VMware Site Recovery Manager with EMC RecoverPoint

Implementation Guide
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VMware Site Recovery Manager with EMC RecoverPoint Implementation Guide

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Purpose

EMC solution architects were given access to an EMC lab environment to install, configure, validate the operation of, and document a disaster recovery plan using VMware Site Recovery Manager (SRM) for ESX Server 3.5 virtual machines with EMC RecoverPoint systems. This guide provides an illustrated walkthrough of this exercise, with example screenshots and command line input, for individuals attempting to implement such a solution in the field.

Audience

This guide is intended for system engineers attempting to implement a disaster recovery solution using VMware Site Recovery Manager (SRM) for ESX Server 3.5 virtual machines with EMC RecoverPoint systems. Customers evaluating such a solution will also find this document useful.

It is assumed that the reader is already familiar with ESX Server 3.5 virtual machines, EMC RecoverPoint systems, and VMware Site Recovery Manager (SRM) software.

Scope

This guide attempts to bridge a potential information gap between the administration guide for VMware Site Recovery Manager and the release notes for EMC RecoverPoint Storage Replication Adapter for VMware Site Recovery Manager (see “Scope of EMC RecoverPoint Storage Replication Adapter for SRM release notes” and “Scope of VMware Site Recovery Manager administration guide” on page 6).

This guide does not reproduce the information in the previously mentioned documents. Instead, it provides an illustrated walkthrough, with example screenshots and command line input, of the processes of setting up and testing a disaster recovery plan using SRM for ESX Server 3.5 virtual machines with EMC RecoverPoint RecoverPoint systems. Also included are a limited set of recommendations for individuals attempting to implement such a solution in the field.
Scope of EMC RecoverPoint Storage Replication Adapter for SRM release notes

The EMC RecoverPoint Storage Replication Adapter for SRM release notes provide information about installing and configuring the Storage Replication Adapter (SRA) for EMC RecoverPoint systems. The release notes include:

- Environment and system requirements, including basic EMC RecoverPoint system requirements
- Known problems and limitations
- A reference to instructions for installing the RecoverPoint system for the first time, or for upgrading from earlier RecoverPoint releases
- References to special instructions for deploying RecoverPoint with a SANTap-based or SaaS-based intelligent switch
- A reference to special instructions for deploying RecoverPoint with the CLARiiON splitter
- An explanation of RecoverPoint consistency groups and SRM protection groups and how they work, recommendations for configuring LUNs in relation to SMR protection groups and RecoverPoint consistency groups
- Prerequisites and instructions for installing the EMC RecoverPoint Storage Replication Adapter for SRM plug-in on both the protected and recovery SRM servers

Scope of VMware Site Recovery Manager administration guide

The VMware Site Recovery Manager administration guide provides information about installing and configuring SRM, including conceptual overviews of configuring and managing protection sites, recovery planning, testing, and performing failover, alerts, system management, and troubleshooting.

Related documents

The following documents provide additional, relevant information.

- EMC RecoverPoint Adapter for VMware Site Recovery Manager Release Notes (EMC Powerlink)
- Administration Guide for Site Recovery Manager (http://www.VMware.com)
- Improving VMware Disaster Recovery with EMC RecoverPoint—Applied Technology (EMC Powerlink)
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Introduction

The increasing demand for server consolidation to contain hardware and data center environment costs has accelerated the deployment of server virtualization technology into the data center. Customers are deploying VMware ESX Server into ever-increasing parts of their infrastructures, in many cases as a first choice for server platform deployment for tier-1 and tier-2 applications. As more business-critical applications are deployed as virtual servers, it is important to integrate VMware into the business continuity planning process. To facilitate recovery of virtual server environments, VMware has introduced Site Recovery Manager, an integrated disaster recovery workflow application that automates and controls the site-to-site failover of virtual machines in the event of a disaster.

Site Recovery Manager (SRM) is an integral component of the VMware infrastructure that is installed within a VirtualCenter controlled VMware data center. SRM leverages the data replication capability of the underlying storage array to create a workflow that will fail over selected virtual machines from a “protected site” to a “recovery site” and bring the virtual machines and their associated applications back into production at the recovery site. SRM accomplishes this by communicating with and controlling the underlying storage replication software through an SRM plug-in, known as a Storage Replication Adapter (SRA). EMC has written, tested, and released SRAs for its storage replication products.

