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Hitachi Storage Replication Adapter for Hitachi NAS Platform

Users Guide

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MK-90BA027-00

Contents

Preface

This document describes how to use the Hitachi Storage Replication Adapter (SRA) for Hitachi NAS Platform (HNAS).

This preface includes the following information:

- Intended Audience
- Software Version
- Document Revision Level
- Getting Help
- Comments

Notice: The use of Hitachi Storage Replication Adapter (SRA) for Hitachi NAS Platform and all other Hitachi products is governed by the terms of your agreement(s) with Hitachi.

Intended Audience

This document is intended for anyone who wants to install SRM with Hitachi enterprise storage systems. It is written for experienced Microsoft® Windows system administrators who are familiar with virtual machine technology and data center operations. This document assumes familiarity with VMware Virtual Infrastructure, including ESX Server 3.x, VirtualCenter Server 2.5 and the VI Client. Readers also need working knowledge of storage network technology, specifically Hitachi NAS Platform and how Virtual Infrastructure interacts with it.

A full analysis to determine the specific bandwidth and redundancy requirements of the environment you intend to replicate must be conducted by Hitachi Data Systems Global Solutions Services in its Remote Copy Planning and Design Service. This service provides you with a high-level design for your distance replication solution and a detailed analysis of workload and performance characteristics to help you support potentially expensive bandwidth decisions.

Software Version

This document revision applies to Hitachi Storage Replication Adapter (SRA) for Hitachi NAS Platform version 01.0.0.

Document Revision Level

Revision	Date	Description
MK-90BA027-00	August 2010	Preliminary Release

Referenced Documents

VMware Documentation

- Administration Guide for Site Recovery Manager 1.0 – Provides a conceptual overview as well as reference information about SRM prerequisites, system requirements, installation and licensing, configuring virtual machines, protected and recovery sites, recovery plans, testing and running failover, failback scenarios, adding users, procedural checklists and terminology.
- Site Recovery Manager 1.0 Release Notes – Provides last-minute information about Site Recovery Manager version 1.0.
- Site Recovery Manager Compatibility Matrixes – Lists server, client, database, and guest operating system version compatibilities for Site Recovery Manager.
- Getting Started with Site Recovery Manager – Provides a high-level overview of Site Recovery Manager.
- Site Recovery Manager Evaluator Guide – Provides a conceptual overview and step-by-step workflows describing planning for using SRM, setting up protected and recovery sites, testing failover, the failover and failback process, alarms and status monitoring and a discussion of roles and privileges.

Hitachi Documentation

- **Hitachi NAS Platform and Hitachi High Performance Platform, powered by BlueArc® System Administration Guide**- Provides detailed information how to set up and manage an HNAS system. The version of this document matching the code version of your system can be found in the documentation section of the SMU.

Getting Help

If you need to call the Hitachi Data Systems Support Center, make sure to provide as much information about the problem as possible, including:

- The circumstances surrounding the error or failure
- The content of any error message(s) displayed on the SRM
- The content of any error message(s) displayed on the SMU
- The Diagnostic information of source HNAS
- Diagnostic information of target HNAS
- Diagnostic of SMU
- VMware vCenter SRM Logs

The Hitachi Data Systems customer support staff is available 24 hours/day, seven days a week. If you need technical support, please call:

United States: (800) 446-0744
Outside the United States: (858) 547-4526

Comments

Please send us your comments on this document: doc.comments@hds.com. Include the document title, number, and revision, and refer to specific section(s) and paragraph(s) whenever possible.

Thank you! (All comments become the property of Hitachi Data Systems Corporation.)

Setting Up and Configuring the SRA Adapter

This document explains how to set up and configure the Hitachi Storage Replication Adapter for Hitachi NAS Platform. The following topics are discussed:

Overview of the Hitachi Storage Replication Adapter

Complex distance recovery solutions traditionally require customized, site-specific scripting. Testing these solutions also often requires multiple steps, each separately and manually executed. Hitachi Data Systems and VMware now offer a compelling solution that provides user-friendly site recovery testing and failover for VMware environments. The solution integrates VMware host-side intelligence and robust, market proven storage system-based replication from Hitachi Data Systems.

