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Preface

This chapter contains these topics:

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Purpose

The main purpose of this document is to guide you in the installation and configuration of the RecoverPoint for VMs system.

Also provided are procedures for maintaining your system after it is operational, including:

- Replacing existing vRPAs
- Modifying the configuration of an existing vRPA cluster
- Scaling your system by adding additional vRPAs and vRPA clusters
- Upgrading your system when a new release becomes available

Audience

This document is intended for:

- Virtualization Admins who manage, maintain, and scale their virtual environments to keep up with user and data growth.
- Application Admins who are concerned with application performance and scaling those applications to keep up with user and data growth.

Readers should be familiar with RecoverPoint and have basic knowledge of storage technologies and VMware Virtual infrastructure technology.

Related documentation

These publications provide additional information:

- RecoverPoint for Virtual Machines Release Notes
- RecoverPoint for Virtual Machines Product Guide
- RecoverPoint for Virtual Machines Security Configuration Guide
- RecoverPoint for Virtual Machines Administrator's Guide
- RecoverPoint for Virtual Machines CLI Reference Guide
- RecoverPoint for Virtual Machines Deployment REST API Guide
- RecoverPoint for Virtual Machines Scale and Performance Guide

To download a document, go to https://support.emc.com. Perform a search by document title to locate the document. Click the link to download the document.
CHAPTER 2

Introduction to RecoverPoint for VMs

This chapter contains these topics:

- RecoverPoint for VMs system

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RecoverPoint for VMs system

RecoverPoint for VMs is a virtualized solution that provides data replication, protection, and recovery within the VMware vSphere environment.

Key components of the RecoverPoint for VMs system that are involved in this installation include:

**vRPA**

The virtual RecoverPoint Appliance is a data appliance that manages data replication. You will create the vRPAs you need by using the vSphere Web Client from the vCenter Server.

**vRPA cluster**

A group of up to 8 vRPAs that work together to replicate and protect data. You will create the vRPA clusters and connect them to the system by using the RecoverPoint for VMs Deployer wizards.

**RecoverPoint for VMs plug-in**

The vSphere Web Client user interface for managing VM replication. Automatically installed after you create the vRPA cluster.

**RecoverPoint for VMs splitter**

Proprietary software installed on every ESXi host in an ESXi cluster involved in RecoverPoint replication or running virtual RPAs. Splits every write to the VMDK and sends a copy of the write to the vRPA and then to the designated storage volumes. Automatically installed after you register the ESXi cluster.

**RecoverPoint for VMs system**

One or more connected vRPA clusters.

Figure 1 on page 15 provides a reference diagram that shows the vRPA and vRPA clusters within the RecoverPoint for VMs system. The diagram shows how these components interconnect within the VMware vSphere environment.
Figure 1 RecoverPoint for VMs system

Site A

- vCenter Server
- vRPA Cluster
- ESXi

Site B

- vCenter Server
- vRPA Cluster
- ESXi

Legend

- RecoverPoint for VMs
- RecoverPoint for VMs Splitter
- Plug-in for vCenter Server
CHAPTER 3

Preparing to install RecoverPoint for VMs

This chapter contains this topic:

- RecoverPoint for VMs networking example .......................................................... 18
- Planning your system ..........................................................................................19
- Preparing the VMware environment .................................................................22
- Understanding the installation flow .................................................................24
RecoverPoint for VMs networking example

A reference diagram is a valuable tool for planning your RecoverPoint for VMs system. For clarity, Figure 2 on page 18 shows the components and interconnections of only one site in a small system. The IP addresses are for illustration purposes only.

The remaining sections of this chapter will help you to plan a system that meets your specific requirements.

Figure 2 Networking example
Planning your system

System limitations

Understanding system limitations will facilitate the installation of the RecoverPoint for VMs system.

For a comprehensive and up-to-date list of system limitations, see the RecoverPoint for Virtual Machines Release Notes.

Choosing a vRPA topology

The first step in planning your system is to determine how many:

- vRPAs you need in each vRPA cluster
- vRPA clusters you need in your RecoverPoint for VMs system

How many vRPAs?

For most installations, two vRPAs per vRPA cluster is sufficient. Two vRPAs per vRPA cluster provide the high availability that most production environments require.

For production environments that do not require high availability or for product evaluation in non-production environments, a single vRPA per cluster is also possible.

To scale up and support higher throughput, you may non-disruptively add vRPAs (up to 8) to each vRPA cluster.

All vRPA clusters in a system should have the same number of vRPAs (recommended).

The actual number of vRPAs that you need for each vRPA cluster depends on the capabilities of your storage, network, ESXi hosts, and the scale and performance requirements of your system.

For specific details and examples, refer to the RecoverPoint for Virtual Machines Scale and Performance Guide.

How many vRPA clusters?

For most installations, you will install two vRPA clusters in your RecoverPoint for VMs system.

The actual number of vRPA clusters that you need depends on your replication requirements. For local replication, you need only one vRPA cluster. To support remote replication, two vRPA clusters are required. The maximum number of vRPA clusters in a system is five.

A vRPA cluster is confined to a single ESXi cluster and cannot span across multiple ESXi clusters. All vRPAs in a vRPA cluster must be in the same ESXi cluster.

A vRPA cluster protects VMs on the same or a different vRPA cluster. This capability requires connections between the vRPA cluster and the ESXi hosts (see Preparing the network on page 22).

For specific details and examples, refer to the RecoverPoint for Virtual Machines Scale and Performance Guide.
Choosing a vRPA performance profile

The next step in planning your RecoverPoint for VMs system is to choose the performance profile for each vRPA in your system. The performance profile determines the resources that will be allocated to the vRPAs.

For most installations, 2 CPUs and 4 GB of RAM is sufficient.

The actual vRPA performance profile that you need depends on these factors:

- IOPS and throughput of protected VMs
- The number of VMs protected by the vRPA cluster

You can change the resource allocation later by using the vSphere vCenter Web Client.

Choose from among the vRPA performance profiles:

<table>
<thead>
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<th>Table 1 vRPA performance profiles</th>
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</thead>
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<tr>
<td>vRPA performance profile</td>
</tr>
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<td></td>
</tr>
<tr>
<td>Virtual CPUs</td>
</tr>
<tr>
<td>RAM</td>
</tr>
<tr>
<td>VMDK capacity</td>
</tr>
</tbody>
</table>

For more details and examples, refer to the *RecoverPoint for Virtual Machines Scale and Performance Guide*.

Allocating IP addresses

The RecoverPoint for VMs system requires these IP addresses:

- Cluster management IP address for each vRPA cluster
- An IP address for each vRPA network adapter (see Choosing a network adapter topology on page 20)
- An IP address for each VMkernel port (see Preparing the network on page 22)

You may need to consult with your network administrator to allocate the necessary IP addresses for the RecoverPoint for VMs system.

It is recommended to document these addresses in a planning spreadsheet (or similar form) before you begin the installation.

Choosing a network adapter topology

RecoverPoint for VMs supports LAN, WAN, and Data (iSCSI) interfaces.

RecoverPoint for VMs 5.0 and later supports multiple interfaces on one network adapter (recommended for small environments). The advantage is a smaller network footprint and ease of installation and management.

Where high availability and performance is desired, separate the LAN and WAN interfaces from the Data (iSCSI) interfaces (recommended for most installations). For even better performance, place each network on a separate virtual switch.

Choose from among the following network adapter topologies:
### Documenting your installation settings

Planning your RecoverPoint for VMs system within the VMware environment is an important first step toward a successful installation.

After you complete the required planning, use a planning spreadsheet (or similar form) to record the values that you will enter during the installation.

Adhere to a consistent naming and numbering convention for the components of your RecoverPoint for VMs system. For example:

- For vRPAs: `<vRPA_name>_1, <vRPA_name>_2, ..., <vRPA_name>_8`
- For vRPA clusters: `<vRPA_cluster_site_name_1>, <vRPA_cluster_site_name_2>` (for example: `London_1` or `New York_2`)

---

<table>
<thead>
<tr>
<th>Network adapter topology</th>
<th>Network Adapter 1</th>
<th>Network Adapter 2</th>
<th>Network Adapter 3</th>
<th>Network Adapter 4</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 network adapter</td>
<td>WAN LAN Data (iSCSI)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>- Fewer IP addresses to create and manage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not for high availability solutions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IPv6 is not supported for iSCSI</td>
</tr>
<tr>
<td>2 network adapters</td>
<td>WAN LAN</td>
<td>Data (iSCSI)</td>
<td>-</td>
<td>-</td>
<td>- Better performance, high availability</td>
</tr>
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<td></td>
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<td></td>
<td>IPv6 is not supported for iSCSI</td>
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<td>LAN Data (iSCSI)</td>
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<td>-</td>
<td>- DHCP for LAN is not supported</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IPv6 is not supported for iSCSI</td>
</tr>
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<td>3 network adapters</td>
<td>WAN</td>
<td>LAN</td>
<td>Data (iSCSI)</td>
<td>-</td>
<td>- DHCP for LAN is not supported</td>
</tr>
<tr>
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<td></td>
<td></td>
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<td>IPv6 is not supported for iSCSI</td>
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<td>4 network adapters</td>
<td>WAN</td>
<td>LAN</td>
<td>Data1 (iSCSI1)</td>
<td>Data2 (iSCSI2)</td>
<td>- Compatible with previous releases</td>
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<td>Best performance and high availability</td>
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<td>DHCP for LAN is not supported</td>
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<td></td>
<td></td>
<td>IPv6 is not supported for iSCSI</td>
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For high-availability deployments in which clients have redundant physical switches, route each Data (iSCSI) card to a different virtual switch with a separate network adapter.

For each network adapter, you will have the option to assign a dynamic or static IP addresses.

