

NetApp® Disaster Recovery SAN Adapter 1.4 for VMware® vCenter Site Recovery Manager **Installation and Administration Guide**

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About this guide

This document helps you to use the product that it describes. You can do that more effectively when you understand the intended audience and the conventions that this document uses to present information.

This guide describes how NetApp Disaster Recovery SAN Adapter enables interaction between Site Recovery Manager and the storage controller. It also provides details about the SAN adapter installation, and system configuration and requirements. The document includes troubleshooting information.

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Audience

This document is written with certain assumptions about your technical knowledge and experience.

This guide is for system administrators using the array scripts with VMware vCenter Site Recovery Manager. You must be familiar with ESX servers, VMware vCenter Site Recovery Manager for Windows, and storage systems running Data ONTAP software. The guide assumes that you are familiar with how to configure these systems and how the NFS, CIFS, HTTP, and SAN, and NAS protocols (such as iSCSI, NFS, and FC) are used for file sharing or transfers. The guide does not cover basic system or network administration topics; they describe the various scripts and how the scripts are used during failover along with storage systems running Data ONTAP.

Terminology

To understand the concepts in this document, you might need to know how certain terms are used.

Storage terms

LUN (Logical Unit Number)	Refers to a logical unit of storage identified by a number.
----------------------------------	---

storage controller	Refers to the component of a storage system that runs the Data ONTAP operating system and controls its disk subsystem. Storage controllers are also sometimes called <i>controllers</i> , <i>storage appliances</i> , <i>appliances</i> , <i>storage engines</i> , <i>heads</i> , <i>CPU modules</i> , or <i>controller modules</i> .
storage system	Refers to the hardware device running Data ONTAP that receives data from and sends data to native disk shelves, third-party storage, or both. Storage systems that run Data ONTAP are sometimes referred to as <i>filers</i> , <i>appliances</i> , <i>storage appliances</i> , <i>V-Series systems</i> , or <i>systems</i> .
third-party storage	Refers to back-end storage arrays, such as IBM, Hitachi Data Systems, and HP, that provide storage for storage systems running Data ONTAP.

Cluster and high-availability terms

active/active configuration	In the Data ONTAP 7.2 and 7.3 release families, refers to a pair of storage systems (sometimes called <i>nodes</i>) configured to serve data for each other if one of the two systems stops functioning. Also sometimes referred to as <i>active/active pairs</i> . In the Data ONTAP 7.1 release family and earlier releases, this functionality is referred to as a <i>cluster</i> .
cluster	In the Data ONTAP 7.1 release family and earlier releases, refers to a pair of storage systems (sometimes called <i>nodes</i>) configured to serve data for each other if one of the two systems stops functioning. In the Data ONTAP 7.3 and 7.2 release families, this functionality is referred to as an <i>active/active configuration</i> .

Where to enter commands

You can use your product more effectively when you understand how this document uses command conventions to present information.

You can perform common administrator tasks in one or more of the following ways:

- You can enter commands either at the system console or from any client computer that can obtain access to the storage system using a Telnet or Secure Shell (SSH) session.
In examples that illustrate command execution, the command syntax and output shown might differ from what you enter or see displayed, depending on your version of the operating system.
- You can use the graphical user interface.
- You can enter Windows, ESX, HP-UX, AIX, Linux, and Solaris commands at the applicable client console.
In examples that illustrate command execution, the command syntax and output shown might differ from what you enter or see displayed, depending on your version of the operating system.
- You can use the client graphical user interface.
Your product documentation provides details about how to use the graphical user interface.

- You can enter commands either at the switch console or from any client that can obtain access to the switch using a Telnet session.

In examples that illustrate command execution, the command syntax and output shown might differ from what you enter or see displayed, depending on your version of the operating system.

Keyboard and formatting conventions

You can use your product more effectively when you understand how this document uses keyboard and formatting conventions to present information.

Keyboard conventions

Convention	What it means
The NOW site	Refers to <i>NetApp On the Web</i> at http://now.netapp.com/ .
<i>Enter, enter</i>	- Used to refer to the key that generates a carriage return; the key is named Return on some keyboards. - Used to mean pressing one or more keys on the keyboard and then pressing the Enter key, or clicking in a field in a graphical interface and then typing information into the field.
hyphen (-)	Used to separate individual keys. For example, Ctrl-D means holding down the Ctrl key while pressing the D key.
type	Used to mean pressing one or more keys on the keyboard.

Formatting conventions

Convention	What it means
<i>Italic font</i>	- Words or characters that require special attention. - Placeholders for information you must supply. For example, if the guide says to enter the <code>arp -d <i>hostname</i></code> command, you enter the characters "arp -d" followed by the actual name of the host. - Book titles in cross-references.