VMware's Site Recovery Manager (SRM) is a host-based graphical user interface (GUI) application with intelligence about VMware virtual machines and virtual disks and the association of virtual machines and storage. The integration component connecting VMware SRM to Hitachi NAS Platform-based replication is called the Hitachi Storage Replication Adapter (SRA) for HNAS. The SRA allows Hitachi NAS Platform customers to take advantage of the disaster recovery capabilities of SRM.

This document describes the configuration details required to deploy the SRA within an SRM environment using Hitachi NAS Platform replication. It serves as a supplementary implementation guide, describing how to deploy SRM on an existing distance replication solution.

Supported Operating Systems

- Microsoft Windows Server 2003 SP2
- Microsoft Windows Server 2003 R2 SP2
- Microsoft Windows Server 2008
- Microsoft Windows Server 2008 SP2

Supported Arrays

- Hitachi NAS Platform 3100 & 3200
- Hitachi NAS Platform 3080 & 3090

Replication Requirements and Recommendations

A number of requirements must be addressed in a storage replication environment before you deploy the Storage Replication Adapter within SRM. In addition, follow the best practice recommendations in this document to ensure successful deployment and maintenance of the replication environment.

Supported Storage Systems and Replication Architecture

The SRA is designed to work with the Hitachi NAS Platform IP replication. You must configure HNAS storage to perform IP replication using Incremental Data Replication (IDR) with Incremental Block-level Replication (IBR).

For more information on configuring the IP Replication, see the documents in the Referenced Documents section.

Configuration recommendations for the Hitachi NAS Platform

In order for Hitachi NAS and the SRA to work seamlessly together, we suggest you follow the recommendations listed below:

- Each EVS configured on the Hitachi NAS cluster will be discovered as individual arrays. Also note that each EVS should have only one IP address assigned to it. This is based on the recommendation from VMware for the SRM implementation.
- The Array ID will be a combination of the Hitachi NAS Entity IP and EVS ID.

- A VMWare LUN should be mapped to one NFS export:
    - Each NFS export should be unique. There should not be any NFS export pointing to the same HNAS FileSystem path.
    - Each LUN ID will be uniquely represented by the Hitachi NAS FileSystem ID and FileSystem path.
    - SRM/SRA NFS name is the Hitachi NAS NFS Export Name.

- Replicated Filesystems must not be syslocked.

Configuring the setup

Figure 1 illustrates a SRM/SRA setup for performing disaster recovery.