When using Dynamic Host Configuration Protocol (DHCP):

- Separating WAN and LAN interfaces on different network adapters is supported only when using static IP addresses for the LAN interface
- Redundant, highly-available DHCP servers in your network will ensure that when a vRPA restarts, it will acquire an IP address
Preparing the VMware environment

Supported vSphere versions

Ensure you are running VMware vCenter 5.1 U1 or later with at least one registered vSphere 5.1, 5.5, 6.0, or 6.5 ESXi host.

Preparing the network

You will need to prepare your VMware network to enable communications between the ESXi hosts and the vRPAs in your RecoverPoint for VMs system. The preparation requires adding iSCSI software adapters, setting up VMkernel ports, and optionally binding the ports to the adapters.

The number of VMkernel ports you will need is based on the network adapter topology you previously selected.

If you decided to use 4 network adapters for your topology, create 2 VMkernel ports; otherwise, one VMkernel port is required.

Adding the iSCSI software adapter

Procedure

1. At the vSphere Web Client, under Inventory Trees, select Hosts and Clusters.
2. For each ESXi host, click Manage > Storage > Storage Adapters, and create a software iSCSI adapter, or use an existing software iSCSI adapter.
3. To add a software iSCSI adapter, click the Add icon and confirm your selection.

The software iSCSI adapter appears in the list of storage adapters. The vRPA iSCSI target ports will automatically be discovered after RecoverPoint for VMs has been installed and the ESXi cluster is registered.

Setting up VMkernel ports

Procedure

1. For each ESXi host, click Manage > Networking > VMkernel adapters.
2. Add/edit the VMkernel adapters.
   * Assign IP addresses that are on a routable subnet or on the same subnet as the vRPA iSCSI interfaces.
   * Configure each VMkernel port on each iSCSI vSwitch/dvSwitch.
   * If you encounter messages about the VMkernel port teaming policy, refer to VMware KB2009119.
   * Ensure that all ESXi HBA drivers and firmwares are up to date and supported by VMware and respective storage vendors. See VMware KB1002598.

The vRPA iSCSI IP addresses will be assigned when deploying the vRPA cluster.

Binding ports to adapters

Before you begin

For more information on iSCSI VMkernel port binding, refer to VMware KB2038869.
If iSCSI is used for storage connectivity, consult the storage vendor for the recommendations and best practices.

Procedure

1. Determine whether or not port binding is needed. If the iSCSI VMkernel ports and the vRPA iSCSI ports are on:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
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<tr>
<td>Different subnets/broadcast domains</td>
<td>Do not use port binding. Skip this procedure.</td>
</tr>
<tr>
<td>Example: vRPA iSCSI vNICs on subnet 192.168.1.x and ESXi VMkernel ports subnet 172.30.90.x</td>
<td></td>
</tr>
</tbody>
</table>

| The same subnet/broadcast domain       | Bind the VMkernel ports to the software iSCSI adapter. Continue to use this procedure. |
| Example: vRPA iSCSI vNICs on subnet 192.168.1.x and ESXi VMkernel ports also on subnet 192.168.1.x |                                                                             |

2. If port binding is needed, bind the VMkernel ports to the software iSCSI adapters:

   a. In the vSphere Web client, select the ESXi host and click Manage > Storage > Storage Adapters.
   b. Select the iSCSI software adapter. In the Adapter Details section, select the Network Port Binding tab, and click the Add icon.
   c. Select a VMkernel adapter to bind with the iSCSI adapter and click OK.
   d. Perform a full rescan on the ESXi host.
   e. Repeat this step for each ESXi host in the ESXi cluster.

Results

VMkernel ports are bound to the iSCSI software adapters. Verify that the Port Group Policy for every VMkernel you created is Compliant and that at least one of them is Active. The paths will become active after RecoverPoint for VMs is installed. The targets will be automatically added when the ESXi cluster is registered.

Establishing vCenter-to-vRPA communication

During installation, the vCenter server communicates to the vRPAs over port 443 to acquire the RecoverPoint for VMs plug-in.

Ensure that you open port 443 between the vCenter and the vRPAs.

See the RecoverPoint for Virtual Machines Security Configuration Guide for more information.

Preparing the storage

RecoverPoint for VMs replicates VMs on any type of storage supported by VMware including VMFS, NFS, VSAN and VVols.

Ensure that the datastore for the repository VMDK is shared by all ESXi hosts in the cluster where the vRPAs reside.

RecoverPoint for VMs requires additional storage for journal VMDKs to store point-in-time history. This storage is needed at local and remote sites. The amount of journal storage you need depends on site-specific installation and replication requirements.
and requires careful planning. A general guideline is to begin with a number that is 15-25% of the total protected VM capacity; you may add additional storage later, if required. To size your system based on estimated workloads, use the RecoverPoint Sizer tool; see https://help.psapps.emc.com/display/RSIZ/RecoverPoint+Sizer.

The total storage capacity required includes:

- Storage for production VMs at the production site
- Storage for replica VMs at the replica site
- Storage for journal VMDKs
- 35 GB for each vRPA in your RecoverPoint for VMs system

A persistent scratch location on the ESXi host is required for storing splitter configuration information. Beginning with RecoverPoint for VMs Release 5.0, the scratch location (/scratch/log) requires at least 50 MB of free storage space on a permanently available persistent storage device.

For more details and examples, refer to the RecoverPoint for Virtual Machines Scale and Performance Guide.

For additional guidelines and sizing tools, contact EMC Customer Support.

Note

Shared virtual disks (VMDK/RDM) are not supported.

Note

vSCSI splitter does not support using VVols for journal storage.

Disabling delayed ACK

It is recommended to disable delayed ACK on all ESXs in all ESX clusters that may be hosting vRPAs and/or protected VMs. For more information and for instructions on disabling delayed ACK, refer to VMware KB1002598.

Understanding the installation flow

Understanding the basic installation flow will facilitate a successful installation of the RecoverPoint for VMs system. Figure 3 on page 25 shows the major stages of the installation flow. Table 3 on page 25 provides details of the required procedures for each stage of the installation flow. Table 4 on page 25 lists the tasks performed in the RecoverPoint for VMs plug-in to protect VMs.
Table 3 Procedures in the installation flow

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<td>vSphere Web Client &gt; RecoverPoint for VMs plug-in</td>
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Installing RecoverPoint for VMs

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- Creating vRPAs.............................................................28
- Creating vRPA clusters..................................................29
- Connecting between vRPA clusters................................31
- Changing default passwords...........................................32
- Registering and licensing your system..........................32
- Registering ESXi clusters...............................................32
- Protecting VMs............................................................33
**Downloading the installation package**

Download the RecoverPoint for VMs installation package from the online support site.

---

**Note**

Try and Buy customers should go to http://www.emc.com/products-solutions/trial-software-download/recoverpointforvms.htm to complete a registration form requesting a download for evaluation.

---

**Procedure**

2. Perform a search in the Type a Product Name text box for RecoverPoint for Virtual Machines.
3. Locate and download RecoverPoint for Virtual Machines <version> Installation Kit.
   
   Example of downloaded file:
   RecoverPoint_for_Virtual_Machines_<version>_Installation_Kit_<md5_checksum>.zip

4. Uncompress the .zip file.
   
   The .zip file contains the OVA file needed for the installation.

5. (Recommended) Obtain documentation for RecoverPoint for VMs. See Related documentation on page 12.
6. Continue to the next section, Creating vRPAs.

---

**Creating vRPAs**

**Before you begin**

Ensure that you have completed all preparations for installation (see Preparing to install RecoverPoint for VMs on page 17).

This procedure uses a standard OVA to create vRPAs for the RecoverPoint for VMs system.

**Procedure**

1. In the vSphere Web Client, right-click on an ESXi host and select Deploy OVF Template....
2. In the Select source screen, specify the vRPA OVF package location.
3. In the Review details screen, review the general properties of the OVF template. To accept, click Next.
4. In the Accept License Agreements screen, if you accept the terms of the EMC End-User License Agreement, click Accept and Next.
5. In the Select name and folder screen, enter a name for this vRPA. If you completed a planning spreadsheet (or similar information form), enter the vRPA name you listed there.
   
   If you enter the name of an existing vRPA, you will not be permitted to continue.
6. In the **Select configuration** screen, select the desired vRPA performance profile.

7. In the **Select a resource** screen, select a cluster, host, or resource pool.

8. In the **Select storage** screen, select a disk format, storage policy, and high-performance datastore (best practice) to host the vRPA virtual machine files.

   The datastore where the repository VMDK resides must be shared by all ESXi hosts in the cluster where the vRPAs reside.

9. In the **Setup networks** screen, select a destination network for the RecoverPoint Management Network.

10. In the **Customize template** screen, enter these vRPA LAN settings: IP address, subnet mask, and gateway.

    Follow instructions on the screen for using DHCP or static IP addresses depending on your network adapter topology.

11. The **Ready to Complete** screen summarizes all your selections. Select **Power on after deployment**. Click **Finish** to create the vRPA.

    The **Deploying vRPA** screen appears, showing the progress.

12. To create additional vRPAs, repeat this procedure.

13. When you finish creating vRPAs, continue to the next section, *Creating vRPA clusters*.

**Results**

When a vRPA is created, the **vRPA Summary** tab shows the vRPA package contents as specified. The selected IP policy will be implemented automatically when the vRPA is powered up.

**After you finish**

To enable redundancy in case an ESXi host or datastore fails, ensure that vRPAs do not share the same ESXi host or datastore.

---

**Creating vRPA clusters**

This procedure uses the RecoverPoint for VMs Deployer to create vRPA clusters for your system.

**Procedure**

1. In a web browser, enter `https://<LAN-ip-address>` where `<LAN-ip-address>` is the LAN IP address of the first vRPA in the cluster you are installing. In the vRPA home page, click **RecoverPoint for VMs Deployer**.

