

# HP StorageWorks

## P4000 SRA for VMware SRM user guide

This guide provides information about the HP StorageWorks P4000 SRA for VMware SRM, which enables full featured use of the VMware Site Recovery Manager. Combining Remote Copy replication with VMware SRM provides an automated solution for implementing and testing disaster recovery between geographically separated sites.



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# 1 Using the HP StorageWorks P4000 SRA for VMware SRM

## Overview

The HP StorageWorks P4000 SRA for VMware SRM enables full featured use of the VMware Site Recovery Manager. Combining Remote Copy replication with VMware SRM provides an automated solution for implementing and testing disaster recovery between geographically separated sites.

## Configuring SRA

A typical SRM configuration involves two geographically separated sites with TCP/IP connectivity, the protection site and the recovery site. The protection site is the site that is being replicated to the recovery site for disaster recovery. Each site contains a HP StorageWorks P4000 SAN Solution, ESX servers, a Virtual Center Server, and a SRM server.

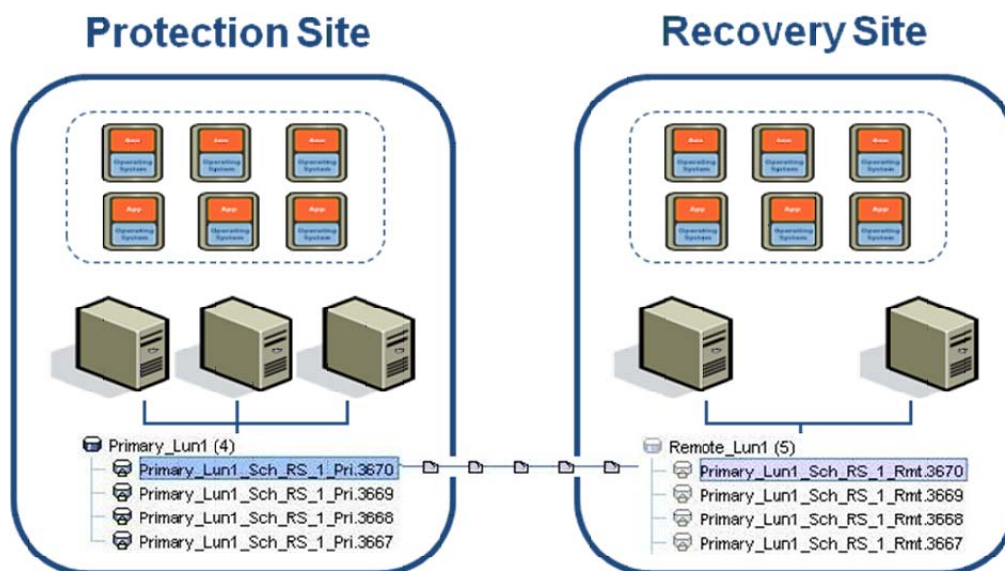


Figure 1 Typical SRM configuration with two geographically separate sites

## Installing SRA

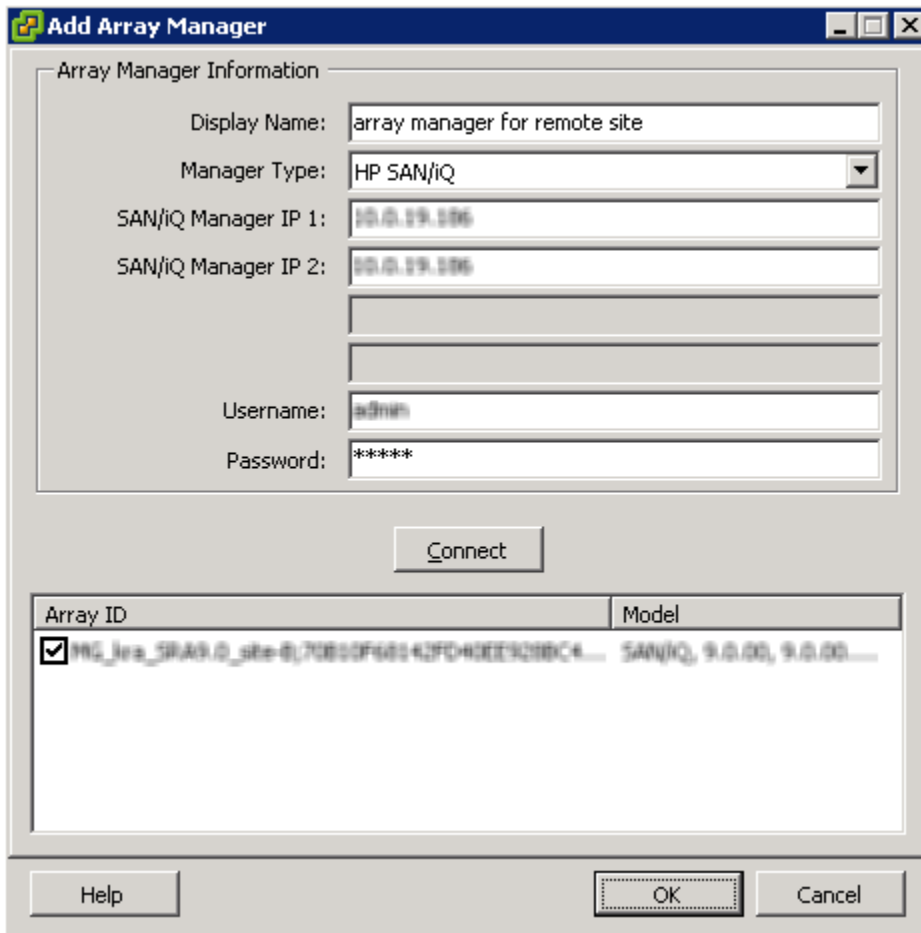
First install the VMware SRM at each site, and then install the HP StorageWorks P4000 SRA on the SRM server at each site. Once the HP StorageWorks P4000 SRA is installed, SRM can discover replicated volumes between sites by configuring arrays in SRM. Configuring HP StorageWorks P4000 SAN Solution arrays in SRM requires the following:

- The IP address of the cluster VIP.
- A user name and a password for each site.

 **NOTE:**

This is the HP StorageWorks P4000 SAN user name and password as configured in the CMC.

The user at the recovery site must have full permissions on the management group but can be limited to read only on all other permissions.



**Figure 2** Configuring arrays in SRM

## How the HP StorageWorks P4000 SRA Works with the SRM

The HP StorageWorks P4000 SRA performs three main functions for SRM. These functions each depend on specific configuration information in a HP StorageWorks P4000 SAN Solution management group.



## Array and volume discovery

SRM gets information from the HP StorageWorks P4000 SRA about what volumes are being replicated by the SAN/iQ software. SRM then compares that list to the volumes it recognizes in a VMware environment.

