



NetApp Element

NetApp Storage Replication Adapter for Element User Guide

Version: 3.0

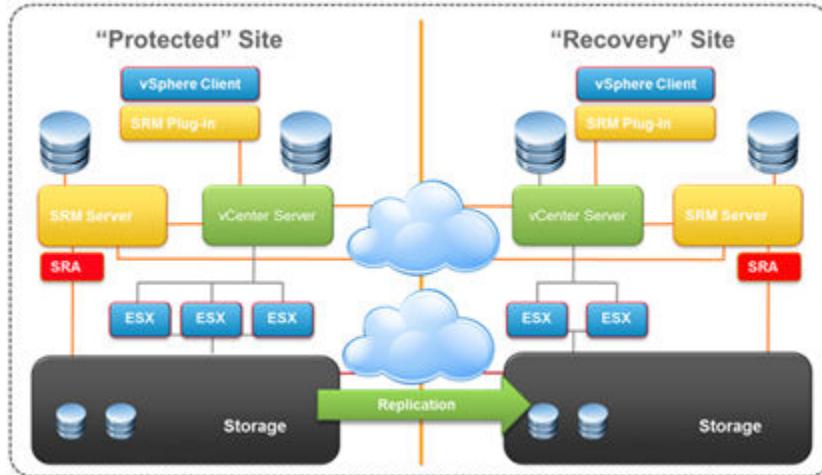
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Introduction

The NetApp Storage Replication Adapter for Element (SRA) integrates with the VMware Site Recovery Manager (SRM) to enable communication with replicated Element 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 SRA to manage and configure replication of virtual machines with datastores hosted on the Element storage clusters.



The 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 Element cluster from the protected site to the recovery site.
- Perform disaster recovery of virtual machines with datastores on the Element 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 the SRA and SRM message logs.

Note: Snapshot only replication is not supported.

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 Element node types, supported protocols, Element software, and SRM versions.

[*VMware Compatibility Guide*](#)

Installing the SRA

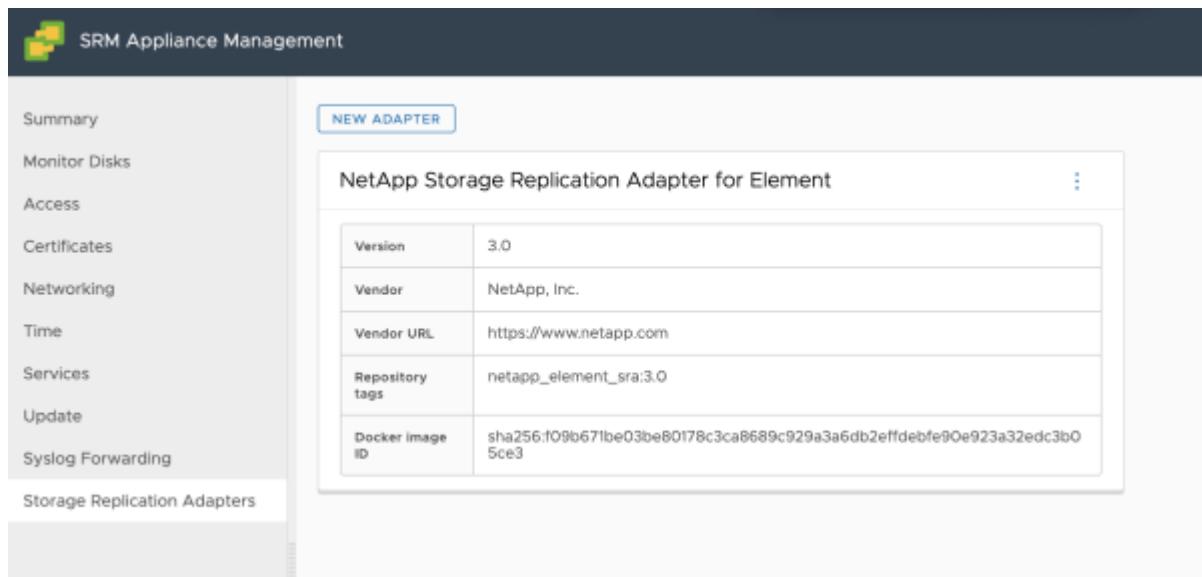
You can install the SRA with the photon installer. Follow installer prompts to complete the installation on protected and recovery sites.

