IBM XIV Adapter for VMware vCenter Site Recovery Manager 4.x

Version 4.1.0

User Guide

GA32-2224-00

Note
Before using this document and the product it supports, read the information in "Notices" on page 35.

Edition notice

Publication number: GA32-2224-00. This edition applies to version 4.1.0 of the IBM XIV Adapter for VMware vCenter Site Recovery Manager 4.x and to all subsequent releases and modifications until otherwise indicated in a newer publication.

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About this guide

This guide describes how to prepare for, install, configure, and use the IBM® XIV® Adapter for VMware vCenter Site Recovery Manager.

Who should use this guide

This guide is intended for system administrators who are familiar with the VMware vCenter and vSphere environments, and with the IBM XIV Storage System.

Conventions used in this guide

These notices are used to highlight key information.

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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.

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Related documentation

You can find additional information and publications related to the IBM XIV Adapter for VMware vCenter Site Recovery Manager on the following web addresses.

- IBM XIV Adapter for VMware vCenter Site Recovery Manager – Release Notes, available under Publications on the IBM XIV Storage System Information Center: IBM System Storage® Information Center website (publib.boulder.ibm.com/infocenter/ibmxiv/r2/index.jsp)
- VMware vCenter Site Recovery Manager Documentation: VMware vCenter Site Recovery Manager Documentation

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- Go to the feedback form (publib.boulder.ibm.com/infocenter/ibmxiv/r2/topic/com.ibm.xiv.doc/icfeedback.htm) in the IBM System Storage information center. You can use this form to enter and submit comments.
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Chapter 1. Introduction

The IBM XIV Adapter for VMware vCenter Site Recovery Manager is a software add-on, used as a Storage Replication Adapter (SRA) that integrates with VMware Site Recovery Manager (SRM) solution and enables SRM to perform failovers together with IBM XIV storage systems.

The IBM XIV SRA extends SRM capabilities and allows it to employ XIV replication and mirroring as part of the SRM comprehensive Disaster Recovery Planning (DRP) solution.

Using the IBM XIV SRA, VMware administrators can automate the failover of an XIV system at the primary SRM site to an XIV system at a recovery (secondary) SRM site. Immediately upon a failover, the ESX/ESXi servers at the secondary SRM site start using the replicated datastores on the mirrored volumes of the secondary XIV system.

When the primary site is back online, administrators can manually perform failback from the recovery site to the primary site.

Concept diagram

The following figure illustrates how the IBM XIV Storage System is integrated in a typical VMware SRM disaster recovery solution, using the SRA add-on that works with each instance of VMware vCenter SRM (protected or recovery).

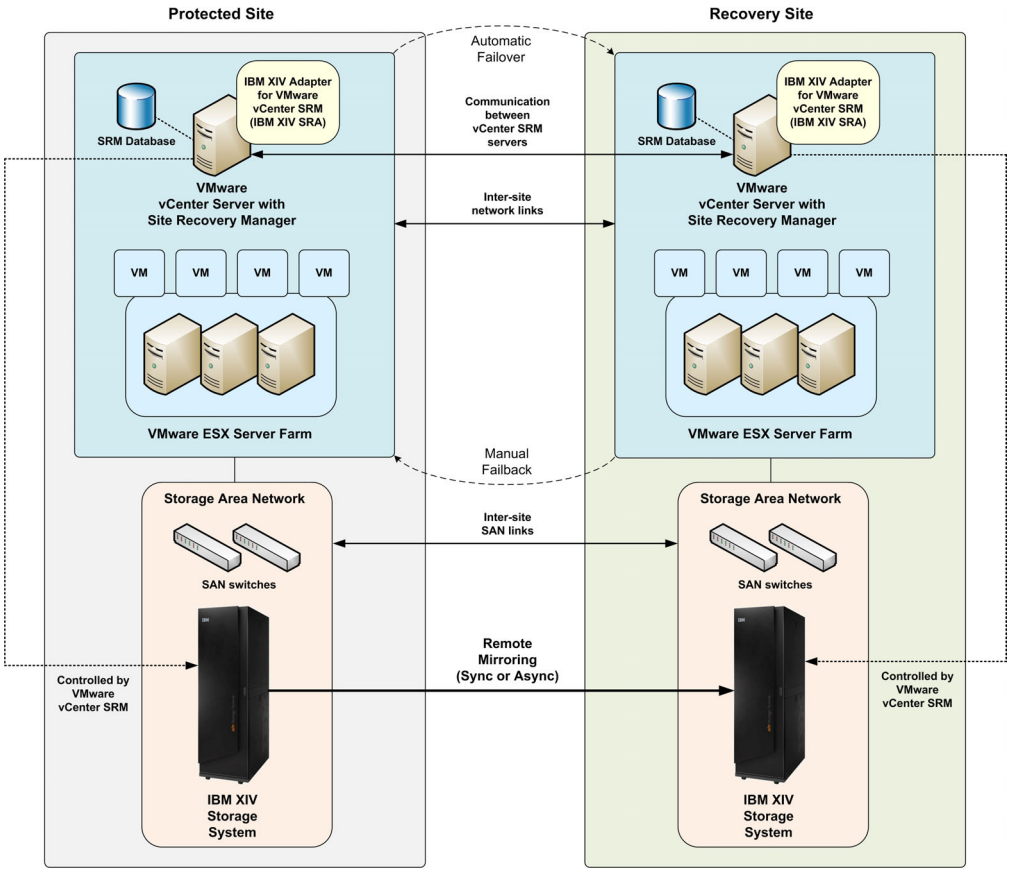

Figure 1. Protected and Recovery VMware site interaction with IBM XIV Storage

Compatibility and requirements

This topic describes the necessary compatibility and requirements.

For the complete and up-to-date information about the compatibility and requirements of the IBM XIV Adapter for VMware vCenter Site Recovery Manager, refer to the latest release notes.

You can obtain the latest release notes on the IBM System Storage Information Center website (publib.boulder.ibm.com/infocenter/ibmxiv/r2/index.jsp).

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

Download site

The IBM XIV Adapter for VMware vCenter Site Recovery Manager 4.x is available for download from the VMware website at the following web address:

https://my.vmware.com/web/vmware/details/srm412/ZCVwYnRocHBidGR0cA==

Before you proceed

Before you proceed to the next chapters, you must have access to a workstation on which your preferred XIV Storage management software is locally installed or accessible via a remote connection.

You can manage the IBM XIV Storage System using the XIV graphical user interface (GUI) or XIV command-line interface (XCLI).

For additional assistance and more information on how to obtain, install, and use the IBM XIV Storage System management software, refer to the IBM XIV Storage System Information Center (http://publib.boulder.ibm.com/infocenter/ibmxiv/r2).

Important: Refer to the VMware Site Recovery Manager Administration Guide to learn about the requirements for using SRM at your sites. The guide is available at the following web address:

http://www.vmware.com/pdf/srm_admin_4_1.pdf

Chapter 2. Preparation

Preperation is required depending on your specific site configuration.

Prior to installing and using the IBM XIV Adapter for VMware vCenter Site Recovery Manager (IBM XIV SRA), perform the following verifications:

- "Verifying the XIV mirroring configuration"
- "Verifying the VMware SRM installation" on page 6

To learn about how to prepare your sites from scratch, refer to "Setting up site-to-site mirroring from scratch" on page 7.

Verifying the XIV mirroring configuration

All XIV systems, volumes, and ESX hosts at both the protected (primary) and recovery (secondary) sites must be properly connected to their remote counterparts and configured for site mirroring.

Prior to installing and using the IBM XIV SRA, make sure that:

- Your local XIV system at the protected site has mirroring connectivity with the target XIV system at the recovery site.
- The name of each XIV system is unique in both the protected and recovery sites.
- The Target Name of any target XIV system (remote mirrored system; see example in Figure 2) is identical to the predefined System Name of that same remote XIV system (see example in Figure 3 on page 6).

Figure 2. Define Target dialog box – Target Name is "XEST01"

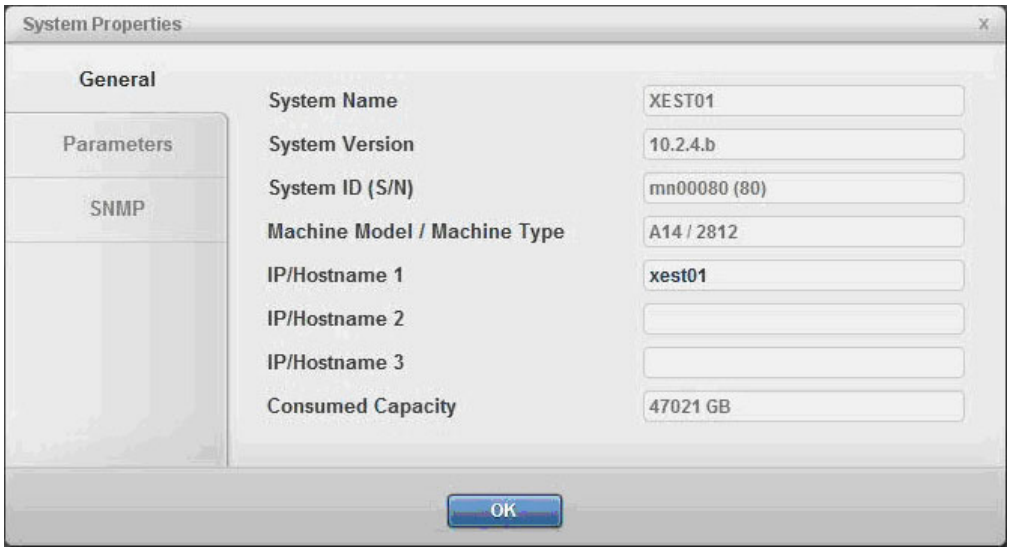

Figure 3. Properties information – System Name is "XEST01"

- The storage pools that contain the replicated volumes at both the protected and recovery sites have sufficient size for creating the snapshots of all replicated volumes concurrently. Allocate a minimum of 17 GB for each volume, with additional 17 GB as spare space.
- Remote mirroring is defined for all XIV-based volumes that you intend to protect as part of your Disaster Recovery Plan (DRP).
- Your protected (primary) volumes are mapped to the protected ESX hosts.
- The recovery (secondary) XIV-based volumes remain unmapped.
- Your recovery (secondary) ESX/ESXi hosts are defined as XIV hosts at the recovery site.
- Your recovery ESX/ESXi host ports are FC-zoned with the XIV system at the recovery site, and are visible by that XIV system.