For normal SRM operation, a replicated volume needs to have a Remote Copy schedule with completed remote copies at a different HP StorageWorks P4000 SAN Solution management group under a remote volume that is not mounted at the remote site. This is a standard HP StorageWorks P4000 SAN Solution Remote Copy configuration.

For instructions on how to configure Remote Copy schedules, see the *Remote Copy User Manual* which is installed in the Documentation directory of the HP StorageWorks P4000 Centralized Management Console program. The same information is available from the online help in the HP StorageWorks P4000 Centralized Management Console.

## Volumes recognized by the HP StorageWorks P4000 SRA

Volumes must be configured with scheduled remote snapshots or they will not be considered for SRM by the SRA. The HP StorageWorks P4000 SRA recognizes the scheduled remote snapshots as replicated LUNs for SRM to manage. Volumes that are being remote copied only manually are not updated consistently enough to be useful for disaster recovery and SRM.

If a volume has scheduled remote snapshots, and you create an ad hoc manual remote snapshot of that volume, then the HP StorageWorks P4000 SRA will recognize the manual remote snapshot along with the scheduled remote snapshots. Such ad hoc remote snapshots may be useful to test failover with a more recent copy than the schedule has, or to push the latest updates to the remote site before a foreseeable disaster occurs.

## Volumes ignored by the HP StorageWorks P4000 SRA

Remote snapshots within the same HP StorageWorks P4000 SAN Solution management group are ignored. These snapshots are not considered disaster recovery copies since they are usually created to clone a volume in the HP StorageWorks P4000 SAN Solution, and copies that reside on the same SAN are not useful for disaster recovery.

## Testing failover at the recovery site

SRM performs test failovers at the recovery site when requested. When test failovers are requested, the HP StorageWorks P4000 SRA will perform the steps listed.

1. Select the replicated volumes.
2. Identify the latest complete Remote Copy snapshot.
3. Delete any temporary writable space on that snapshot to ensure an unedited snapshot is presented to ESX servers.
4. Configure authentication for ESX servers to directly mount snapshots.
5. When testing stops, to conserve space on the SAN, delete the temporary writable space that was used during the test.