Convention	What it means
Monospaced font	• Command names, option names, keywords, and daemon names. • Information displayed on the system console or other computer monitors. • Contents of files. • File, path, and directory names.
Bold monospaced font	Words or characters you type. What you type is always shown in lowercase letters, unless your program is case-sensitive and uppercase letters are necessary for it to work properly.

Special messages

This document might contain the following types of messages to alert you to conditions that you need to be aware of.

Note: A note contains important information that helps you install or operate the system efficiently.

Attention: An attention notice contains instructions that you must follow to avoid a system crash, loss of data, or damage to the equipment.

How to send your comments

You can help us to improve the quality of our documentation by sending us your feedback.

Your feedback is important in helping us to provide the most accurate and high-quality information. If you have suggestions for improving this document, send us your comments by e-mail to doccomments@netapp.com. To help us direct your comments to the correct division, include in the subject line the name of your product and the applicable operating system. For example, *FAS6070—Data ONTAP 7.3*, or *Host Utilities—Solaris*, or *Operations Manager 3.8—Windows*.

NetApp Disaster Recovery SAN Adapter for VMware vCenter Site Recovery Manager

NetApp Disaster Recovery SAN Adapter is the storage vendor specific plug-in to Site Recovery Manager that enables interaction between Site Recovery Manager and the storage controller.

The SAN adapter interacts with the storage controller on behalf of Site Recovery Manager to discover the storage arrays and replicated datastores, and to fail over or test failover the replicated datastores on which the virtual machines reside. The SAN adapter for VMware Site Recovery Manager supports raw device mapping (RDM) and active/active configuration.

For more information about the new and enhanced features of Site Recovery Manager, see the Site Recovery Manager documentation.

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[SnapMirror modes supported by NetApp Disaster Recovery SAN Adapter](#) on page 16

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What Site Recovery Manager does

Site Recovery Manager uses disaster recovery scripts supported by NetApp to discover arrays and LUNs, and fail over LUNs.

Site Recovery Manager uses virtualization to provide end-to-end disaster recovery management and automation across the entire data center. Site Recovery Manager leverages VMware Infrastructure to build, automate, and test disaster recovery plans for the data center. Site Recovery Manager integrates with VMware Infrastructure and VMware vCenter Server (formerly VMware VirtualCenter) and provides a seamless view of your environment that includes both virtual infrastructure and disaster recovery management.

Site Recovery Manager uses the following disaster recovery scripts supported by NetApp:

- DiscoverArrays.pl—This script discovers the array name, array ID, storage-port information, and so on.
- DiscoverLuns.pl—This script discovers all LUNs that are replicated and belong to an igroup of ostype *vmware*.
- failover.pl—This script performs test-failover-start, test-failover-stop, or the actual failover for input LUNs.

What Site Recovery Manager supports using Disaster Recovery SAN Adapter

Site Recovery Manager with the disaster recovery SAN scripts supports storage environments such as VMFS (iSCSI and FC), RDM (iSCSI and FC), and active/active configuration.

For more information about Site Recovery Manager, see the Site Recovery Manager documentation on the VMware site.

SnapMirror modes supported by NetApp Disaster Recovery SAN Adapter

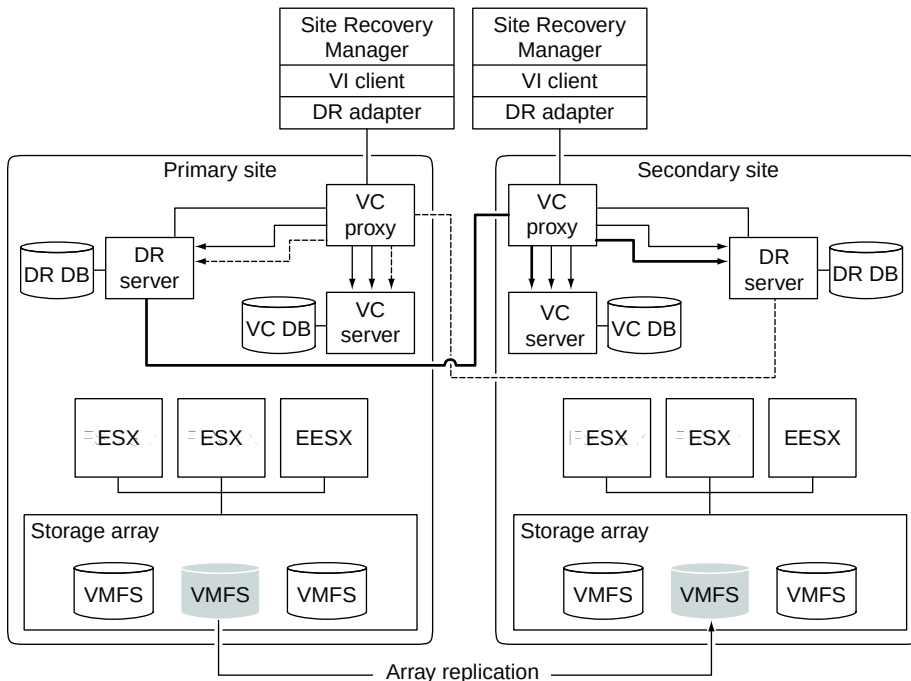
The SAN adapter supports asynchronous qtree SnapMirror, asynchronous volume SnapMirror, and synchronous SnapMirror.