SRM is installed into a new or existing ESX Server environment that has intelligent array storage. Through SRM, the administrator defines virtual machines at the protected site that are to be incorporated into a “recovery plan.” Virtual machines in a recovery plan must have data stores on an array that is replicating the underlying devices supporting the data store. The recovery plan defines the actions that are to be taken for a selected set of virtual machines in the event of an administrator-initiated failover from the protected site to the recovery site. The recovery plan will shut down virtual machines at the protected site, prepare storage for device/LUN recovery and use at the recovery site, and initiate startup of virtual machines at the recovery site.
Component overview

The basic components of a disaster recovery solution using VMware Site Recovery Manager with EMC® RecoverPoint systems are described in this section.

VMware Site Recovery Manager

VMware Site Recovery Manager (SRM) is a disaster recovery framework that integrates with various EMC replication software products (for example, RecoverPoint) to automate the failover process of virtual machines. SRM recovery plans leverage the array-based snapshot features to test the failover process to ensure that the secondary image is consistent and usable. SRM relies on two independent VMware VirtualCenter servers to be in place at both the protected (primary) site and at the recovery (secondary) site to facilitate the failover process between the two sites. Array-based Storage Replication Adapters (SRAs) are also installed at both sites in order to talk to the storage-systems independently (see Storage Replication Adapter below).

EMC RecoverPoint

EMC RecoverPoint is a comprehensive replication and data protection solution designed and built from scalable and highly available hardware appliances and software modules. RecoverPoint systems provide continuous remote replication (CRR), continuous data protection (CDP), and concurrent local and remote (CLR) data protection support for heterogeneous storage, server, and network environments.

By using a combination of modules, customers can protect and replicate data written over Fibre Channel to local SAN-attached storage, locally for operational recovery, remotely for disaster recovery, or both, with no production application impact. For long distances, RecoverPoint systems use an existing IP network to send the data over a WAN. In the event of a local data corruption or a regional disaster, customers can recover data either at the local or remote site.

Storage Replication Adapter

A Storage Replication Adapter (SRA) is software provided by storage vendors that ensures integration of storage devices and replication with VMware Site Recovery Manager. These vendor-specific scripts support array discovery, replicated LUN discovery, test failover, and actual failover. The EMC RecoverPoint Storage Replication Adapter for VMware Site Recovery Manager is a software package that allows SRM to implement disaster recovery for ESX Server 3.5 virtual machines using RecoverPoint systems. The adapter facilitates
SRM functions, such as failover and replication and failover testing, using the RecoverPoint system as the replication engine.

**Note:** The RecoverPoint Adapter operates with RecoverPoint CRR consistency groups only.

**Logical architecture**

*Figure 1* illustrates the overall logical architecture of the integration scenario.
### Hardware and software resources

Table 1 and Table 2 present the hardware and software used in this specific implementation scenario.

#### Table 1  Hardware resources

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Quantity</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage arrays</td>
<td>2</td>
<td>EMC CLARiiON CX3 running FLARE® version 03.26 with a CLARiiON RecoverPoint splitter</td>
</tr>
<tr>
<td>Commodity servers</td>
<td>4</td>
<td>Dell PowerEdge 2950 Windows hosts configured as VMware VirtualCenter servers running VMware ESX Server 3.5</td>
</tr>
<tr>
<td>EMC RecoverPoint appliances</td>
<td>2</td>
<td>Running EMC RecoverPoint 3.0</td>
</tr>
<tr>
<td>Network switch</td>
<td>1</td>
<td>Cisco 4506</td>
</tr>
<tr>
<td>Fibre Channel switch</td>
<td>1</td>
<td>Cisco MDS 9513</td>
</tr>
</tbody>
</table>

#### Table 2  Software resources

<table>
<thead>
<tr>
<th>Software title</th>
<th>Version</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMware ESX Server</td>
<td>3.5</td>
<td>Installed on VMware VirtualCenter servers</td>
</tr>
<tr>
<td>VMware Site Recovery Manager</td>
<td>1.0</td>
<td>Installed on VMware VirtualCenter servers</td>
</tr>
<tr>
<td>.NET Framework</td>
<td>2.0</td>
<td>Installed as part of VMware VirtualCenter</td>
</tr>
<tr>
<td>EMC RecoverPoint</td>
<td>3.0</td>
<td>Installed on EMC RecoverPoint appliances</td>
</tr>
<tr>
<td>EMC RecoverPoint SRA for SRM</td>
<td>1.0</td>
<td>Installed on VMware VirtualCenter servers</td>
</tr>
</tbody>
</table>
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Introduction

The installation and configuration instructions presented in this section apply to the specific revision levels of components used during the testing of this integration scenario. Before attempting a real-world implementation based on this scenario, gather the appropriate installation and configuration documentation for the revision levels of the hardware and software components that you are planning to include in the implementation. Version-specific release notes are especially important.