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

Note: To learn how to set up XIV mirroring in a "start from scratch" scenario, refer to “Setting up site-to-site mirroring from scratch” on page 7.

Verifying the VMware SRM installation

Before installing the IBM XIV Adapter for VMware vCenter Site Recovery Manager, make sure that the VMware Site Recovery Manager is already installed and accessible at the protected (primary) site, as well as 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.

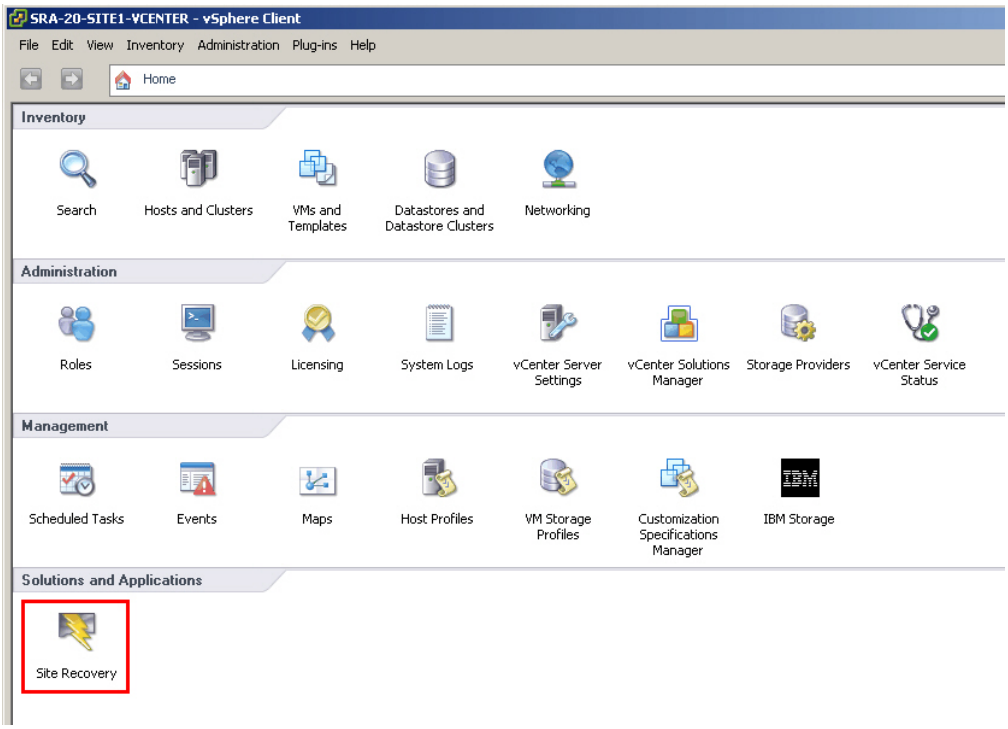

Figure 4. VMware vSphere Client – Site Recovery Manager is installed

Setting up site-to-site mirroring from scratch

This section covers the specific scenario when no previous setup for mirroring has been preformed at your sites.

The specific scenario of setting up mirroring from scratch includes the following configuration stages:

- "Stage 1: Establish XIV mirroring connection" on page 8
- "Stage 2: Create a storage pool for the protected volumes" on page 11
- "Stage 3: Create a storage pool for the recovery volumes" on page 11
- "Stage 4: Create protected volumes" on page 11
- "Stage 5: Create recovery volumes" on page 12
- "Stage 6: Map protected volumes to protected ESX or ESXi hosts" on page 12
- "Stage 7: Define recovery ESX or ESXi hosts" on page 13
- "Stage 8: Define mirroring for volumes" on page 15
- "Stage 9: Define consistency groups (optional)" on page 17

Note:

- If your sites are already partially configured for mirroring, perform only the stages or steps that are relevant to your specific case.
- The following sections provide setup examples from version 3.0.x of the XIV GUI. If you are using an older or a newer XIV GUI version, refer to its online help or documentation.

Stage 1: Establish XIV mirroring connection

Your first task is to determine which of your XIV systems should be used as the protected (primary) system, and which should be used as the recovery (secondary) system.

About this task

Perform the following procedure to define a mirroring connection with the secondary XIV system.

Important: The target XIV system at the remote site must already be up and running, as well as added to the XIV GUI before you can set the mirroring connection to it. In addition, all iSCSI or FC connections to the remote XIV system must be operational as well. Confirm with your storage administrator that the remote XIV system is ready for establishing the mirroring connection.

Procedure

1. On the XIV management GUI, go to **Remote** > **Mirroring Connectivity**
2. Right-click the XIV system that you want to use as the primary system, and then click **Create Target**. The Define Target dialog box appears.

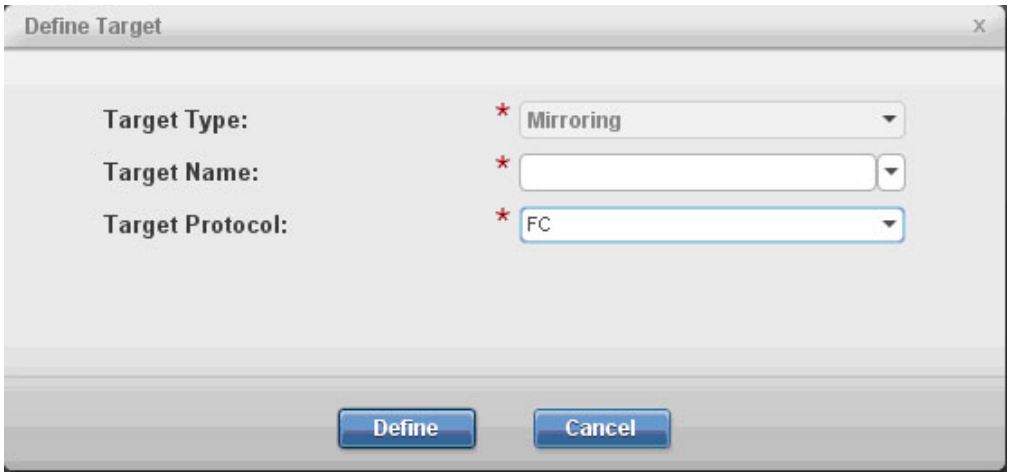

Figure 5. XIV Management GUI – Define Target dialog box

3. From the Target Name drop-down list, select the name of the XIV system that should be used as the target system.
4. From the Target Protocol drop-down list, select the connection type (FC or iSCSI) to the selected target system.
5. Click **Define**. The interface panels of the two XIV systems are displayed.
6. Click **Show Auto Detected Connections**, located above the two interface panels.

Figure 6. Show Auto Detected Connections button

The auto-detected physical connections (iSCSI or FC) between the two XIV systems are displayed graphically as green arrow lines between the interface connections of both XIV systems.

Important: Fibre Channel (FC) connections can be auto-detected only through proper FC zoning. Confirm with your storage administrator that FC zoning has been properly set in advance.

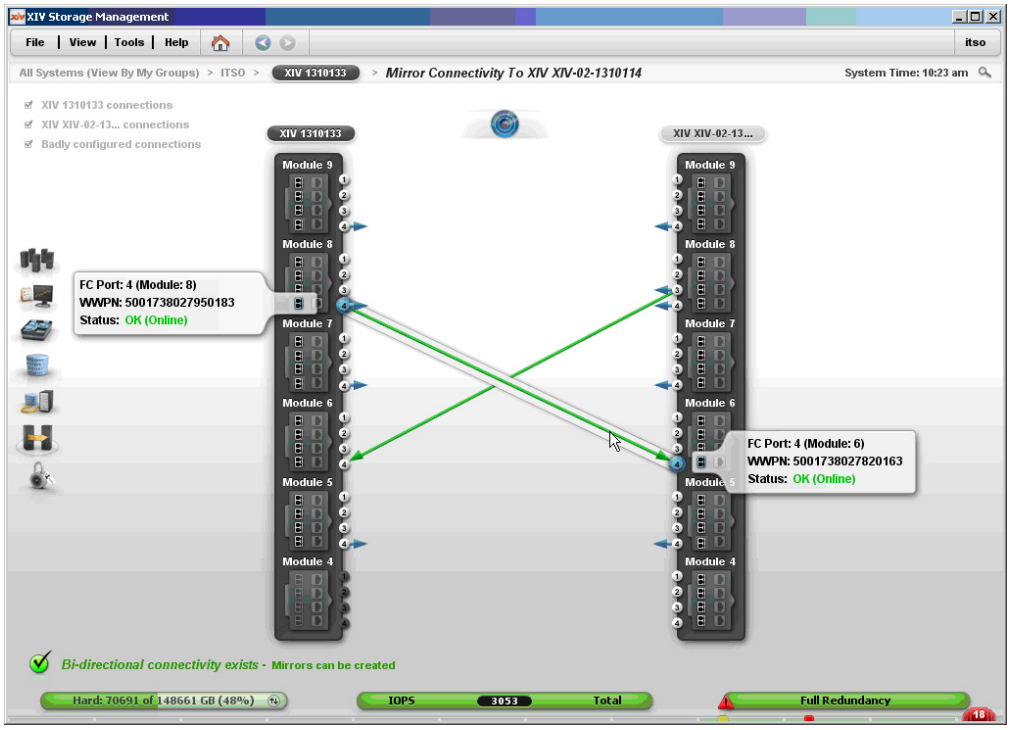

Figure 7. XIV Management GUI – Detected connections

7. Click **Approve** to use the graphically displayed connections.

Figure 8. XIV Management GUI – Approve button

Note: You can also define new connections manually by clicking a port on the primary system and then by dragging a blue arrowed line to the corresponding port on the target system (see Figure 9 on page 10). Placing the arrow head on the target port initiates the connection.