For more information about SnapMirror modes, see the *Data ONTAP Data Protection Online Backup and Recovery Guide*.

Components of a disaster recovery environment

A disaster recovery environment consists of the storage array, ESX servers, virtual machines, Site Recovery Manager, vCenter Server, and Disaster Recovery SAN Adapter.

The following illustration shows the components of a disaster recovery environment.



- The SAN adapter provides array-specific support for Site Recovery Manager:
 - Array discovery (DiscoverArrays.pl)

The DiscoverArrays discovers the storage array operation. This operation discovers the storage arrays that the administrator has selected as part of the Site Recovery Manager recovery policy during a disaster. The operation discovers the array ID and the port information about the storage system. For NetApp storage, the array ID is the host name of the storage system and the port is the FC WWNN or the iSCSI IQN. This script also discovers the model and product type of the storage array.
 - Replicated device discovery (DiscoverLuns.pl)

The DiscoverLuns discovers the LUNs that are replicated and mapped to an initiator group of ostype vmware. To discover a LUN, you should map the LUN to igroup of ostype vmware and also replicate using SnapMirror. The operation discovers the datastores that are mapped and then checks the datastores that are replicated.

Finally, the operation reports the replicated datastores along with their replication destination storage array and destination LUN path.

- Test failover and actual failover (failover.pl)
Test failover creates a FlexClone volume from the replicated base Snapshot copy at the destination volume for testing.

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What TestFailover-Start does

When a replicated LUN path is provided in the secondary storage array, the TestFailover-Start operation tests the actual failover to verify that the failover works.

The operation first confirms whether the LUN path from the Site Recovery Manager input is mirrored. If the path is a SnapMirror destination, then the operation finds the base Snapshot copy of the volume and then creates a clone of the volume by using FlexClone technology. The operation then maps the LUNs of the FlexClone volume to the initiator groups of ostype vmware. The operation displays the cloned LUN path to Site Recovery Manager.

Note: This operation does not affect the ongoing SnapMirror replication; a clone of the destination is used to verify the disaster recovery process. This enables you to perform a nondisruptive test to check disaster recovery. You should create a cloned volume with no space guarantee as the cloned volume is not used during actual disaster recovery and is destroyed.

What TestFailover-Stop does

The TestFailover-Stop operation cleans the environment after a TestFailover-Start operation. This operation makes the cloned volume offline and then destroys the cloned volume. This step marks the end of the nondisruptive test to check disaster recovery.

What Failover does

The Failover operation aborts any ongoing transfers to the SnapMirror destination. The operation then quiesces the destination and breaks the SnapMirror relationship. When the SnapMirror relationship is broken, the destination volume is ready for read/write operations.

The Failover operation is the actual failover at the time of disaster recovery. The operation maps the input LUN paths to the initiator groups of ostype vmware. The operation then makes the datastore online and displays the failed-over datastores to Site Recovery Manager for discovery.

Note: The Site Recovery Manager input tells Disaster Recovery SAN Adapter the LUN paths that need to be mapped using specific initiators. The SAN adapter has to follow the input specifications.

NetApp Disaster Recovery SAN Adapter installation

You should ensure that you meet the system requirements to install the SAN adapter.

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System requirements for using the disaster recovery SAN scripts

Before you run Disaster Recovery SAN Adapter, ensure that you meet the system requirements.

The system requirements include the following:

- Data ONTAP 7.2.2 or later is installed on the following storage systems:
 - FAS200 series
 - FAS20xx
 - FAS30xx
 - FAS31xx
 - FAS60xx
 - V30xx
 - V31xx
 - V60xx

For more information about supported platforms, see the supportability matrix on the NOW site.

- Support for the NearStore option.
- FlexClone license to test failover.
- SnapMirror license is enabled on the storage system running Data ONTAP.
- iSCSI, FC, or both services are running.