See also

For environment and system requirements, including EMC RecoverPoint system requirements, refer to the most recent version of the *EMC RecoverPoint Adapter for VMware Site Recovery Manager Release Notes*.

Installation and configuration of the various components must be performed in the appropriate sequence and at the appropriate site or sites (protected site, recovery site, or both). *Table 3* summarizes the sequence and indicates the site or sites at which each step in the sequence is performed.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Installation and configuration process overview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Action at protected (primary) site</strong></td>
<td><strong>Action at recovery (secondary) site</strong></td>
</tr>
<tr>
<td><strong>Initial requirements</strong></td>
<td><strong>VMware ESX Server cluster at protected site</strong>&lt;br&gt;<strong>VMware VirtualCenter 2.5u1 installed</strong>&lt;br&gt;<strong>Array with remote replication capability</strong></td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td>Map virtual machines to be protected to associated storage LUNs</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Verify available LUNs to act as a target for array replication</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Using storage replication management tools, configure target array LUN replication from protected site to recovery site</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Verify replication</td>
</tr>
<tr>
<td><strong>Step 5</strong></td>
<td>Install VMware Site Recovery Manager (SRM) and EMC Site Recovery Adapter on VirtualCenter server</td>
</tr>
<tr>
<td><strong>Step 6</strong></td>
<td>Install VMware Site Recovery Manager (SRM) and EMC Site Recovery Adapter on VirtualCenter server</td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td>Using VirtualCenter client, log in to VirtualCenter server at protected site and configure connection to VirtualCenter server</td>
</tr>
</tbody>
</table>
Configuring RecoverPoint consistency groups

The first step in setting up and testing a disaster recovery plan using SRM for ESX Server 3.5 virtual machines with EMC RecoverPoint systems is to configure RecoverPoint consistency groups for the VMware volumes that are to be protected and managed by SRM.

The general procedure is as follows:

1. Create consistency groups.
2. Configure copies.
3. Add replication sets and journals.
4. Add splitters.
5. Attach volumes to splitters.
6. Enable groups.
7. Start replication.

This process is described in detail in the RecoverPoint administrator’s guide.

Note: Configure consistency groups on the VirtualCenter client connected to the protected site and also the VirtualCenter client connected to the recovery site.

See also For detailed information on configuring RecoverPoint consistency groups, refer to the *EMC RecoverPoint Administrator’s Guide.*
Installing VMware Site Recovery Manager

After configuring RecoverPoint consistency groups, the next step is to install the SRM framework, the SRM plug-in, and the RecoverPoint Storage Replication Adapter for SRM.

See also

For more information, including system requirements, refer to the Administration Guide for Site Recovery Manager and the EMC RecoverPoint Adapter for VMware Site Recovery Manager Release Notes.

Prerequisites

Before you install SRM, RecoverPoint consistency groups must be synchronized and replicating.

Installing the SRM framework

Click on the VMware Site Recovery Manager executable to install the SRM framework and navigate through the installation wizard as shown in the example below (the example sequence flows from left to right, top to bottom).

Note: Install this component on the VirtualCenter client connected to the protected site and also the VirtualCenter client connected to the recovery site.
Installation and Configuration

Creating a New Data Source to SQL Server

This wizard will help you create an ODBC data source that you can use to connect to SQL Server.