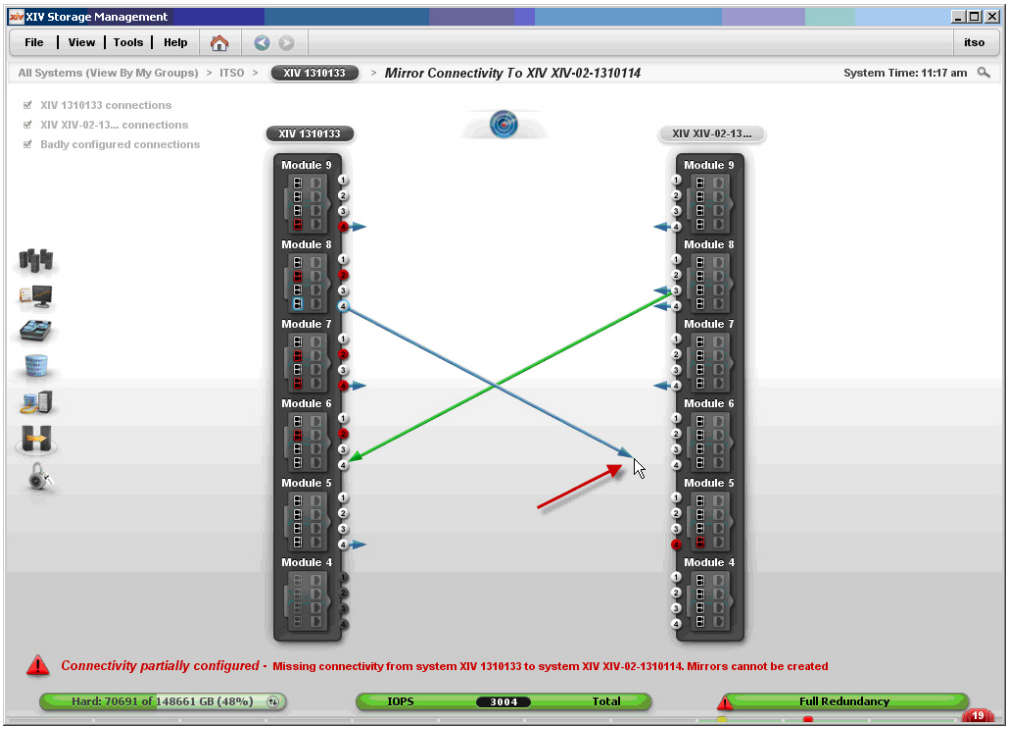

Figure 9. XIV Management GUI – Detected connections

8. Right-click the arrowed line of a connection that you want to enable, and then click **Activate** on the pop-up menu.

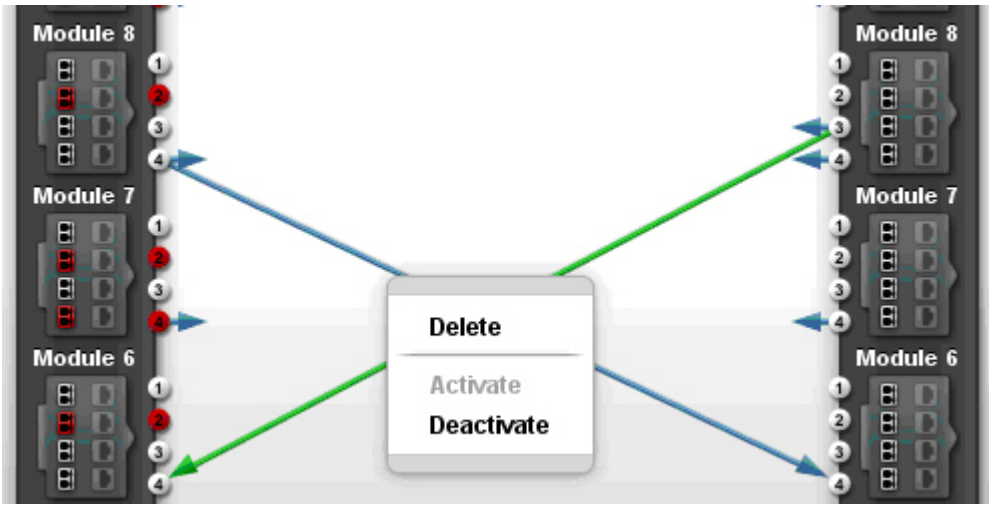

Figure 10. XIV Management GUI – Connection pop-up menu

Important:

- Make sure that a bi-directional connection is established with the target XIV system.
- If you are using the XIV CLI (XCLI), establish a bi-directional connection manually. For more information, refer to the XCLI documentation.

Stage 2: Create a storage pool for the protected volumes

In this preparation stage you create a storage pool for the protected volumes.

About this task

After the mirroring between the XIV systems is set, create a storage pool for the protected volumes on the Primary XIV system.

Procedure

1. On the XIV management GUI, focus on the primary XIV system, and then click **Pools** > **Storage Pools**.
2. Click **Add Pool** and then define the pool size and name in the Add Pool dialog box.

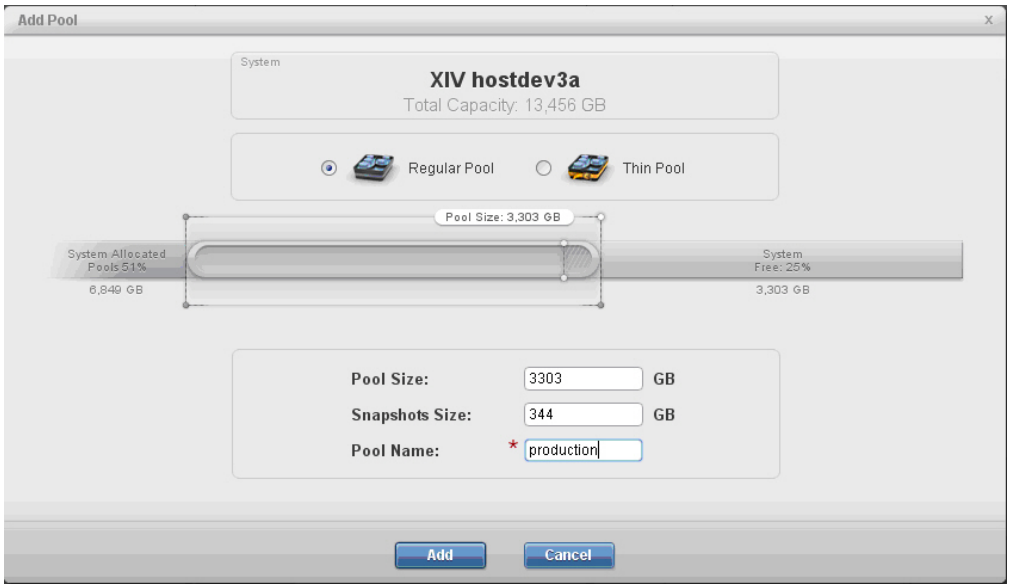

Figure 11. XIV Management GUI – Add Pool dialog box

3. Click **Add**. The storage pool is created.

Stage 3: Create a storage pool for the recovery volumes

In this preparation stage you create a storage pool for the recovery volumes.

Procedure

Perform the pool creation procedure (see "Stage 2: Create a storage pool for the protected volumes") at the recovery (secondary) site as well. When you do so, you may want to give an identical name to the storage pool at the recovery site.

Stage 4: Create protected volumes

In this preparation stage you create protected volumes.

About this task

After the storage pool is created, create the protected volumes on it.

Procedure

1. On the XIV management GUI, focus on the primary XIV system, and then click **Pools** > **Volumes by Pools**.
2. Click **Add Volumes**. The Create Volumes dialog box is displayed.
3. From the Select Pool drop-down list, select the pool you created in the previous stage, and then define the number of volumes, as well as the size of volumes that you want to create in this pool.

Important: The size of the volume must be 17 GB or more.

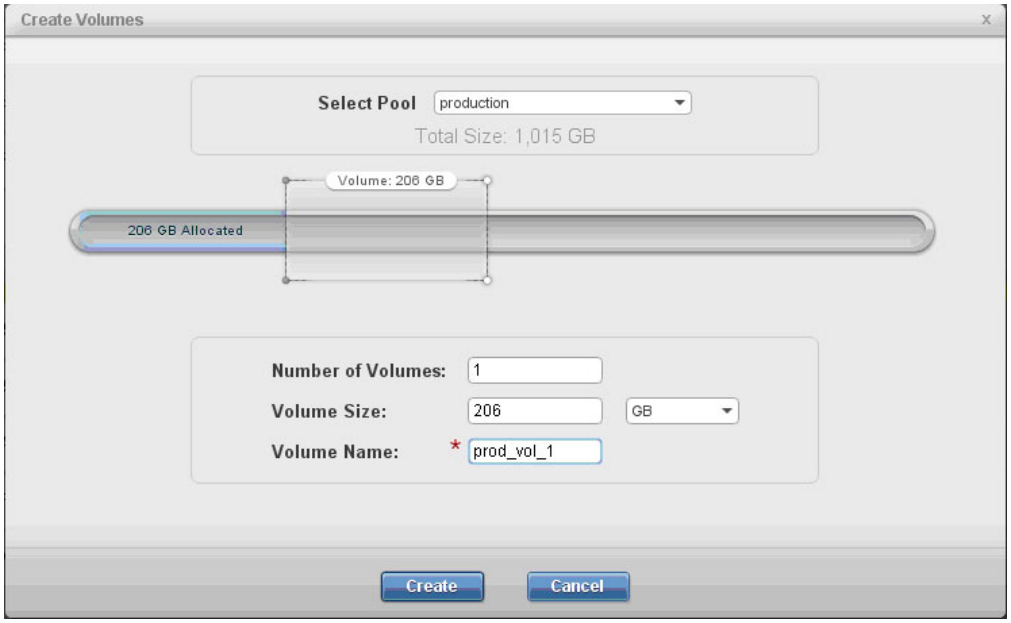

Figure 12. XIV Management GUI – Create Volumes dialog box

4. Click **Create**.

Stage 5: Create recovery volumes

In this preparation stage you create recovery volumes.