- Site Recovery Manager is installed on Windows.
Site Recovery Manager supports VMFS (iSCSI and FC) and RDM (iSCSI and FC) storage environments.
- Perl 5.8 is installed in the system in which Site Recovery Manager is installed.
Note: If the Site Recovery Manager installation does not include Perl 5.8, you can install Perl separately with the default configuration. For more information about downloading Perl, see the Perl download page.
For more information about installing SSL on Perl, see the knowledgebase article on the NOW site.
- If you want to use secureHTTP, you must set up SecureAdmin and ensure that SSL or SSH is running.
By default, the Perl script calls the Data ONTAP API over HTTP.
Note: SecureAdmin does not require a license.
- To keep the corresponding port open, the firewall (if any) between Data ONTAP and Site Recovery Manager must be configured because SOAP, HTTP, or SSL is used.

Related information

[Perl script download page](#)

www.now.netapp.com

Limitations of the disaster recovery SAN scripts

When you use Disaster Recovery SAN Adapter for Site Recovery Manager, LUNs with multiple replication destinations cannot be failed over. Also, SyncMirror replication is not supported.

- LUNs that have multiple replication destinations cannot be failed over.
- The testFailover operation might fail if there is an existing volume with the same name that it tries to create. This step might destroy the existing volume when testFailover cleans up.
- The testFailover operation is not supported on traditional volumes because FlexClone technology is not available for traditional volumes.
- SyncMirror replication between Site Recovery Manager sites (as in MetroCluster) is not supported.
- NFS environment is not supported.

For specific information about recommended configurations and best practices when using different replication modes, see the *Data ONTAP Data Protection Online Backup and Recovery Guide*.

Setting up the system before running the disaster recovery SAN scripts

You need to set up the system before running Disaster Recovery SAN Adapter for Site Recovery Manager.

Steps

1. Install Site Recovery Manager.

For information about installing Site Recovery Manager, see the Site Recovery Manager documentation on the VMware site.

2. Install Disaster Recovery SAN Adapter for Site Recovery Manager.
3. Configure the primary ESX server to access the LUNs in the primary storage system.
4. Replicate the volume or qtrees containing the LUNs to the secondary storage system.
5. On the primary storage system, enter the `snapmirror status` command to confirm that the concerned LUN is involved in only one replication relationship and that the relationship status displays `Source`.
6. On the secondary storage system, enter the `snapmirror status` command to confirm that the relationship state is `SnapMirrored`.

For information about managing a SnapMirror relationship, see the *Data ONTAP Data Protection Online Backup and Recovery Guide*.

7. Create igroups, either iSCSI, FC, or both, of ostype `vmware` on the secondary storage system.
8. Add secondary ESX server initiators to this igroup.
9. Enter the `igroups show` command to confirm the addition of the secondary ESX server initiators to the igroup.

You can allow more than one initiator to see the LUNs that have failed over. Site Recovery Manager informs the disaster recovery script about all initiators that should see these LUNs.

Note: Ensure that you add the initiators to igroups of ostype `vmware` on the secondary storage system.

Related tasks

[Installing Disaster Recovery SAN Adapter](#) on page 24

[Configuring the primary ESX server to access LUNs](#) on page 25

Downloading Disaster Recovery SAN Adapter

You can download the disaster recovery SAN scripts from the NOW site.

Steps

1. Log in as administrator and download the applicable file directly to your target system, or download it to a PC host and copy it to the target system.
2. After downloading or copying the .zip file to your target system, unzip the file.

Related tasks

[Installing Disaster Recovery SAN Adapter](#) on page 24

Related information

www.now.netapp.com

Installing Disaster Recovery SAN Adapter

You can install the disaster recovery SAN scripts from the location where you downloaded the scripts.

Steps

1. Use Windows Explorer to navigate to the directory to which you unzipped the downloaded file, and then double-click the `setup.msi` file.

The installer finds the installed location of Site Recovery Manager from the registry and copies these scripts to that location.

2. Select the **Complete install** option.

Note: The version of Disaster Recovery SAN Adapter is available at the following registry location: `HKEY_LOCAL_MACHINE\SOFTWARE\NetApp Inc\NetApp Disaster Recovery SAN Adapter\Version`.

3. Click **Finish**.

Recommendations when using Disaster Recovery SAN Adapter

When you use the disaster recovery SAN scripts with Site Recovery Manager, ensure that the secondary storage system does not contain volumes that have the same name as that of the volume that TestFailover creates.

- Ensure that the primary and secondary ESX servers can discover LUNs on storage systems by using iSCSI, FC, or both.
- On the secondary storage system, ensure that there are no volumes with names that match the name of the volume that TestFailover creates.
- When removing SnapMirror relationships to avoid multiple replication destinations, if you delete the SnapMirror relationship on the secondary storage system, you should also delete the relationship on the primary storage system.
- When adding active/active configuration systems to the Site Recovery Manager configuration, you should add each NetApp controller as an array in Array Managers.

