFS renamed in new\_CIFS**:**

PS C:\Users\masson\Documents\GitHub\SVMTOOL> .\svmtool.ps1 -Instance COT2-COT3 -vserver PSLAB\_DR -ConfigureDR -SelectVolume -AlwaysChooseDataAggr

Vserver PSLAB3 already exist on 10.65.176.31

Export Policy [CIFS\_POLICY] already exist

Export Policy [default] already exist

Export Policy [transition\_export\_policy\_1] already exist

Export Policy [transition\_readonly] already exist

Sis Policy [default] already exist and identical

Sis Policy [inline-only] already exist and identical

Sis Policy [testom] already exist and identical

Network Interface [lif\_PSLAB\_N1] already exist

Check Local Unix User

Modify Local Unix User [demofr] [3001] [3000] [] on [PSLAB3]

Modify Local Unix User [ftp] [65533] [65533] [FTP Anonymous - Transitioned from 10.65.176.29] on [PSLAB3]

Modify Local Unix User [nobody] [65535] [65535] [] on [PSLAB3]

Modify Local Unix User [pcuser] [65534] [65534] [] on [PSLAB3]

Modify Local Unix User [root] [0] [1] [] on [PSLAB3]

Modify Local Unix User [tcornolo] [1000] [1000] [Thierry CORNOLO - Transitioned from 10.65.176.29] on [PSLAB3]

Modify Local Unix User [testomu] [2001] [2000] [test om] on [PSLAB3]

Modify Local Unix User [testomu2] [2002] [100] [test om 2] on [PSLAB3]

Check Local Unix Group

Check User Mapping

No NIS service found on Vserver [PSLAB\_DR]

Set NFS Services Attributes on [PSLAB3]

WARNING: IsNfsv41PnfsStripedVolumesEnabled parameter is not available on Data ONTAP 8.3 and later.

No ISCSI services in vserver [PSLAB\_DR]

No igroup found on cluster [10.65.176.30]

Does volume [new\_CIFS 1024 GB /CIFS] need to be replicated on destination ? [y/n]: y

Volume [new\_CIFS] already exist on [PSLAB3]

As the associated SnapMirror relationship already exist, this will only be integrated (with new volume name) into the script

The end of the ConfigureDR execution remains identical (see [Create a new Disaster Recovery Storage Virtual Machine](#_Create_a_new))

1. **Run UpdateDR**

Execute an **UpdateDR** for this instance and the associated SVM

See( [Update a Disaster Recovery Storage Virtual Machine](#_Update_a_Disaster) )

Abbreviations:

|  |  |
| --- | --- |
| **SVM** | Storage Virtual Machine |
| **NAS** | Network attached storage |
| **DR** | Disaster Recovery |
| **LIF** | Logical Interface |
| **DNS** | Domain Name Server |
| **NIS** | Network Information Systems |
| **CIFS** | Command Internet File System |
| **AD** | Active Directory |
| **LADP** | Lightweight Directory Access Protocol |
| **NFS** | Network File System |
| i**SCSI** | Internet Small Computer System Interface |
| **FCP** | Fiber Channel Protocol |
| **CM** | Cluster Mode |
| **VSM** | Volume Snapmirror |
| **cDot** | Cluster data ONTAP |
| **ONTAP** | Open Network Technology for Appliance Products |



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