

IBM System Storage SAN Volume Controller Adapter for
VMware vCenter Site Recovery Manager
Version 2.2.1

User Guide



Note

Before using this document and the product it supports, read the information in "Notices" on page 31.

Edition notice

This edition applies to version 2.2.1 of the IBM System Storage SAN Volume Controller Adapter for VMware vCenter Site Recovery Manager 5.x and to all subsequent releases and modifications until otherwise indicated in a newer publication.

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About this guide

This guide prepares you for installing, configuring, and using the IBM® System Storage® SAN Volume Controller Adapter for VMware vCenter Site Recovery Manager 5.x.

Who should use this guide

System administrators or others who install and use the VMware Site Recovery Manager with IBM System Storage SAN Volume Controller can benefit from this guide.

Before installing the Storage Replication Adapter for SAN Volume Controller, it is important to have an understanding of the following systems:

- Storage area networks (SANs)
- SAN Volume Controller Metro/Global-Mirror Copy Services
- The capabilities of your storage units

For information on Metro/Global-Mirror Copy Services, refer to the IBM System Storage SAN Volume Controller Administration guide. The guide can be downloaded from the IBM SAN Volume Controller information center (<http://pic.dhe.ibm.com/infocenter/svc/ic/index.jsp>).

Conventions used in this guide

The notices that are used in this publication highlight key information.

Note: These notices provide important tips, guidance, or advice.

Important: These notices provide information or advice that might help you avoid inconvenient or difficult situations.

Attention: These notices indicate possible damage to programs, devices, or data. An attention notice appears before the instruction or situation in which damage can occur.

Related documentation

You can find additional information and publications related to the IBM System Storage SAN Volume Controller Adapter for VMware vCenter Site Recovery Manager 5.x at the following websites:

- IBM Storage Host Software Solutions Information Center (<http://pic.dhe.ibm.com/infocenter/strhosts/ic/index.jsp>).
- IBM SAN Volume Controller Information Center (<http://pic.dhe.ibm.com/infocenter/svc/ic/index.jsp>).
- VMware vCenter Site Recovery Manager Documentation (http://www.vmware.com/support/pubs/srm_pubs.html)
- SAN Volume Controller V4.3.0 Advanced Copy Services (<http://www.redbooks.ibm.com/redbooks/pdfs/sg247574.pdf>)

- SAN Volume Controller Best Practices and Performance Guidelines (<http://www.redbooks.ibm.com/redbooks/pdfs/sg247521.pdf>)

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Procedure

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- Send your comments by email to starpubs@us.ibm.com. Be sure to include the following information:
 - Exact publication title and version
 - Publication form number (for example, GC27-3920-02)
 - Page, table, or illustration numbers that you are commenting on
 - A detailed description of any information that should be changed

Chapter 1. Introduction

The IBM System Storage SAN Volume Controller Adapter for VMware vCenter Site Recovery Manager (SRM) is a software add-on, used as a Storage Replication Adapter (SRA). The SRA integrates with the SRM solution and enables SRM to run failovers together with IBM SAN Volume Controller storage systems.

The IBM SAN Volume Controller SRA extends SRM capabilities and uses replication and mirroring as part of the SRM comprehensive Disaster Recovery Planning (DRP) solution.

VMware administrators can automate the failover of a SAN Volume Controller system at the primary SRM site to a recovery (secondary) SRM site. Immediately upon a failover, the ESX/ESXi servers at the secondary SRM site initiate the replicated datastores on the mirrored volumes of the secondary SAN Volume Controller system.

When the primary site is back online, you can run failback from the recovery site to the primary site by clicking **Reprotect** in the SRM.

Concept diagram

The IBM SAN Volume Controller Storage System can use the SAN Volume Controller SRA add-on that works with each instance of VMware vCenter SRM (protected or recovery).

Figure 1 on page 2 shows how the IBM SAN Volume Controller Storage System is integrated in a typical VMware SRM disaster recovery solution.

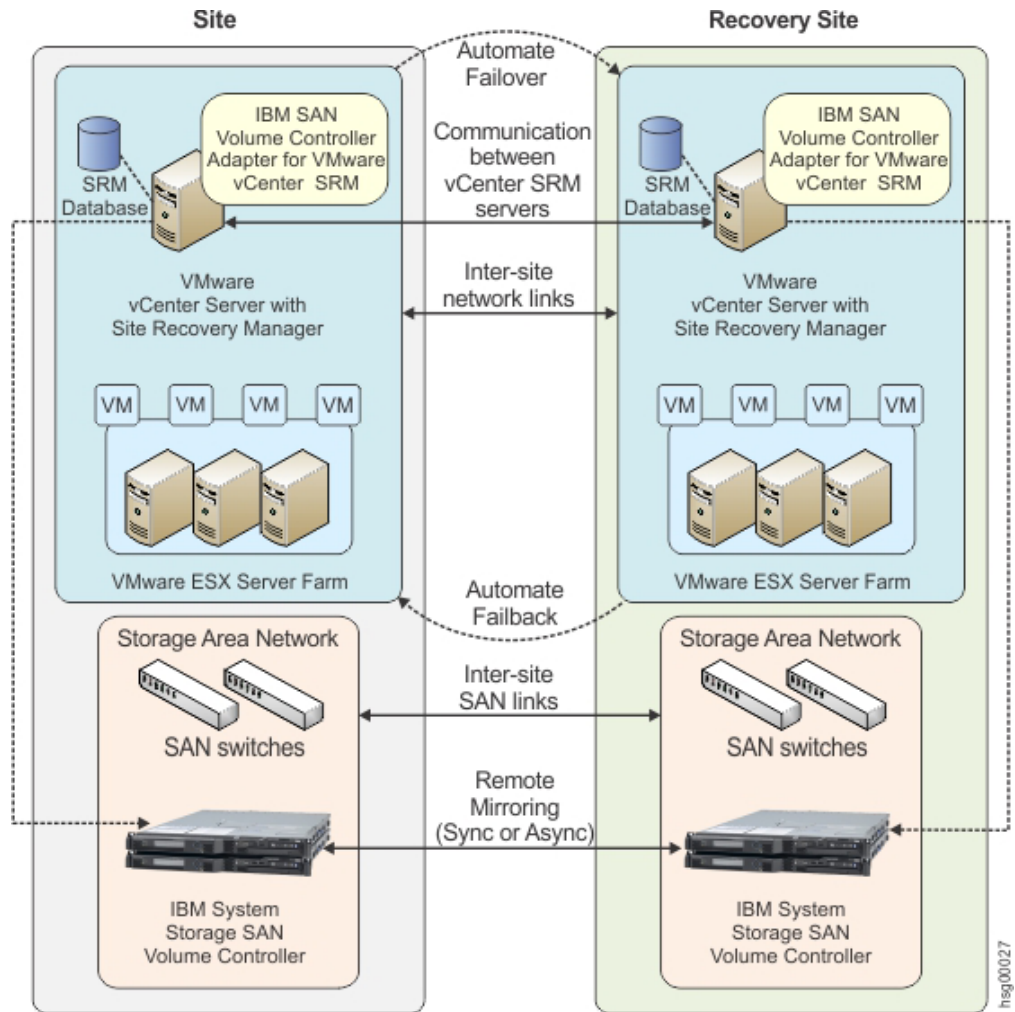


Figure 1. Concept Diagram

Compatibility and requirements

For up-to-date information about the compatibility and requirements of the IBM SAN Volume Controller Adapter for VMware vCenter Site Recovery Manager, see the latest release notes.

You can obtain the latest release notes on the IBM Storage Host Software Solutions Information Center.

Note: See the relevant VMware documentation for information about how to install the compatible versions of vCenter Server, Site Recovery Manager, and vSphere Client. Also, see the latest installation and configuration instructions for ESX and ESXi servers.

Chapter 2. Preparation

Depending on your specific site configuration, preparation is required.

Before you install the IBM SAN Volume Controller Adapter for VMware vCenter Site Recovery Manager (IBM SAN Volume Controller SRA), verify the following tasks:

- “Verifying the SAN Volume Controller software implementation”
- “Verifying the mirroring configuration”
- “Verifying the VMware vCenter Site Recovery Manager installation” on page 5

Verifying the SAN Volume Controller software implementation

To verify the IBM System Storage SAN Volume Controller Storage Replication Adapter for VMware SRM software implementation, you must complete the steps.

Procedure

1. Verify that the system requirements are met. See System requirements for the IBM System Storage SAN Volume Controller Storage Replication Adapter software.
2. Verify that the SAN Volume Controller nodes are running firmware version 5.1.0.10 or later.
3. Create appropriate-sized target volumes on the recovery site SAN Volume Controller. Create Metro/Global-Mirror relationships between the source and target volumes and add the relationships to Consistency Groups, as needed. For more information about volume creation and Metro/Global Mirror Copy Services, see the IBM SAN Volume Controller Information Center.
4. Create a user on the SAN Volume Controller with the appropriate privileges for SRA. For SRA non-preconfigured settings, a user with “Administrator” or higher privilege is needed. For SRA Preconfigured settings, a user with “CopyOperator” or higher privilege is needed.