Related concepts

[Failover testing](#) on page 27

Configuring the primary ESX server to access LUNs

You can configure the primary ESX server to access the LUNs in the primary storage system.

Steps

1. Create an igroup, either iSCSI, FC, or both, of ostype *vmware* on the primary storage system.
2. Add the primary ESX server initiator to the igroup.

Related tasks

[Setting up the system before running the disaster recovery SAN scripts](#) on page 23

Disaster Recovery SAN Adapter options

The SAN adapter uses provisioning management options such as `volume_guarantee` and `lun_space_reservation` while testing disaster recovery on Site Recovery Manager.

- `volume_guarantee` (none/file/volume; default value is none)

The option controls the value of the volume guarantee on all volumes created for disaster recovery testing.

- `lun_space_reservation` (yes/no; default value is no)

This option checks whether the LUNs recovered for disaster recovery testing is set with space reservations enabled or disabled.

Failover testing

You need to test the failover operation to ensure that it works properly when you encounter a problem.

When testing failover, the TestFailover operation creates a cloned volume on the secondary storage system with the prefix `testfailoverClone_nss_v10745371_`, followed by the parent volume name. The test cloned volume that is created for the *secondary_volume* is named *testfailoverClone_nss_v10745371_secondary_volume*.

After testing failover, the TestFailover cleanup script tries to destroy the *testfailoverClone_nss_v10745371_secondary_volume* volume. Ensure that you do not have user-created volumes with names prefixed with *testfailoverClone_nss_v10745371_*. You can find existing volumes in the secondary storage system by running the `vol status` command.

Failback management by using Site Recovery Manager

You need to manage failback manually because Site Recovery Manager does not have an automated push-button mechanism. Failback management is also manual because the protected site might have completely different hardware and network configurations after a disaster occurs.

To achieve failback, you should perform a series of manual steps that should be run in a reverse direction in the failover workflow.

Scenario: Running failback manually

In a failback scenario, you can use Site Recovery Manager as a failback tool to run failback manually. You should run failback to restore the original primary protected site to its pre-failover state. You can manage failback like any planned server migration.

About this task

In the following failback scenario, Site Recovery Manager is the failback tool in the protected site after running the recovery plan at the recovery site in recovery mode for recovered virtual machines.

Name	Description
Site A	original protected site
Site B	original recovery site
Storage systemA	original protected storage system
Storage systemB	original recovery storage system

Assume that there is an original protected site (Site A) and an original recovery site (Site B). After failover occurs, the recovery site becomes the acting protected site (Site B). By using the failback procedure, the original protected site becomes the acting recovery or failback site (Site A).

Steps

1. Ensure that the protected virtual machines at Site A are no longer accessed by any users or applications.
2. Shut down all the protected virtual machines at Site B that were part of the recovery plan at Site B.
3. Perform a cleanup of the failover LUN at Site B that contained virtual machine configuration files created during the protection group setup at Site A.

4. Delete protection groups from Site A.
5. Perform a remove from inventory operation for all the protected virtual machines from Site A that were part of the recovery plan at Site B.
6. Perform one of the following steps:

If...	Then...
You want to recover storage systemA's volume	Enter the following command from storage systemA to resynchronize the SnapMirror relationship: <pre>snapmirror resync -S storage systemB:volB storage systemA:volA</pre>
You do not want to recover storage systemA's volume	Enter the following command from storage systemA to initialize the SnapMirror relationship: <pre>snapmirror initialize -S storage systemB:volB storage systemA:volA</pre>

7. Ensure that there is an igroup of ostype *vmware* on the original protected storage system. If not, create an igroup of ostype *vmware*.
8. Verify that the two Site Recovery Manager servers are paired with each other; if they are not, pair them with each other.
9. At Site B, configure the array manager and inventory mapping.
10. At Site B, create protection groups for virtual machines to be failed back. Select a spare LUN from Site A for failback inventory mapping.
11. At Site A, create a recovery plan for the protection groups that are created on Site B.
12. From Site A, test the recovery plan.
13. If the test is successful, then run the recovery plan.
14. Shut down all the protected virtual machines at Site A that were failed back during the failback recovery plan.
15. Perform a cleanup of the failback LUN at Site A that contained the virtual machine configuration files created during the protection group setup at Site B.

Guidelines for using the Data ONTAP API over SecureHTTP

The Data ONTAP API can use either HTTP or SecureHTTP. By default, the disaster recovery scripts use the Data ONTAP API over HTTP. However, the editable configuration SSL parameter enables you to use the Data ONTAP API over SecureHTTP.