- Name: SRM_Primary
- Description:
- Which SQL Server do you want to connect to? SRM_CIPL SQL VM

Configure the database settings:

- Database name:
- Mirror server:
- Attach database filename:
- Use ANSI quoted identifiers:
- Use ANSI nulls, paddings and warnings:
- Change the default database to:

SQL Server authentication using a login ID and password entered by the user:
- Connect to SQL Server to obtain default settings for the additional configuration options:

How should SQL Server verify the authenticity of the login ID?
- SQL Server authentication using a login ID and password entered by the user:
- Connect to SQL Server to obtain default settings for the additional configuration options:

Local ID: Administrator
Password: 

Finish | Next | Cancel | Help
Installing VMware Site Recovery Manager

1. **Database Configuration**:
   - Enter database information to use for VMware Site Recovery Manager.
   - Select database client type: SQL Server.
   - Enter data source name (DSN): SPM_Prim.
   - Enter database user credentials:
     - Username: Administrator
     - Password:********
   - Connection information:
     - Connect Count: 5

2. **Ready to Install the Program**:
   - The wizard is ready to begin the installation.
   - If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

3. **InstallShield Wizard Completed**:
   - VMware Site Recovery Manager has been installed successfully. Click Finish to exit the wizard.
Installing the SRM plug-in

After installing the SRM framework, navigate to Manage Plugins and download and install the SRM plug-in as shown in the example below (the example sequence flows from left to right, top to bottom).

Note: Install this component on the VirtualCenter client connected to the protected site and also the VirtualCenter client connected to the recovery site.

---

![Image of plugin manager](image1)

**VMware Site Recovery Manager Extension**
- Version: 3.0
- VMware, Inc.
- VMware Site Recovery Manager Win32 client

![Image of installation wizard](image2)

**Welcome to the installation wizard for VMware Site Recovery Manager Plugin**
- The installation wizard will install VMware Site Recovery Manager Plugin on your computer. To continue, click Next.

![Image of license agreement](image3)

**VMware Master End User License Agreement**
- Notice: By downloading and installing, copying or otherwise using the software, you agree to be bound by the terms of this VMware master end user license agreement (EULA). If you do not agree to the terms of this EULA, you may not download, install, copy or use the software, and you may return the unused software to the vendor from which you acquired it within thirty (30) days and request a refund of the.

![Image of installation progress](image4)

**Ready to Install the Program**
- The wizard is ready to begin installation.

Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
Installing the RecoverPoint SRA for Site Recovery Manager

After installing the SRM plug-in, launch the RecoverPoint Storage Replication Adapter installation wizard and follow the instructions it presents.

**Note:** Install this component on the VirtualCenter client connected to the protected site and also the VirtualCenter client connected to the recovery site.
Installation and Configuration
Configuring VMware Site Recovery Manager

After installing the RecoverPoint Storage Replication Adapter for SRM, configure SRM within the environment as follows.

Establishing the connection between sites

**Note:** Establish the inter-site connection on the VirtualCenter client connected to the protected site and also the VirtualCenter client connected to the recovery site.

1. Log in to the VirtualCenter client.
2. On the toolbar, click the Site Recovery button.
3. Near the center of the Site Recovery screen, notice that the Paired Site field is blank. Under Protection Setup, next to the Connection label, click Configure.
4. Add the IP address of the virtual client at the recovery site to establish a connection.
Configuring array managers

After establishing a connection between the protected and recovery sites, configure array managers as shown in the example below.
Note: Configure array managers on the VirtualCenter client connected to the protected site and also the VirtualCenter client connected to the recovery site.

1. Restart the SRM service at both the protected and recovery site.
2. Under Protection Setup, next to the Array Managers label, click Configure.
3. On the Configure Array Managers screen, click the Add button.
4. On the Add Array Manager screen, specify the array information for the protected side, and click Connect to discover and display the array.

5. Click OK to dismiss the Add Array Manager screen.
6. Repeat step 3 and step 4, this time adding an array manager for the recovery site.

7. Click OK to dismiss the Add Array Manager screen.
8. Click Next to display all the data stores that are being replicated from the protected site to the recovery site. If you do not see the expected data stores, click Rescan Arrays.

**Note:** During testing, it was necessary to remove the data stores from the virtual machine and then re-add them in order for SRM to list the virtual disks as replicated.

9. Click Finish. The arrays are now managed.

### Configuring inventory mappings

After configuring array managers, configure inventory mappings. This involves mapping resources from the protected site to the recovery site.
**Note:** Configure inventory mapping on the VirtualCenter client connected to the protected site and also the VirtualCenter client connected to the recovery site.

In the main window of the VirtualCenter client, click the item that you want to configure. The Configure link in the upper right-hand area of the screen becomes live. You can use this link to the map resource from the protected to the recovery side. Repeat to map all of the appropriate resources.
Creating and configuring protection groups

After configuring inventory mappings, create and configure protection groups. A protection group defines the specific items you want to move from the protected site to the recovery site in the event of a disaster. Such items might include virtual machines (VMs), resource pools, data stores, and networks.