   If you are using DHCP, obtain the LAN IP address from the vSphere Web Client by selecting the vRPA and clicking the **Summary** tab.

2. If prompted, enter the login details for the boxmgmt user and click **Sign in**.

3. Select the **Install a vRPA cluster** wizard.

4. In **Version Requirements**, the version requirements file is automatically downloaded and validated to ensure that your system meets the requirements. If the version requirements file fails to download, select one of these options:

   - **Retry downloading the up-to-date requirements from EMC Online Support**
• Provide version requirements file manually
• Do not check version requirements

Issues, if found, are displayed for your analysis. Follow instructions to fix blocking issues before continuing.

5. In Installation Prerequisites, enter information for the vCenter on which the current vRPA is running, and then click Connect.

If the SSL Certificate window appears, verify the vCenter's SSL certificate and click Confirm.

6. Review the Pre-installation Validation Results. If any of the validations result in an error, fix them before proceeding.

If the error can be automatically fixed, the Fix button appears in the Auto-Fix column.

7. In Environment Settings, define the required settings.

• Enter a name for the vRPA cluster. If you completed a planning spreadsheet (or similar information form), enter the vRPA cluster name you listed there.

• For better security, select the Authenticated and encrypted communication between vRPAs checkbox (recommended). For better performance, clear this checkbox.

• Enter IP addresses for DNS or NTP servers.

• Select the vRPAs for the vRPA cluster.

• Retrieve associated datastores and select one for the repository volume. This datastore must be shared by all ESXi hosts in the cluster where the vRPAs reside.

8. In Network Settings, provide the requested settings for vRPA clusters and vRPAs.

• Keep the default setting for the network adapter configuration, or click Edit to choose a different setting.

• If your network configuration requires gateways to communicate with remote vRPA clusters, click Add to insert each gateway. Also define gateways on the remote clusters.

• Change the MTU values only if required. MTU values must be consistent across the communication interface from source to target. See KB article 484259 for more information.

9. (Optional but recommended) To export a configuration file of the vRPA cluster settings, click Export.

This file provides a record of your vRPA cluster configuration for the major version you have installed. You use it to restore the vRPA cluster settings after an installation failure (requiring the installation to be repeated).

10. In Deployment progress, on reaching 100%, click Finish to return to the home page.

If installation fails:

• Review the displayed error messages to identify the cause of failure.

• Click Back to return to the step in the wizard where you can fix the problem and retry the installation wizard from that point.
Alternatively, you can retry the operation that failed by clicking **Retry the operation**.

If installation continues to fail, contact EMC Customer Support.

11. To enable multi-site replication, create additional vRPA clusters by repeating this procedure for each site.

12. When all vRPA clusters are created, continue to the next section, **Connecting between vRPA clusters**.

**Results**
Installation of the RecoverPoint for VMs plug-in for vSphere vCenter is initiated.

The plug-in installation usually occurs immediately, but it might take some time for the vCenter to identify the plug-in. If you experience issues with the RecoverPoint for VMs plug-in, log out and log in again to the vSphere Web Client as described in **Troubleshooting the RecoverPoint for VMs plug-in** on page 58.

Splitters are pushed to all ESXi hosts in the ESXi cluster where the vRPAs are installed.

**Connecting between vRPA clusters**

To enable replication between any two vRPA clusters, use the **Connect vRPA clusters** wizard to establish a connection between them.

**Before you begin**
Ensure that you do not exceed the maximum number of 5 vRPA clusters per system.

If you require a gateway for communication between vRPA clusters, add a gateway at each vRPA cluster before connecting between the clusters. To add a gateway, click **Modify vRPA cluster network** from the home page.

In this procedure, the current cluster is defined as the vRPA cluster to which you are currently connected. The remote cluster is the vRPA cluster at a remote site. This wizard helps you to connect a remote vRPA cluster to the current vRPA cluster.

When connecting a remote vRPA cluster to the current cluster, the remote vRPA cluster must be a new installation (no settings or licenses installed).

If one of the vRPA clusters you are connecting has already been configured, run the **Connect vRPA clusters** wizard from that cluster.

Clusters to be connected must not be in maintenance mode.

**Procedure**

1. In the RecoverPoint for VMs Deployer home page of the current cluster, select the **Connect vRPA clusters** wizard.

2. In the **Prerequisites** step, follow the instructions on the screen.

3. In the **Environment Settings** step, in the **Remote Cluster Details** section, follow the instructions on the screen.

4. In the **Current Cluster Settings** section, review the list of gateways configured for this vRPA cluster. If required, define additional gateways on both vRPA clusters. To add a gateway, click **Modify vRPA cluster network** from the home page.

5. In the **Add Cluster Progress** step, the remote cluster connects to the current cluster.
6. Repeat this procedure to connect additional vRPA clusters.

7. Continue to the next section, Changing default passwords.

Changing default passwords

To align with security best practices, change the default passwords of your RecoverPoint for VMs system.

Procedure

1. Connect to the RecoverPoint for VMs CLI by using SSH and the cluster management IP address.
   
   For more details, see the RecoverPoint for Virtual Machines CLI Reference Guide.

2. Log in with security-admin credentials (user/password).

<table>
<thead>
<tr>
<th>User</th>
<th>Default password</th>
</tr>
</thead>
<tbody>
<tr>
<td>admin</td>
<td>admin</td>
</tr>
<tr>
<td>boxmgmt</td>
<td>boxmgmt</td>
</tr>
<tr>
<td>security-admin</td>
<td>security-admin</td>
</tr>
</tbody>
</table>

3. Run the set_user command to change the default passwords for the admin and boxmgmt users.

4. Run the set_password command to change the default password for the security-admin user.

5. Continue to the next section, Registering and licensing your system.

Registering and licensing your system

Use the RecoverPoint for VMs plug-in to register and license your system. Registration and licensing enables support and provides important product updates to keep your system running optimally.

Procedure

1. Ensure that you activate your entitlements.
   
   This procedure is in the "Activating your entitlements" section of the RecoverPoint for Virtual Machines Administrator’s Guide.

2. Use the Getting Started Wizard to add licenses and register your RecoverPoint for VMs system.
   
   This procedure is in the "Licensing, support, and registration" section of the RecoverPoint for Virtual Machines Administrator’s Guide.

3. Continue to the next section, Registering ESXi clusters.

Registering ESXi clusters

You will use the RecoverPoint for VMs plug-in to register ESXi clusters. You cannot protect VMs unless you first register the ESXi clusters.
Procedure

1. To register an ESXi cluster:
   a. In the vSphere Web Client home page, select RecoverPoint for VMs Management > Administration > VRPA Clusters.
   b. Select the VRPA cluster at which you wish to register ESX clusters.
   c. Select the ESX Clusters tab.
   d. Click Add.
   e. In the Register ESX Clusters dialog box, select the ESX cluster that you want to register, and then click OK.

2. If there are connectivity issues with the cluster, click Validate. See Validating ESXi connectivity on page 60.

3. Repeat this procedure for each VRPA cluster.

4. Continue to the next section, Protecting VMs.

Results
The RecoverPoint for VMs splitter automatically installs on the ESXi hosts. The VRPA IP addresses are automatically added to the ESXi hosts.

Protecting VMs

The RecoverPoint for VMs system is now ready for operation. You will use the RecoverPoint for VMs plug-in to begin protecting VMs.

Procedure

1. Protect your VMs by right-clicking each VM and selecting the protection option; detailed instructions are in the RecoverPoint for Virtual Machines Administrator's Guide.

2. After protection is enabled, monitor your system as described in the RecoverPoint for Virtual Machines Administrator's Guide.
CHAPTER 5

Maintaining RecoverPoint for VMs

This chapter contains these topics:

- Modifying vRPA cluster network settings .......................................................... 36
- Modifying network adapter topology for vRPA 1 .................................................. 36
- Modifying network adapter topology for additional vRPAs ................................. 37
- Adding vRPAs to a vRPA cluster ......................................................................... 37
- Removing a vRPA from a vRPA cluster .............................................................. 38
- Replacing a vRPA ............................................................................................... 38
Modifying vRPA cluster network settings

Before you begin

To modify the network adapter topology, refer to Modifying network adapter topology for vRPA 1 on page 36.

Procedure

1. In a web browser, enter https://<cluster_management-ip-address>. In the vRPA home page, click RecoverPoint for VMs Deployer.
2. If prompted, enter the login credentials for the boxmgmt user and click Sign in.
4. Make the desired modifications to the Environment Settings and Network Settings.
   Some settings cannot be modified.
5. (Optional but recommended) To export a configuration file of the vRPA cluster settings, click Export.
   This file provides a record of your vRPA cluster configuration. You use it to restore the vRPA cluster settings after an installation failure (requiring the installation to be repeated).
6. Click Modify to apply the modifications.

Modifying network adapter topology for vRPA 1

Procedure

1. Use an SSH client to log in to the vRPA as a boxmgmt user. From the Main menu, select Cluster operations > Detach RPA from cluster.
2. From the vSphere Web Client, select the virtual machine. In the Getting Started tab, select Edit virtual machine settings. Define new network adapters and specify adapter type.
3. From the Main menu, select Setup > Modify settings > Enter cluster details > Connectivity settings > Network configuration wizard. Implement required changes.
   - If changing the LAN subnet, add additional gateways (static routes) to connect between the current LAN subnet and the subnet to which you are moving the LAN. Gateways must be created from the current LAN subnet to the new LAN subnet and from the new LAN subnet to the current one.
   - If changing the WAN subnet, add additional gateways to connect between the new WAN subnet and the WAN subnet of every other cluster in the system. Gateways must be created from the new WAN subnet to every other WAN subnet in the system and from every other WAN subnet in the system to the new WAN subnet.
4. From the Main menu, select Cluster operations > Attach RPA to cluster.
5. Perform Modifying network adapter topology for additional vRPAs on page 37.
Modifying network adapter topology for additional vRPAs

Before you begin

When changing network adapter topology, first use Modifying network adapter topology for vRPA 1 on page 36 to configure vRPA 1. Then use this procedure to modify every other vRPA in the cluster.