Procedure

Perform the volume creation procedure (see: "Stage 4: Create protected volumes" on page 11) at the recovery (secondary) site as well. When you do so, keep in mind:

- You may want to give identical names to the volumes at the recovery site.
- The volumes at the recovery site must have the same size as the volumes at the protected site.

Stage 6: Map protected volumes to protected ESX or ESXi hosts

In this preparation stage you map protected volumes to protected ESX or ESXi hosts.

About this task

After you have created protected volumes, map the volumes to the primary ESX or ESXi hosts that are to be protected by VMware SRM, and then rescan these hosts.

Procedure

1. On the XIV management GUI, focus on the primary XIV system, and then go to **Hosts and Clusters** > **Volumes by Hosts**. The ESX or ESXi hosts that are already mapped to the XIV system are displayed.
2. Double-click a host to which you want to map volumes. The list of currently mapped volumes (mapped to the host) is displayed on the right.
3. From the XIV volumes list on the left, select the volume or volumes that you want to map to the host, and then click **Map**.

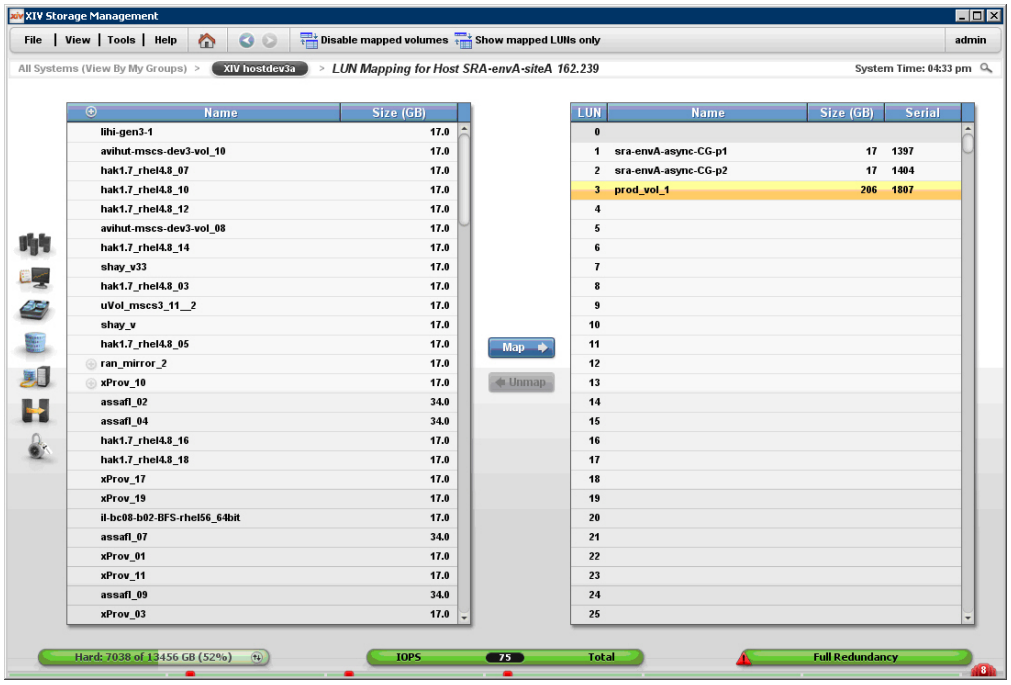

Figure 13. XIV Management GUI – LUN Mapping for Host panel

4. Click **Back** to go back to the main GUI window, and verify that the volumes are mapped.

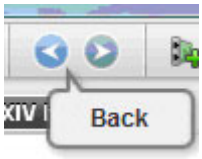

Figure 14. Back button

Stage 7: Define recovery ESX or ESXi hosts

In this preparation stage you define recovery ESX or ESXi hosts.

About this task

After mapping the protected volumes to the protected ESX or ESXi hosts, you can start defining your recovery (secondary) ESX/ESXi hosts as XIV hosts at the recovery site.

Important: The recovery ESX hosts should be connected over iSCSI or FC to the recovery XIV system. For FC, proper zoning must be predefined.

Procedure

1. On the XIV management GUI, focus on the secondary XIV system (at the recovery site), and then go to **Hosts and Clusters** > **Hosts and Clusters**.
2. Click **Add Host**. The Add Host dialog box appears.

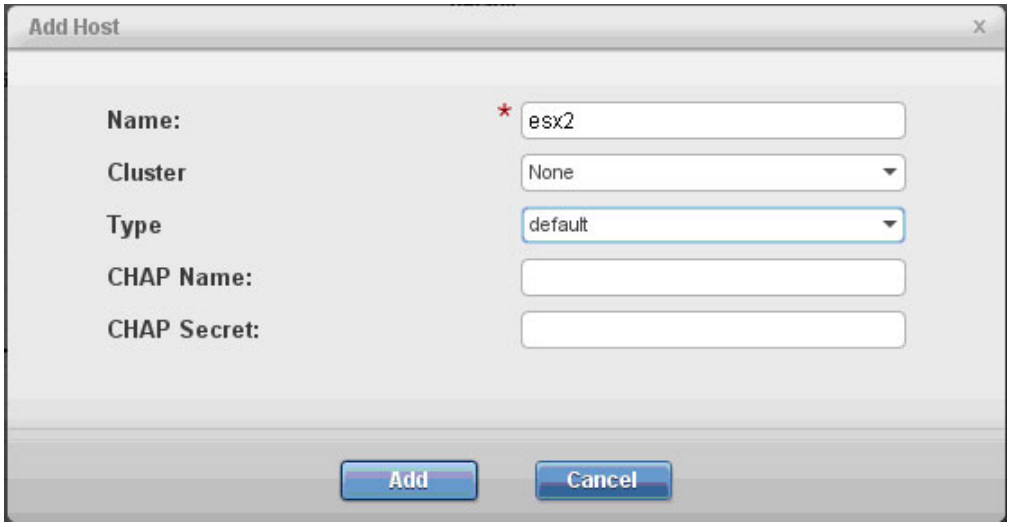

Figure 15. XIV Management GUI – Add Host dialog box

3. Enter the name and details of the recovery host, and then click **Add**. The host is added to the list of hosts.
4. On the list of hosts, right-click the name of the host you have added, and then click **Add Port**.
5. Enter the communication port details, and then click **Add**.

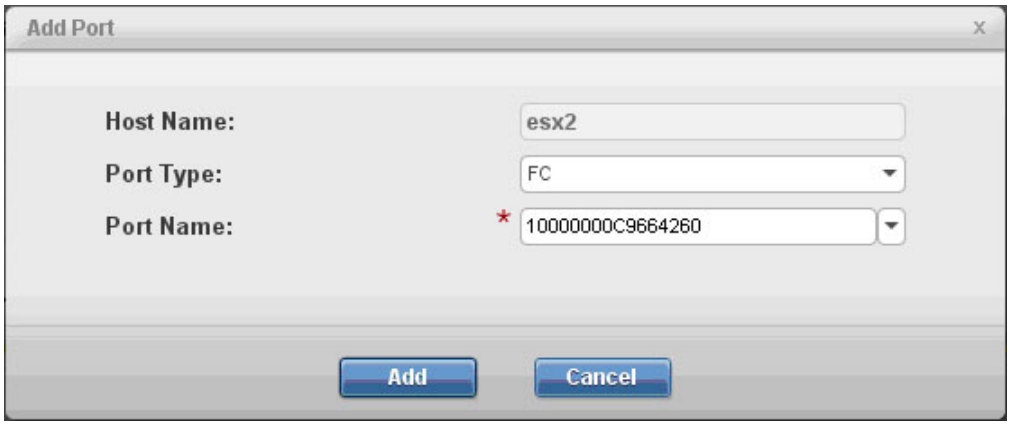

Figure 16. XIV Management GUI – Add Port dialog box

Note: Step 5 on page 14 repeats for multipathed Fibre Channel (FC) connections.

6. Repeat steps 2 on page 14 –5 on page 14 for each recovery host at the recovery site.

Note: The procedure above is for a single host. If some hosts are part of a cluster, go to **Hosts and Clusters** > **Hosts and Clusters**, hold down the SHIFT key and select these hosts. Then, right-click the selection and click **Create a Cluster with Selected Hosts** on the pop-up menu.

Stage 8: Define mirroring for volumes

In this preparation stage you define mirroring for volumes.

About this task

After the recovery hosts are defined as XIV hosts at the recovery site, you can start defining the volume mirroring. The mirroring direction is from the protected site to the recovery site, and can be either synchronous (Sync) or asynchronous (Async). If you choose asynchronous mirroring, set the required Recovery Point Objective (RPO).

Procedure

1. On the XIV management GUI, focus on the primary XIV system, and the go to **Pools** > **Volumes by Pools**. The list of available storage pools is displayed.
2. Select the storage pool on which protected volumes exist, and then open the volume tree of that pool.

