NetApp SolidFire Storage Replication Adapter User Guide

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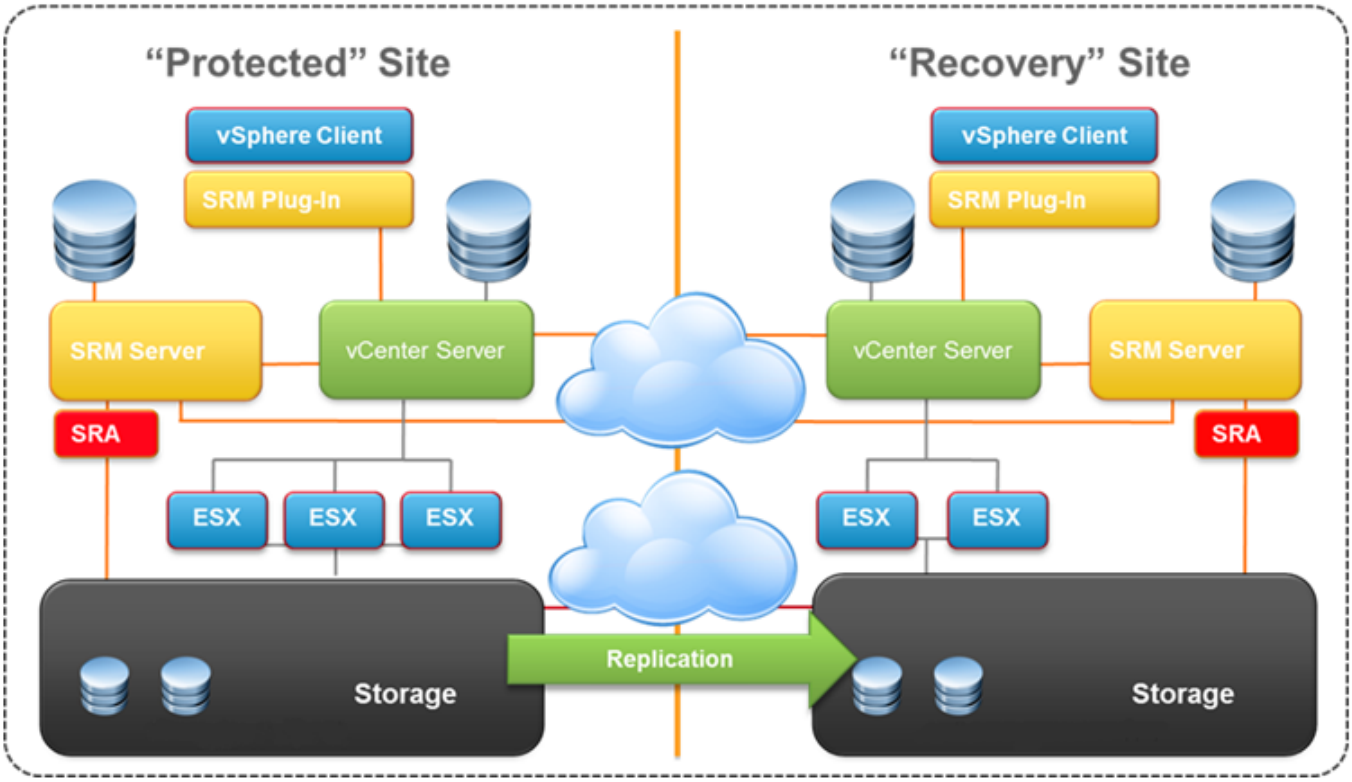
Introduction

The NetApp SolidFire Storage Replication Adapter (SRA) integrates with the VMware Site Recovery Manager (SRM) to enable communication with replicated SolidFire storage clusters (arrays) and execute supported workflows. The SRA facilitates planned migration and disaster recovery management between protected and recovery sites. Administrators can use the VMware SRM with the NetApp SolidFire SRA to manage and configure replication of virtual machines with datastores hosted on the SolidFire storage clusters.



SolidFire SRA supports the following workflows and actions:

- View all replicated sources and targets configured on the storage arrays from protected and recovery sites.
- Perform planned migration of virtual machines with datastores on the SolidFire cluster from the protected site to the recovery site.
- Perform disaster recovery of virtual machines with datastores on the SolidFire cluster from the protected site to the recovery site.
- Reprotect virtual machines with datastores after failover from the recovery site.
- Create and clean up writable snapshots to simulate a failover and test recovery procedures.
- View SolidFire SRA and SRM message logs.