Procedure

1. Use an SSH client to log in to the vRPA as boxmgmt user. From the Main menu, select Cluster operations > Detach RPA from cluster.
2. From the vSphere Web Client, select the virtual machine. In the Getting Started tab, select Edit virtual machine settings. Define new network adapters and specify adapter type.
3. From the Main menu, select Setup > Modify settings > Enter cluster details > Connectivity settings > Network configuration wizard. Implement required changes.
4. From the Main menu, select Cluster operations > Attach RPA to cluster.
5. If the LAN subnet was changed, you must also change the cluster management IP address. From the Main menu, select Setup > Modify settings > Enter cluster details > Connectivity settings > LAN IP details.

Adding vRPAs to a vRPA cluster

Procedure

1. In a web browser, enter https://<cluster_management-ip-address>. In the vRPA home page, click RecoverPoint for VMs Deployer.
2. If prompted, enter the login credentials for the boxmgmt user and click Sign in.
3. Under More actions, click Add vRPAs to vRPA cluster.
4. In the Add Prerequisites step, acknowledge that you have met the listed conditions by selecting the check box.
5. In the Add vRPAs step, select one or more VMs/vRPAs to add to the cluster.
   - New vRPAs must have the same RecoverPoint software ISO image as the existing vRPAs in the cluster.
   - A cluster can have a maximum of 8 vRPAs.
6. In the vRPA Cluster Settings and vRPA Settings sections, enter required information for the vRPAs you are adding.
7. In the Add vRPAs Progress step, on reaching 100%, click Finish to return to the Home Page.

   If adding a vRPA fails:
   - Review the displayed error messages to identify the cause of failure.
   - Click Back to return to the step in the wizard where you can fix the problem and retry the installation wizard from that point.
Alternatively, you can retry the operation that failed by clicking **Retry the operation**.

If adding a vRPA continues to fail, contact EMC Customer Support.

## Removing a vRPA from a vRPA cluster

**Before you begin**

You cannot remove a vRPA if the cluster has 2 or fewer vRPAs.

**Procedure**

1. In a web browser, enter `https://<cluster_management-ip-address>`. In the vRPA home page, click **RecoverPoint for VMs Deployer**.
2. If prompted, enter the login credentials for the boxmgmt user and click **Sign in**.
3. Under **More actions**, click **Remove vRPA from vRPA cluster**.
   - The highest numbered vRPA (the last one added) will be removed.
   - The consistency groups of the removed vRPA will be non-disruptively moved to a different vRPA.
   - The preferred vRPA setting for those consistency groups will be automatically updated.

## Replacing a vRPA

**Before you begin**

This wizard does not support replacing a vRPA within a vRPA cluster that has only one vRPA. If you must replace a vRPA in a single-vRPA cluster, contact EMC Customer Support.

Deploy the new, replacement vRPA with the same IP settings as the faulty vRPA you want to replace. Ensure that the replacement vRPA is shut down (recommended).

**Procedure**

1. In a web browser, enter `https://<cluster_management-ip-address>`. In the vRPA home page, click **RecoverPoint for VMs Deployer**.
2. If prompted, enter the login credentials for the boxmgmt user and click **Sign in**.
3. Under **More actions**, click **Replace vRPA**.
4. In the **Prerequisites** step, acknowledge that you have met the listed conditions by selecting the checkbox.
5. In the **Replace vRPA** step, select the vRPA that you want to replace.
6. To delete the replaced vRPA from disk, select the checkbox.
7. Select the vRPA you want to add as a replacement.
8. In the **Replacement Progress** step, on reaching 100% click **Finish** to return to the home page.

If replacing a vRPA fails:

- Review the displayed error messages to identify the cause of failure.
• Click **Back** to return to the step in the wizard where you can fix the problem and retry the installation wizard from that point.
• Alternatively, you can retry the operation that failed by clicking **Retry the operation**.
• If replacing a vRPA continues to fail, contact EMC Customer Support.
CHAPTER 6

Upgrading RecoverPoint for VMs

This chapter contains these topics:

- Upgrade overview ........................................................................................................ 42
- The Upgrade and Maintenance package ......................................................................... 43
- Upgrading a vRPA Cluster .......................................................................................... 43
- Upgrading the RecoverPoint for VMs splitters .............................................................. 44
- Upgrading the RecoverPoint for VMs plug-in ............................................................... 45
Upgrade overview

When upgrading from RecoverPoint for VMs 4.3.1 to 5.0 or later, all existing RecoverPoint for VMs settings are preserved. There is no journal loss and no full sweep.

The upgrade procedure requires a minimum of 2 ESXi hosts with installed splitters; the vRPAs will continue running on one host while the other host's splitter is being upgraded.

Before upgrading the RecoverPoint for VMs splitters, all vRPA clusters attached to the splitter must be upgraded to RecoverPoint for VMs 5.0 or later.

Upgrading from RecoverPoint for VMs from 4.3.1 to 5.0 or later consists of:

- Downloading the upgrade package
- Upgrading the vRPA clusters
- Upgrading the RecoverPoint for VMs splitters
- Upgrading RecoverPoint for VMs plug-in

If you have RecoverPoint for VMs 4.3, the upgrade flow is non-disruptive (no journal loss, no full sweep). RecoverPoint for VMs 4.3 users will upgrade to RecoverPoint for VMs 4.3.1 and then to RecoverPoint for VMs 5.0 or later. The upgrade requirements are listed in Table 5 on page 42:

Table 5 Upgrade path

<table>
<thead>
<tr>
<th>Upgrade path</th>
<th>Upgrade tool</th>
<th>Components to upgrade</th>
<th>Reference document</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3 to 4.3.1</td>
<td>RecoverPoint Deployment Manager</td>
<td>• vRPA clusters</td>
<td>RecoverPoint for Virtual Machines 4.3.1 Installation and Deployment Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RecoverPoint for VMs plug-in</td>
<td></td>
</tr>
<tr>
<td>4.3.1 to 5.0 or later</td>
<td>RecoverPoint for VMs Deployer</td>
<td>• vRPA clusters</td>
<td>RecoverPoint for Virtual Machines 5.0.1 Installation and Deployment Guide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RecoverPoint for VMs splitter</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• RecoverPoint for VMs plug-in</td>
<td></td>
</tr>
<tr>
<td>5.0 to 5.0.1</td>
<td>RecoverPoint for VMs Deployer</td>
<td>• vRPA clusters</td>
<td>RecoverPoint for Virtual Machines 5.0.1 Installation and Deployment Guide</td>
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<tr>
<td></td>
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<td>• RecoverPoint for VMs splitter</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RecoverPoint for VMs plug-in</td>
<td></td>
</tr>
</tbody>
</table>

Note

After upgrading, force your browser to reload updated files. From the Deployer Welcome page, enter CTRL + F5.
The Upgrade and Maintenance package

Download the RecoverPoint for VMs Upgrade and Maintenance Kit from http://support.emc.com. The Upgrade and Maintenance package is a zip file that consists of multiple components required for the upgrade.

Upgrading a vRPA Cluster

Before you begin

The RecoverPoint for VMs Deployer supports non-disruptive upgrades for clusters with 2 or more vRPAs and enables upgrading an ISO image without re-protecting VMs.

If you are upgrading a cluster that has only one vRPA, the upgrade is disruptive to replication, but the upgrade occurs without full sweep or journal loss. Also, during the vRPA reboot, the Upgrade Progress report may not update, and Deployer may become temporarily unavailable. When the vRPA completes its reboot, the user can log back in to Deployer and observe the Upgrade Process to completion.

When you upgrade a cluster that has two or more vRPAs and is connected to a cluster with a single vRPA, a partially disruptive upgrade occurs. When the first vRPA is upgraded, all consistency groups move to another RPA. However, for consistency groups replicated in the single vRPA, replication will stop while the first vRPA is upgraded.

Procedure

1. In a web browser, enter https://<ip-address> where <ip-address> is the Cluster Management IP address for the cluster you want to upgrade. When the landing page loads in the web browser, click the RecoverPoint for VMs Deployer link.

2. If prompted, enter the login credentials for the boxmgmt user, and click Sign in.

3. Click Upgrade a vRPA cluster.

4. In the Upgrade Prerequisites step, ensure that you meet the conditions listed on the screen. Select the checkbox: I have fulfilled these conditions.

5. In the ISO step, choose how you want to provide the ISO image for upgrading RecoverPoint for VMs.

6. In the Change Version Requirements step, the version requirements file is automatically downloaded and validated to ensure that your system meets the requirements. If the version requirements file fails to download, select one of these options:
   - Retry downloading the up-to-date requirements from EMC Online Support
   - Provide version requirements file manually
   - Do not check version requirements

   Issues that are found are displayed for your analysis. It is recommended that you fix blocking issues before continuing.

7. In the System Diagnostics step, Deployer checks for tweak modifications and signed scripts on the vRPAs. If discovered, these are collected and the user is prompted to send the modifications file to EMC Customer Support for analysis.

8. In the Upgrade Progress step, the progress bar displays the replacement progress. On reaching 100%, click Finish to return to the Home Page.
9. If upgrading fails, review the displayed error message to identify the cause of the failure. Click Back to correct the issue and retry.

If upgrading a vRPA continues to fail, contact EMC Customer Support.