Setting up the disaster recovery scripts to use the Data ONTAP API over SecureHTTP

You can set up Disaster Recovery SAN Adapter to use the Data ONTAP API over SecureHTTP.

Steps

1. In the primary and secondary storage systems, set up SecureAdmin and enable the SSL and SSH services.
2. Enter the `secureadmin status` command to confirm that the SSL and SSH services are running.
3. Add the following line to the `ontap_config.txt` file: `ssl=on`
4. In the Perl environment, install the `Net::SSLeay` module.

HTTPS support uses `Net::SSLeay.pm`. `Net::SSLeay` is not part of Perl 5.8 that is shipped with Site Recovery Manager. You need to compile `Net::SSLeay.pm` from the source `Net_SSLeay.pm-1.xx.tar.gz` from the Comprehensive Perl Archive Network. For instructions about how to compile and install `Net::SSLeay.pm` from the source, see the Readme file available in `Net_SSLeay.pm-1.xx.tar.gz`.

Related information

<http://www.cpan.org/>

Troubleshooting error messages by using the log files

You can use the log files to troubleshoot problems that you might encounter when using Disaster Recovery SAN Adapter. You can find the log files at `C:\Documents and Setting\All Users\Application Data\VMware\VMware Site Recovery Manager\Logs\`. There might be multiple log files with names such as `vmware-dr-log number.log`.

The Site Recovery Manager user interface does not display the error log messages.

In case of any adapter failure or unexpected behavior, you should set the log level to `trivia` in Site Recovery Manager and run the failed operation again. For details about running the failover operation, see the Site Recovery Manager documentation. Then, you should examine the log messages.

Note: The solutions provided assume that you are running the disaster recovery SAN scripts in a failover environment.

Next topics

[Error messages when executing the `command.pl` script](#) on page 33

[Error messages when executing the `common.pm` script](#) on page 35

[Error messages when executing the `DiscoverArrays.pl` script](#) on page 35

[Error messages when executing the `DiscoverLuns.pl` script](#) on page 37

[Error messages when executing the `failover.pl` script](#) on page 39

Error messages when executing the `command.pl` script

The `command.pl` script invokes `discoverArrays.pl`, `discoverLuns.pl`, or `failover.pl` based on the input.

Next topics

[Missing the `OutputFile` parameter in XML input](#) on page 33

[Missing the `LogLevel` parameter in XML input](#) on page 34

[Command is not specified in XML input](#) on page 34

[Error while executing script](#) on page 34

Missing the `OutputFile` parameter in XML input

Message	Missing the <code>OutputFile</code> parameter in XML input
Log level	Quiet

Cause	The output file parameter is missing in the XML input file from Site Recovery Manager.
Corrective action	Check the configuration settings in Site Recovery Manager.

Missing the LogLevel parameter in XML input

Message	Missing the LogLevel parameter in XML input
Log level	Quiet
Cause	The LogLevel parameter is missing in the XML input file from Site Recovery Manager.
Corrective action	Check the configuration settings in Site Recovery Manager.

Command is not specified in XML input

Message	Command is not specified in XML input
Log level	Quiet
Cause	The input command from Site Recovery Manager is not part of discoverArrays, discoverLuns, failover, or testFailover operations.
Corrective action	Check the configuration settings in Site Recovery Manager.

Error while executing script

Message	Error while executing script
Log level	Quiet
Cause	The error occurs when the script is run in a Perl environment.
Corrective action	Add the path to perl.exe to the system path and install the scripts in the correct directory.

Related tasks

[Installing Disaster Recovery SAN Adapter](#) on page 24

Error messages when executing the common.pm script

The common.pm script contains common routines that are used by other scripts.

Next topics

[Could not get the host name](#) on page 35

[Unable to set HTTPS transport](#) on page 35

Could not get the host name

Message	Could not get the host name
Log level	Quiet
Cause	The storage system does not have a valid host name.
Corrective action	Configure a valid host name for the storage system.

Unable to set HTTPS transport

Message	Unable to set HTTPS transport
Log level	Quiet
Cause	The SSL and SSH services might not be running in the storage system.
Corrective action	Run the <code>secureadmin status</code> command. If the services are not running, configure the <code>secureadmin</code> service and start the SSH and SSL services.

Error messages when executing the DiscoverArrays.pl script

The DiscoverArrays.pl script discovers the array name, array ID, storage-port information, and so on.