Important: It is preferred that the user name and password are the same on both the Protected and the Recovery Site.

Note: For more information about how to install IBM SAN Volume Controller Console, see the IBM SAN Volume Controller Information Center.

Verifying the mirroring configuration

All SAN Volume Controller systems, volumes, and ESX hosts at both sites must be properly connected to their remote counterparts and configured for site mirroring.

Before you install the IBM SAN Volume Controller SRA, verify that the following prerequisites are completed:

- Your local SAN Volume Controller system at the protected site has mirroring connectivity with the target SAN Volume Controller system at the recovery site.
- The name of each SAN Volume Controller system is unique at both the protected and the recovery sites.

- The target name of any target SAN Volume Controller system (remote mirrored system) is identical to the predefined System Name of that same remote SAN Volume Controller system.
- The storage pools that contain the replicated volumes at both the protected and recovery sites are sufficient for creating the snapshots of all replicated volumes concurrently.
- For non pre-configured environments, an extra spare space for Test Failover and Failover is necessary. Ensure that enough space is available in the pool for it.
- Remote mirroring is defined for all SAN Volume Controller-based volumes that you intend to protect as part of your Disaster Recovery Plan (DRP).
- Protected (primary) volumes are mapped to the protected ESX hosts.
- For non-preconfigured environments, the recovery (secondary) SAN Volume Controller-based volumes remain unmapped.
- The recovery (secondary) ESX/ESXi hosts are defined as SAN Volume Controller hosts at the recovery site.
- Recovery ESX/ESXi host ports are FC-zoned with the SAN Volume Controller system at the recovery site, and are visible by that SAN Volume Controller system.

Attention: Confirm with your storage administrator that all the requirements are met.

Supported iSCSI configurations

Single session or multi-session iSCSI configurations are supported.

Single session Configuration

The following single session configurations are supported:

- A VMware ESX server with one NIC Port and a single IP V4 configured on it. At the same time, the SAN Volume Controller has a single Target IP V4 configured on an Ethernet Port. This configuration results in a single path from the ESX server to each iSCSI LUN.
- A VMware ESX server with one NIC Port and a single IP V4 configured on it. At the same time, the SAN Volume Controller has two Target IP V4 configured on Ethernet Ports, one on each node. This configuration results in two paths visible from the ESX server to each iSCSI LUN.

Multi-session Configuration

A maximum of four sessions are supported between a VMware ESXi Server and a SAN Volume Controller Node (Canister). Therefore, a maximum of eight paths are available to the Disk/LUN. For example, four paths or sessions are available to each SAN Volume Controller Node (Canister) from each iSCSI initiator IQN.

Note: For more information about iSCSI host attachment of VMware hosts, see Guidelines for the Attachment of VMware iSCSI Hosts to SAN Volume Controller and Storwize® V7000 – Errata.

Verifying the VMware vCenter Site Recovery Manager installation

Before you install the IBM SAN Volume Controller Adapter for VMware vCenter Site Recovery Manager (SRM), ensure that the VMware SRM is already installed and accessible.

The VMware SRM must be installed and accessible at the protected (primary) site, in addition to at the recovery (secondary) site.

On the vSphere client application, go to the home page and check that the **Site Recovery** icon is displayed under **Solutions and Applications**.

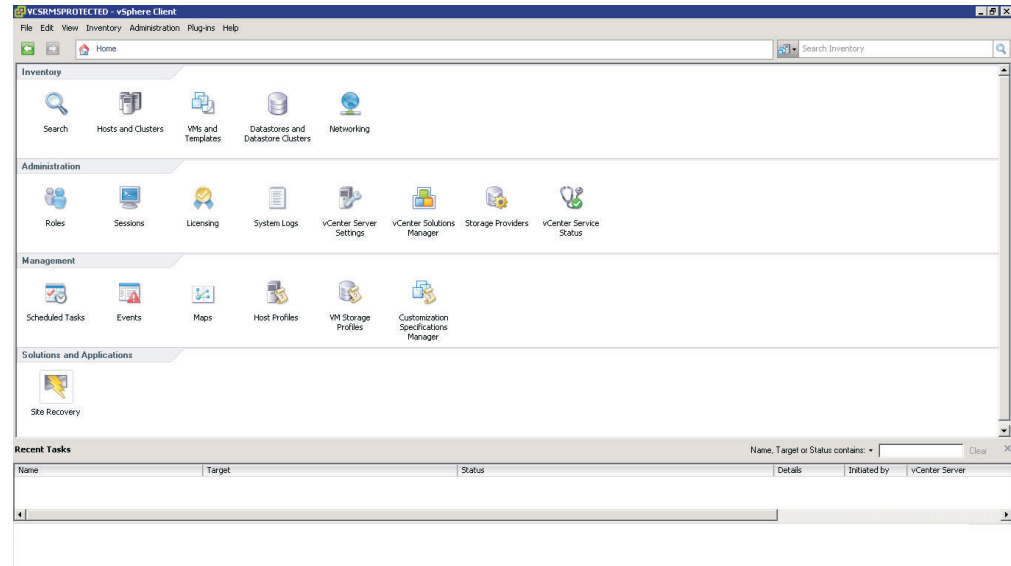


Figure 2. VMware vSphere Client – Site Recovery Manager is installed

Chapter 3. Installation

After you finish the required preparation, you can install the IBM SAN Volume Controller SRA.

This chapter describes:

- “Running the SAN Volume Controller SRA installation wizard”
- “Uninstalling SAN Volume Controller Storage Replication Adapter Software” on page 11

Running the SAN Volume Controller SRA installation wizard

Use the installation wizard to install the IBM System Storage SAN Volume Controller Storage Replication Adapter for VMware SRM software.

Before you begin

You must satisfy all of the prerequisites that are listed in Chapter 2, “Preparation,” on page 3 before you start the installation. For more information, see the IBM System Storage SAN Volume Controller Storage Replication Adapter for VMware SRM Release Notes[®].

Procedure

Complete the following steps to install the IBM System Storage SAN Volume Controller Storage Replication Adapter for VMware SRM software on the Windows server:

1. Log on to the Windows server as an administrator.
2. Double-click the IBMSVCSRA.exe file that you extracted from the downloaded compressed file archive. The Welcome panel is displayed.

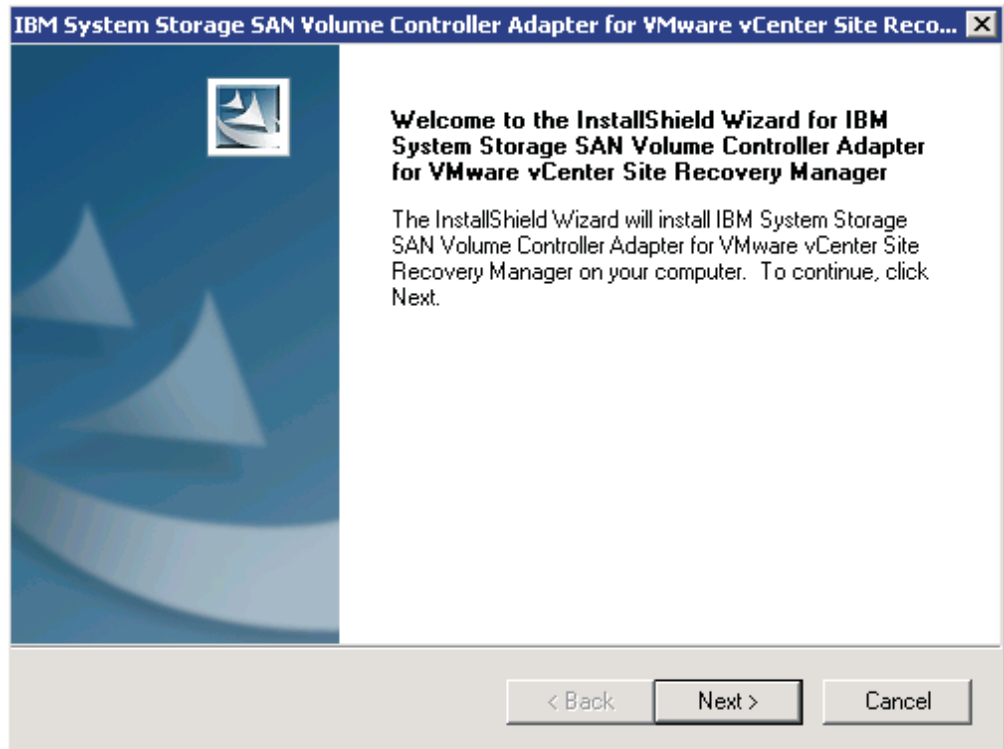


Figure 3. Welcome panel

3. Click **Next**. The License agreement panel is displayed. You can click **Cancel** at any time to exit the installation.
4. Read the license agreement information. Select the **I accept the terms of the license agreement** option and click **Next**. If you do not accept the terms of the agreement, you cannot continue with the installation. The Customer information panel is displayed.
5. Enter the appropriate user and organization names and click **Next**.