Upgrading the RecoverPoint for VMs splitters

Before you begin
You may need to enable ESX Shell and SSH access before proceeding. Refer to VMware documentation for more information.

To keep vRPAs working during the splitter upgrade, ensure that at least two ESXi hosts have an installed splitter.

Procedure
1. On the ESXi host, vMotion all VMs to another ESXi host.
2. At the ESXCLI, enter maintenance mode. From the ESXi host console, use SSH to run the following command:
   
   `esxcli system maintenanceMode set -e=true`

3. Remove the old RecoverPoint vSphere Installation Bundle on the ESXi host.
   
   `esxcli software vib remove -n "RP-Splitter"`

4. Install the new splitter by using this method: Installing the splitter with the RecoverPoint for VMs VIB installer on page 44

5. On the ESXi host, exit maintenance mode by running the following command:
   
   `esxcli system maintenanceMode set -e=false`

6. vMotion the VMs back to this ESXi host.
7. Repeat this procedure for each ESXi host.

Installing the splitter with the RecoverPoint for VMs VIB installer

Before you begin
You may need to enable ESX Shell and SSH access before proceeding. Refer to VMware documentation for more information.

Procedure
1. Use an SSH client with secure copy protocol to copy the RecoverPoint VIB to the tmp directory. Use the following command:
   
   `scp <vib name> <username>:@<ESXi host IP>:/scratch`

   **NOTICE**

   *Do not erase the /scratch space during the upgrade!*

   Example:
   
   `scp kdriver_RPESX-00.5.0.0.0.h.152.000.vib root@10.10.10.10:/scratch`

2. To install the new splitter, in the ESXi host console, run the following command:
   
   `esxcli software vib install -v /<vib_full_path> --no-sig-check`

   The following message appears if installation is successful:
Installation Result
Message: Operation finished successfully.
Reboot Required: false
VIBs Installed: EMC_Recoverpoint_bootbank_RP-Splitter_RPS-
<version number>
VIBs Removed:
VIBs Skipped:

3. Confirm installation of the splitter in the ESXi host console by using SSH to run
the following command:
esxcli software vib list

The RecoverPoint for VMs splitter installation bundle name should appear at the
top of the list.

Upgrading the RecoverPoint for VMs plug-in

This procedure supports upgrading Release 4.3.1 and later. Upgrade the RecoverPoint
for VMs plug-in for each vCenter in your system.

Procedure

1. Access the vSphere Web Client at: https://<vCenter-ip-address>:9443/vsphere-client/. In the vSphere Web Client home page, click the
RecoverPoint for VMs icon.

2. Click the Help... link at the top right of the RecoverPoint for VMs
Management screen, and select Upgrade RecoverPoint for VMs.

3. In the Upgrade RecoverPoint for VMs window, select the upgrade version and
click OK.

4. Log out all active user sessions of the vSphere Web Client, and log back in.
Verify that the RecoverPoint for VMs plugin is listed under Inventories.

5. If the RecoverPoint for VMs plug-in is not listed under Inventories, restart the
vCenter Web Client service to ensure that all active user sessions are
disconnected.

After upgrading the plug-in, you will not be able to access vRPA clusters that
are running earlier versions of RecoverPoint for VMs.
Upgrading RecoverPoint for VMs
CHAPTER 7

Uninstalling RecoverPoint for VMs

This chapter contains these topics:

- Uninstalling a single vRPA cluster from a vCenter .............................................. 48
- Uninstalling all vRPA clusters from a vCenter .................................................... 48
- Procedures used when uninstalling vRPA clusters ................................................ 49
Uninstalling a single vRPA cluster from a vCenter

Perform this procedure to uninstall one vRPA cluster from a vCenter using the RecoverPoint for VMs Uninstall tool.

Note

If removing the last vRPA cluster on the vCenter, use the procedure Uninstalling all vRPA clusters from a vCenter on page 48 instead of this one.

Procedure

1. If the vRPA cluster is active:
   a. Unprotect the virtual machines. For more information, see Unprotecting VMs on page 49.
   b. Remove all ESX clusters from the vRPA cluster. For more information, see Removing ESX clusters from vRPA clusters on page 49. Repeat this step for all ESX clusters in the vRPA cluster.
2. If you are removing just one vRPA cluster from a system with at least two clusters, perform the following procedure: Uninstalling a vRPA Cluster on page 50 with the Shut down the vRPAs on the cluster option enabled, and then continue with this procedure.
3. Navigate to the RecoverPoint for Virtual Machines download page under the Tools & Utilities section and click the RecoverPoint for Virtual Machines Uninstaller Tool link. The link is also referenced from the Customer Installation kit.
4. From a Windows machine, unzip the .zip file and run uninstaller.bat.
   The RecoverPoint for VMs Uninstall tool opens in a command line.
5. Type clean and follow the on-screen instructions. For more details, see RecoverPoint for VMs Uninstall tool on page 69.
6. If the ESX clusters you removed are not registered to any other vRPA cluster, you can uninstall the RecoverPoint for VMs splitter on that ESX host. For more information, see Uninstalling the RecoverPoint for VMs splitter on page 50.

Uninstalling all vRPA clusters from a vCenter

Perform this procedure to uninstall all vRPA clusters from a vCenter using the RecoverPoint for VMs Uninstall tool.

Procedure

1. If the vRPA cluster is active:
   a. Unprotect the virtual machines. For more information, see Unprotecting VMs on page 49.
   b. Remove all ESX clusters from the vRPA clusters. For more information, see Removing ESX clusters from vRPA clusters on page 49. Repeat this step for all ESX clusters in all vRPA clusters.
2. If you are removing just one vRPA cluster from a system with at least two clusters, perform the following procedure: Uninstalling a vRPA Cluster on page 50 with the Shut down the vRPAs on the cluster option enabled, and then continue with this procedure.
3. Navigate to the **RecoverPoint for Virtual Machines download page** under the Tools & Utilities section and click the **RecoverPoint for Virtual Machines Uninstaller Tool** link. The link is also referenced from the Customer Installation kit.

4. From a Windows machine, unzip the .zip file and run `uninstaller.bat`. The RecoverPoint for VMs Uninstall tool opens in a command line.

5. Type `full_rp_cleanup` and follow the on-screen instructions. For more details, see **RecoverPoint for VMs Uninstall tool** on page 69.

6. Uninstall the RecoverPoint for VMs splitter. For more details, see Uninstalling the RecoverPoint for VMs splitter on page 50.

7. Connect to the vCenter server (using a local network mapping or Remote Desktop Connection). Delete the following folder:
   - vCenter 5.1/5.5 and Windows vCenter: `C:\ProgramData\VMware \vSphere Web Client\vc-packages\vsphere-client-serenity\com.emc.recoverpoint.vwc-<version>`
   - vCenter 5.1/5.5 and vCSA: `/var/lib/vmware/vsphere-client/vc-packages/vsphere-client-serenity/com.emc.recoverpoint.vwc-<version>`
   - vCenter 6.0/6.5 and Windows vCenter: `C:\ProgramData\VMware \vCenterServer\cfg\vsphere-client\vc-packages\vsphere-client-serenity\com.emc.recoverpoint.vwc-<version>`
   - vCenter 6.0/6.5 and vCSA: `/etc/vmware/vsphere-client/vc-packages/vsphere-client-serenity/com.emc.recoverpoint.vwc-<version>`

8. Restart the vSphere Web Client. For instructions, refer to VMware KB2109887.

### Procedures used when uninstalling vRPA clusters

#### Unprotecting VMs

**Procedure**

1. In the vSphere Web Client home page, click the **RecoverPoint for VMs Management** icon > Protection tab. Click Virtual Machines.
2. Select the VM you wish to stop replicating. Click the **Unprotect** icon. Repeat for each protected VM.

#### Removing ESX clusters from vRPA clusters

**Procedure**

1. In the vSphere Web Client home page, click the **RecoverPoint for VMs Management** icon > Administration tab.
2. Click **vRPA Clusters**.
3. Select the relevant vRPA cluster.
4. Click the **ESX Clusters** tab.
5. Click the garbage can icon next to each ESX cluster to remove that ESX cluster from the selected vRPA cluster.
Uninstalling a vRPA Cluster

Before you begin
- You cannot remove a cluster from a single-cluster system.
- You cannot remove a cluster before you first remove all of its consistency groups.

Procedure
1. In a web browser, enter https://<cluster_management-ip-address>. In the vRPA home page, click RecoverPoint for VMs Deployer.
2. If prompted, enter the login credentials for the boxmgmt user and click Sign in.
4. Select the vRPA cluster you want to remove. Optionally, you may choose to shut down the vRPAs on the cluster to be removed. Click OK.

If cluster removal does not succeed, try again. If cluster removal fails, connect to the Deployer again, load the configuration file, and then try to remove the cluster.

Removing the vRPA cluster from the RecoverPoint for VMs system

If you wish to remove just one vRPA cluster from a system with at least two clusters, the following procedure should be performed from a vRPA cluster that is remaining in the system (and not from the cluster being removed).

Procedure
1. Use an ssh client to connect to a vRPA in the cluster and log in as user boxmgmt.
2. From the Main Menu, select Cluster operations > Remove a cluster from this system.

Uninstalling the RecoverPoint for VMs splitter

For each ESXi host in the ESXi cluster, perform the following procedure.

