RECOVERPOINT/SE 4.1 QUICK START INSTALLATION GUIDE

A step-by-step walkthrough of the RecoverPoint/SE installation process

EMC RECOVERPOINT FAMILY

Abstract

This RecoverPoint/SE 4.1 Quick Start Installation Guide ensures that RecoverPoint/SE users have all of the information that they need to perform a RecoverPoint/Se installation and configure their RecoverPoint/SE environments in one place. Use the RecoverPoint/SE Installation Quick Start Installation Guide as a standalone guide or as a companion to the RecoverPoint/SE Quick Start Installation Poster.

June 2014

EMC²

Published June 2014

EMC RecoverPoint/SE 4.1 Quick Start Installation Guide

Part Number 302-001-169

Revision 01 (June 24, 2014)

Contents

Preface

As part of an effort to improve and enhance the performance and capabilities of its product line, EMC from time to time releases revisions of its hardware and software. Therefore, some functions described in this guide may not be supported by all revisions of the software or hardware currently in use. For the most up-to-date information on product features, refer to your product release notes.

If a product does not function properly or does not function as described in this document, please contact your EMC representative.

Note This document was accurate as of the time of publication. However, as information is added, new versions of this document may be released to the EMC online support website. Check the website to ensure that you are using the latest version of this document.

Purpose

This document describes how to install, configure, and get started replicating with RecoverPoint/SE.

Audience

This document is intended for internal EMC personnel, partners, and customers.

Related documents

The following publications provide additional information:

- *EMC RecoverPoint 4.1 Release Notes*
- *EMC RecoverPoint Installation and Deployment Guide*
- *EMC RecoverPoint 4.1 Administrator's Guide*
- *EMC RecoverPoint 4.1 CLI Reference Guide*
- *EMC RecoverPoint Deploying with VNX/CLARiiON Arrays and Splitter Technical Notes*
- *EMC RecoverPoint vRPA Technical Notes*

Chapter 1 Welcome to RecoverPoint/SE

Welcome to the RecoverPoint/SE Quick Start Installation Guide.

This book will guide you, step by step, through the process of installing, configuring, and deploying your RecoverPoint/SE system.

By the end of this guide, RecoverPoint/SE will be installed, fully functional, and ready to replicate your applications' data volumes.

In RecoverPoint/SE, changes to your application data are stored in your production volumes, and simultaneously replicated locally and/or remotely, by your RecoverPoint Appliances, whether physical or virtual.

In the case of a disaster at the production site, RecoverPoint enables users to restore their application data from ANY previous point-in-time, using the replicated copy.

RecoverPoint/SE offers bi-directional replication between two VNX series or CLARiiON arrays with no distance limitation, while guaranteeing data consistency.

The RecoverPoint/SE Quick Start Installation Poster is part of the RecoverPoint/SE Installation Kit, and may be used alongside this guide. The poster describes the end-to-end process of installing and configuring RecoverPoint/SE.

Now let’s get started!

Chapter 2 Before You Begin

In this chapter, you will learn what you must do to prepare for a successful deployment of RecoverPoint/SE.

- You must be familiar with all network and storage systems in your environment, or have access to the resources and personnel in your organization that have that knowledge. In a two-site installation, this includes not only the local systems, but those at the remote site as well.
- If you are a new EMC customer, register for the EMC Online Support site, at: support.emc.com

  To register for the EMC Online Support site:

  a. At support.emc.com, click **Register Here**.

  b. Follow the online registration steps, making sure to fill in all required fields, including your business email address.

  c. When you receive a return email confirmation of your registration, use the access authorization and additional information in that email to complete your registration and log in for the first time to the site.
- The RecoverPoint/SE Installation Kit contains the software and documentation you will need for installation.

  To download the kit from EMC Online Support (http://support.emc.com), click **Support by Product**, and type "RecoverPoint SE" in the Find a Product search field. On the RecoverPoint SE page, the kit is located in the Recommended Resources section.