## Actual failover at the recovery site

In the event of a disaster, the SRM can perform actual failover when requested to. When actual failover is requested the HP StorageWorks P4000 SRA will perform the steps listed.

1. Select the replicated volumes.
2. Identify and remove any incomplete remote copies that are in progress and present the most recent completed Remote Copy as a primary volume.
3. Convert remote volumes into primary volumes and configure authentication for ESX servers to mount them

If an actual failover does not run completely for any reason, the failover can be called many times to try to complete the run. If, for example, only one volume failed to restore and that was due to a normal snapshot being present, the snapshot could be manually deleted and the failover be requested again.

## Troubleshooting the HP StorageWorks P4000 SRA

**Table 1 Troubleshooting the HP StorageWorks P4000 SRA**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
The HP StorageWorks P4000 SAN array does not appear in the drop down list of arrays for SRM.	The HP StorageWorks P4000 SRA might not be installed or the SRM service has not restarted since the HP StorageWorks P4000 SRA was installed.	Install the HP StorageWorks P4000 SRA and restart the VMware Site Recovery Manager Service.
SRM does not see the volumes that are replicated.	Volumes are only reported as replicated to SRM if they have a Remote Copy schedule.	Create a Remote Copy schedule for all volumes that are to be managed by SRM.
CHAP-authenticated ESX servers are failing to perform test failovers or actual failover.	SRM does not store or pass CHAP passwords to the HP StorageWorks P4000 SRA. For CHAP authentication to work, the authentication group with correct password must be already configured on the SAN/iQ management group.	Create authentication groups for any CHAP authentication required on the recovery site before running test failover or failover.
The HP StorageWorks P4000 SRA fails to connect to the SAN.	SRM servers running the HP StorageWorks P4000 SRA must be able to route TCP/IP traffic to the SAN that is to be managed and must have a valid username and password.	Configure a network that can route from SRM servers to the HP StorageWorks P4000 SAN Solution, and verify the user account configured in SRM.
When the HP StorageWorks P4000 SAN array is discovered, an error message states there are duplicate LUNs.	Both the primary and remote volume might be mounted at the same site.	Do not mount primary and remote volumes at the same site at the same time.

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# 2 Support and other resources

## Contacting HP

For worldwide technical support information, see the HP support website:

<http://www.hp.com/support>

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

## Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

<http://www.hp.com/go/e-updates>

After registering, you will receive e-mail notification of product enhancements, new driver versions, firmware updates, and other product resources.

## HP Insight Remote Support Software

HP strongly recommends that you install HP Insight Remote Support software to complete the installation or upgrade of your product and to enable enhanced delivery of your HP Warranty, HP Care Pack Service or HP contractual support agreement. HP Insight Remote Support supplements your monitoring, 24x7 to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to HP, which will initiate a fast and accurate resolution, based on your product's service level. Notifications may be sent to your authorized HP Channel Partner for on-site service, if configured and available in your country. The software is available in two variants:

- **HP Insight Remote Support Standard:** This software supports server and storage devices and is optimized for environments with 1-50 servers. Ideal for customers who can benefit from proactive notification, but do not need proactive service delivery and integration with a management platform.
- **HP Insight Remote Support Advanced:** This software provides comprehensive remote monitoring and proactive service support for nearly all HP servers, storage, network, and SAN environments, plus selected non-HP servers that have a support obligation with HP. It is integrated with HP Systems Insight Manager. A dedicated server is recommended to host both HP Systems Insight Manager and HP Insight Remote Support Advanced.

Details for both versions are available at: <http://h18004.www1.hp.com/products/servers/management/insight-remote-support/overview.html>

To download the software, go to Software Depot:

<https://h20392.www2.hp.com/portal/swdepot/index.do>.

Select Insight Remote Support from the menu on the right.

## New and changed information in this edition

The following additions and changes have been made for this edition:

- The following information has been updated:
  - P4000 SAN Solution and user documentation have been rebranded
  - New alerts and events functionality replaces the reporting and monitoring features
  - New online upgrade functionality added
  - Space reporting for clusters has been updated
  - Ability to cluster servers in the CMC added
- Detailed hardware information was removed, including details about disk raid, networking, and hardware diagnostics
- 

## Related information

The following documents [and websites] provide related information:

- *HP StorageWorks P4000 Remote Copy User Manual*
- *HP StorageWorks P4000 Multi-Site HA/DR Solution Pack User Manual*
- *CLIQ — The SAN/iQ Command-Line Interface User Manual*

You can find these documents from the Manuals page of the HP Business Support Center website:

<http://www.hp.com/support/manuals>

In the Storage section, click **Disk Storage Systems** and then select P4000 SAN Solutions.