Procedure
1. Use ESXCLI to obtain a list of all installed vSphere Installation Bundles (VIBs). Use the following command:
   ```bash
esxcli software vib list
   ```
2. Ensure that a bundle named RP-Splitter is installed.
3. To uninstall the splitter, use the following command:
   ```bash
   esxcli software vib remove -n RP-Splitter --maintenance-mode
   ```

Note
Using this command, the ESXi host will not enter maintenance mode. There is no need to shut down or migrate VMs for this command to succeed.
CHAPTER 8

Installing in VxRail environments

This chapter contains these topics:

- Deploying in a VxRAIL environment ................................................................. 52
Deploying in a VxRAIL environment

Before you begin

Two networking configurations may be used when deploying RecoverPoint for VMs in VxRail environments:

- Minimal network resource consumption: use a single network adapter and a single VMKernel port per ESXi host
- Maximum network redundancy and performance: use network adapters and two VMKernel ports per ESXi host

When deploying RecoverPoint for VMs on VxRail appliances, follow the guidelines in this chapter along with the instructions listed in Preparing the network on page 22, Creating vRPAs on page 28, and Creating vRPA clusters on page 29.

Downloading from the VxRail market place

Download the latest qualified RecoverPoint for VMs release from the VxRail manager marketplace.

Preparing the network for VxRail

Prepare the required port groups on EVO:RAIL Distributed Switch.

Procedure

- When using a single network adapter, define one port group: RP_ALL.
- When using four network adapters, define four port groups: RP_WAN, RP_LAN, RP_iSCSI1, RP_iSCSI2.

Deploying vRPAs using the OVA file

When creating vRPAs:

Procedure

- In the Select storage screen, in the VM Storage Policy drop down, select MARVIN-STORAGEPROFILE. The compatible VSAN datastore will be selected.
- Deploy two vRPAs and configure VM-Host affinity rules to avoid running both vRPAs on the same ESXi node (recommended).

Configuring networking

Configure software iSCSI adapters on all ESXi nodes:

Procedure

1. Create one or two VMkernel ports on each ESXi node by selecting an existing distributed vSwitch “EVO:RAIL Distributed Switch”.
2. Override the NIC teaming policy to select one network adapter (uplink) as active; the other should be marked as unused. VxRAIL uses uplink2 exclusively for VSAN.

When using a single VMKernel port, assign uplink1 to the port and bind it to the software iSCSI adapter.

When using two VMkernel ports:
Assign uplink1 to one VMkernel port and uplink2 to the second VMkernel port.

For uplink2, use traffic shaping to limit iSCSI bandwidth to no more than 1Gb/s:

a. Locate the port group, right-click it, and select **Edit Settings**.

b. In the **Edit Settings** window, change traffic shaping for the port group:

<table>
<thead>
<tr>
<th>Traffic shaping</th>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingress</td>
<td>Peak bandwidth (kb/s)</td>
<td>1048576</td>
</tr>
<tr>
<td></td>
<td>Burst size (KB)</td>
<td>102400</td>
</tr>
<tr>
<td>Egress</td>
<td>Status</td>
<td>Enabled</td>
</tr>
<tr>
<td></td>
<td>Average bandwidth (kb/s)</td>
<td>1048576</td>
</tr>
<tr>
<td></td>
<td>Peak bandwidth (kb/s)</td>
<td>1048576</td>
</tr>
<tr>
<td></td>
<td>Burst size (KB)</td>
<td>102400</td>
</tr>
</tbody>
</table>

3. Bind the VMkernel ports to the software iSCSI adapter.

**Installing a vRPA cluster**

When creating a vRPA cluster:

**Procedure**

- In the **Environment Settings** step, select the VSAN datastore from the table of available datastores.
- In the **Network Settings** step of the wizard, specify the vRPA iSCSI addresses (and not the VMkernel port IP addresses that were created earlier).

**Adding VxRail appliances or nodes**

After adding a new VxRail appliance or a new node to an existing appliance:

**Procedure**

1. Verify the new nodes are added into the same VSAN cluster and under the same vCenter.
2. Configure each new ESXi node with the required iSCSI adapters for enabling splitter-to-vRPA communication.
3. Register the new ESXi clusters within the vRPA cluster.
   - This action will install the RecoverPoint for VMs splitters on the new ESXi nodes.
4. Adjust VM-host affinity rules for the vRPAs to ensure that they are running on separate ESXi servers.
Installing in VxRail environments
CHAPTER 9

Troubleshooting installation

This chapter contains these topics:

- Troubleshooting vRPAs ................................................................. 56
- Troubleshooting splitters ............................................................. 57
- Troubleshooting the RecoverPoint for VMs plug-in ....................... 58
- Troubleshooting RecoverPoint for VMs replication ....................... 59
- Validating ESXi connectivity ......................................................... 60
- ESX UUID duplication ................................................................. 61
- Working with vCenter Server Linked Mode .................................. 62
- Getting help .................................................................................. 62
Troubleshooting vRPAs

This section describes how to troubleshoot these vRPA conditions:

- vRPA is down
- vRPA is detached from cluster
- vRPA does not see storage or splitter

vRPA is down

Procedure
1. Check the RecoverPoint for VMs dashboard for Error events indicating that the vRPA is not online.
2. Log in to a surviving vRPA and enter your RecoverPoint username and password to log into the CLI. Use the `get_system_status` command to check the cluster status. Choose to retrieve the status of all categories.
3. Use SSH to log in to the failed vRPA with boxmgmt credentials. Confirm that the failed vRPA cannot be reached.
4. Check any conflicts in the vRPA resource reservation that might have led to the vRPA being powered off. Resolve any issues before proceeding.
5. In the vSphere Web Client, right-click on the vRPA that is down and select All vCenter Actions > Power > Power On.
6. Monitor the vRPA console in the vSphere Web Client to ensure that the vRPA was powered on successfully.
7. Collect logs to investigate the root cause of the vRPA failure. For more information on collecting logs, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.

vRPA is detached from the cluster

Procedure
1. Check the RecoverPoint for VMs dashboard for Error events indicating that the vRPA cannot access storage or communicate with the splitter(s).
2. Log in to a surviving vRPA and enter your RecoverPoint username and password to log into the CLI. Use the `get_system_status` command to check the cluster status. Choose to retrieve the status of all categories.
3. From the surviving vRPA, use SSH to attempt logging in to the failed vRPA with boxmgmt credentials.
   a. From the boxmgmt Main Menu, select Diagnostics > Run internal command.
   b. At the prompt, enter: `ssh boxmgmt@<ip_address_of_detached_vrpa>`
   c. Confirm that the vRPA cannot be reached.
4. Log in to the detached vRPA using boxmgmt and select Cluster operations > Attach RPA to Cluster. Monitor the vRPA console in the vSphere Web Client to ensure that the vRPA was powered on successfully.
5. Collect logs to investigate the root cause of the vRPA detachment from the cluster. For more information on collecting logs, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.
6. If you are using a licensed version of RecoverPoint for VMs, contact EMC Customer Support.

**vRPA does not see storage or splitter**

**Procedure**

1. Ensure the vRPA is online.
2. Ensure the vRPA is attached to the cluster.
3. Verify that the splitters are running:
   a. Login to ESXi host(s).
   b. Run: `ps |grep kdriver`
   c. Ensure that splitter processes are running.
4. Collect logs to investigate the root cause of why the vRPA went down. For more information on collecting logs, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.
5. If you are using a licensed version of RecoverPoint for VMs, contact EMC Customer Support.

**Troubleshooting splitters**

The section describes how to troubleshoot the splitter when it is not visible or is in error state.

**Splitter is not visible or is in error state**

**Procedure**

1. If possible, vMotion any protected VMs from ESXi hosts with splitters in error state continue or resume replication.
2. Ensure the splitter processes are running on the host you are troubleshooting:
   a. Login to the ESXi host and use the following command: `ps |grep kdriver`
   b. If processes are not running, place the ESXi node in maintenance mode and reboot.
3. Verify Software iSCSI Adapter configuration:
   a. Ensure that the VMkernel ports are bound to the Software iSCSI Adapter on every host in the ESXi cluster.
   b. Verify that the Software iSCSI Adapter sees all paths and vRPA iSCSI targets.
   c. Verify that the iSCSI paths to the vRPAs are active and used.
4. Verify that the vRPAs are able to ping the Software iSCSI VMkernel ports:
   a. Log in to boxmgmt and select *Diagnostics > Run Internal Command > ping -I eth2 (or eth3) <VMkernel IP address>*
   b. If the ping tests fail, validate the IP address, netmask, and gateway assignments on the vRPA iSCSI interfaces and on the Software iSCSI Adapter VMkernel ports.
5. Collect logs to investigate the root cause of the splitter failure. For more information on collecting logs, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.

6. If you are using a licensed version of RecoverPoint for VMs, contact EMC Customer Support.

**Troubleshooting the RecoverPoint for VMs plug-in**

This section describes how to troubleshoot these conditions:

- vSphere Web client does not contain plug-in
- Plug-in does not see the vRPA cluster

**vSphere Web client does not contain plug-in**

Proceed through the following steps until the problem is resolved:

**Procedure**

1. Log out of vSphere Web client and log back in. Check if the RecoverPoint for VMs plug-in is listed under Inventories.
2. If the RecoverPoint for VMs plug-in is not listed, close all active vSphere Web client user sessions. Then check if the RecoverPoint for VMs plug-in is listed under Inventories.
3. If the RecoverPoint for VMs plug-in is still not listed, restart the vCenter Web Client service.
4. If the plug-in is still not visible in the vSphere Web Client, validate the vCenter Credentials configuration. You may need to reconfigure vCenter credentials. Consult EMC Customer Support if protected VMs exist.
5. If the plug-in is still not visible in the vSphere Web Client, collect logs to investigate the root cause of why the plug-in is not visible. For more information on collecting logs, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.

**Plug-in does not see the vRPA cluster**

Proceed through the following steps until the problem is resolved:

**Procedure**

1. Log out of the vSphere Web Client and log back in.
2. Refresh the vSphere Web Client.
3. Log out all users from the vSphere Web Client.
4. Restart the vSphere Web Client.
5. Log into the Managed Object Browser at https://<vSphere Web Client>/mob. Ensure the vCenter credentials are configured properly.