Before you begin

- The SRA 3.0 supports SRM 8.2 and 8.3 virtual appliance (Photon OS) only.
- Install and configure VMware SRM 8.2 and 8.3 on both the protected and recovery sites. Follow the VMware installation instructions on the [About VMware Site Recovery Manager Installation and Configuration](#) site.
 - Specify the Photon version.
 - Specify the IP address and port for the SRM Appliance Management dashboard.
 - Register and configure the vCenter.
- Install and configure VMware vSphere Web Client 6.7 or 7.0.
- Create and configure the Element cluster pair for replication using the NetApp Element 11 or 12 software.
- Configure the replicated volumes on the cluster pairs using the NetApp Element 11 or 12 software.

Steps

1. Download the `netapp_element_sra-3.0.9.tar.gz` from the [NetApp Support](#) site.
2. Use the SRM IP address to open and log into the SRM Appliance Management dashboard.



3. Click **New Adapter** and add the **NetApp Storage Replication Adapter for Element**.
4. Select the file downloaded from the [NetApp Support](#) site.

The TAR file is the docker file that creates the **NetApp Storage Replication Adapter for Element** container.

Upgrading the SRA

The installation method has changed. The SRA v3.0 only supports SRM 8.2 or 8.3 Virtual Appliance (Photon OS).

To upgrade to the latest version, do the following:

- Follow the VMware migration instructions. For more information, see [*Migrate from Site Recovery Manager for Windows to Site Recovery Manager Virtual Appliance*](#).
- After successful migration to a Photon based SRM, install the latest version of SRA. For more information, see [*Installing the SRA*](#) on page 5.



CAUTION: After you have reinstalled the SRA, reconfigure the array manager and array pair.

Discovering the SRA

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

Steps

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 NetApp Element SRA

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

Steps

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 Element 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 Element 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 Element cluster pairs.