The intended audience for the SRA user guide is administrators who install, configure, use, or troubleshoot SRM-related issues.

- SRM Administrators: You should have training or have worked as an SRM administrator.
- Networking: You have a familiarity with server networking and network storage, including IP addresses, netmasks, and gateways.

Support Matrix

The VMware Compatibility Guide includes information about supported hardware and software, including compatible SolidFire node types, supported protocols, Element OS, and SRM versions.

Installing the NetApp SolidFire SRA

You can install the NetApp SolidFire SRA with the MSI installer. Follow installer prompts to complete the installation on protected and recovery sites.

Prerequisites

- Install and configure VMware SRM 6.1 or 6.5 on both the protected and recovery sites.
- Install and configure VMware vSphere Web Client.
- Create and configure the SolidFire cluster pair for replication using the Element OS Web UI.
- Configure the replicated volumes on the cluster pairs using the Element OS Web UI.

Procedure

1. Download the `solidFire_SRA_[most recent version number].msi` from the SolidFire BrickFTP site, and place it on the desktop of each Windows server running SRM (they may be physical or VM).

   NOTE: For BrickFTP access, contact NetApp SolidFire support.

2. Double-click the `solidFire_SRA_[most recent version number].msi` installer from the desktop.
3. Read the license agreement, select the check box to accept the terms of the agreement, and click **Install**.
4. Click **Finish**.

Upgrading the SolidFire SRA

You can upgrade the SRA to the latest version by downloading the installer and completing the installation on all sites where the SRA was previously installed. See *Installing the NetApp SolidFire SRA*.

Caution: You must remove and recreate all recovery plans, protection groups, and array managers from the 1.0 configuration in SRM. It is also recommended that you reset your storage environment to its starting configuration (no SRA-created snapshots, all replica links up and active) before using NetApp SolidFire SRA version 2.0.

Discovering SRA

After installing the SRA on both the protected and recovery sites, you need to rescan both sites to discover the SRA.

Procedure

1. In the vSphere Web Client on the protected site, go to **Site Recovery > Sites**.

   The **Summary** page indicates that no SRAs are installed.

2. Click **View SRA Tab**.
3. Click the rescan icon.
4. Repeat this procedure for the recovery site.

Configuring the SolidFire SRA

You must configure the NetApp SolidFire SRA to work with SRM after the SRA is installed and discovered on both the paired protected site and paired recovery site.

Procedure

1. In the vSphere Web Client on the protected site, go to **Site Recovery > Array Based Replication**.
2. Click **Add Array Manager**.
3. In the **Add Array Manager** wizard, select **Add a pair of array managers** from the **Options** menu.
4. Click **Next**.
5. In the **Location** menu, specify the IPs of the protected and recovery sites and the SRM ID.
6. Click **Next**.
7. In the **Configure array manager** menu, enter a name for the local (protected) array in the **Display Name** text box.

   NOTE: Both sites and their array managers can be bi-directional, including both protected and recovery volumes.

8. Enter the connection parameters for the SolidFire cluster:
   - The management virtual IP (MVIP) for the cluster.
   - The volume prefix you wish to use to filter volumes.
   - The cluster admin user name.

     NOTE: The cluster admin must have cluster and volume privileges.

   - The cluster admin password.
9. Click **Next**.
10. In the **Configure paired array manager** menu, enter a name for the remote (recovery) array in the **Display Name** text box.
11. Enter the connection parameters for the SolidFire cluster:
    - The management virtual IP (MVIP) for the cluster.
    - The volume prefix you wish to use to filter volumes.
    - The cluster admin user name.

      NOTE: The cluster admin must have cluster and volume privileges.

    - The cluster admin password.
12. Click **Next**.
13. Select the array pairs that you wish to enable from the list.
14. Click **Next**.
15. Review the array manager settings and click **Finish**.
16. Repeat this procedure to configure array managers for any additional SolidFire cluster pairs.