   Access to the Managed Object Browser is disabled by default in vSphere 6.0 and later. For instructions on how to enable access, refer to VMware KB2108405.

6. Reboot vRPA1.
7. Reboot vRPA2.
8. Collect logs to investigate the root cause of the vRPA failure. For more information on collecting logs, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.

9. If you are using a licensed version of RecoverPoint for VMs, contact EMC Customer Support.

**Troubleshooting RecoverPoint for VMs replication**

This section describes how to troubleshoot these conditions:

- Consistency group is in high-load transfer state or initialization is not completing
- Consistency group is in error state

**CG in high-load transfer state or initialization not completing**

**Procedure**

1. Create an SSH connection to the vRPA management IP address, and enter your RecoverPoint username and password to log into the CLI. Run the `detect_bottlenecks` command and collect the created reports to determine the root cause of the high-load condition. For more information on detecting bottlenecks, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.

2. Resolve issues highlighted by the `detect_bottlenecks` reports such as WAN or journal issues.

3. If consistency groups are not balanced across vRPAs, create an SSH connection to the vRPA management IP address, and enter your RecoverPoint username and password to log into the CLI. Run the `balance_load` command and change consistency group assignments accordingly. For more information on load balancing, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.

4. If the throughput required by a consistency group exceeds the availability on a single vRPA, review the vRPA profile to see if additional resources can be added to meet higher IOPS requirements.

5. Check link policies such as compression and deduplication. These can add additional load on the vRPA. For more information on these link policies, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.
   a. If the consistency group contains more than one VM, consider moving VMs to dedicated consistency groups and using group sets as needed.
   b. Consider adding vRPAs (up to 8) to the vRPA cluster for additional resources.
   c. Review ESXi resources to ensure there is no contention.

6. If needed, create an SSH connection to the vRPA management IP address, and enter your RecoverPoint username and password to log into the CLI. Run the `config_io_throttling` command to slow down production storage reads during full sweep process.

**Consistency group is in Error state**

**Procedure**

1. Perform all of the procedures suggested for a consistency group in high-load state.
2. If the consistency group is still in Error state, try the following:
   a. Check if the image access buffer is full. If so, disable image access.
   b. Resolve any WAN issues.
   c. Check if the consistency group is in a permanent high-load state.
3. Collect logs to investigate why the consistency group is in error state. For more information on collecting logs, see the *EMC RecoverPoint for Virtual Machines Administrator’s Guide*.
4. If you are using a licensed version of RecoverPoint for VMs, contact EMC Customer Support.

### Validating ESXi connectivity

During ESXi cluster registration, you can validate connectivity issues by clicking the **Validate** wizard.

#### Table 6 Validation tests and fixes

<table>
<thead>
<tr>
<th>Validation test</th>
<th>Description</th>
<th>Fix (manual or automatic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No old RecoverPoint splitters installed on any ESXi in the ESXi cluster where the vRPA cluster is deployed.</td>
<td>All ESXi hosts are ready for a new splitter installation. This test validates that no splitters exist on any of the ESXi nodes or, if there is an installed splitter, that its version matches (such as when deploying a second vRPA cluster on the same ESXi cluster).</td>
<td>Pass: No splitters are installed or the installed splitters match the new version. Warning: A 4.3 splitter is installed. Error: A 4.2 splitter is installed. Fix: If an ESXi node is listed, manually remove the splitter from that node and retry.</td>
</tr>
<tr>
<td>All ESXis in the ESXi cluster are communicating with the vCenter.</td>
<td>All hosts on the ESXi cluster are connected to the vCenter.</td>
<td>Pass: All ESXi hosts are connected to the vCenter. Warning: There is at least one ESXi host that is disconnected from the vCenter. Fix: Manually ensure that all hosts in the ESXi cluster are connected to the vCenter.</td>
</tr>
<tr>
<td>Supported ESXi versions in the ESXi cluster.</td>
<td>All ESXi hosts meet the minimum supported version for RecoverPoint for VMs.</td>
<td>Pass: All ESXi in the ESXi cluster meet the minimum required version. Error: There exists an ESXi whose version is less than 5.1 Update 1. Fix: Manually upgrade the ESXi.</td>
</tr>
<tr>
<td>Persistent scratch locations are available on all ESXi in the ESXi cluster.</td>
<td>A persistent scratch location was found for each ESXi in the cluster.</td>
<td>Pass: A persistent scratch location is configured on all ESXi nodes. Error: There is a non-persistent scratch location configured. Fix: Adjust the vSphere deployment to configure a persistent scratch location.</td>
</tr>
<tr>
<td>iSCSI software adapter installed on the ESXi.</td>
<td>To allow the ESXi host to communicate with vRPAs, a software iSCSI adapter is needed on each ESXi host that are running vRPAs.</td>
<td>Pass: There is an iSCSI software adapter installed on the ESXi. Error: There is no iSCSI software adapter installed on the ESXi. Fix: Automatically install an iSCSI software adapter on the ESXi.</td>
</tr>
</tbody>
</table>
### Table 6 Validation tests and fixes (continued)

<table>
<thead>
<tr>
<th>Validation test</th>
<th>Description</th>
<th>Fix (manual or automatic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sufficient vNIC ports available on the ESXi.</td>
<td>Ensure that each ESXi host has a VMkernel port available for iSCSI communication.</td>
<td>Pass: All ESXs have at least two VMkernel ports.&lt;br&gt;Warning: Some ESXs have only one VMkernel port.&lt;br&gt;Error: Some ESXs have no VMkernel ports.&lt;br&gt;Fix: Manually add VMkernel ports to the relevant ESXs.</td>
</tr>
<tr>
<td>Ping to the splitter on the ESXi cluster.</td>
<td>Verifies that there is connectivity to the ESXi's iSCSI VM kernel port(s).</td>
<td>Pass: There is connectivity to the ESXi's IP address.&lt;br&gt;Error: There is no connectivity to the ESXi's IP address.&lt;br&gt;Fix: Determine why there is no connectivity to the IP address.</td>
</tr>
<tr>
<td>No conflicting iSCSI ports binding on all ESXi in the ESXi cluster.</td>
<td>Verifies that there is a supported iSCSI port binding configuration on each ESXi host.</td>
<td>Pass: For each ESXi host, either no port binding is configured or port binding is configured with a single broadcast domain in the target list.&lt;br&gt;Error: for some ESXs, port binding is configured with more than one broadcast domain in the target list.&lt;br&gt;Fix: Manually fix the port binding configuration for relevant ESXs (either by removing port binding or by changing targets list).</td>
</tr>
<tr>
<td>Splitter connectivity status</td>
<td>Verifies iSCSI connectivity to each ESXi host.</td>
<td>Pass: Successfully communicated with all ESXi hosts in the cluster.&lt;br&gt;Error: Failed to communicate with one or more ESXi hosts in the cluster.&lt;br&gt;Fix: Manually check the iSCSI configuration for all ESXi and/or vRPAs to identify the communication problem.</td>
</tr>
</tbody>
</table>

### ESX UUID duplication

In the VMware environment, each ESX host is assigned a Universally Unique ID (UUID). RecoverPoint for VMs uses these UUIDs to maintain the integrity of replicated copies and protect the ESX hosts from data corruption.

However, in some cases, a UUID might change with results that include:
- More than one ESX host within a cluster reporting the same UUID.
- A single ESX host reporting a different UUID after host reboot (or similar operations).
- A single ESX host reporting a degenerated UUID with all 0's or F's.

These cases can occur when using hardware that is not certified by VMware because the UUID is based on the BIOS UUID reported by the underlying server hardware. For more information about duplicate UUIDs, see [VMware Knowledgebase Article 2006865](https://kb.vmware.com/kb/2006865).

Duplicate or degenerated UUIDs can cause the following:
- The RecoverPoint cluster can experience reboot regulation (vRPAs rebooting over and over again until they detach from the cluster).
- The RecoverPoint consistency groups may not be able to recognize, connect to, or communicate with the splitter on the affected ESX hosts.
Beginning with Release 5.0.1, RecoverPoint replaces the use of VMware's ESX host UUID and creates its own unique identifier, which ensures that no duplicate or degenerated UUIDs exist in the system. The substitution occurs only if the:

- vRPA cluster is at version 5.0.1 or higher, and
- Splitter is at version 5.0.1 or higher

For versions lower than 5.0.1, RecoverPoint displays a warning about the condition.

**Working with vCenter Server Linked Mode**

Multiple vCenter Servers can be linked together to share information. The vCenter Server Linked Mode enables users to view and manage inventories of the linked vCenter servers.

When working with vCenter Server Linked Mode, ensure that:

- All vCenter Servers are registered on all ESXi clusters in your RecoverPoint for VMs system.
- ESXi cluster registration is based on the connectivity between vRPA clusters and ESXi clusters in your RecoverPoint for VMs system.

When working with vCenters in Linked Mode, some users may need to run the `register_storage` CLI command to manually register their vCenter. This method requires knowledge of the vCenter certificate locations in *Table 7* on page 62:

**Table 7 Certificate locations**

<table>
<thead>
<tr>
<th>Version</th>
<th>Certificate location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows vCenter 5.1/5.5</td>
<td>C:\ProgramData\VMware\VMware Virtual Center\ssl\rui.crt</td>
</tr>
<tr>
<td>Windows vCenter 6.0/6.5</td>
<td>C:\ProgramData\VMware\vCenterServer\cfg\vmware-vpx\ssl \rui.crt</td>
</tr>
<tr>
<td>Linux vCenter 5.1/5.5</td>
<td>/etc/vmware-vpx/ssl/rui.crt</td>
</tr>
<tr>
<td>Linux vCenter 6.0/6.5</td>
<td>/etc/vmware-vpx/ssl/rui.crt</td>
</tr>
</tbody>
</table>

To follow best practices for working with vCenter Server Linked Mode, refer to VMware KB2005481.