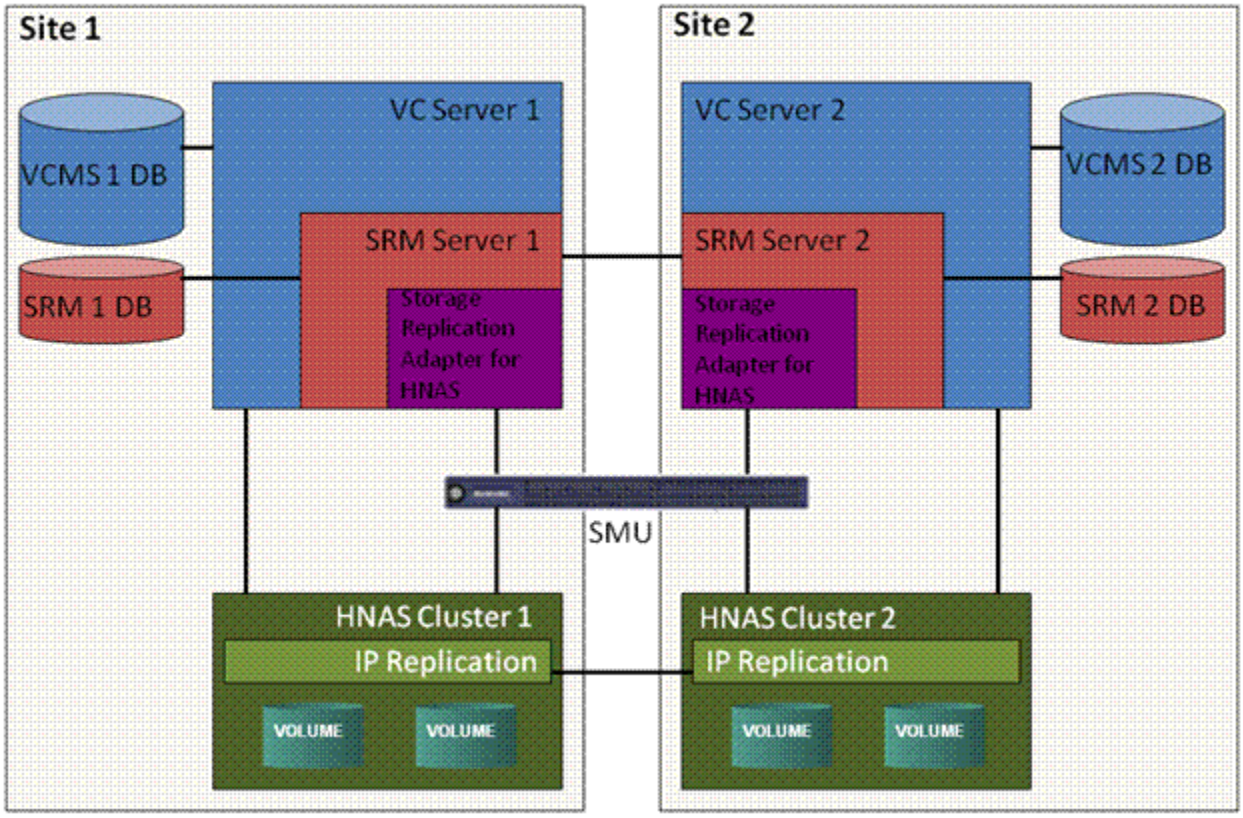

Figure 1 SRM Server side components

SRM is designed as a plug-in to VirtualCenter so that DR tasks can be executed inside the same management tool as other VM administration tasks such as creation, migration, deletion, etc. To summarize, below are the typical configurations for a SRM setup:

- 2 VC servers (one per site)
- 2 SRM servers (one per site)
- 4 databases (two per site, one for VC and one for SRM)
- Pre-configured array-based replication

Configuring SMU permissions

The SRA utilizes the IP replication features of the Hitachi NAS Platform, and uses the System management Unit of a Hitachi NAS installation to influence the replication relationships and to connect to the HNAS nodes. In an installation without an SRA, the replication can only be influenced using the SMU, because special permissions need to be granted to the SRA. The following procedure describes how to achieve this.

In order to allow the HNAS SRA to run the commands which are required to influence the replications the following line needs to be appended to the `sudoers` file:

```
manager         ALL=(root) NOPASSWD:
/opt/smu/adc_replic/replication_schedule.sh ,
/opt/smu/adc_replic/replication_recovery.sh, /bin/ls
/opt/smu/adc_replic/conf/* , /bin/cat /opt/smu/adc_replic/conf/*
```

Please note that the above statement represents one single line in the `/etc/sudoers` file. Also changes to the `/etc/sudoers` file can only be performed by root.

To Configure SMU Permissions:

1. Use `ssh` to logon on the smu as user manager.
2. Acquire root privileges by using "`su -`".
3. Change permissions of `/etc/sudoers` to 0660.
4. Append additional permissions to `/etc/sudoers`.
5. Change permissions of `/etc/sudoers` to 0440.
6. Exit root shell.

Example:

```
[manager@smu01 ~]$
[manager@smu01 ~]$ su -
Password:
[root@smu01 ~]# chmod 0660 /etc/sudoers
[root@smu01 ~]# echo "manager         ALL=(root) NOPASSWD:
/opt/smu/adc_replic/replication_schedule.sh ,
/opt/smu/adc_replic/replication_recovery.sh, /bin/ls
/opt/smu/adc_replic/conf/* , /bin/cat /opt/smu/adc_replic/conf/*" >>
/etc/sudoers
[root@smu01 ~]# chmod 0440 /etc/sudoers
[root@smu01 ~]#
[root@smu01 ~]#exit
[manager@smu01 ~]$
```

Installing the Adapter

The SRA is available as an msi installer file. The adapter should be installed on the server where the SRM server is running. The installation will copy the SRA scripts and binaries to the SRM plugin install folder which is typically:

```
C:\Program Files\VMware\VMware vCenter Site Recovery Manager\scripts\SAN\HNAS
```

Please note that the Adapter should be installed on the primary and secondary SRM server machines.