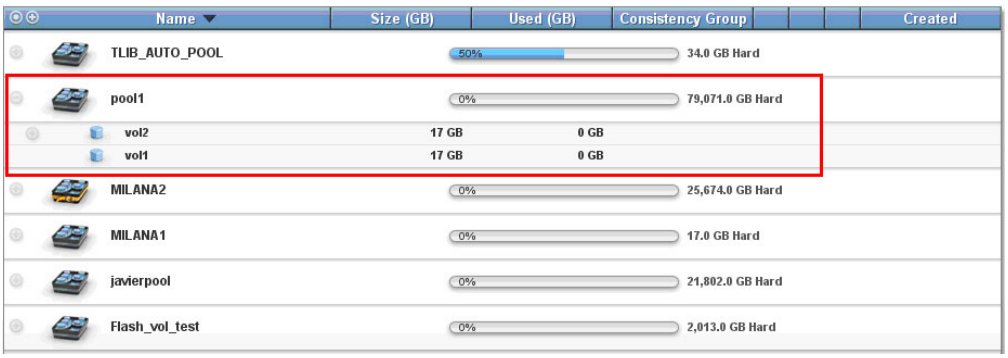

Figure 17. XIV Management GUI – Volumes of a storage pool

3. Double-click a volume to be mirrored, and then click **Create Mirror**. The Create Mirror dialog box appears.

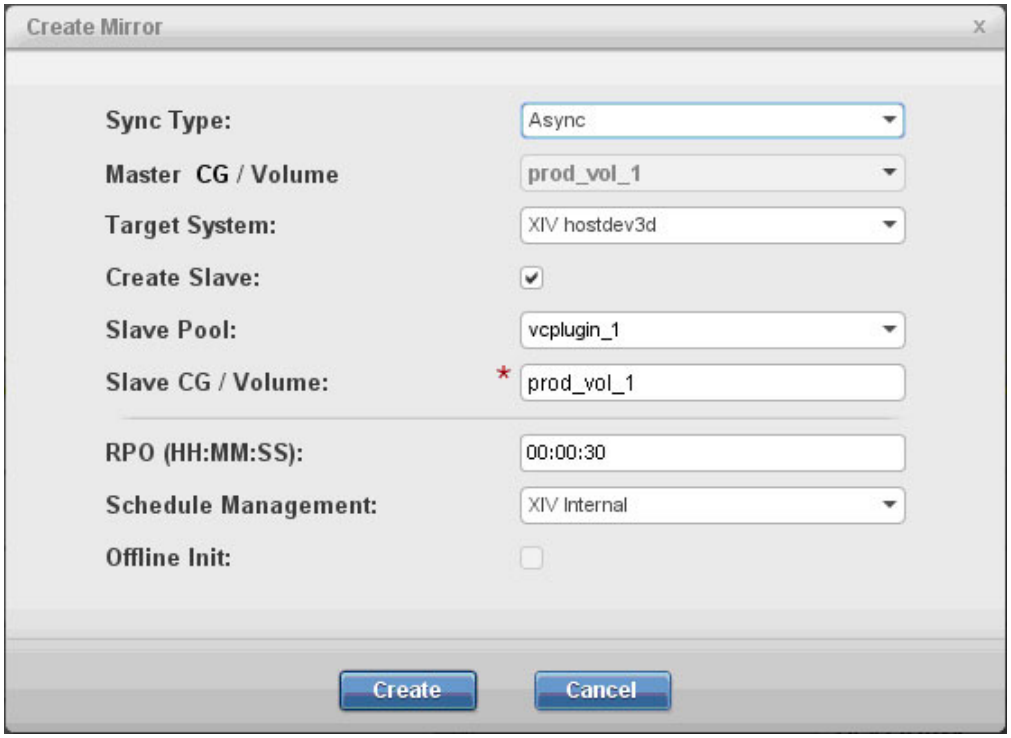

Figure 18. XIV Management GUI – Create Mirror dialog box – for a volume

4. Select the mirroring type (Sync or Async) and enter the relevant mirroring details.
5. Click **Create**. The mirroring is set for the volume.
6. Repeat steps 3 – 5 for every volume that requires mirroring.
7. Go to **Remote** > **Mirroring Connectivity**, right-click a newly created volume mirror and then click **Activate**. Repeat this action for all mirrored volumes.

Important: Make sure that the volume mirroring connection is activated for each mirrored volume.

Stage 9: Define consistency groups (optional)

If your volumes require replication in consistency with each other (for example, when a datastore consists of more than one volume), create a consistency group for these volumes.

About this task

Create one consistency group for the primary XIV system, and one for the secondary XIV system.

Procedure

1. On the XIV management GUI, focus on the primary XIV system, and the go to **Volumes** > **Consistency Groups**. The list displays all existing consistency groups and a group of unassigned volumes.

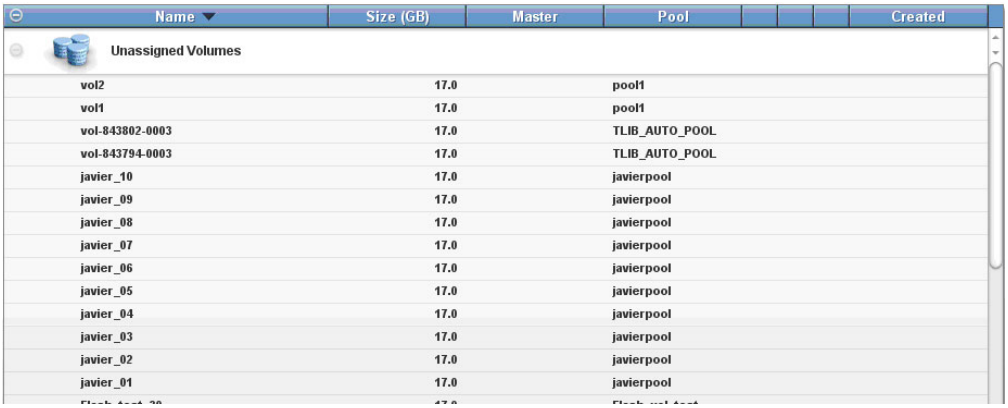

Figure 19. XIV Management GUI – List of unassigned volumes

2. Click **Create Consistency Group**. The Create Consistency Group dialog box appears.
3. Enter the consistency group's name and select the storage pool on which it should be created. Then, click **Create**.
   The Create Mirror dialog box appears.

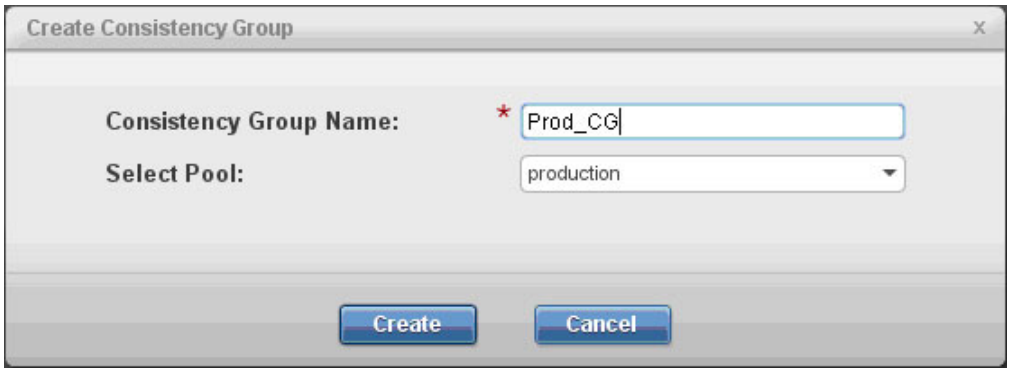

Figure 20. XIV Management GUI – Create Consistency Group dialog box

4. Define mirroring for the consistency group (CG) you have created. The mirroring should be of the same type and characteristics of the mirrored volumes that you intend to add to the group. Then, click **Create**.

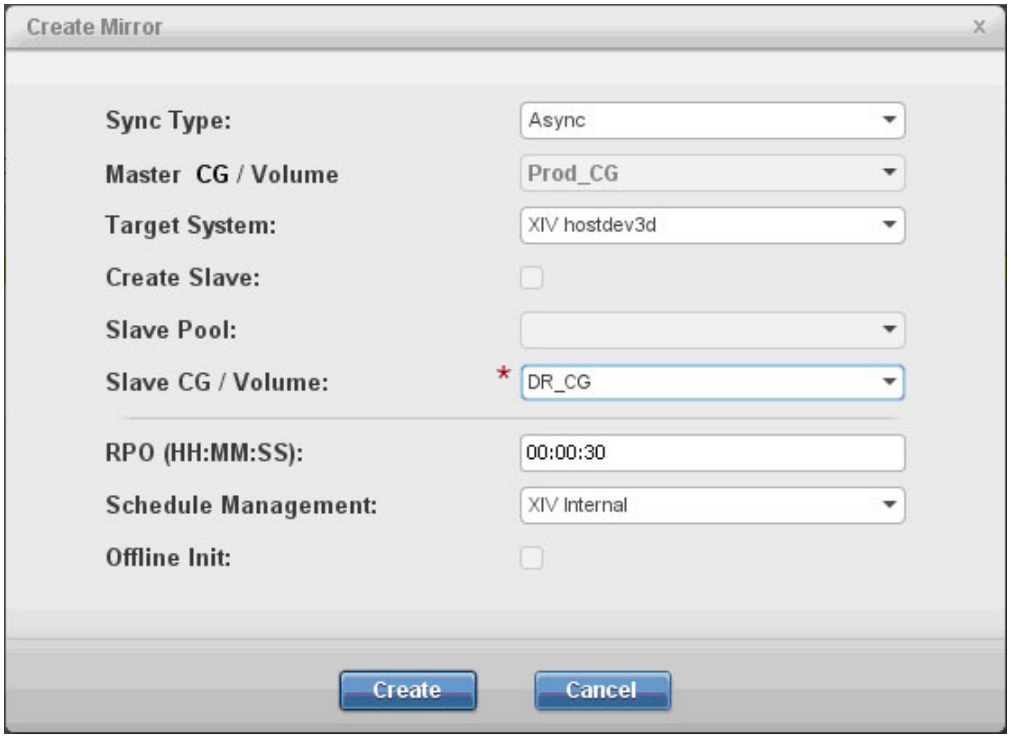

Figure 21. XIV Management GUI – Create Mirror dialog box – for a CG

5. Go to **Remote** > **Mirroring** and add the relevant mirrored volumes to the consistency group.
   The mirrored volumes are now part of the mirrored consistency group.