SRA enabled workflows

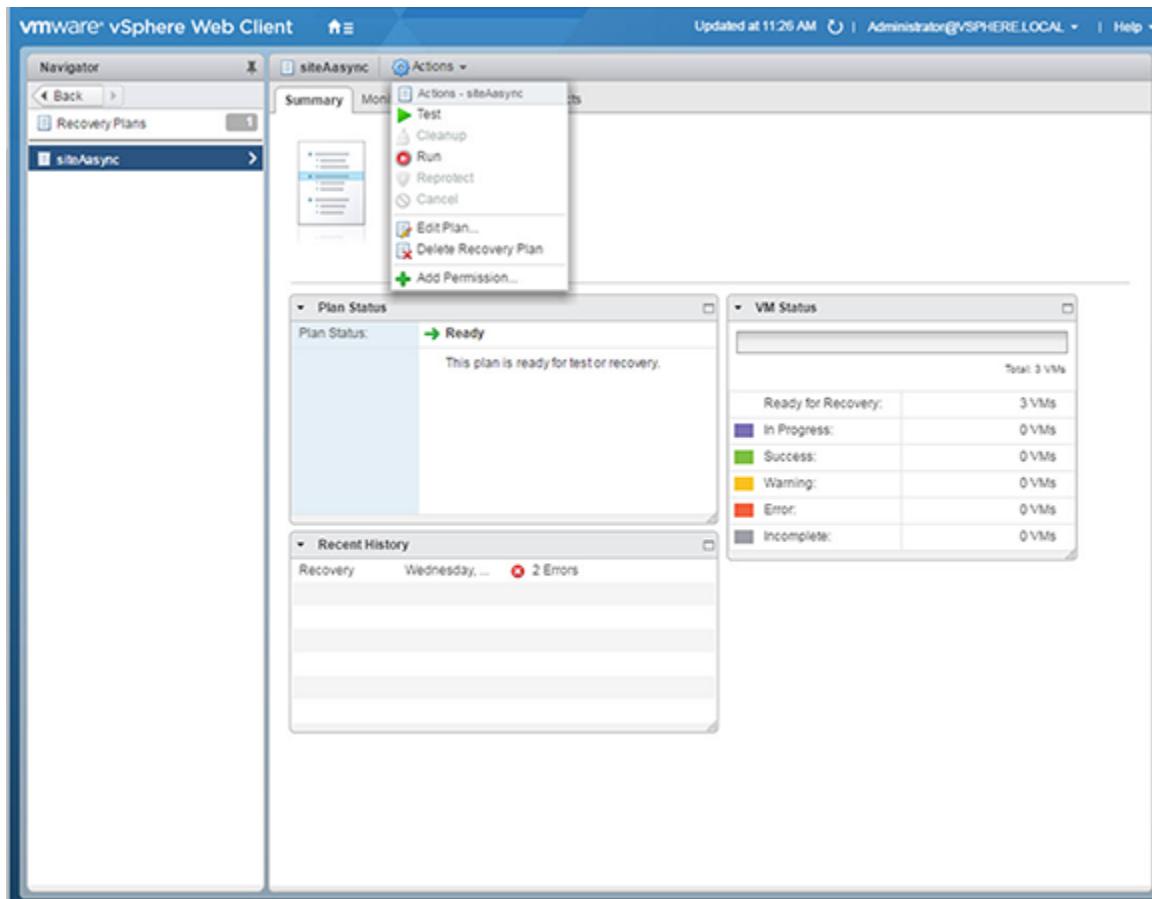
The following workflow options are available from the landing page of the Site Recovery Manager (SRM):

- **Test:** Perform a test recovery of virtual machines with datastores on a Element 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. Element SRA enables that workflow by translating SRM actions into Element 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. Element 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.