Uninstalling the Adapter

1. Open **Add/Remove Programs**.
2. Select the application **Hitachi Storage Replication Adapter for HNAS**.
3. Click on **Remove**.

Verifying the Adapter in the SRM GUI

To start the SRM GUI, from the vSphere Client GUI navigate to:

View/Solutions and Applications/Site Recovery, and then click on **Connect to VMware vCenter Site Recovery Manager.**

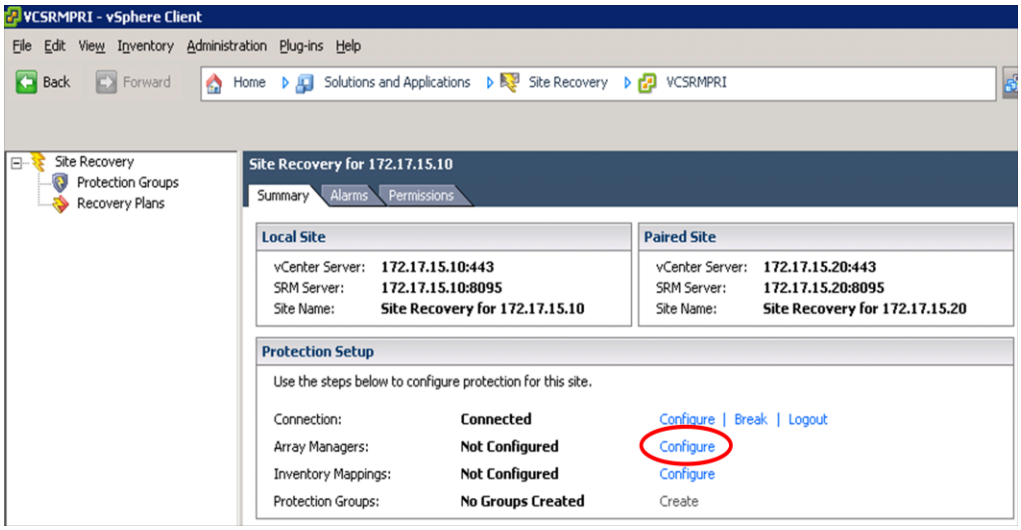

Figure 2 Verifying the adapter in the GUI

The Array Managers needs to be configured for SRM to configure/identify the replicated volumes. Click **Configure** under Array Manager as highlighted in the above figure and follow the following steps below to configure the SRM/SRA for HNAS.