Next topics

[Creating server element failed](#) on page 36

[No FC WWNN \(world wide node name\) found](#) on page 36

[No iSCSI port found](#) on page 36

[No FC adapter found](#) on page 36

Creating server element failed

Message	Creating server element failed
Log level	Quiet
Cause	This might occur because of the following reasons: • Low memory in the vCenter Server host. • Cannot connect to the NetApp storage system.

No FC WWNN (world wide node name) found

Message	No FC WWNN (world wide node name) found
Log level	Verbose
Cause	Either an FC license is not installed in the NetApp storage system or there are no FC ports.
Corrective action	Install the FC license and start the FC service.

No iSCSI port found

Message	No iSCSI port found
Log level	Verbose
Cause	The iSCSI license might be missing or the iSCSI service might not be running.
Corrective action	Check the iSCSI license and verify that the iSCSI service is running.

No FC adapter found

Message	No FC adapter found
Log level	Verbose
Cause	The FC license might be missing or the FC service might not be running.
Corrective action	Check the FC license and verify that the FC service is running.

Error messages when executing the DiscoverLuns.pl script

The DiscoverLuns discovers replicated and exported datastores on the primary storage array.

Next topics

[Could not find an igroup of ostype vmware](#) on page 39

[Error while discovering igroups of ostype vmware](#) on page 39

[Could not discover any LUNs mapped to an igroup of ostype vmware and replicated](#) on page 37

[Error while discovering LUNs mapped to an igroup of ostype vmware and replicated](#) on page 38

[Skipping lun_path as it has multiple peers](#) on page 38

[igroup_name does not have any initiators](#) on page 43

Could not find an igroup of ostype vmware

Message	Could not find an igroup of ostype vmware
Log level	Quiet
Cause	There might not be an igroup of ostype <i>vmware</i> .
Corrective action	Create an igroup with ostype <i>vmware</i> and map the LUN to be failed over to this igroup.

Error while discovering igroups of ostype vmware

Message	Error while discovering igroups of ostype vmware
Log level	Quiet
Cause	There might not be an igroup of ostype <i>vmware</i> .
Corrective action	Create an igroup with ostype <i>vmware</i> and map the LUN to be failed over to this igroup.

Could not discover any LUNs mapped to an igroup of ostype vmware and replicated

Message	Could not discover any LUNs mapped to an igroup of ostype vmware and replicated
Log level	Quiet

Cause	The LUNs might not be replicated.
Corrective action	Replicate the LUNs to be failed over and map these LUNs to an igroup of ostype <i>vmware</i> .

Error while discovering LUNs mapped to an igroup of ostype vmware and replicated

Message	Error while discovering LUNs mapped to an igroup of ostype vmware and replicated
Log level	Quiet
Cause	The LUNs might not be replicated or there might not be an igroup of ostype <i>vmware</i> .
Corrective action	If the LUNs are not replicated, replicated the LUNs to be failed over and map these LUNs to an igroup of ostype <i>vmware</i> . If there is no igroup of ostype <i>vmware</i> , create such an igroup. This igroup should contain ESX server initiators.

Skipping lun_path as it has multiple peers

Message	Skipping lun_path as it has multiple peers
Log level	Quiet
Cause	LUNs that have been replicated multiple times are not currently supported.
Corrective action	Run the <code>snapmirror status</code> command on the storage system. Ensure that the replication relationship for the concerned LUN has only one peer.

igroup_name does not have any initiators

Message	igroup_name does not have any initiators
Log level	Verbose
Cause	The igroup might not add the initiator.
Corrective action	Configure this igroup so that it includes the correct initiators.

Error messages when executing the failover.pl script

The failover.pl script performs test-failover-start, test-failover-stop, or the actual failover depending on the Site Recovery Manager input.

Next topics

- [Could not find an igroup of ostype vmware](#) on page 39
- [Error while discovering igroups of ostype vmware](#) on page 39
- [Skipping lun_path as input initiators to be mapped to do not belong to any VMware igroup in the storage system](#) on page 40
- [initiator ID does not belong to any igroup of ostype vmware](#) on page 40
- [Skipping lun_path as this is not a valid SnapMirror relation](#) on page 40
- [Could not find base Snapshot copy for relation_path; skipping lun_path](#) on page 41
- [Test volume clone creation for testClonevolume failed](#) on page 41
- [Mapping lun_name to igroup_name failed](#) on page 41
- [Onlining lun_path failed](#) on page 41
- [Skipping lun_name as it is not failed over](#) on page 42
- [Destroying test volume clone_volume_name failed](#) on page 42
- [No LUN with mapping information provided for failover](#) on page 42
- [No mapping information provided for the LUNs](#) on page 42
- [igroup_name does not have any initiators](#) on page 43

Could not find an igroup of ostype vmware

Message	Could not find an igroup of ostype vmware
Log level	Quiet
Cause	There might not be an igroup of ostype <i>vmware</i> .
Corrective action	Create an igroup with ostype <i>vmware</i> and map the LUN to be failed over to this igroup.