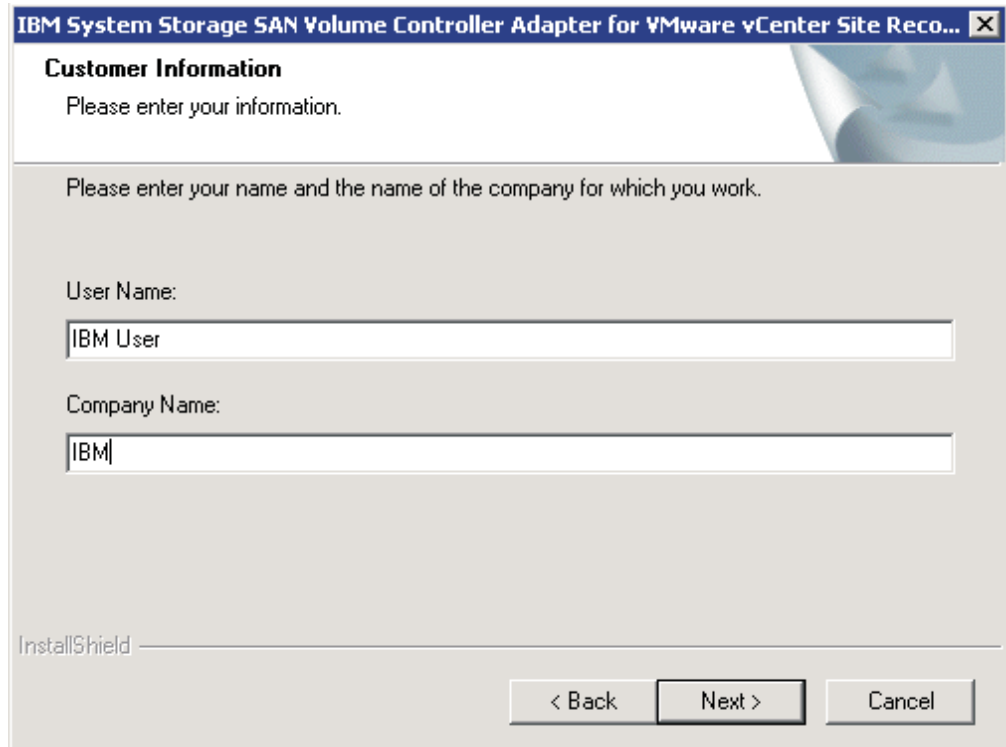


Figure 4. Customer Information panel

6. On the **Confirm New Folder** panel, the installation location is displayed. Click **Yes** to allow the installer to create the destination folder. If you do not agree with the installation location, click **No**.

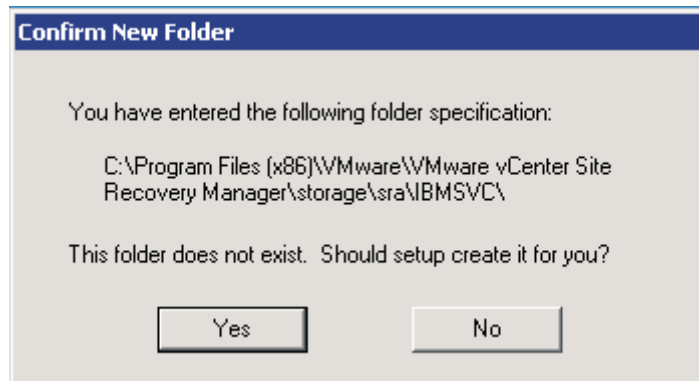


Figure 5. Confirm New Folder panel

7. Click **Install**.

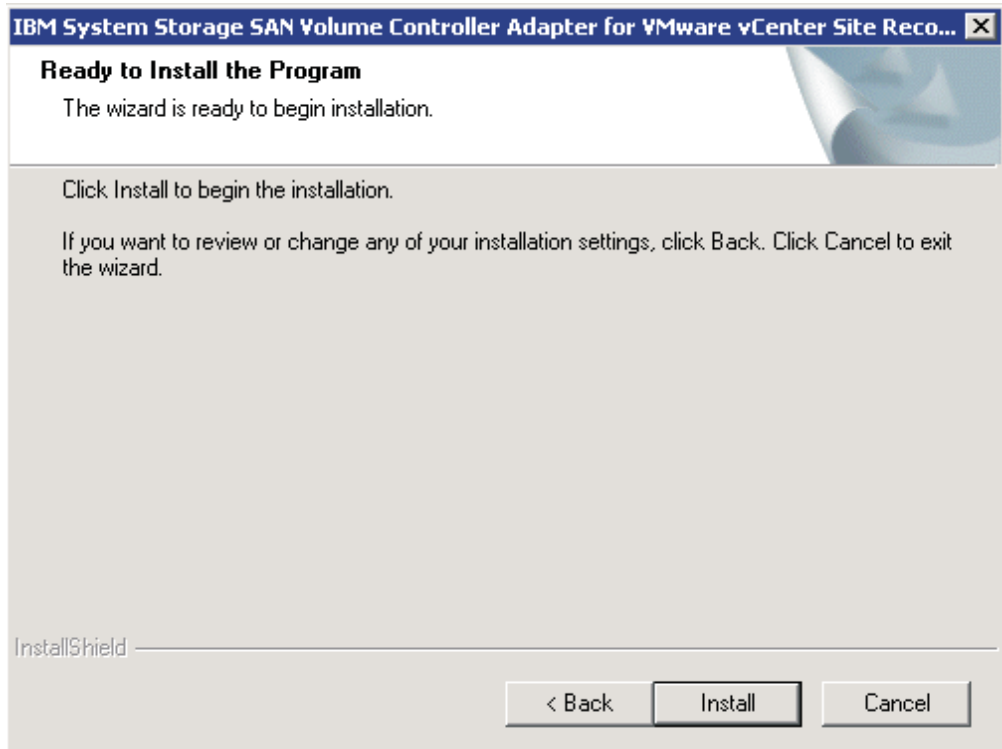


Figure 6. Ready to install the program panel

8. Click **Finish** when the installation process completes.

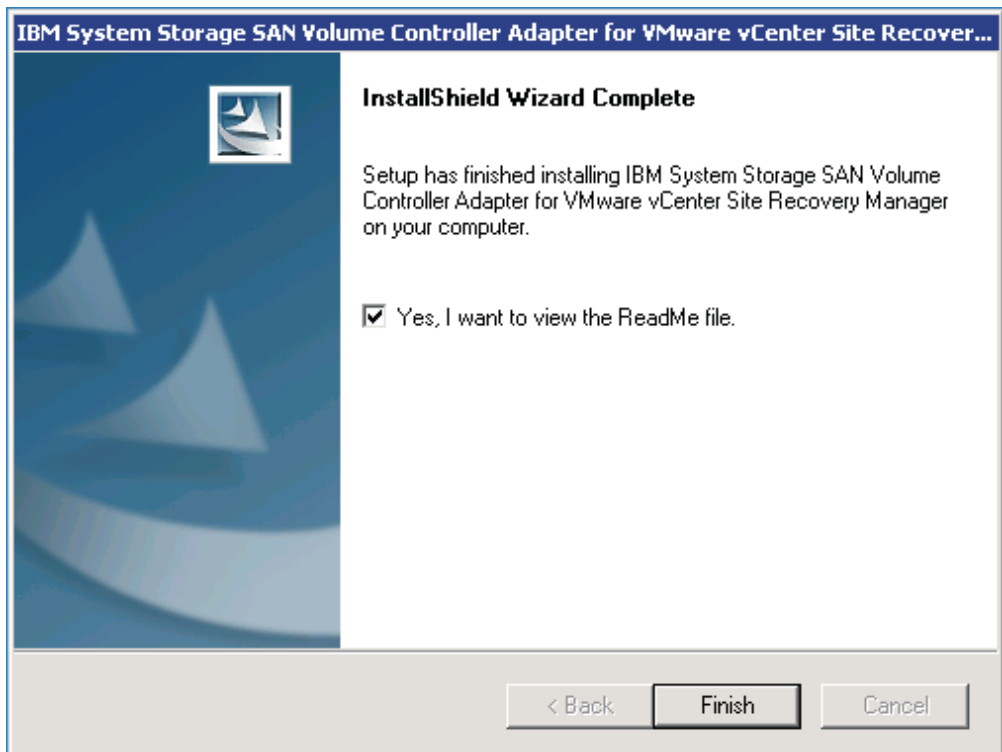


Figure 7. Installation wizard Complete panel

Uninstalling SAN Volume Controller Storage Replication Adapter Software

You can uninstall the IBM System Storage SAN Volume Controller SRA software by kicking off the installation file (IBMSVCSRA.exe).