1. Click on **Add** to configure the array manager information for the Protected Site.

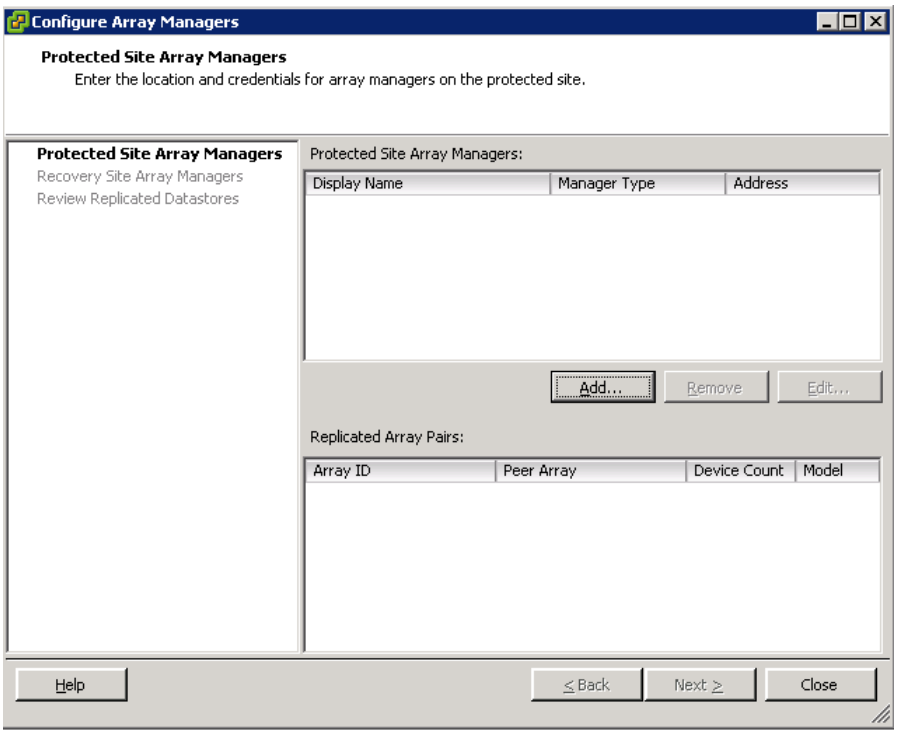

Figure 3 Configuring the Array Manager

2. Enter Array Manager Information for the Protected Site.

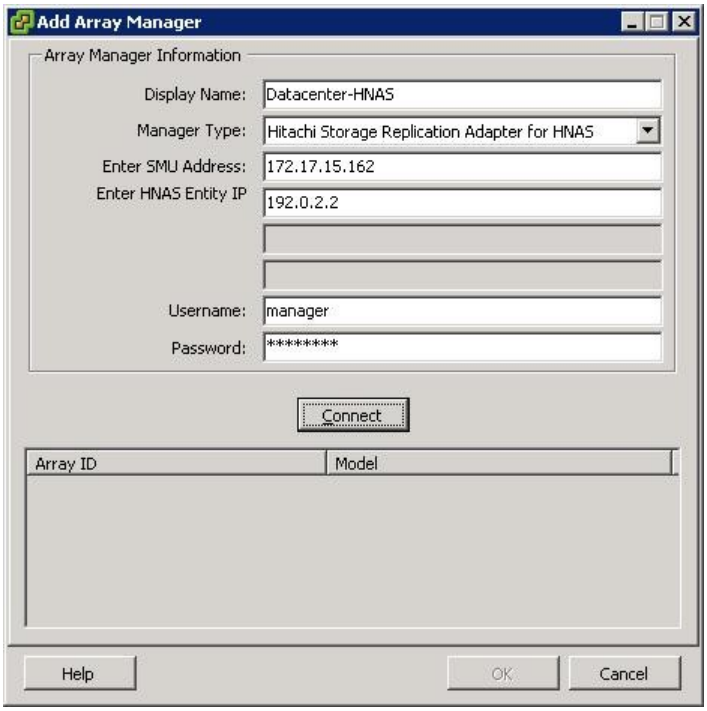

Figure 4 Entering Array Manager information

In the above screen, make sure that you select the **Hitachi Storage Replication adapter for HNAS**. Provide the SMU IP address, the HNAS entity IP address (the HNAS cluster IP or a standalone HNAS that will be hosted on the protected site), SMU user name and SMU password. The SMU user name and password might be different from the username/password that is provided to the web based GUI.

3. Now click on **Connect**, and it will display the list of array ID. Please note that the number of Array ID will be equal to the number of HNAS cluster ID and the EVS ID.