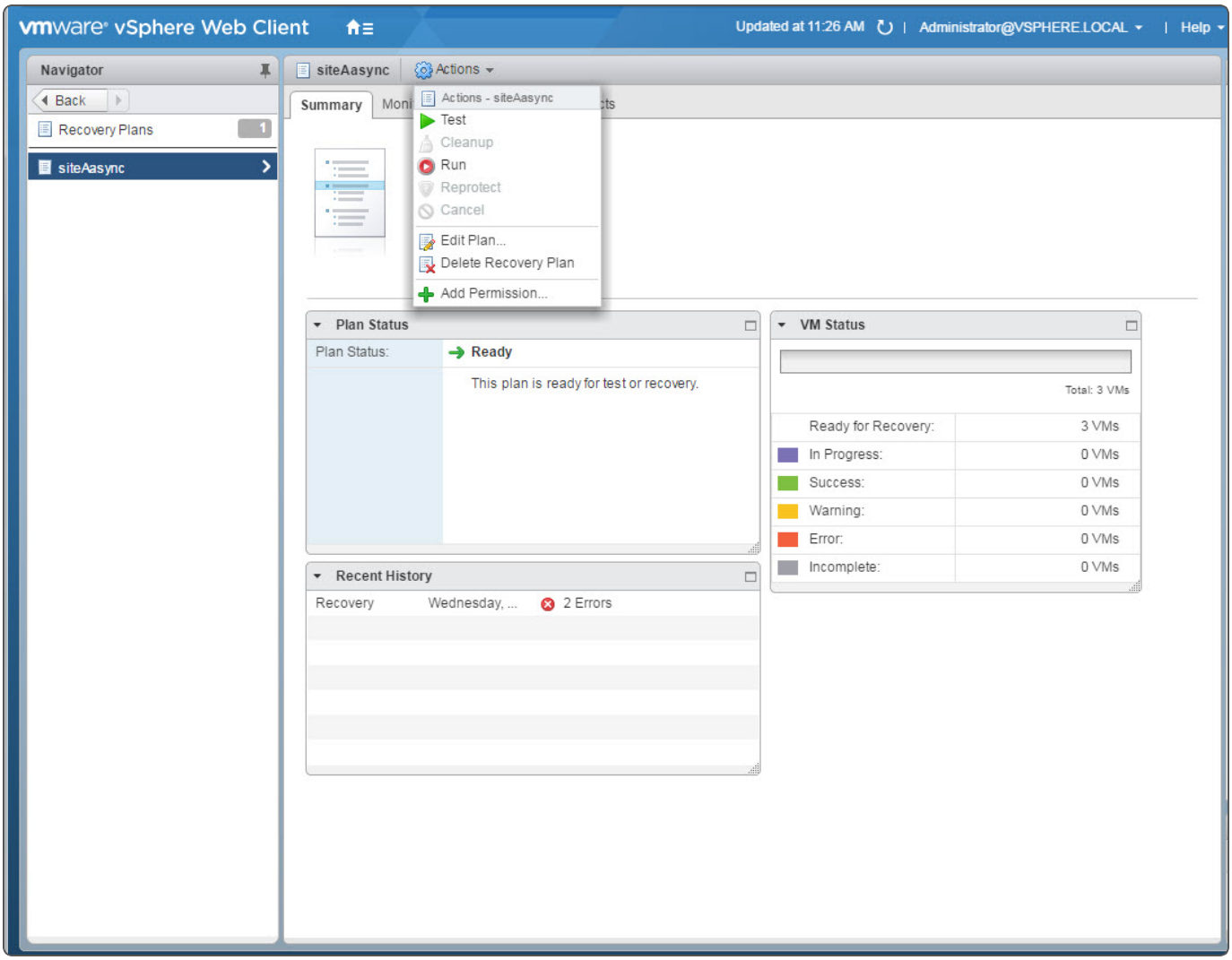
SolidFire SRA Enabled Workflows

The following workflow options are available from the landing page of the Site Recovery Manager (SRM):

- **Test**: Perform a test recovery of virtual machines with datastores on a SolidFire cluster from protected site to the recovery site.

  The Test workflow is a simulation failover of an entire configuration of virtual machines from protected sites to the recovery sites in a non-disruptive environment. This workflow can be used to confirm that configuration has been setup correctly for the protected virtual machines. Instead of disabling or deactivating the main production datastore(s), SRM will create a datastore copy that can run in parallel with production for testing.