Procedure

Complete the following steps to uninstall the software:

1. Log on to the Windows server as the local administrator.
2. Select one of the following actions:
 - Double-click the IBMSVCSRA.exe file and select **Remove**.
 - Go to **Add/Remove Program** in the Windows Control panel.
3. Click **Finish** on the final panel. If necessary, you are prompted to restart the system.

Chapter 4. Configuration

The SRA installation creates a shortcut named `IBMSVCSRAUtil.exe` on the desktop.

Important: The configuration utility must be run on both the protection site and the recovery site SRM host. The **Pre-Configured Env.** setting must be consistent for both sites.

Double-click the `IBMSVCSRAUtil.exe` shortcut to show the configuration utility dialog box.

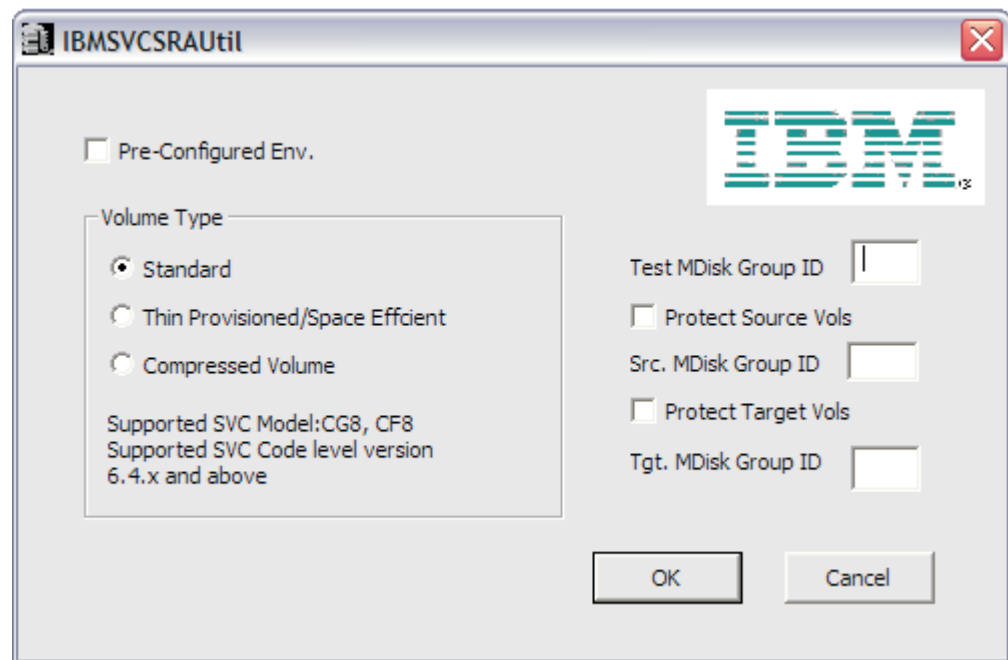


Figure 8. Non-preconfigured environment configuration

VMware SRM 5.0 and above provides two kinds of recoveries:

- Planned failover
- Disaster recovery

In both recovery scenarios, back up the source and target volumes. Instruct the SRA to create FlashCopy® backups of the remote copy source and target volumes by checking **Protect Source Vols** and **Protect Target Vols**. Add the appropriate MDisk group IDs in the boxes before you promote target volumes to the ESX server and recover VMs on them.

Note: If the SRA fails to back up the source or target volumes, no warning message is displayed. It is necessary to check the backups on the storage. Or, check the log messages in the SRM logs.

- For preconfigured environment configuration settings, see “Configuring preconfigured environments” on page 14.

- For non-preconfigured environment configuration settings, see “Configuring non-preconfigured environments.”
- To set user privileges, see “Setting user privileges for SRA configurations” on page 15.

Configuring preconfigured environments

If the **Pre-Configured Env** option is selected, some pre-configuration steps are necessary before SRA can function properly.

Procedure

1. Create an equal number of FlashCopy (target) volumes as the Remote Copy target volumes on the recovery site SAN Volume Controller.
2. Create a background copy and incremental FlashCopy mapping between Remote Copy target volumes and the previously created FlashCopy target volumes on the recovery site SAN Volume Controller.
3. If the remote copies are in a consistency group, create a corresponding FlashCopy consistency group and configure the corresponding FlashCopy to the FlashCopy consistency group.
4. Map the Remote Copy target and FlashCopy target volumes to the recovery site vSphere servers.
5. Create an equal number of FlashCopy (target) volumes as the Remote Copy source volumes on the protected site SAN Volume Controller.
6. Create a background copy and incremental FlashCopy mapping between Remote Copy source volumes and the previously created FlashCopy target volumes on the protected site SAN Volume Controller.
7. If the remote copies are in a consistency group, create a corresponding FlashCopy consistency group and configure the corresponding FlashCopy to the FlashCopy consistency group.
8. Map the Remote Copy source and FlashCopy target volumes to the protected site vSphere servers.

Note:

- a. FlashCopy configuration on the protected site is for the test recovery and recovery operation after the **reprotect** operation on the recovery site.
- b. FlashCopy (target) volumes are resynchronized during recovery.

Configuring non-preconfigured environments

With non-preconfigured mode, SRA creates volumes and FlashCopy, and also attaches and detaches volumes to and from the host.

Procedure

1. Set the appropriate configuration settings:

Test MDisk group ID

Instructs SRA as to which MDisk group on the recovery site SAN Volume Controller creates FlashCopy (target) volumes during test recovery operations.

Volume Type

Select the volume type as Standard, Thin Provisioned (Space Efficient), or Compressed Volume depending on your requirement. SRA creates the same type of volume during test recovery or recovery.

Note: If you back up remote mirror source or target volumes during recovery, the **Src. MDisk Group ID** must be an MDisk group ID on the primary SAN Volume Controller cluster. Likewise, on the recovery site SAN Volume Controller, the **Tgt. MDisk Group ID** must also be an MDisk group ID.

2. Click **OK** to confirm the selections or click **Cancel** to leave the selections unchanged. To confirm or change the options, restart the configuration utility by double-clicking the shortcut. The current selections are shown under Current Settings.

Setting user privileges for SRA configurations

Setting the user privileges for SRA differs depending on if you have a pre-configured environment or a non-preconfigured environment.

Preconfigured environment

A **CopyOperator** privilege suffices if you precreate the needed volumes and map them to the recovery site ESX servers.

Non-preconfigured environment

If the **Pre-Configured Env.** box is empty in the configuration utility, an **Administrator** privilege is necessary for SRA to complete the following tasks:

- Create the snapshot volumes and map the volumes to the ESX servers at the recovery site.
- Run test recovery operations.

Important: If the replicated targets are pre-mapped to the recovery site ESX servers, a **CopyOperator** privilege is enough for recovery operations.

Chapter 5. Usage

Use the IBM SAN Volume Controller Adapter for VMware vCenter SRM to run dependable Disaster Recovery Planning (DRP). The IBM SAN Volume Controller Adapter for VMware vCenter SRM also protects VMware sites with their SAN Volume Controller-based datastores.

This includes:

- “Creating the Target Volumes and Metro/Global Mirror Relationships”
- “Configuration requirements”
- “Adding an Array Manager to the VMware Site Recovery Manager”
- “Performing a test procedure” on page 27
- “Failover procedure” on page 27

Creating the Target Volumes and Metro/Global Mirror Relationships

You must create an equal number of target VDisks (for Metro/Global Mirror targets) and source VDisks on the recovery site SAN Volume Controller.

Important: Create Metro/Global Mirror relationships between the source and target VDisks, and add them to Consistency Groups as needed. For more information about Metro/Global Mirror Copy Services, see the IBM SAN Volume Controller Advanced Copy Services Implementation (SAN Volume Controller v4.3.0 Advanced Copy Services).

Important: Before you use the SAN Volume Controller Storage Replication Adapter, make sure that the Metro/Global Mirror relationships and Consistency Groups are in a consistent synchronized state.

Global Mirror with Cycling Mode with SAN Volume Controller 6.3.0.1 is supported. You can create the Target Volumes and Metro Mirror, Global Mirror, and Global Mirror with Cycling Mode relationships.

Configuration requirements

IBM SAN Volume Controller SRA supports secure ports to connect to CIMOM.

Adding an Array Manager to the VMware Site Recovery Manager

To add an array manager to VMware Site Recovery Manager, complete the following procedure.