4. Validate the Protected Array Manager Replicated pair information.

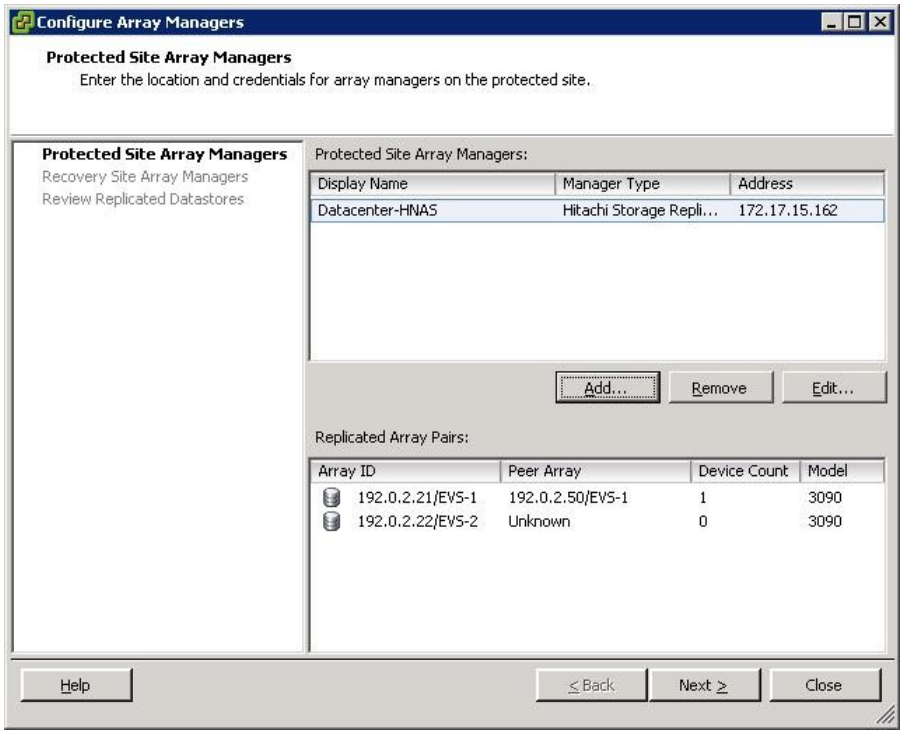

Figure 5 Validating the Protected Array Manager replicated pair information

Now validate that the pair count in the SRM GUI is the same as the replications configured on HNAS for an EVS. Selected arrays that do not have any replication pairs will have the **Peer Array** set to **Unknown**.

5. Enter Array Manager Information for the Recovery Site

6. Click on **Next** in the screen shown in Figure 5, for configuring the Array Manager information for the replicated site. Make sure that you enter the correct information for the HNAS entity IP address (the HNAS cluster IP or a standalone HNAS that will be hosted on the recovery site).