  The Installation Kit contains the following software:

  – RecoverPoint Splitter Enabler

  – RecoverPoint Deployment Manager

  It also contains the following documents:

  – *RecoverPoint/SE Quick Start Installation Guide*

  – *RecoverPoint/SE Quick Start Installation Poster*

  – *RecoverPoint VNX/CLARiiON Splitter Activation Procedure*

  – *RecoverPoint Post Deployment Form*
- To complete the licensing process, you will need the LAC emails, which are sent to you upon approval of your sales order.

  The licensing process is presented in Chapter 10, on page 87. You can perform the entire licensing process at that point; that is, after you have already created and connected your RPA clusters. Alternatively, you can do

the first parts of the process now (as presented on pages 87–91), and complete the rest when you reach Chapter 10.

- During the installation you will be required to provide infrastructure-related information. To ensure that the installation can proceed smoothly, collect the relevant infrastructure data in the IP & SAN Setup Details Templates (Appendix A), prior to beginning installation.

  Note: It is *critical* to the success of your installation that you complete this template now, prior to proceeding to the next chapter.

- You will also need the following:

  For physical RPAs:

  - Two Ethernet cables per RPA (one for LAN and one for WAN)
  - At least four available dedicated storage ports on the storage array.
  - A dedicated resource pool mapped to each RPA cluster for automatic repository volume provisioning.
  - Fibre Channel cables:
    - Two cables per RPA, in dual fabric topology.
    - Four cables per RPA, in direct attach topology.

    These topologies are described in Chapter 5.

  For virtual RPAs:

  - Four Ethernet cables per ESX server (LAN, WAN, iSCSI1, iSCSI2).
  - At least four available dedicated iSCSI ports on the storage array.

- In planning your RecoverPoint/SE deployment, be aware that ports and LUNs that are used for RecoverPoint replication cannot be used also by other replication products, such as MirrorView.

- To carry out the installation, you will need a dedicated computer running Windows, which we will refer to as your workstation.

  Java™ 7 (update 13 or higher), 32-bit, must be installed on this workstation. It is highly recommended to have the latest Java 7 update installed.

  Later on, during the actual RecoverPoint/SE installation, you will use this workstation to run the Deployment Manager RecoverPoint/SE Installer wizard.

- If network security configurations—such as firewalls or access lists—are defined in your environment, ensure that your workstation can communicate with the management (LAN) networks for the RPAs at both sites.

  If you are unable to achieve full communication from the workstation to *both* sites, you may also perform the deployment independently at each site.

- For installation, you must ensure that ports 21, 22, 8081, and 8082 (all TCP) are open on your workstation.

  To enable log retrieval from the array-based splitter, ensure also that TCP port 443 (https) is open to each storage array.

If you want to check that these ports are indeed open, you can Telnet from a workstation on the network, as follows (from the command line):

```
telnet IpAddress PortNo
```

Example:

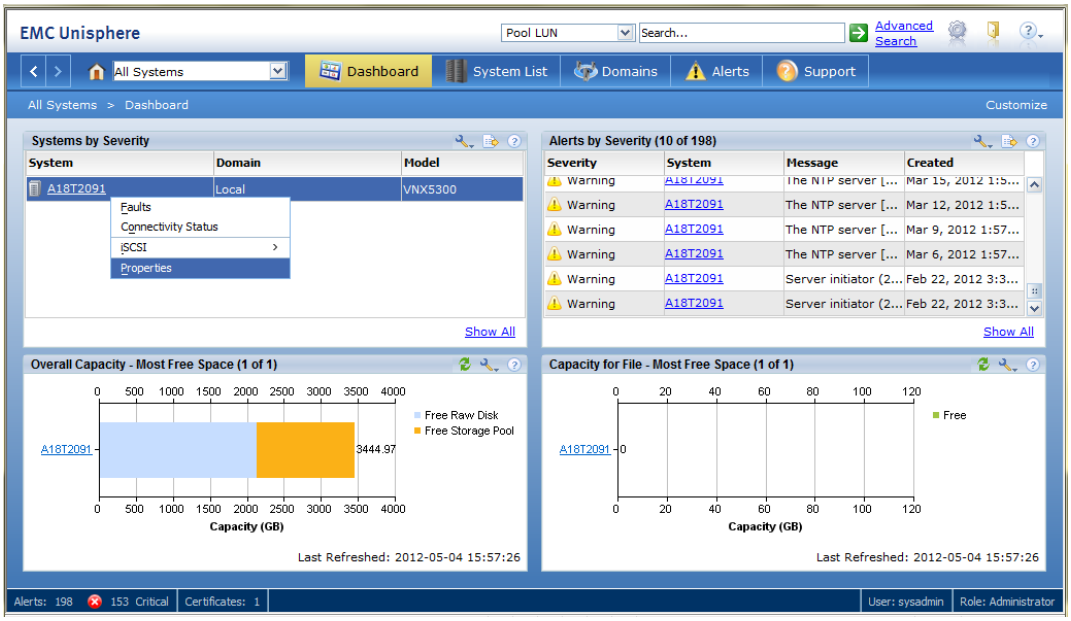
```
telnet 10.76.7.35 443
```

Note: Ensure that Telnet is open on the workstation. When successful, a flashing underscore appears.

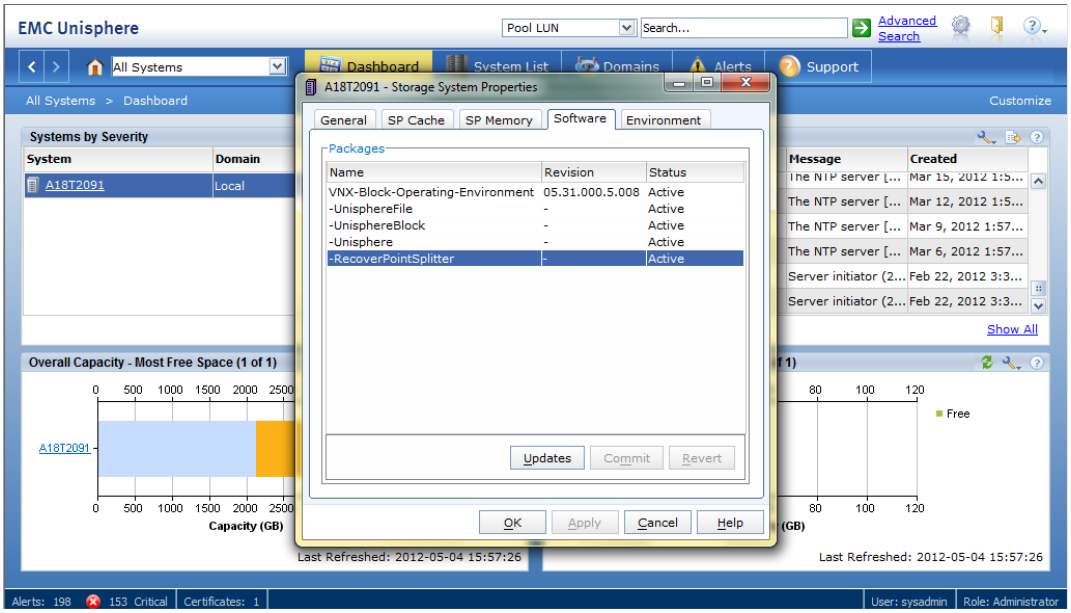
- The RecoverPoint VNX/CLARiiON splitter driver (engine) included in the VNX OE or CLARiiON FLARE bundle must be active.

  To ensure the splitter driver is active:

  a. In the Unisphere management interface for the storage system, right click the storage array, and select **Properties**.



  b. Select the Software tab:



c. Verify that the status for RecoverPointSplitter is *Active*.

   If it is not Active, you must enable it. For instructions, see the *RecoverPoint VNX/CLARiiON Splitter Activation Procedure*, which is included in your RecoverPoint/SE Installation Kit.

When (and only when) you have completed all of the preparations for installation that have been presented in this chapter, you are ready to proceed to the next chapter.