Procedure

1. Log on to the VMware Virtual Center Server.



Figure 9. VMware Virtual Center Server Login panel

2. Click **Site Recovery** on the Home panel.
3. Enter the Remote Virtual Center user name and password when prompted, and click **OK**.
4. Ensure that the local and remote sites are connected. Confirm the connection by clicking the **Summary** tab in the inventory panel.
5. Click the **Array Managers** option on the **Inventory** panel and select **Summary**.

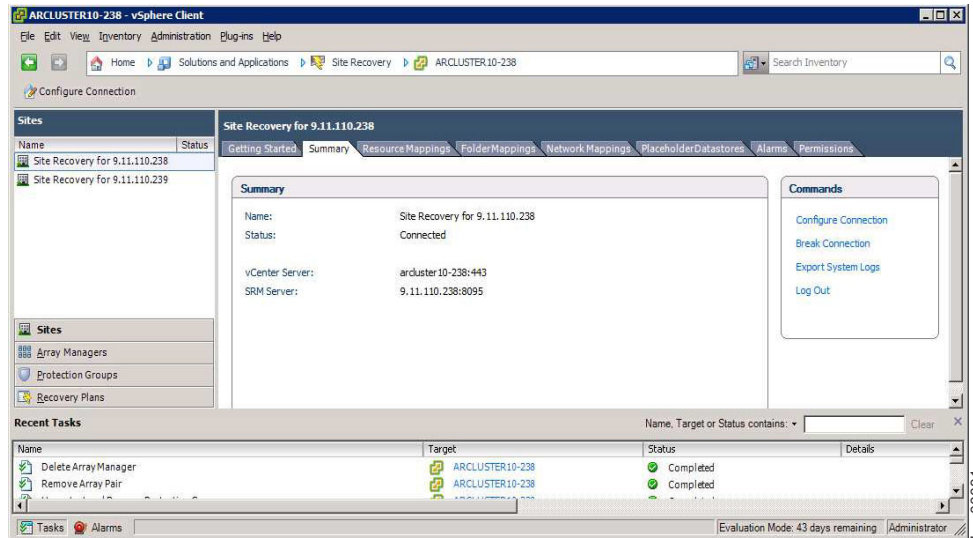


Figure 10. Summary Tab

6. Select the local site on the **Inventory** panel and click **Add Array Manager**.

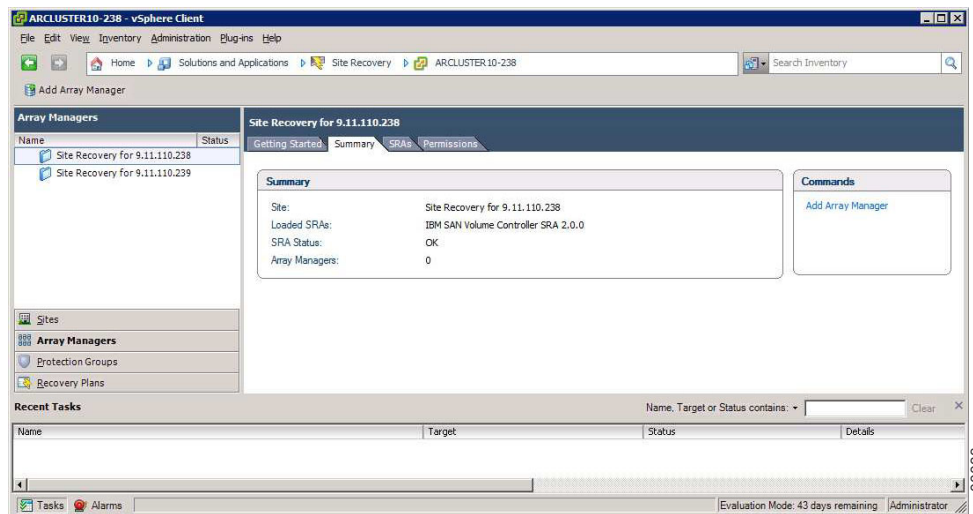


Figure 11. Add Array Manager command

7. Enter the display name for the local SAN Volume Controller and click **Next**.

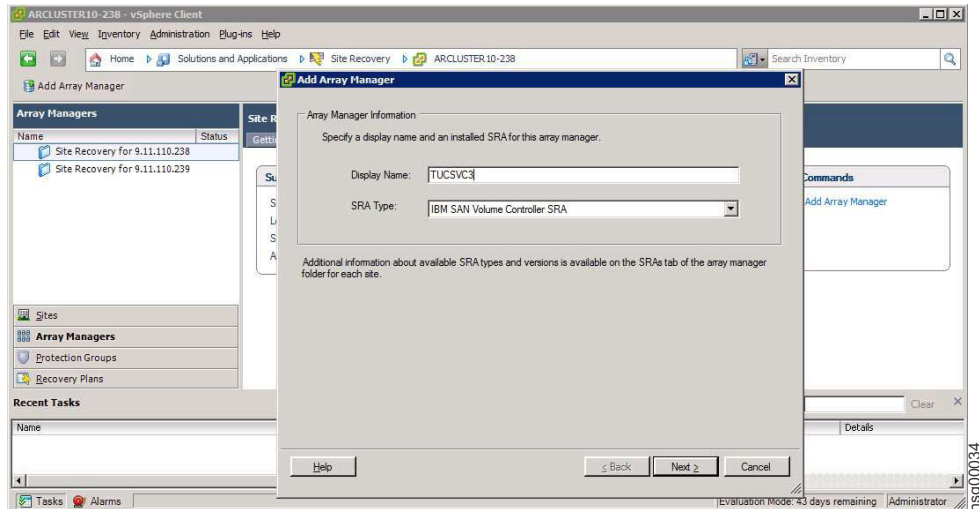


Figure 12. Display name in the Add Array Manager dialog box

8. Enter the array manager information in the **Add Array Manager** panel.

CIM Address of Primary SAN Volume Controller

Enter the CIMOM address and CIM port of the local SAN Volume Controller cluster.

CIM Address of Remote SAN Volume Controller

Enter the CIMOM address and CIM port of the remote SAN Volume Controller cluster. The addresses can either be IP addresses or fully qualified domain names.

Name Filter

This field is optional. To run a full discovery, keep this field empty. To filter volume names or consistency groups, enter the volume name/prefix or consistency group name/prefix to run the filter operation.

Note: See “Using the Name Filter” on page 23 for more information.

User name

Enter the user name that is configured on the CIMOM.

Password

Enter the password that is configured on the CIMOM.

Important: The user name and password for local and remote SAN Volume Controller CIMOMs must be the same.

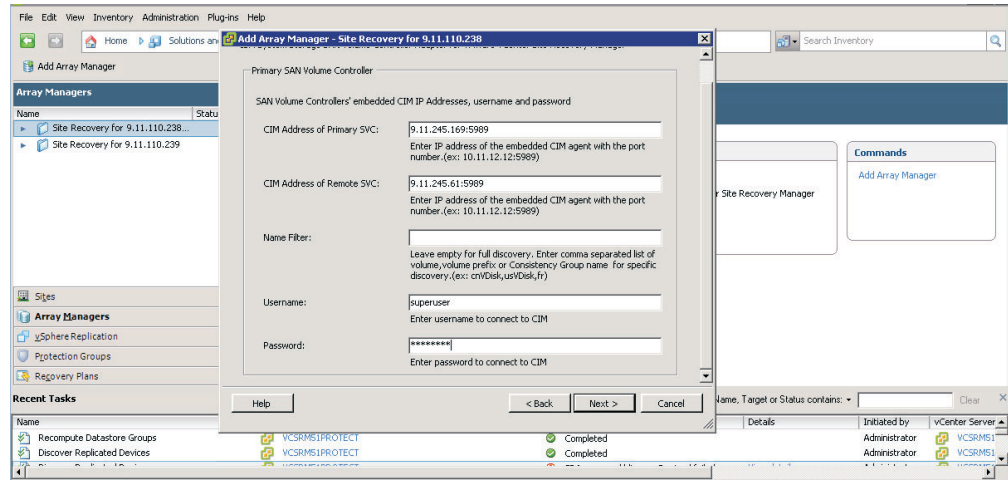


Figure 13. Array Manager information dialog box

9. Enter the connection information for the array.
10. Click **Next**. SRM discovers the SAN Volume Controller device at the specified IP address.
11. Click **Finish**.