Protection groups can protect VMs, applications, or a combination of the two (for example, an application distributed across multiple VMs).

For ease of management, it is ideal to maintain a one-to-one mapping between SRM protection groups and RecoverPoint consistency groups. However, multiple consistency groups can be mapped to a single protection group, if necessary.
**Note:** Create and configure protection groups only on the VirtualCenter client connected to the protected site.

To create and configure a protection group, follow the example presented below:

1. In the main window of the VirtualCenter client connected to the primary (protected) site, click Create Protection Group.

2. Name the new protection group.
3. Select the VMs to be failed over as a group and click Next.

4. Select a recovery site data store for the placeholder VM configuration files.
Click Configure Protection
Configuring VMware Site Recovery Manager

VMware Site Recovery Manager with EMC RecoverPoint Implementation Guide
Creating a recovery plan

After creating and configuring protection groups, create a recovery plan as shown in the example below.

**Note:** Create the recovery plan on the VirtualCenter client connected to the recovery site.

1. From the VirtualCenter client connected to the recovery site, click Create Recovery Plan.

2. Name the new recovery plan.
3. Select the protection group you previously created and click Next.

4. Continue to follow the instructions that the wizard presents.
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Testing the recovery plan

After creating an SRM recovery plan, it is important to test the plan to verify that it is performing the expected operations.

SRM provides the ability to test a recovery plan from the recovery site. When running a test, SRM executes the configured recovery plan with the following exceptions:

- The recovery site does not connect to the production site and does not shut down the production VMs.
- During a test, a test network is created at the recovery site so that the infrastructure of the recovery site is not affected. The test network is deleted at the conclusion of the test.

**Note:** Recovery plans are tested only from the VirtualCenter client connected to the recovery site.

To test the recovery plan you previously created:

1. From the VirtualCenter client connected to the recovery site, open the recovery plan you previously created and configured.
2. Select the Recovery Steps tab to view the sequence of configured events.
3. Click Test. SRM begins to execute the recovery plan in test mode.
4. The following events occur:
   a. RecoverPoint bookmark images are created and virtual access is enabled on the remote copy for the consistency group volumes.
   b. SRM simulates the carry-over of all of the resources created within the SRM protection group to the recovery site.
   c. The recovery VMs are powered on in the order defined within the recovery plan.
   d. SRM pauses.
5. Open a console for a VM that was started at the recovery site and verify that the data is as you would expect it to be.
6. Click the Continue button to have SRM clean up the test and revert back to the original production state.
7. Open a console for a VM that was started at the recovery site and verify that the data is as you would expect it to be.

8. Click the Continue button to have SRM clean up the test and revert back to the original production state.

**See also** For additional information about testing SRM recovery plans, refer to the *Administration Guide for Site Recovery Manager*, available on the VMware website (http://www.VMware.com).

**Recovery plan execution operations**

Executing an SRM recovery plan is similar to testing a recovery plan with the following differences:

- Executing a recovery plan is a one-time activity; testing a recovery plan can be performed multiple times.

- When a recovery plan is executed, RecoverPoint consistency groups are failed over. When a recovery plan is tested, an image with virtual access is enabled instead.

- When a recovery plan is executed, the remote copy becomes the production copy and vice versa. Testing a recovery plan does not transfer production to the remote copy.

- After executing a recovery plan, manual steps are required to resume operation at the original production site. Testing a recovery plan does not require such steps because production is not actually transferred to the remote site.
Note: Recovery plans are executed from the VirtualCenter client connected to the recovery site.

Important: Executing an SRM recovery plan should be done only in the event of a declared disaster to enable operations to be resumed at the recovery site.

Recovery plan execution scenarios

The following recovery plan execution scenarios were conducted as part of validation. All scenarios were successful.

- A single recovery plan with single protection group.
- A single recovery plan with multiple protection groups.
- Multiple recovery plans having the same protection group or groups. Tests could be run only one at a time, and each test had to complete before the next test could be started.
- Multiple recovery plans with a single protection group or multiple protection groups. Each recovery plan used a unique protection group; that is, a given protection group was used in one (and only one) recovery plan. Tests had to be staggered, meaning that one plan’s test had to progress to the point of the snapshots becoming active on the recovery site before the next plan’s test could begin.