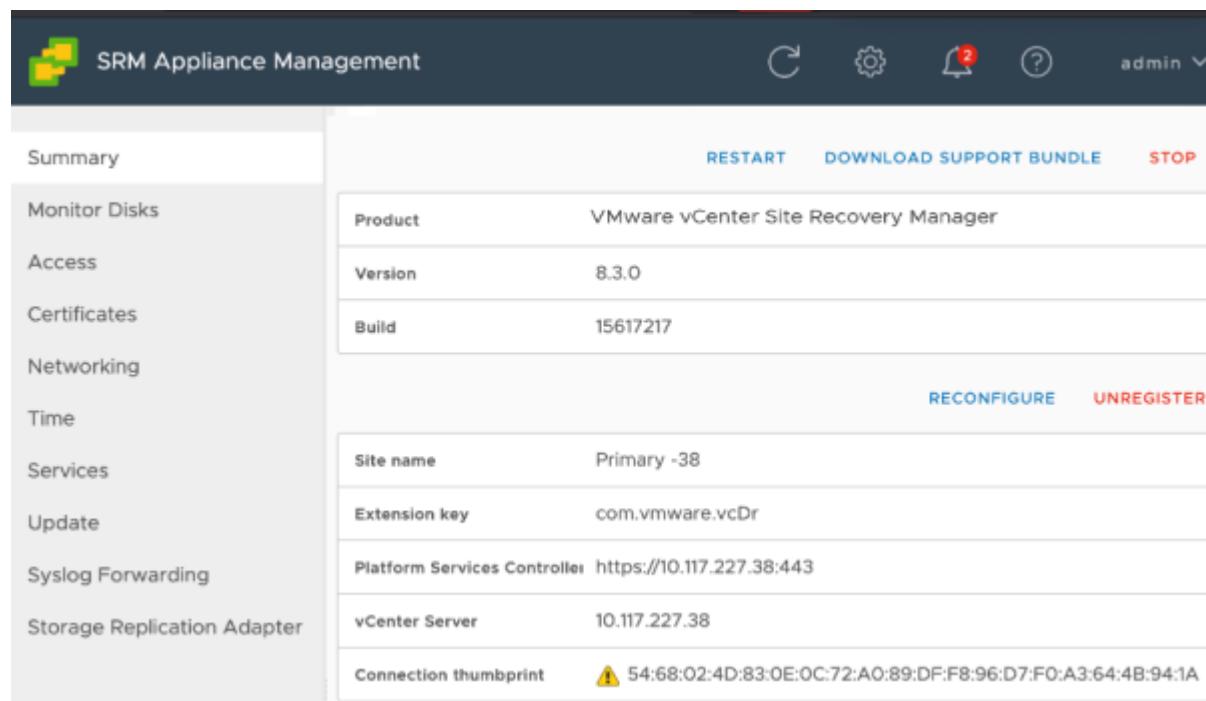


Logging and errors

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

The SRA logs messages and command requests sent by SRM to SRA in a set of standard SRA log files. Each log file is saved in the <VMware vCenter Site Recovery Manager install location>\Logs\SRAssolidfire_sra_<number from 1 to 10>.log format; for example, solidfire_sra_01.log These files overwrite the oldest as needed to preserve a limit of 10 logs. 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 Element cluster.

You can view the SRA log files when you download a support bundler from the SRM Appliance Management dashboard.



The screenshot shows the SRM Appliance Management interface. The top navigation bar includes the SRM logo, the title 'SRM Appliance Management', and user information ('admin'). Below the title are four icons: a circular arrow, a gear, a bell with a question mark, and a help icon. The main content area has a sidebar on the left with links: 'Summary', 'Monitor Disks', 'Access', 'Certificates', 'Networking', 'Time', 'Services', 'Update', 'Syslog Forwarding', and 'Storage Replication Adapter'. The 'Summary' section on the right contains two tables. The first table shows product information: Product (VMware vCenter Site Recovery Manager), Version (8.3.0), and Build (15617217). It includes buttons for 'RESTART' (blue), 'STOP' (red), and 'UNREGISTER' (red). The second table shows connection details: Site name (Primary -38), Extension key (com.vmware.vcDr), Platform Services Controller (https://10.117.227.38:443), vCenter Server (10.117.227.38), and Connection thumbprint (54:68:02:4D:83:0E:0C:72:A0:89:DF:F8:96:D7:F0:A3:64:4B:94:1A). Below these tables are buttons for 'RECONFIGURE' (blue) and 'UNREGISTER' (red).