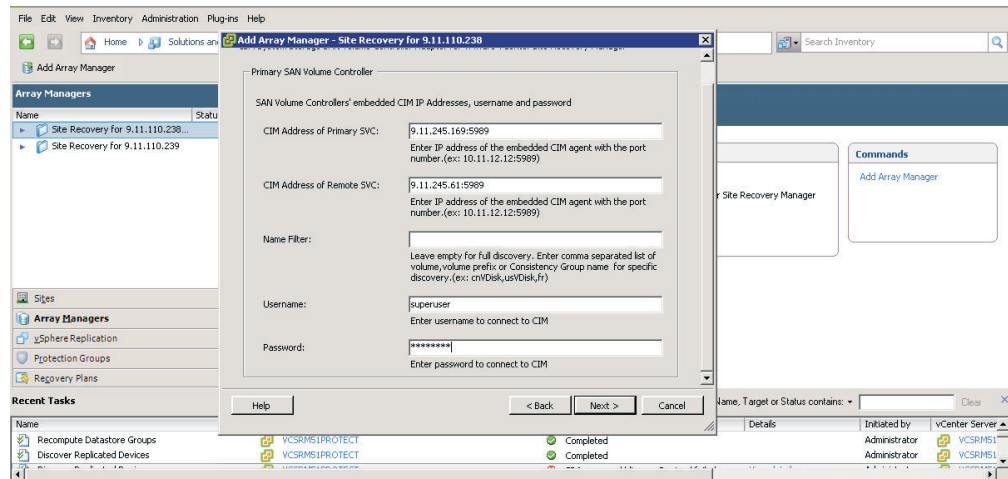


Figure 14. Array Manager Success panel

12. Select the remote site on the **Inventory** panel and click **Add Array Manager**.
13. Enter the display name for the remote SAN Volume Controller and click **Next**.

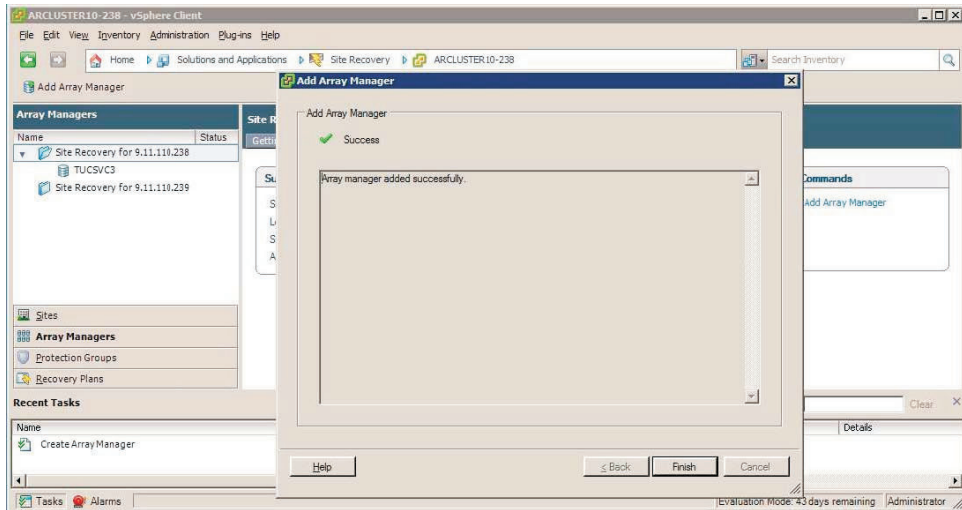


Figure 15. Display name for the remote SAN Volume Controller

14. Enter the Array Manager information for the remote SAN Volume Controller cluster on the **Add Array Manager** panel.

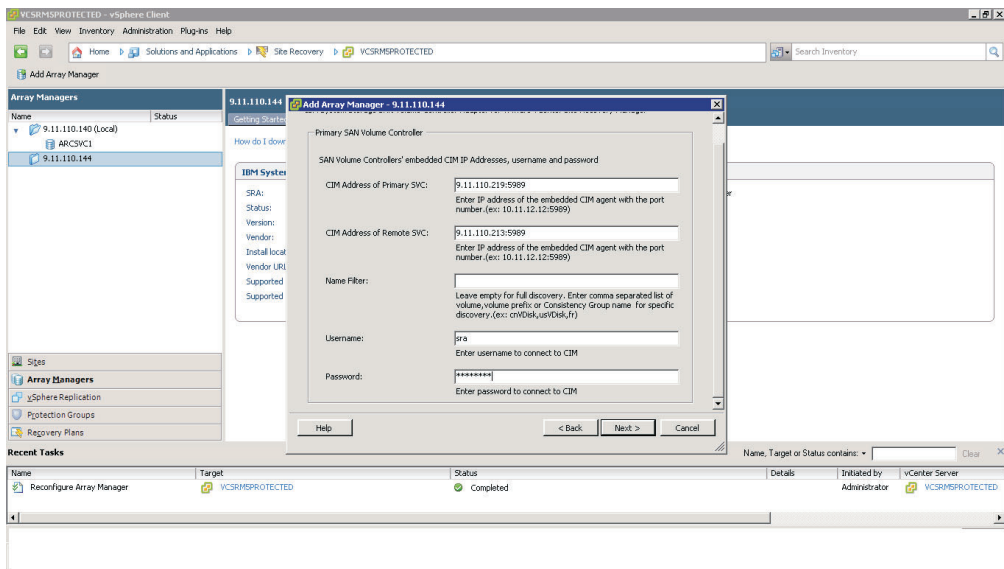


Figure 16. Array Manager information for the remote SAN Volume Controller cluster

15. Click **Next** to confirm the successful addition of the Array Manager.
16. Click **Finish**.
17. Select the local array on the inventory panel and select the **Array Pairs** tab.

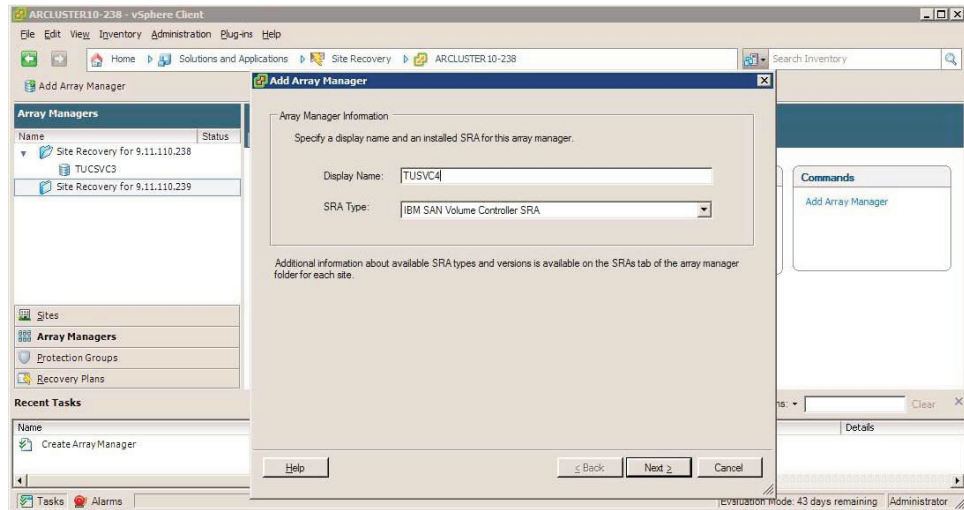


Figure 17. Array Pairs tab

18. Click **Enable** in the Actions column to pair the local and remote sites together. The device discovery and datastore computation process is initiated. If the pairing is successful, the Status column shows **Enabled**. The discovered devices information is available under the Devices tab. If new replicated devices must be discovered, click **Refresh**.

Important: All SAN Volume Controller-replicated VDisks that participate in SRM and belong to the same Remote Mirror Consistency Group are shown under a single Local Consistency Group. Take extra care when you add replicated VDisks to Consistency Groups. All VDisks used by a single virtual machine or an application on the VM can be added to the same Consistency Group.

Using the Name Filter

If you want to see selected volumes in the **Devices** tab, use the **Name Filter** option.

Procedure

Note: This field is optional and can be kept empty to enable full discovery.

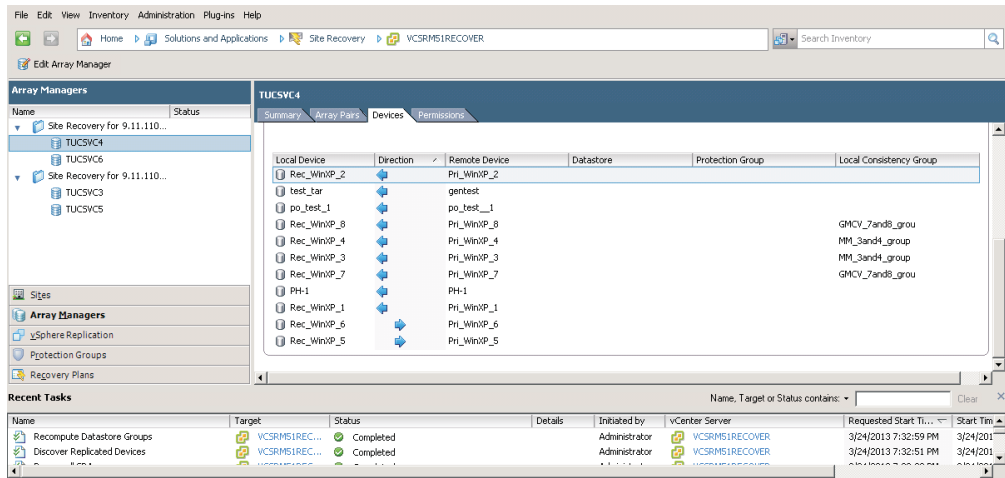


Figure 18. Devices discovered without using any filter

1. During Add/Edit Array Manager, you can enter the Consistency Group name or prefix and volume name or volume name prefix to show the selected volumes in the Devices tab.