  When you start the Test workflow, a simulated failover is executed. SRM ensures that protected VMs at the protected site are not subject to any interruption during a test workflow execution. SolidFire SRA enables that workflow by translating SRM actions into SolidFire commands.
- **Cleanup**: Clean up the temporary writable snapshots (clones) created by the test operation on a recovery site during a simulated failover. The link is active only when a Test workflow is performed.
- **Recovery**: Recover virtual machines to the recovery site from the protected site. SolidFire SRA supports the following recovery types:
  - Planned Migration: Includes planned decommissioning of virtual machines at the protected site and commissioning of virtual machines at the recovery site. Both protected and recovery sites must be up and running.
  - Disaster Recovery: Restores the virtual machines on the recovery site when the protected site goes down.
- **Reprotect**: Reprotect after failover from a protected site to a recovery site to restore virtual machines with datastores to the original protected site. The link is active only after a Recovery workflow is performed.
- **Cancel**: Cancel the current workflow.



Logging and Errors

You can use the log files of SRM and NetApp SolidFire SRA to troubleshoot issues that you might encounter while using the SolidFire SRA.

The SolidFire SRA logs messages and command requests sent by SRM to SRA in a standard SRA log file. The log file is saved in the `solidfire_sra_<year>_<month>_<date>.log` format; for example, `solidfire_sra_2014_08_21.log`. There is an additional log file also created here named `solidfire_sra_api_<year>_<month>_<day>.log` that includes request and response details sent to and received from the SolidFire cluster.

You can view SRA log files in **<VMware vCenter Site Recovery Manager install location>\Logs\SRAs\solidfire**.

Logging messages specific to SRM are saved in **<VMware vCenter Site Recovery Manager install location>\Logs**.

The SRM also displays error messages and possible resolutions within the SRM UI.

Troubleshooting

The following issues might occur when executing the processes described in this document.

Issue	Cause	Solution
Running a recovery plan fails with a timeout error while waiting for the VMware Tools to start. Recovery operations fail at the Waiting for VMware Tools step of a recovery plan.	SRM uses VMware Tools heartbeat to discover when recovered virtual machines are running on the recovery site. Recovery operations require that you install VMware Tools on the protected virtual machines. Recovery fails if you do not install VMware Tools on the protected virtual machines, or if you do not configure SRM to start without waiting for VMware Tools to start.	Install VMware Tools on the protected virtual machines. If you do not or cannot install VMware Tools on the protected virtual machines, you must configure SRM so that it does not wait for VMware Tools to start in the recovered virtual machines. If protected virtual machines do not have VMware Tools installed, set the `recovery.powerOnTimeout` value to zero in the advanced settings of SRM on both sites. For further details on changing recovery settings, see VMware documentation.
Failure of the cluster nodes from backend or reconfiguration of storage.	The Array ID changes on failure or reconfiguration, which causes the array pairing to break.	To resolve this issue, remove the Array Manager and add the Array Manager again with the correct credentials.
A workflow fails due to stale entries in the underlying volume of the datastore in which VM is configured.	A volume on the storage has been deleted. VMware continues to report the virtual machine that was a part of a datastore (volume). Reconfiguring the array from backend and removing the volume, in which the VM is created with a protected group, causes stale entries in the volume.	The VM and the underlying datastore with stale entries should be deleted. A new volume should be mapped from the backend, and the new VM should be created with a new protection group on that datastore. Start the workflow again.
SRM does not correctly remove static iSCSI targets from the ESXi hosts when a failover test is cleaned up or a reprotect is performed.	The issue occurs if you have recently configured SRM (paired sites, resource mappings, created array managers, etc.) and the SRM servers or services have not been shut down or restarted.	Reboot or restart the SRM services after they have been configured but before running the SRM test plan failover or failover tests.
SRA rescan returns **SRA command 'discoverDevices' didn't return a response**. The vCenter task list also displays the error.	Volumes from one cluster might have been deleted or the volume access changed to `Locked`.	Ensure volumes are accessible and volume pairing can be performed on both clusters.

Removing the SolidFire SRA

You can remove NetApp SolidFire SRA by uninstalling the program from the Windows Control Panel (**Programs > Programs and Features**).

NOTE: After you have uninstalled the SRA, reboot before installing an updated SolidFire SRA. The SRM service needs to restart after each uninstall.

Contacting NetApp SolidFire Active Support

You can contact NetApp SolidFire Active Support if you have any questions or comments about SolidFire documents or products in general.

Visit NetApp SolidFire Active Support or email ng-SF-Support@netapp.com for help with NetApp SolidFire systems.

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Boulder, Colorado 80302

Phone: 720.523.3278
Email: info@solidfire.com

Web: solidfire.com
Support: www.solidfire.com/support/

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