Note: Recovery plan tests were successful only when replication was active between the sites. Artificially pausing the data transfer caused the tests to fail, as intended.

Important: Before testing a recovery plan, if data transfer is paused, resume transfer with Image Access disabled.

Failover operations

The following failover operations were conducted as part of validation:

- Failing over with replication on and data transfer enabled
- Failing over with data transfer paused, which characterizes a disaster situation

Note: Failover operations are initiated from the VirtualCenter client connected to the recovery site.
Failback operations

The extent of a disaster determines whether recovery is performed to a newly provisioned site or to the original site. Thus, different steps are required depending on the scenario. However, the underlying technology and initialization of SRM are the same.

Note: Failback operations are initiated from the VirtualCenter client connected to the original protected site.

The general steps required for failback are as follows:

1. Perform cleanup with VirtualCenter:
   a. Remove the VMs from inventory on the protected site.
   b. Remove the failed-over recovery plan from the recovery site.
   c. Remove the protection group or groups associated with the removed recovery plan from the protected site.

2. Reverse RecoverPoint replication to perform replication in the opposite direction (recovery site to protected site). For instructions on addressing various failback scenarios with RecoverPoint, refer to the EMC RecoverPoint Administrator's Guide.

3. Configure SRM to fail back from the recovery site. Using SRM Array Manager, perform the following steps on both arrays:
   a. Add the recovery array as the new protected site array (only if it has not yet been added).
   b. Add the protected array as the new recovery site array (only if it has not yet been added).
   c. Optional) Remove the previous protected/recovery array configuration.

4. Rescan the arrays. The data sources to fail back should now be displayed.

5. Close and reopen the VirtualCenter client.

6. Re-create the protection group or groups on the new protected array (previously the recovery array).

7. Re-create the recovery plan on the new recovery array (previously the protected array).

8. Test the recovery plan.

9. Initiate failover from the new protected array to the new recovery array.

10. Repeat steps 1 through 8 to revert the environment to SRM readiness.
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Recommendations

As a direct result of working through this implementation scenario, the solution architects identified the following recommendations.

- If the VMs to be failed over do not have VMware Tools installed, the recovery plan will generate an error when attempting to shut down the production VMs (notice the step that is annotated in the screenshot below). The remaining steps in the plan will succeed, however, provided the plan was configured properly. The final status of the recovery plan will display the error (on the History tab), even if the VMs failed over successfully.
• Alarms should be created to announce the creation of new VMs on the data store, so that mirrors can be configured to include the new VMs in the SRM protection scheme.

• It is strongly recommended that RecoverPoint consistency groups be defined and configured for initial Replication before installing SRM and SRA.

• Restart the SRM service before configuring array managers.

• If SRM is used for failover, it is recommended that SRM also be used for failback, since manual failback is cumbersome and requires changing the LVMEnableresignature on the protected ESX servers. By default, SRM changes the LVMEnableresignature to 1 and then renames the VMFS data stores.

• Testing of a recovery plan does not verify whether there is connectivity between the arrays. To verify connectivity between VM consoles, use the SRM connection. To verify connectivity between arrays, use the RecoverPoint GUI.

• Ensure that you have enough disk space configured for the VM and swap file at the recovery site to ensure that the recovery plan test runs successfully and without errors.

• When the RecoverPoint Adapter is used with RecoverPoint 3.0 and an intelligent-fabric splitter, VMware SRM may time out during a rescan of a remote ESX server as part of a failover operation (either real or test). The timeout may occur more frequently when there is a large number of replicated LUNs attached to the ESX server. As a workaround, run the signed script published as part of Primus knowledge base article number emc183371. The script adjusts the RecoverPoint Appliance to prevent SRM timeouts. For more information, contact EMC Customer Service.

• The RecoverPoint Adapter does not support the RecoverPoint KDriver (host-splitter driver). For the most up-to-date list of supported splitters, refer to the EMC Support Matrix (ESM).

**Conclusion**

This guide provides an illustrated walkthrough, with example screenshots and command line input, of the processes of setting up and testing a disaster recovery plan using SRM for ESX Server 3.5 virtual machines with EMC RecoverPoint systems. Also included are a limited set of recommendations for individuals attempting to implement such a solution in the field.