Figure 22. XIV Management GUI – Add Mirrored Volumes to CG dialog box

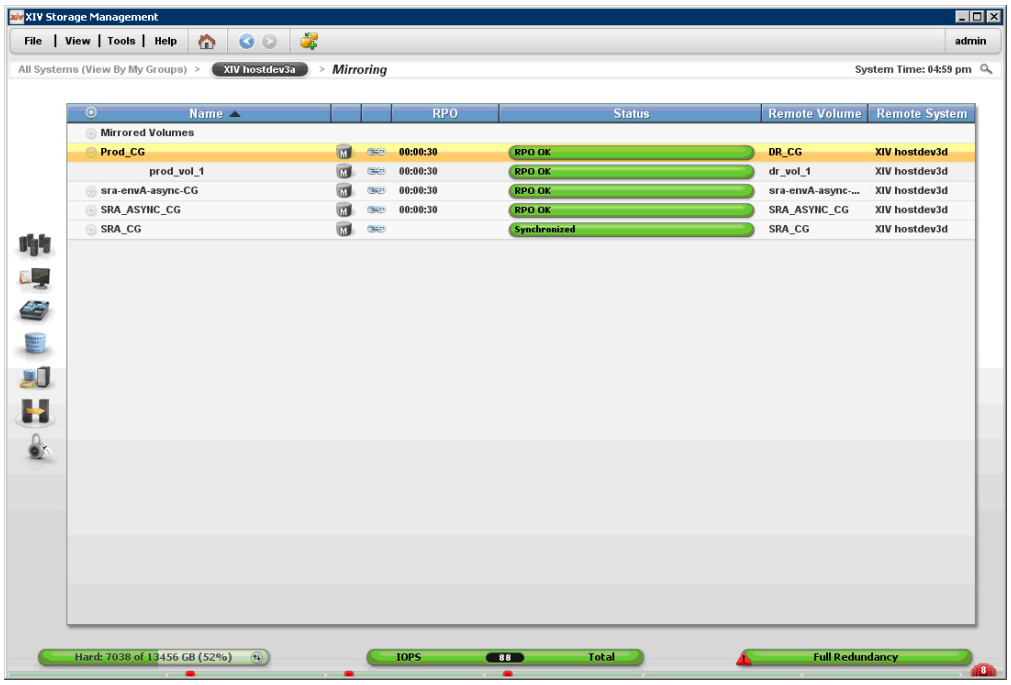

Figure 23. XIV Management GUI – Mirrored volumes in a consistency group

Chapter 3. Installation

After the required preparation has been performed, you can start the IBM XIV SRA installation.

This chapter describes:

- "Upgrading from a previous IBM XIV SRA version"
- "Running the IBM XIV SRA installation wizard" on page 20
- "Verifying the IBM XIV SRA installation" on page 22
- "Removing the IBM XIV SRA software" on page 24

Upgrading from a previous IBM XIV SRA version

Refer to this section if a previous IBM XIV SRA version is already installed.

About this task

The following upgrade procedure is applicable to versions 4.0.0, 4.0.1, and 4.0.2 of the IBM XIV SRA.

Important: If you have version 4.0.0 or 4.0.1, you must first remove all XIV Array Manager definitions from the SRM configurations on vSphere Client. You will have to redefine the XIV Array Manager definitions after the installation of version 4.1.0.

Perform the following procedure on the VMware vCenter SRM server to uninstall the IBM XIV SRA.

Procedure

1. Uninstall the existing version as described in “Removing the IBM XIV SRA software” on page 24.
2. Install version 4.1.0 as described in “Running the IBM XIV SRA installation wizard.”

Running the IBM XIV SRA installation wizard

This section describes how to run the IBM XIV SRA installation wizard (InstallShield wizard).

About this task

Perform the following procedure on the VMware vCenter SRM server to install the IBM XIV SRA.

Note: If a previous version of the IBM XIV SRA is already installed, uninstall it before you install the newer version. For more information, see “Removing the IBM XIV SRA software” on page 24.

Procedure

1. Run the following installation package file:
   `IBM_XIV_Adapter_for_VMware_vCenter_SRM-4.1.0-x64.exe`.
2. From the language selection dialog box, select the language that you want to use in the installation wizard, and then click **OK**.

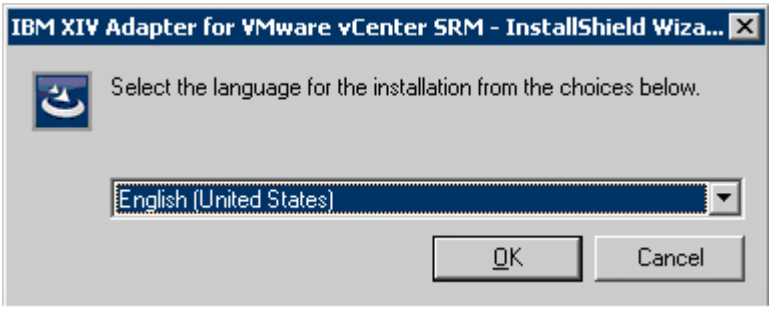

Figure 24. Language selection dialog box

   The installation wizard of IBM XIV Adapter for VMware vCenter Site Recovery Manager starts.
3. Click **Next**. The License Agreement panel is displayed.
4. Read the IBM License Agreement and then select **I accept the terms in the license agreement**.
5. Click **Next**. The Ready to Install the Program panel is displayed.

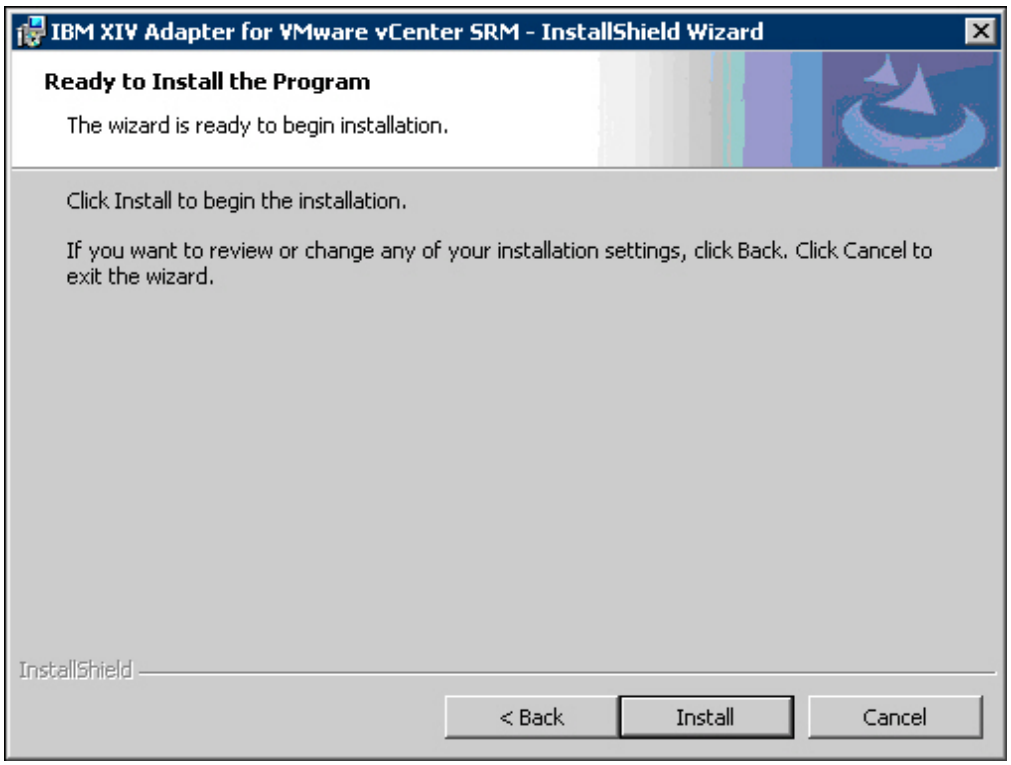

Figure 25. Ready to Install the Program panel

6. Click **Install** to begin the installation.

Note: The IBM XIV SRA files are installed in the SRM installation directory (default: `C:\Program Files (x86)\VMware\VMware vCenter Site Recovery Manager`), under the subfolder: `\scripts\san\XIV`.

After the installation is complete, the Completed panel is displayed.

7. If you want to display the user guide or release notes for the installed version, keep the appropriate check box selected. Otherwise, clear the check box of the document that you do not want to display. Then, click **Finish**.

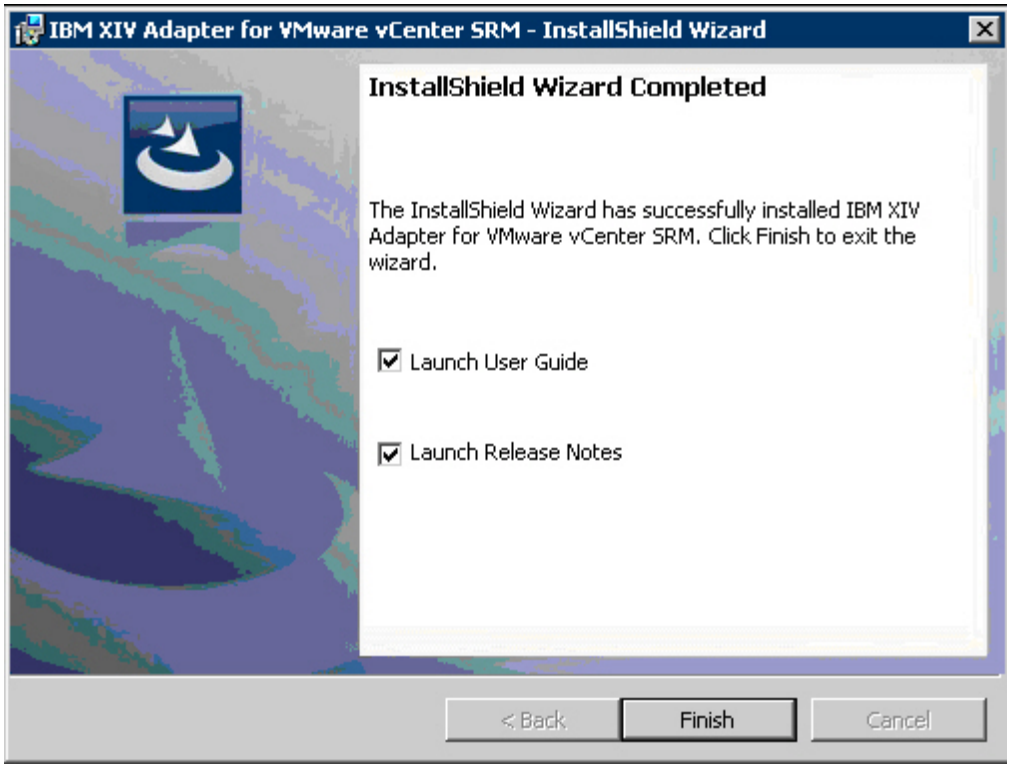

Figure 26. User Guide and Release Notes check boxes selected

8. From the Windows Start menu, go to **All Programs** > **Administrative Tools** > **Services**, and then restart the VMware vCenter Site Recovery Manager service.