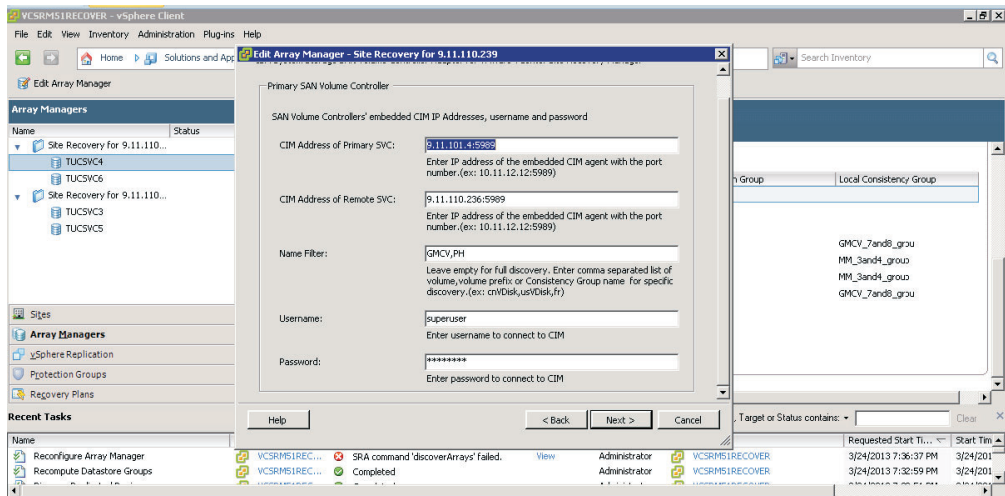


Figure 19. Add/Edit Array manager with volume name prefix(PH) and consistency group name prefix(GMCV) entered in Name Filter field

- Note:** You can enter multiple volume names or volume prefixes, multiple consistency group names, or prefixes, or both, as shown in Figure 19.
2. Enter the same volume names on the remote site.
- Note:** If you enter the volume names on the local site and a matching remote site volume name is not found, an error is flagged.

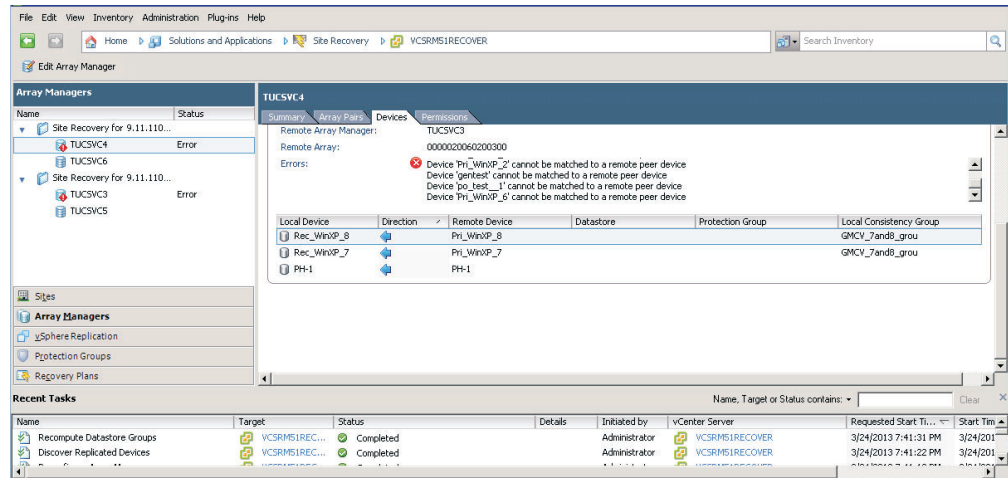


Figure 20. Adding a volume only in the local site with the Add/Edit Array Manager

- Use the **Add/Edit Array Manager** to add the volume/Consistency Group names in the **Name Filter** on the remote site.

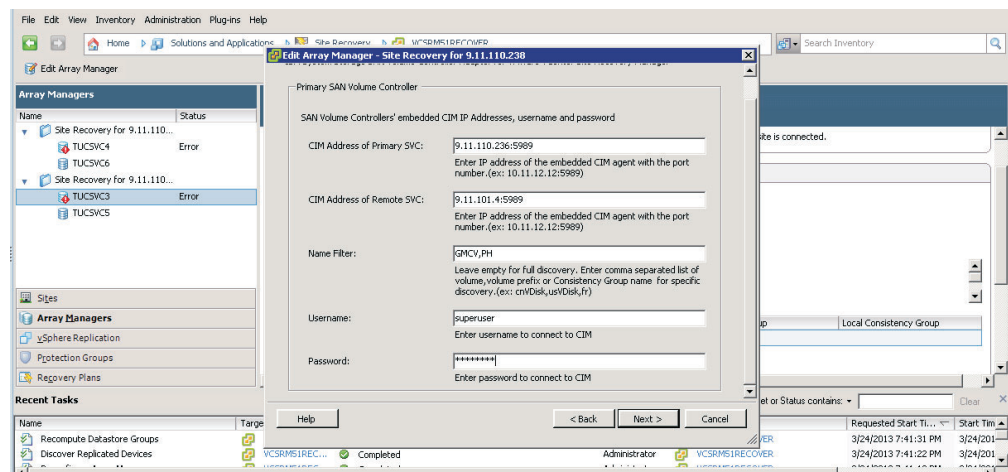


Figure 21. Adding volume prefixes and Consistency Group prefixes at the remote site

Prefixes for the volume name can be different for each site, but prefixes must be paired with the remote site array manager. For example, the local site volume name is Pri_WinXP_3 and on the remote site, it is mapped to Rec_WinXP_3. Then, in Name Filter of the local site, you can enter prefix Pri and on the remote site, enter prefix Rec.

To use the **Name filter** for the consistency group, enter the same name/prefixes at the local and remote sites.

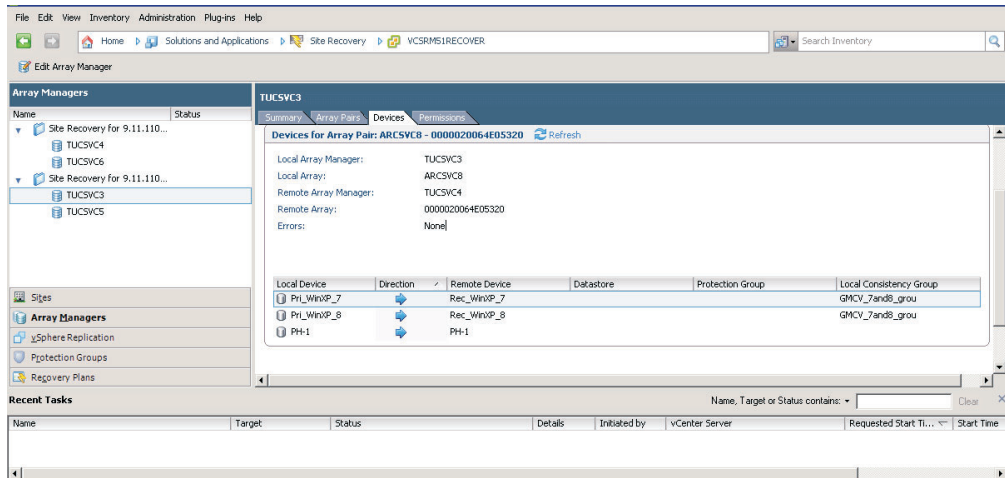


Figure 22. The Recovery Array after you add the Name Filter on the local and remote sites

Name Filter behavior for different Consistency Group/Volume prefixes

When the **Name Filter** shows the volumes that belong to any Consistency Group, it shows volumes only if the prefix matches to all volumes in that Consistency Group.

As shown in Figure 23, if you enter the name or prefix and it does not match all of the names in the Consistency Group, it ignores other volumes of that Consistency Group. For more information, see Table 1.