Export SRM Server Logs

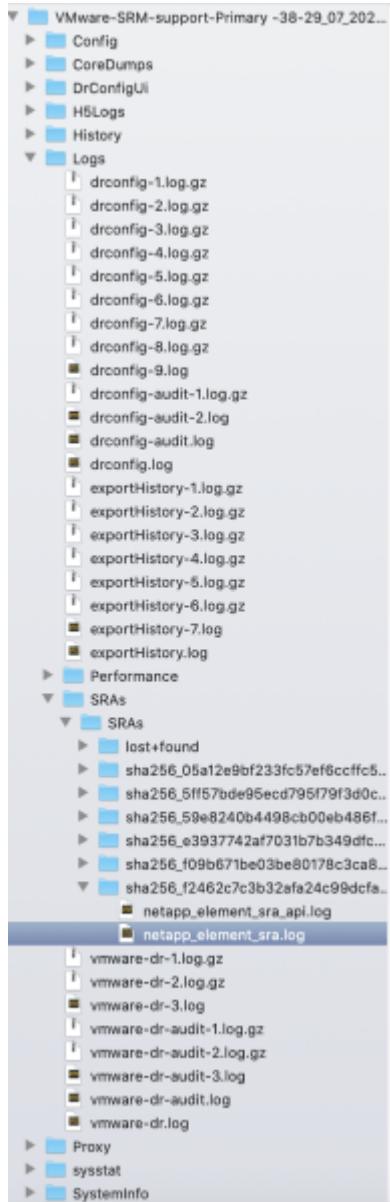
X

SRM server log generation completed

DOWNLOAD

CLOSE

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

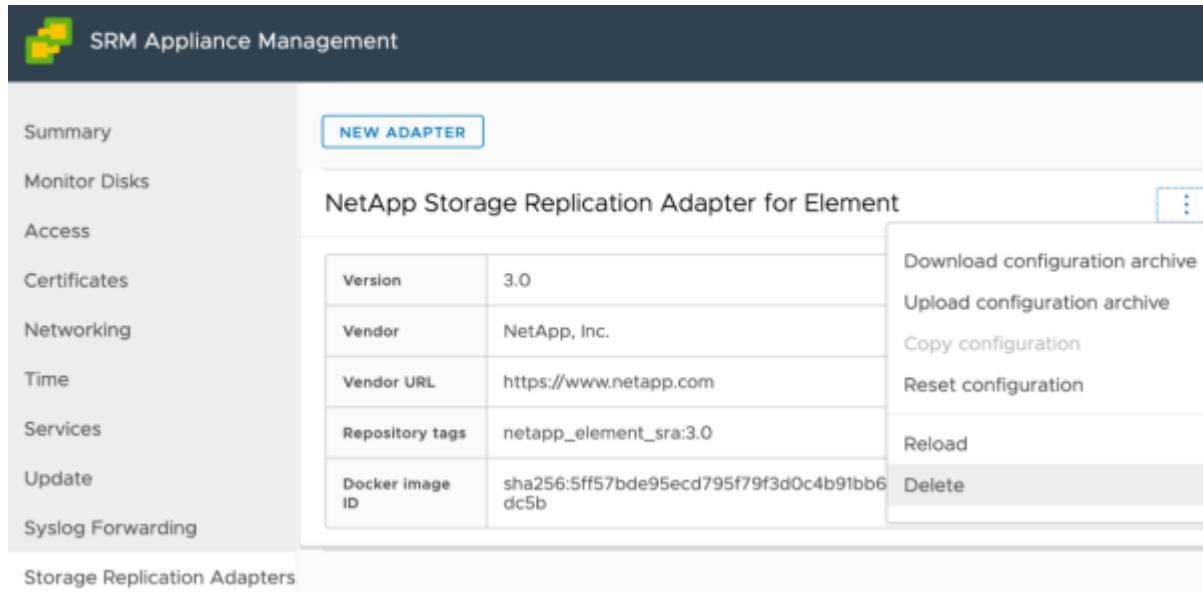
The following issues might occur when executing the processes described in this document.

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 SRA

You can remove the SRA from the SRM Appliance Management dashboard.

Open the NetApp Storage Replication Adapter for Element from the Storage Replication Adapters section and select **Delete** from the ellipses menu.



The screenshot shows the SRM Appliance Management interface. On the left, a sidebar lists various management sections: Summary, Monitor Disks, Access, Certificates, Networking, Time, Services, Update, and Syslog Forwarding. The 'Storage Replication Adapters' section is currently selected. In the main content area, a table displays details for the 'NetApp Storage Replication Adapter for Element'. The table has five columns: Version (3.0), Vendor (NetApp, Inc.), Vendor URL (https://www.netapp.com), Repository tags (netapp_element_sra:3.0), and Docker image ID (sha256:5ff57bde95ecd795f79f3d0c4b91bb6dc5b). To the right of the table is a context menu with several options: Download configuration archive, Upload configuration archive, Copy configuration, Reset configuration, Reload, and Delete. The 'Delete' option is highlighted with a gray background.

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

Contact NetApp Support

If you need help with or have questions or comments about NetApp products, contact NetApp Support.

- Web:
mysupport.netapp.com
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 - 888.4.NETAPP (888.463.8277) (US and Canada)
 - 00.800.44.638277 (EMEA/Europe)
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