Verifying the IBM XIV SRA installation

After the installation, you can verify that the IBM XIV SRA is properly installed.

Procedure

1. From the vSphere Client **Home** panel, go to **Solutions and Applications** > **Site Recovery**, click the **Site Recovery** top tree hierarchy, and then click the **Summary** tab.
2. Under **Protection Setup**, on the **Array Managers** row, click **Configure**.

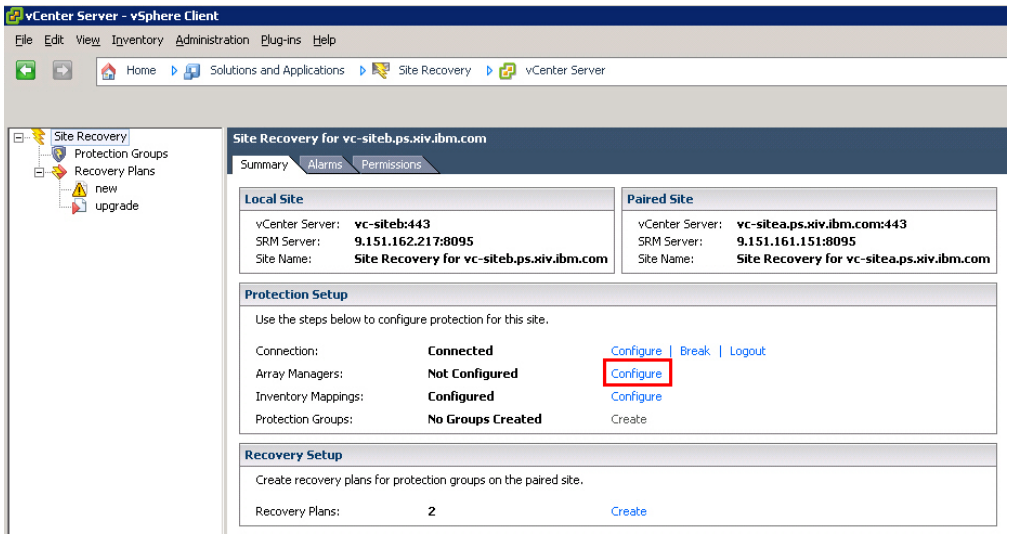

Figure 27. Array Managers Configure option

The Configure Array Managers wizard appears.

3. Click **Add**. The Add Array Manager dialog box appears.
4. Verify that the IBM XIV Storage System can be selected from the **Manager Type** drop-down list.

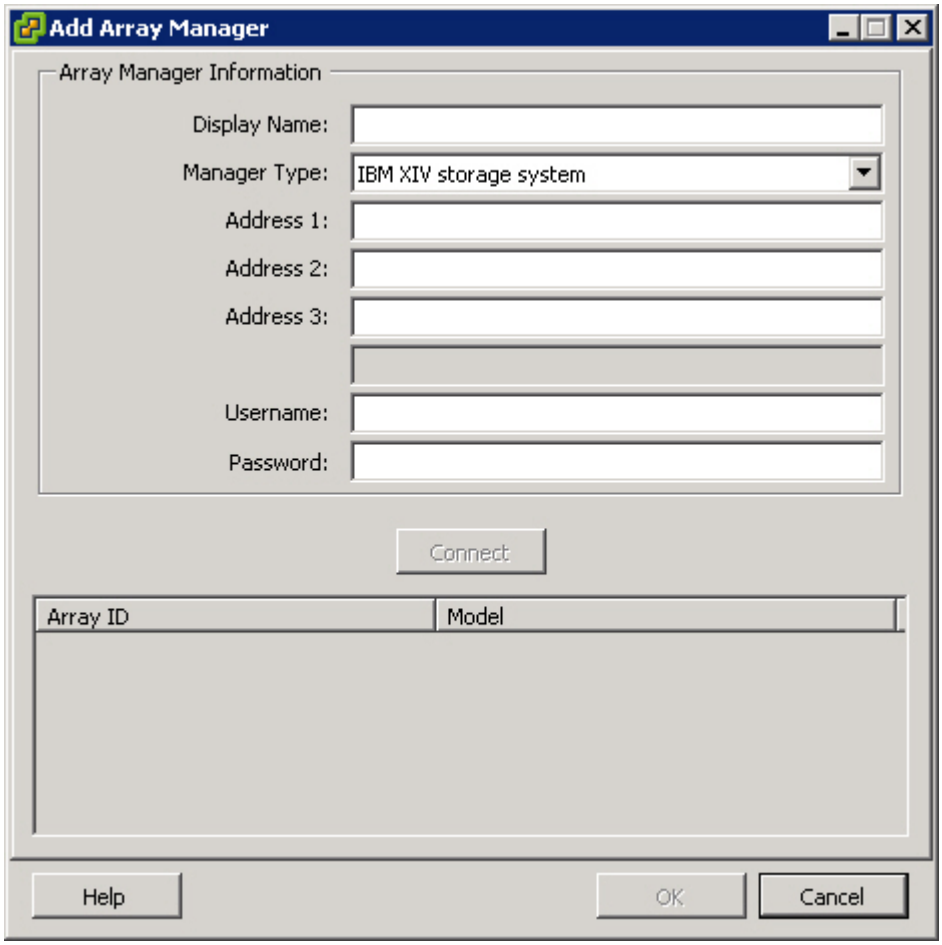

Figure 28. Add Array Manager dialog box

Removing the IBM XIV SRA software

If you want to remove the IBM XIV SRA from the SRM server, perform the standard Windows Server software removal procedure.

Procedure

1. From the Windows Control Panel, start the standard Windows program removal utility.
2. Select IBM XIV Adapter for VMware vCenter SRM from the list of installed programs, and then click the removal button (may be labelled differently depending on the Windows Server version you are using). The uninstallation wizard starts and guides you through the rest of the uninstallation steps.
3. From the Windows Start menu, go to **All Programs** > **Administrative Tools** > **Services**, and then restart the VMware vCenter Site Recovery Manager service.

Chapter 4. Usage

This chapter describes the usage of the IBM XIV SRA together with VMware SRM for performing dependable Disaster Recovery Planning (DRP) and protecting VMware sites in conjunction with their XIV-based datastores.

This includes:

Adding an XIV storage system as an Array Manager

After the IBM XIV SRA is installed, you can start adding IBM XIV storage systems (referred to as *array managers*) to your protected and recovery sites, as described in the following procedure.

Procedure

1. From the vSphere Client **Home** panel, go to **Solutions and Applications** > **Site Recovery**, click the **Site Recovery** top tree hierarchy, and then click the **Summary** tab.
2. Under **Protection Setup**, on the **Array Managers** row, click **Configure** (see Figure 27 on page 23). The Configure Array Managers wizard appears, and its Protected Site Array Managers panel is displayed.

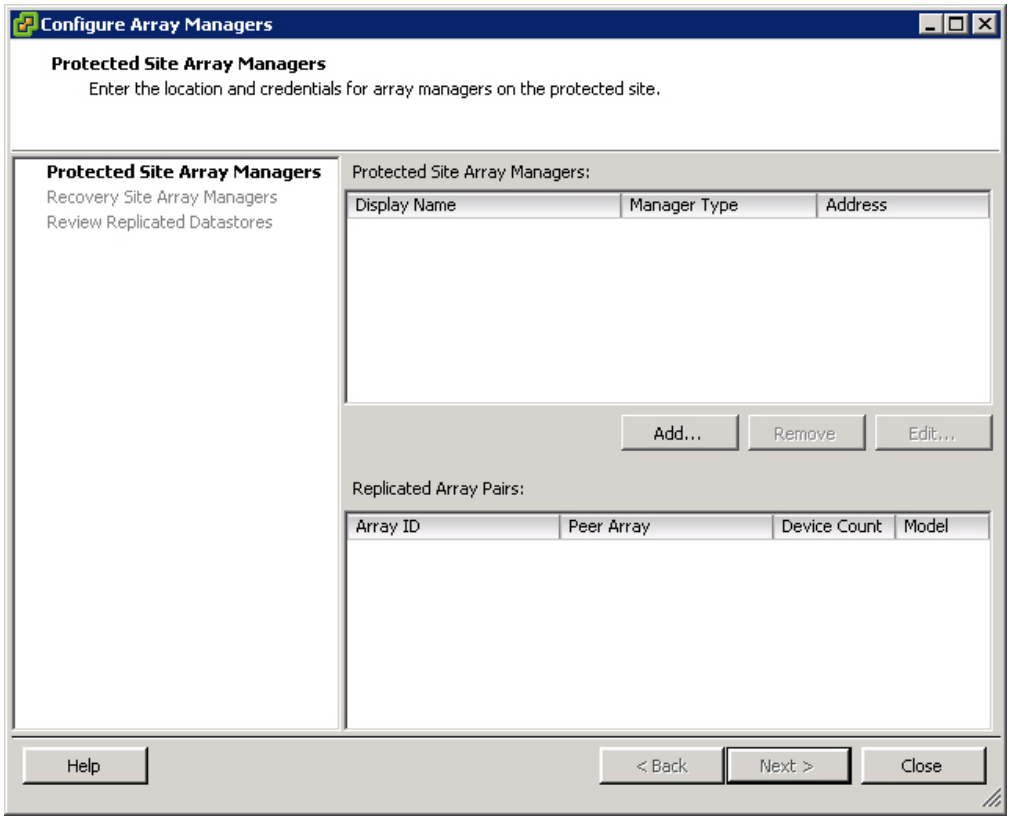

Figure 29. Configure Array Managers wizard – Protected Site Array Managers panel

3. Click **Add**. The Add Array Manager dialog box is displayed.
4. Select **IBM XIV Storage System** from the drop-down list (if not already selected).
5. In **Display Name**, type a name for the XIV storage system that you want to add, and then enter the following connection and credential parameters:
   - **First Management IP Address / Hostname** – Primary IP address or hostname of the XIV system that you want to add.
   - **Second Management IP Address / Hostname** – Alternative IP address or hostname of the XIV system that you want to add.
   - **Third Management IP Address / Hostname** – Another alternative IP address or hostname of the XIV system that you want to add.
   - **Username** – User name for accessing the specified XIV system.
   - **Password** – Password for accessing the specified XIV system.