Error while discovering igroups of ostype vmware

Message	Error while discovering igroups of ostype vmware
Log level	Quiet
Cause	There might not be an igroup of ostype <i>vmware</i> .

Corrective action	Create an igroup with ostype <i>vmware</i> and map the LUN to be failed over to this igroup.
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Skipping lun_path as input initiators to be mapped to do not belong to any VMware igroup in the storage system

Message	Skipping lun_path as input initiators to be mapped to do not belong to any VMware igroup in the storage system
Log level	Quiet
Cause	This error occurs because of the following reasons: • The input XML file from Site Recovery Manager does not mention any initiator that should see this LUN. • None of the initiators specified by the input XML file belong to an igroup of ostype <i>vmware</i>.
Corrective action	Add the initiators to the igroup of ostype <i>vmware</i> .

initiator ID does not belong to any igroup of ostype vmware

Message	initiator ID does not belong to any igroup of ostype <i>vmware</i>
Log level	Quiet
Cause	One of the initiators in the Site Recovery Manager XML file should see the failed over LUNs, but cannot because it does not belong to an igroup of ostype <i>vmware</i> .
Corrective action	Add this initiator to an igroup of ostype <i>vmware</i> in the storage system.

Skipping lun_path as this is not a valid SnapMirror relation

Message	Skipping lun_path as this is not a valid SnapMirror relation
Log level	Quiet
Cause	lun_path is not replicated.
Corrective action	Check the snapmirror status command output to confirm that the LUN is from a replicated relation. Replicate the LUN.

Could not find base Snapshot copy for relation_path; skipping lun_path

Message	Could not find base Snapshot copy for relation_path; skipping lun_path
Log level	Quiet
Cause	Skip the concerned LUN from being moved to the test failover state.
Corrective action	Check the <code>snapmirror status</code> command output for this relationship and check that the LUN is replicated.

Test volume clone creation for testClonevolume failed

Message	Test volume clone creation for testClonevolume failed
Log level	Quiet
Cause	This might occur because a volume with the name <i>testfailoverClone_nss_v10745371_Volumename</i> already exists. The script tries to create a cloned volume and to prefix the original volume name with <i>testfailoverClone_nss_v10745371_Volumename</i> .
Corrective action	Rename the existing volume.

Mapping lun_name to igroup_name failed

Message	Mapping lun_name to igroup_name failed
Log level	Quiet
Cause	Mapping the failed over LUN to igroup_name failed due to some reason.
Corrective action	Check whether igroup_name exists in the storage system. Check if this is a test-failover-start and the volume creation failed with the following message: volume already exists Then check whether a volume with the name <i>testfailoverClone_nss_v10745371_VolumeName</i> already exists.

Onlining lun_path failed

Message	Onlining lun_path failed
Log level	Quiet

Cause	If the LUN is mapped to more than one igroup—for example, A and B—and there are some initiators that belong to both A and B, then the LUN cannot be brought online.
Corrective action	Ensure that one initiator belongs to only one igroup.

Skipping lun_name as it is not failed over

Message	Skipping lun_name as it is not failed over
Log level	Quiet
Cause	For the successful failover of a LUN, it should be online, writable, and mapped.
Corrective action	Run the script with <code>log level=trivia</code> and identify the problem from the log. Run the script again.

Destroying test volume clone_volume_name failed

Message	Destroying test volume clone_volume_name failed
Log level	Quiet
Cause	Taking <i>clone_volume_name</i> offline and destroying it failed. This is because the volume is busy or is used by some other subsystem.
Corrective action	Try destroying <i>clone_volume_name</i> later.

No LUN with mapping information provided for failover

Message	No LUN with mapping information provided for failover
Log level	Quiet
Cause	There is no input initiator for this LUN to be mapped to after failing over. Therefore, the script does not perform a failover operation for this LUN.
Corrective action	Check the configuration. Correctly map the initiators to igroups of ostype <i>vmware</i> in the secondary storage system.

No mapping information provided for the LUNs

Message	No mapping information provided for the LUNs
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Log level	Quiet
Cause	There is no input initiator for this LUN to be mapped to after failing over. Therefore, the script cannot perform a failover operation for this LUN.
Corrective action	Check the configuration. Correctly map the initiators to igroups of ostype <i>vmware</i> in the secondary storage system.

igroup_name does not have any initiators

Message	igroup_name does not have any initiators
Log level	Verbose
Cause	The igroup might not add the initiator.
Corrective action	Configure this igroup so that it includes the correct initiators.

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