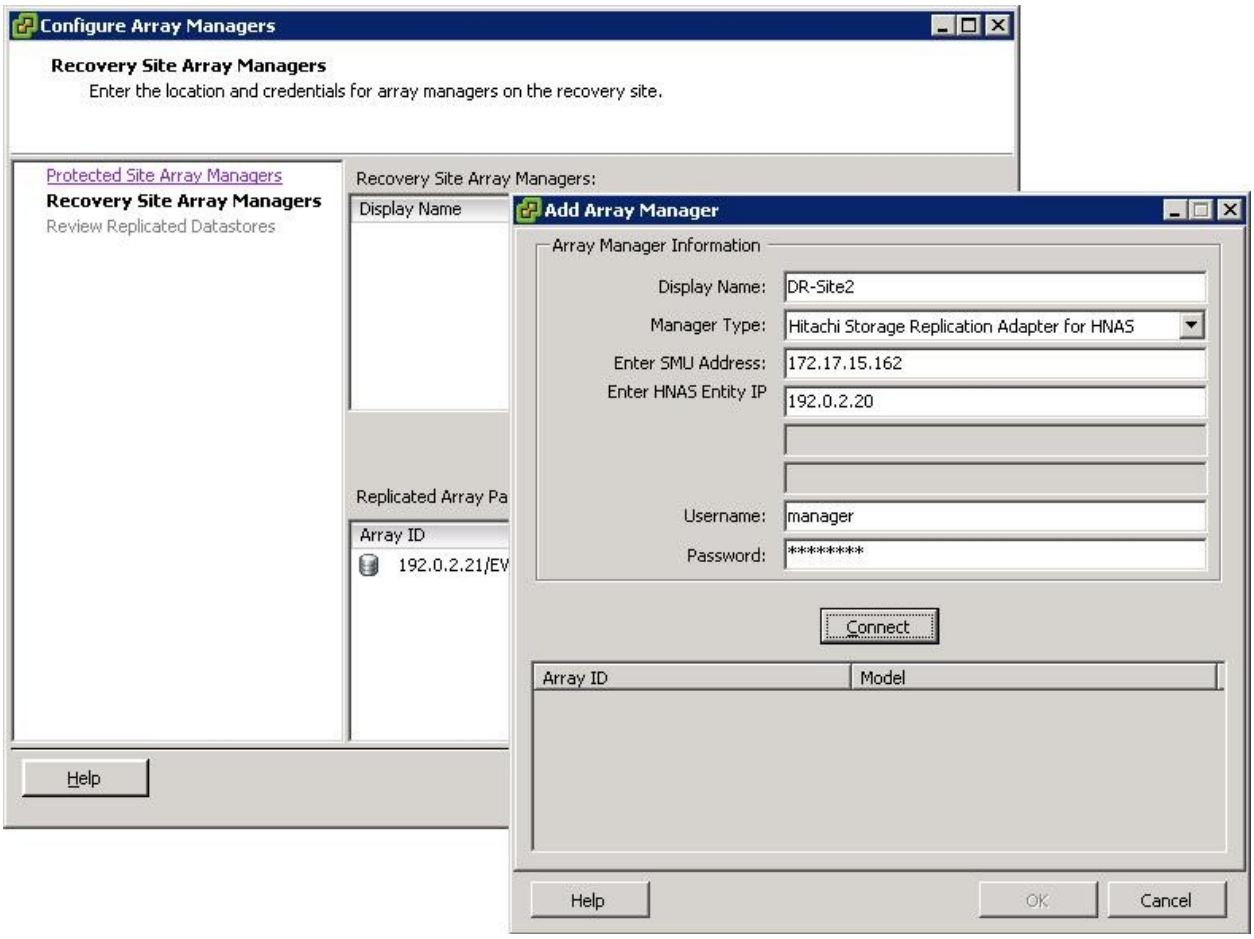

Figure 6 Add Array Manager

7. Confirm the Replicated pair information.

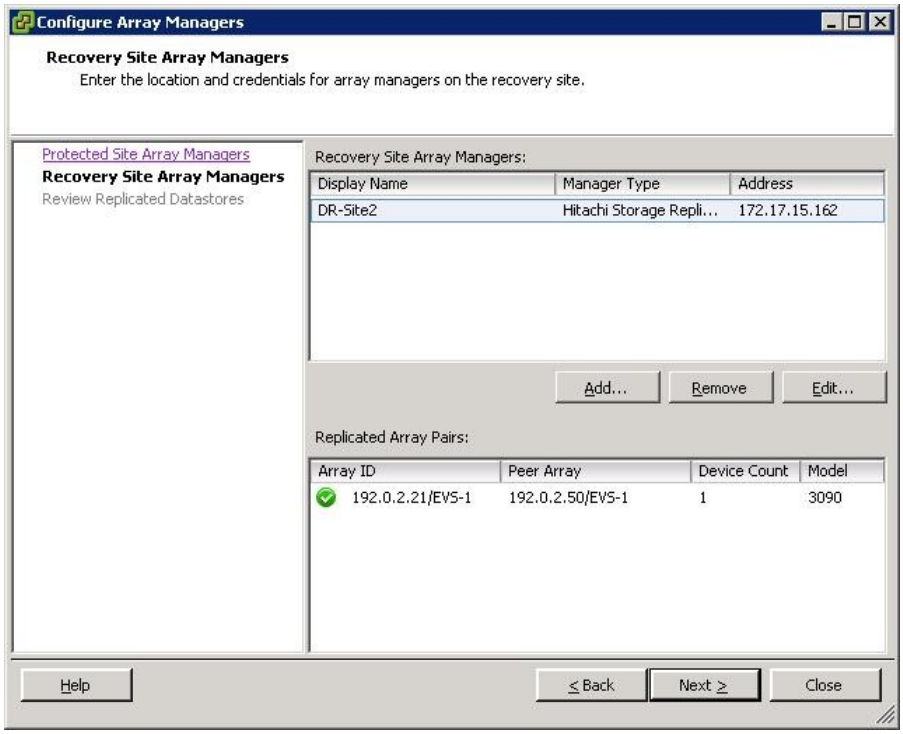

Figure 7 Confirming the Replicated pair information

Troubleshooting

The following sections will list possible problems you may encounter and point you to solutions.

Problem	Possible Cause
When the SRA is called by SRM nothing happens. In the SRM log the SRA seems to be stuck; eventually the SRM action times out.	SRA permissions in `/etc/sudoers` have not been adjusted. Follow the instructions in chapter Configuring SMU Permissions to set up the required permissions.
After a test failover or a failover the storagepools are available but VM cannot start due to denied write access.	Replication target may be syslocked. Sysunlock the replication target Filesystem.

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