To resolve issues related to vCenter Server Linked Mode, refer to VMware KB2031115.

**Getting help**

EMC support, product, and licensing information can be obtained as follows:

- **Product information** — For documentation, release notes, software updates, or information about EMC products, go to EMC Online Support at: https://support.emc.com
- **Technical support** — Go to EMC Online Support and click Service Center. You will see several options for contacting EMC Technical Support. Note that to open a
service request, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or with questions about your account.
Troubleshooting installation
This chapter contains these topics:

- Installation forms

66
Installation forms

The best practice for successful installations is to collect required information before you perform the installation.

The forms provided in this section are examples of the types of information you should collect before installation. You can create a planning spreadsheet of your own that matches your specific requirements (number of vRPA clusters, network topology, etc.).

You will be directed to enter the information from these forms (or a planning spreadsheet) during the installation process.

**Table 8 Example: vRPA cluster/site form**

<table>
<thead>
<tr>
<th>vRPA cluster</th>
<th>vRPA cluster 1</th>
<th>vRPA cluster 2</th>
<th>vRPA cluster 3</th>
<th>vRPA cluster 4</th>
<th>vRPA cluster 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster/site name</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local domain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Management subnet mask IP</td>
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<tr>
<td>WAN default gateway</td>
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<tr>
<td>WAN subnet mask</td>
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<td>SMTP (optional)</td>
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<td>ESXi 1</td>
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<tr>
<td>_Data1 IP</td>
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<tr>
<td>_Data2 IP</td>
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<td></td>
</tr>
<tr>
<td>_Management IP</td>
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### Table 8 Example: vRPA cluster/site form (continued)

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<th>vRPA cluster</th>
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<tr>
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<td>_Data2 IP</td>
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<td>_Management IP</td>
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### Table 9 Example: vRPA IP form

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<th>vRPA</th>
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<tr>
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<td>Data1 IP</td>
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Table 9 Example: vRPA IP form (continued)

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Table 10 Example: Site map

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<th>Site1 (Prod)</th>
<th>Site2 (Remote)</th>
<th>Site2 (Remote)</th>
<th>Site3 (Remote)</th>
<th>Site3 (Remote)</th>
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<td>Cluster2</td>
<td>Cluster3</td>
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<td>Cluster5</td>
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<td>&lt;ip_address&gt; RPA2</td>
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<td>&lt;ip_address&gt; RPA1</td>
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</tbody>
</table>
APPENDIX B

RecoverPoint for VMs Uninstall tool

This chapter contains these topics:

- Using the RecoverPoint for VMs Uninstall tool ......................................................70
- What the RecoverPoint for VMs Uninstall tool does ...............................................70
- Running the RecoverPoint for VMs Uninstall tool .................................................70
Using the RecoverPoint for VMs Uninstall tool

The Uninstall tool removes vRPA clusters and all of their configuration entities from a vCenter.

The Uninstall tool has two options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Command Syntax</th>
<th>When to use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uninstalling a single vRPA</td>
<td>clean</td>
<td>• After removing an old installation before running a new installation when</td>
</tr>
<tr>
<td>cluster from a vCenter</td>
<td></td>
<td>a non-disruptive upgrade (NDU) flow is not possible. For example, when</td>
</tr>
<tr>
<td></td>
<td></td>
<td>replacing a Try &amp; Buy, or Beta version, with a supported production release.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• After data migration, to remove a vRPA cluster.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• In order to remove unwanted elements from the vCenter environment in case</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the vRPA cluster was removed without first unprotecting all VMs.</td>
</tr>
<tr>
<td>Uninstalling all vRPA clusters</td>
<td>full_rp_cleanup</td>
<td>To completely remove all RecoverPoint entities and clusters from the vCenter.</td>
</tr>
<tr>
<td>from a vCenter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What the RecoverPoint for VMs Uninstall tool does

Running the RecoverPoint for VMs Uninstall tool does the following:

1. Scans the vCenter, datastores, and ESXs.

2. Displays a list of all detected vRPA clusters and marks them either active or suspected inactive. Active clusters are clusters that have registered vCenter tokens during the last hour.

3. After you select which vRPA clusters the tool should uninstall, the tool removes the following from the selected vRPA clusters: production and replica VMs that were running vRPAs, shadow VMs, RecoverPoint configuration objects, and the repository and journal volumes.

In addition to all the actions performed when uninstalling one vRPA cluster, uninstalling all vRPAs removes all vRPA clusters on the selected vCenter with all related elements. It also removes from the vCenter RecoverPoint elements not belonging to a specific vRPA cluster, such as the RecoverPoint vCenter plugin.

Running the RecoverPoint for VMs Uninstall tool

Before you begin

Obtain the IP and TCP port number of the vCenter (or vCenters) you want to scan, the vCenter username (and domain name, if one exists), and the vCenter password.

System requirements for the computer running the Uninstall tool:
- Microsoft Windows
- Java 7 or higher

The Uninstall tool runs on RecoverPoint for VMs version 4.3.0 and higher.

**Note**

If a time difference of more than 30 minutes exists between the vRPA and the computer running the Uninstall tool, the tool may recognize the vRPA cluster as inactive when it is not. (The time difference is not influenced by different time zones.)

**Procedure**

1. Navigate to the RecoverPoint for Virtual Machines download page under the Tools & Utilities section and click the RecoverPoint for Virtual Machines Uninstaller Tool link. The link is also referenced from the Customer Installation kit.

2. From a computer with IP connectivity to the vCenters managing the RecoverPoint VMs you want to uninstall, unzip the zip file.

3. Double click on uninstaller.bat.

   The RecoverPoint for VMs Uninstall Tool opens in a command line.

4. Perform one of the following actions:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>To uninstall a single vRPA cluster from a vCenter</td>
<td>...type clean.</td>
</tr>
<tr>
<td>To uninstall all vRPA clusters from a vCenter</td>
<td>...type full_rp_cleanup.</td>
</tr>
</tbody>
</table>

   Type --h after a command to view an explanation of that command. Type help to view a short explanation of all available commands.

5. Enter the IP address of the vCenter.

6. Enter the vCenter's TCP port number or press Enter for the default port (443).

7. Enter the vCenter's username.

8. Enter the vCenter's password.

   The tool tests connectivity and logs in to the vCenter.

9. Type y if you want to add another vCenter. Type n if you do not.

   If you have remote vRPA clusters connected to a different vCenter, type that vCenter's IP address if you want to uninstall that cluster as well.

   The tool displays a list of detected vRPA clusters.

10. Perform one of the following actions:

    | Option | Description |
    |--------|-------------|
    | Uninstalling a single vRPA cluster from a vCenter | Type the index number of the vRPA cluster you want to uninstall. If you want to remove more than one cluster, type the index numbers separated by commas (for example: 1, 4, 9). |
    | Uninstalling all vRPA clusters from a vCenter | Type y to perform the uninstallation. |
Results

The tool begins to scan and uninstall the cluster (or clusters). If the process notifies you that it did not uninstall all objects, you may run the uninstall operation again.

RecoverPoint splitters are not removed by the Uninstall tool. They can be manually removed from each ESX host. For instructions, see Uninstalling the RecoverPoint for VMs splitter on page 50.
This appendix contains the following topics:

- Upgrading vCenter ................................................................. 74
- Upgrading ESXi ................................................................. 74
Upgrading vCenter

Use this procedure when you need to upgrade the vCenter within a RecoverPoint for VMs system.

During the upgrade:

- vRPA clusters cannot be managed from this vCenter. Ensure you have access to other vCenters.
- Recovery time objective (RTO) and data replication might be affected.
- vCenters in Enhanced Linked Mode might be impacted (one vCenter at a time).
- RecoverPoint for VMs plug-in should remain intact.

Procedure

1. If you are upgrading to vCenter 5.5, follow these best practices: Upgrading to vCenter Server 5.5 best practices.
2. If you are upgrading to vCenter 6.0, follow these best practices: Upgrading to vCenter Server 6.0 best practices.
3. If you are upgrading to vCenter 6.5, follow these best practices: Upgrading to vCenter Server 6.5 best practices.

Upgrading ESXi

Use this procedure when you need to upgrade the ESXi within a RecoverPoint for VMs system. This procedure provides pre-upgrade and post-upgrade instructions when upgrading ESXi. Reference to VMware documentation is provided.

Procedure

1. Migrate all existing VMs to the other cluster.
2. Enter ESXi maintenance mode.
3. Unregister the ESXi from the cluster (or manually remove it from the existing cluster). This action uninstalls the splitter.
4. (Optional) Verify the ESXi version before the upgrade:
   ```
   vmware -lv
   ```

   ```
   VMware ESXi 6.0.0 build=2494585
   VMware ESXi 6.0.0 GA
   ```

5. Login to ESXi KVM.
6. Mount the ISO file to the DVD drive.
7. Reboot the ESXi host (boot it from the mounted DVD).
8. Follow VMware instructions for ESXi upgrade.

<table>
<thead>
<tr>
<th>Upgrading to 5.5</th>
<th>Methods for upgrading to ESXi 5.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgrading to 6.0</td>
<td>Methods for upgrading to VMware ESXi 6.0</td>
</tr>
<tr>
<td>Upgrading to 6.5</td>
<td>Upgrading ESXi hosts</td>
</tr>
</tbody>
</table>
9. (Optional) Verify the ESXi version after the upgrade:
   `vmware -lv`

10. Move the ESXi back to the ESXi cluster.
11. Verify that the splitter is installed.
12. Migrate the VMs back to the ESXi.
vSphere upgrades