## HP websites

For additional information, see the following HP websites:

- <http://www.hp.com>
- <http://www.hp.com/go/storage>
- [http://www.hp.com/service\\_locator](http://www.hp.com/service_locator)
- <http://www.hp.com/support/manuals>
- <http://www.hp.com/support/downloads>
- <http://www.hp.com/storage/whitepapers>

## Typographic conventions

**Table 2 Document conventions**

Convention	Element
Blue text: <a href="#">Table 2</a>	Cross-reference links and e-mail addresses

Convention	Element
Blue, underlined text: <a href="http://www.hp.com">http://www.hp.com</a>	Website addresses
<b>Bold</b> text	<ul style="list-style-type: none"> <li>Keys that are pressed</li> <li>Text typed into a GUI element, such as a box</li> <li>GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes</li> </ul>
<i>Italic</i> text	Text emphasis
Monospace text	<ul style="list-style-type: none"> <li>File and directory names</li> <li>System output</li> <li>Code</li> <li>Commands, their arguments, and argument values</li> </ul>
<i>Monospace, italic</i> text	<ul style="list-style-type: none"> <li>Code variables</li> <li>Command variables</li> </ul>
Monospace, <b>bold</b> text	Emphasized monospace text

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 **WARNING!**

Indicates that failure to follow directions could result in bodily harm or death.

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 **CAUTION:**

Indicates that failure to follow directions could result in damage to equipment or data.

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 **IMPORTANT:**

Provides clarifying information or specific instructions.

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 **NOTE:**

Provides additional information.

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 **TIP:**

Provides helpful hints and shortcuts.

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## Customer self repair

HP customer self repair (CSR) programs allow you to repair your StorageWorks product. If a CSR part needs replacing, HP ships the part directly to you so that you can install it at your convenience.

Some parts do not qualify for CSR. Your HP-authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider, or see the CSR website:

<http://www.hp.com/go/selfrepair>

This product has no customer replaceable components.

## HP product documentation survey

Are you the person who installs, maintains, or uses this HP storage product? If so, we would like to know more about your experience using the product documentation. If not, please pass this notice to the person who is responsible for these activities.

Our goal is to provide you with documentation that makes our storage hardware and software products easy to install, operate, and maintain. Your feedback is invaluable in letting us know how we can improve your experience with HP documentation.

Please take 10 minutes to visit the following web site and complete our online survey. This will provide us with valuable information that we will use to improve your experience in the future.

<http://www.hp.com/support/storagedocsurvey>

Thank you for your time and your investment in HP storage products.

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# Glossary

<b>Cluster</b>	A grouping of storage systems that create the storage pool from which you create volumes.
<b>Remote Copy</b>	Asynchronous replication of data across geographic distances. Remote Copy uses existing volume and snapshot functions along with the Remote Copy technology to perform this asynchronous replication.
<b>HP StorageWorks P4000 SRA for VMware SRM</b>	The HP StorageWorks P4000 SRA is the program that integrates the VMware SRM with HP StorageWorks P4000 SAN Solution arrays. The HP StorageWorks P4000 SRA automates the storage management required for testing and performing disaster recovery at sites using SAN/iQ Remote Copy to protect data.
<b>Management group</b>	A collection of one or more storage systems which serves as the container within which you cluster storage systems and create volumes for storage.
<b>Manager</b>	Managers are storage systems within a management group that you designate to govern the activity of all of the storage systems in the group.
<b>Remote Copy schedule</b>	A series of remote snapshots up to a specified number or for a specified time period, that are copied from the primary volume to a remote volume, usually in a different geographic location. When the specified limit is reached (either number of remote snapshots or time period), the earliest Remote Copy snapshot is deleted when the new one is created.
<b>Snapshot</b>	A fixed version of a volume for use with backup and other applications.
<b>Virtual Center Server</b>	A service that acts as a central administrator for VMware servers connected on a network. This service directs actions on the virtual machines and the virtual machine hosts. VirtualCenter Server is the working core of VMware® Virtual Center.
<b>VMware Site Recovery Manager</b>	VMware SRM is designed to protect information systems from disasters. It streamlines and automates the protection of critical virtual machines with data, and continuously tests their availability.
<b>Volume</b>	A logical entity that is made up of storage on one or more storage systems. It can be used as raw data storage or it can be formatted with a file system and used by a host or file server.





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