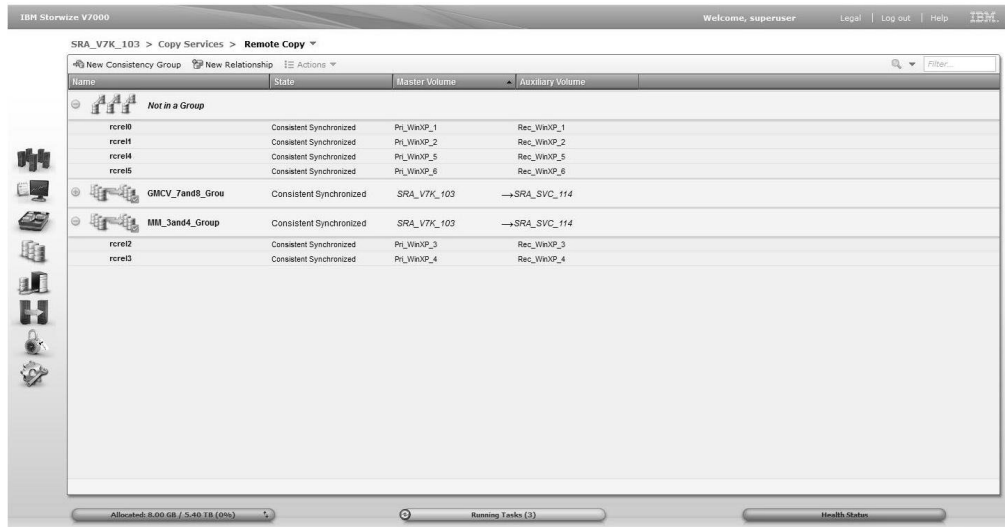


Figure 23. SAN Volume Controller showing few volumes and consistency groups

Table 1. Name Filter Output

| Local Site: Name Filter Value | Remote Site: Name Filter Value | Devices that are displayed on SRM |
|-------------------------------|--------------------------------|-----------------------------------|
| GMCV | GMCV | Pri_WinXP_7, Pri_WinXP_8 |
| Pri | Rec | Full Discovery |

Table 1. Name Filter Output (continued)

| Local Site: Name Filter Value | Remote Site: Name Filter Value | Devices that are displayed on SRM |
|--|--|-----------------------------------|
| Pri_WinXP_1, Pri_WinXP_7 | Rec_WinXP_1, Rec_WinXP_7 | Only Pri_WinXP_1 display. |
| Pri_WinXP_7, Pri_WinXP_8, Pri_WinXP_3, Pri_WinXP_6 | Rec_WinXP_7, Rec_WinXP_8, Rec_WinXP_3, Rec_WinXP_6 | All display except Pri_WinXP_3 |

Performing a test procedure

Depending on the SRA configuration, it might be necessary to perform extra tasks for the test procedure to work.

For troubleshooting information, see “Managing Test failure” on page 30.

Running the test procedure on a preconfigured environment

The IBM SAN Volume Controller SRA completely automates the test procedure.

During the test procedure, the preconfigured FlashCopy target volumes are resynchronized. During the cleanup procedure, the preconfigured FlashCopy target volumes are stopped.

Ensure that all the steps that are outlined in “Configuring preconfigured environments” on page 14 are finished.

Running the test procedure on a non-preconfigured environment

The IBM SAN Volume Controller SRA completely automates the test procedure.

During the test procedure, FlashCopy target volumes are created in the MDisk Group that is specified during the configuration. During the cleanup procedure, the FlashCopy target volumes that are created during the test procedure are deleted.

SRA Test procedure prerequisites:

- Ensure that there is enough free space available on the MDisk Group.
- Ensure that all the steps that are outlined in “Configuring non-preconfigured environments” on page 14 are finished.

Failover procedure

The IBM SAN Volume Controller SRA completely automates the failover procedure.

For a planned failover, the Metro Mirror/Global Mirror direction is switched. Global Mirror with Cycling Mode is stopped with the target volume writable.

For an unplanned failover, the Metro Mirror/Global Mirror/Global Mirror with Cycling Mode is stopped with the target volume writable.

The Metro Mirror/Global Mirror/Global Mirror with Cycling Mode target volume is prompted to the vSphere Server as a production volume. During an SRA preconfigured failover procedure, the preconfigured FlashCopy is resynchronized.

SRA Failover procedure prerequisites:

- Ensure that all the steps that are outlined in “Configuring preconfigured environments” on page 14 are finished.
- Ensure that all the steps that are outlined in “Configuring non-preconfigured environments” on page 14 are finished.

Running the reprotect procedure

The IBM SAN Volume Controller SRA completely automates the reprotect procedure.

Before you run the **Reprotect** action, ensure that the status of the Metro Mirror/Global Mirror/Global Mirror with Cycling Mode is not disconnected. Refresh the **Devices** panel of the SRM Array Managers to ensure that no error messages occur.

The Metro Mirror/Global Mirror/Global Mirror with Cycling mode direction changes from the original recovery site to the original protection site, and the mirroring action resumes.

For SRA with a non-preconfigured setting, the volume of the original protection site is masked from the vSphere Server to avoid any damage to the volume. The original protection site consists of the target volume of the Metro Mirror/Global Mirror/Global Mirror with Cycling Mode.

The following tasks are the SRA reprotect procedure prerequisites:

- Ensure all the steps that are outlined in “Configuring preconfigured environments” on page 14 are finished.
- Ensure all the steps that are outlined in “Configuring non-preconfigured environments” on page 14 are finished.

Chapter 6. Best practices and troubleshooting

The following guidelines are important to follow while you configure the IBM System Storage SAN Volume Controller Adapter for VMware vCenter Site Recovery Manager 5.x.

- “Managing datastores and consistency groups”
- “Troubleshooting”

Managing datastores and consistency groups

Follow these best practice guidelines while you manage datastores and consistency groups.

- The datastores of one VM should be in the same consistency group.
- The datastore of the VM and the raw disk in the VM should be in the same consistency group.
- You must have administrator privileges to install the Recovery Manager.
- Set the appropriate timeout and rescan values in SRM for the recovery of many VMs.

Troubleshooting

When an error occurs, check the status of SAN Volume Controllers, ESX Servers, vCenters, and SANs.

Managing DiscoverArrays failure

Verify the following items when you encounter failure during Array Manager operation:

1. Check that the IP address is correct and in the correct format. For example, the format can resemble: 192.168.10.1:5989.
2. Check that the user name and password are correct.
3. Check to see whether the SAN Volume Controllers are paired.

Managing DiscoverDevices failure

Important: Relationship and Consistency Group status typically is `consist_synchronized` or `consistent_copying` for Global Mirror with Cycling Mode.

Managing recovery failure

For environments that are not pre-configured, ensure that the following items are checked or corrected:

1. Recovery, after you switch from pre-config without rescan SRA.
2. CIM user privilege problem, “administrator” required.
3. After disaster recovery, it is necessary to wait a few minutes and then refresh the Devices in the SRM Array Managers on both sites. This step is necessary to ensure that there is no error before the plan is reprotected.

For environments that are pre-configured, ensure that the following items are checked or corrected:

1. FlashCopy was not created.
2. Corresponding **fcmap** consistency group was not created.
3. The **Remotecopy** target volume is not mapped to the recovery site.

Managing Test failure

For environments that are not preconfigured, ensure that the following are checked or corrected:

1. CIM user privilege problem, "administrator" required.
2. Not enough space in the **mdisk** group.
3. Switching from pre-configured without rescan SRA.
4. The **Mdiskgroup** and volume type is not set for SRA.

For environments that are preconfigured, ensure that the following items are checked or corrected:

1. FlashCopy not created.
2. FlashCopy target volume is not mapped to host.
3. Corresponding FlashCopy consistency group not created.
4. FlashCopy target volume that is mapped to the host are shown as Mounted in Hosts and Clusters/Configuration/Storage/Devices.

Managing SRM procedures

1. Refresh the devices in the SRM array managers. If there are no errors, go to step 4. If there are any errors, continue to step 2.
2. Check whether all the previously related *_fo.d files in directory C:\Program Files (x86)\VMware\VMware vCenter Site Recovery Manager\bin on both the protected and recovery sites are deleted.
3. Check all the previous related SRA-STATUS items in the SRA installation directory. For example, C:\Program Files (x86)\VMware\VMware vCenter Site Recovery Manager\storage\sra\IBMSVC
4. Refresh the devices in the SRM array managers again to ensure that there are no errors.

Note:

*.d file name format

[RemoteCopyTarget:ArrayID] + [RemoteCopyTarget:VolumeID] + _fo'.d

SRA-STATUS file content format:

[ArrayID] | [LunID]=* [ArrayID] + "|CG;" +
[RemoteCopyConsistencyGroupName]=*

Collect log files

If the problem cannot be resolved by following any of the troubleshooting tips, collect the SRM log files and contact IBM support.

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