Important: You must use login credentials of a storage administrator.

6. Click **Connect**. If the connection to the XIV system is successful, the XIV system is added to the array list in the dialog box.

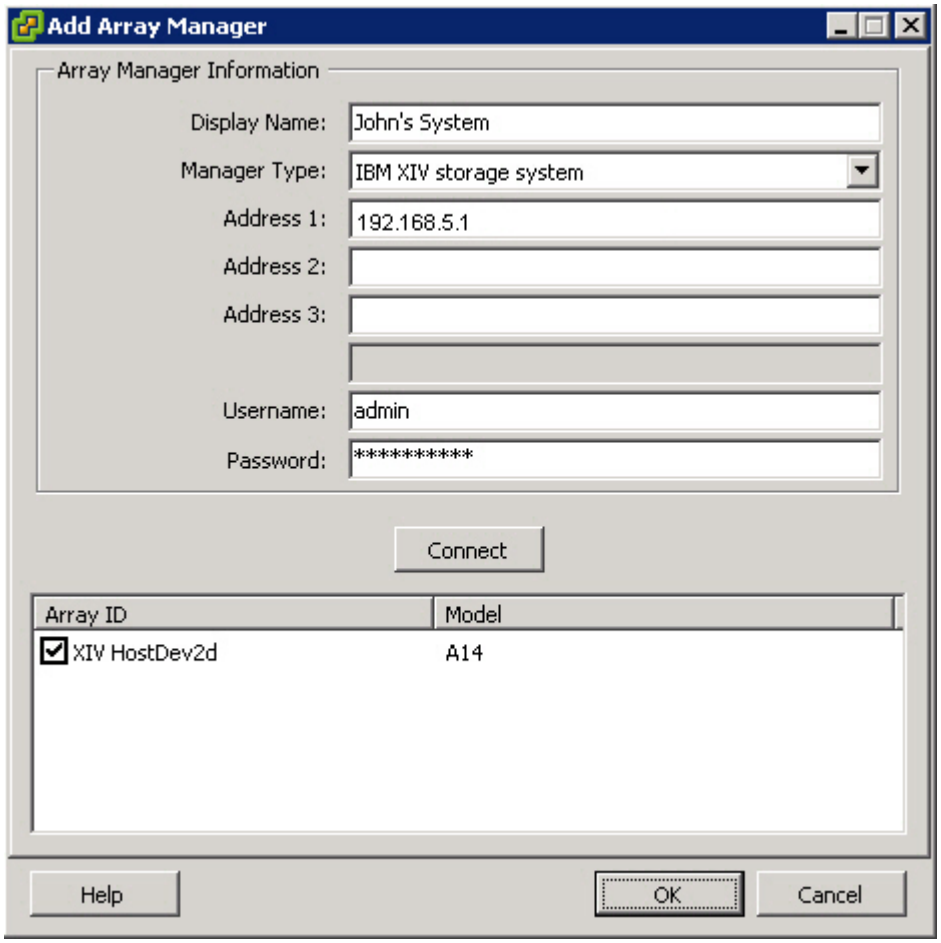

Figure 30. Add Array Manager dialog box – XIV storage system added

7. Click **OK**. The Add Array Manager dialog box closes and the XIV system is added to the list of Protected Site Array Managers.
8. Click **Next**. The Recovery Site Array Managers panel is displayed.
9. If the remote XIV system is not yet defined, repeat steps 3–6 for defining the XIV system at the recovery site. Otherwise, select it from the list of Recovery Site Array Managers.
10. Click **Next**. The Review Replicated Datastores panel is displayed.
11. Verify that the XIV systems at both the protected and recovery sites are properly mirrored, and then click **Finish**.

Note: If any warning is displayed on the last step, refer to Chapter 2, "Preparation," on page 5 in order to check whether the site-to-site mirroring has been properly predefined. You can also refer to Chapter 6, "Troubleshooting," on page 31 or to the VMware vCenter SRM online help.

Performing IBM XIV SRA operations

This topic describes how to use the IBM XIV SRA after an XIV storage system has been added.

The IBM XIV SRA supports the following primary SRM functions:

- Add XIV storage arrays (see "Adding an XIV storage system as an Array Manager" on page 25)
- Refresh XIV device information (display updated information) when the **Add Array Manager** operation is invoked.
- Create protection groups and recovery plans for XIV-based volumes and datastores
- Perform failover tests (create snapshots at the recovery site and mapping these snapshots)
- Perform cleanup (delete snapshots)
- Perform failovers (switch the operation to the recovery site)

Note: After a failover has occurred, you can perform corrective actions manually. For more detailed information about how to operate VMware SRM and perform complete DRP for your VMware server sites, refer to the relevant VMware SRM documentation.

Snapshot creation principles

In SRM 4.x, snapshots are created in Failover Test operations.

Accordingly, when a Failover Test operation is initiated:

- Snapshots are created at the recovery site, unlocked for read-write, and then mapped and used.
- The names of the snapshots are created in the following format:

  `srm_testfailover_<volume name>`

Attention: VMware vCenter SRM 4.x cannot detect XIV consistency groups. The Failover and Failover Test operations are requested at the volume level. When one or more XIV volumes are part of a consistency group, the following is performed at the XIV storage system level:

- In Failover operations:
  - The entire consistency group is failed-over, while the mirroring is deactivated at the consistency group level.
  - Only the requested volume or volumes are being mapped to the relevant ESX hosts.
- In Failover Test operations:
  - In synchronous mirroring, a snapshot is created only for the requested volume(s).
  - In asynchronous mirroring, the snapshot group is duplicated, and the snapshot of the requested volume(s) is mapped.
  - Both mirroring types (sync or async) remain intact.

Chapter 5. Best practices

This chapter summarizes recommended practices when using the IBM XIV SRA.

Consider the following recommendations for:

- "XIV storage pool snapshot size"
- "Volumes in a consistency group"

XIV storage pool snapshot size

Consider allocating extra storage pool snapshot space for storage volumes.

As mentioned in "Verifying the XIV mirroring configuration" on page 5, the storage pools that contain the replicated volumes at both the protected and recovery sites should have sufficient size for creating the volume snapshots.

The requirement is to allocate a minimum of 17 GB for each XIV volume, with additional 17 GB as spare space.

As a best practice, if your volumes are working in a high write rate, consider allocating larger storage pool space for snapshots.

Volumes in a consistency group

If the volumes of a single datastore are not grouped together, datastore consistency issues may arise.

To ensure datastore consistency in Failover or Test operations, place all volumes of a single datastore in one consistency group.

Chapter 6. Troubleshooting

This chapter can help you solve technical problems that you may encounter when using the IBM XIV Adapter for VMware vCenter Site Recovery Manager.

If you encounter an error, refer to the following troubleshooting sections:

- "Checking the log file"
- "Handling miscellaneous problems"

Note: For up-to-date information about known issues and possible workarounds, refer to the latest IBM XIV SRA release notes.

Checking the log file

Events are recorded separately at each site in a log file (each site with its own log file).

About this task

When encountering an issue and you are not sure whether the problem is at the local site or the remote site, you can collect a log file from the local site as well as from the remote site. These two log files may provide helpful information.

Perform the following procedure to retrieve the SRA log together with other SRM logs at a given site (local or remote).

Note: It is recommended to always attach the two log files when opening a new support request. In most cases, you will be requested to provide the log file so that the support team could have more detailed information about the technical problem you encountered.

Procedure

From the Windows Start menu, go to **All Programs** > **VMware** > **VMware vCenter Site Recovery Manager**, and then click **Generate vCenter Site Recovery Manage log bundle**.

Handling miscellaneous problems

This section guides you how to handle miscellaneous problems.

The following table summarizes different possible problems that you might encounter when working with the IBM XIV Adapter for VMware vCenter Site Recovery Manager 4.x.

Table 1. Possible problems and how to resolve them

Problem description	How to resolve
No access groups were provided during the Failover Test operation. Snapshots were created but could not be mapped.	Check the SRA log file, request assistance from your storage administrator, or open a support request.

Table 1. Possible problems and how to resolve them (continued)

Problem description	How to resolve
Snapshot space in the storage pool may exceed its limit if snapshots are created for the requested groups or devices.	Extend the snapshot size for the pool, or delete old snapshots.
SRM could not find hosts on the storage system that matches the provided initiators.	Verify that your ESX/ESXi hosts are defined in the storage arrays.
A command is not supported.	Open a support request and receive specific guidance from the support team. In your request, attach the relevant log file or files.
The system locale is not supported.	Change to English locale or open a support request and receive specific guidance from the support team.
Failed to connect to the XIV storage system.	Make sure that the IP address or hostname is correct, and verify your user credentials
The snapshot for this storage device was not found.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
Removal of mapping for this device has failed.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
The secondary volume or consistency group is not in consistency state.	Wait for the initialization or synchronization to complete, and then retry the operation.
Failover operation could not be performed for this device.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
The device could not be verified for a failover operation.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
The mapping removal and snapshot deletion operations could not be performed.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
Could not find the remote mirroring definition for the storage device.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
The restore replication operation has failed.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
The reverse replication operation has failed.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
Could not establish an immediate synchronization.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
There is insufficient space allocated in the storage pool for creating new snapshots for this device.	Extend the storage pool, or delete old snapshots.
The operation has failed.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
SRA internal error has occurred.	Open a support request and provide the information detailed in the log file.
The failover preparation operation has failed.	Check the SRA log file, request assistance from your storage administrator, or open a support request.
There is no mirror connectivity between the protected site and the recovery site.	Request assistance from your storage administrator.
Failed to create snapshot for the storage device.	Check the SRA log file, contact your storage administrator, or open a support request.
There are no target mirroring connections for this storage device.	Make sure that the mirroring connectivity for your recovery storage device is properly set. For assistance, contact your storage administrator.

Table 1. Possible problems and how to resolve them (continued)

Problem description	How to resolve
The mapping operation has failed.	Check the SRA log file, request assistance from your storage administrator, or open a support request.

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