Chapter 3 Unpack RPAs

We now proceed by unpacking the physical RecoverPoint appliances (RPAs).

As you unpack each RecoverPoint appliance, you should verify that each box contains all of the following items:

- An EMC RecoverPoint appliance
- Two server adjustable slide rails
- An EMC bezel
- Two country-specific power cables

In case any item is missing from the box, you should notify EMC Customer Service immediately.

When you have unpacked all of the RPAs, and assured the relevant items are indeed available in each RPA box, you may proceed to the next chapter.

Chapter 4 Rack and Install RPAs

We can now continue by racking the physical RecoverPoint appliances (RPAs).

1. You must first decide where you would like to locate and install your RPAs.

   The location must have the required infrastructure in place, including:

   - LAN connection
   - WAN connection
   - SAN connection
   - Electrical power source

   The relevant cabling is required for each infrastructure.

   Direct your attention to the rear of the cabinet, and designate where you want to place the RPAs within the cabinet.

   It is recommended that you mark the designated mounting locations accordingly for *each* RPA you intend to install in the cabinet.

Figure 1. Designating RPA mounting location at front of cabinet (while standing at rear of cabinet)

2. Installing the rails:

   a. Once marked, assure the adjustable rails are retracted (not extended), and align the two bulges at the end of each rail with the previously designated RPA mounting location.

   b. Once aligned push the rail from the back of the cabinet to the front of the cabinet until you hear a clicking sound. This indicates that the front of the rail is secured.

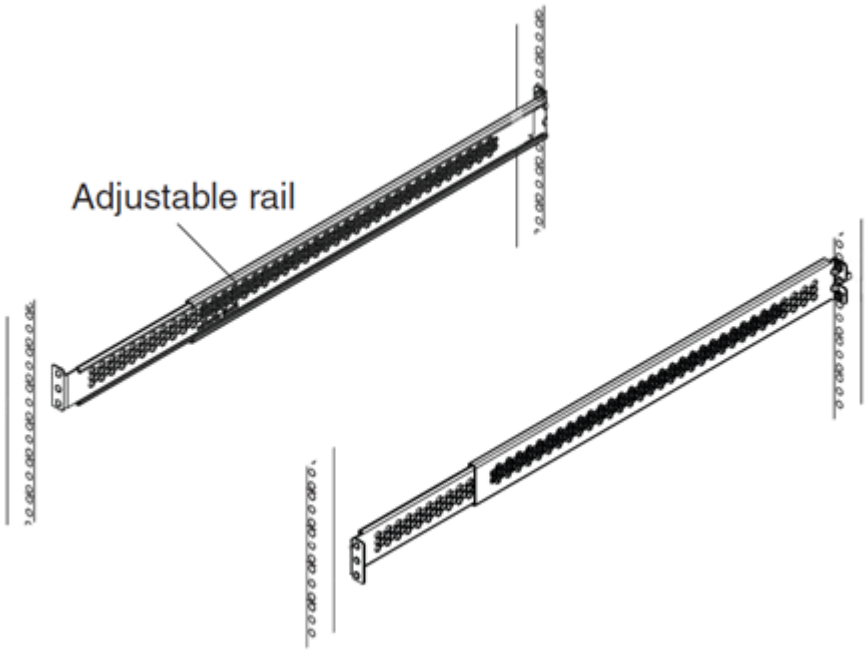


Figure 2. Aligning the adjustable rails

c. Now, secure the secondary clamps on the rear section of the rails to the rear of the cabinet, ensuring that the two ends of the rail are aligned with one another.

3. Mounting the RPAs on the rails:

   a. Stand in front of the cabinet, and slide the rails as far out as possible.

   b. Now, mount the RPA in the cabinet, by aligning it with the rail extensions, and pushing the RPA until it clicks into place around the white plastic indicators on the side of each rail.

      Note: Ensure that the designated cabling location (the back of the RPA) is facing the rear of the cabinet.

   c. Pull out the blue clips from each side of the RPA, and push the RPA all the way forward, until you hear a click, which indicates that the RPA is locked into place.

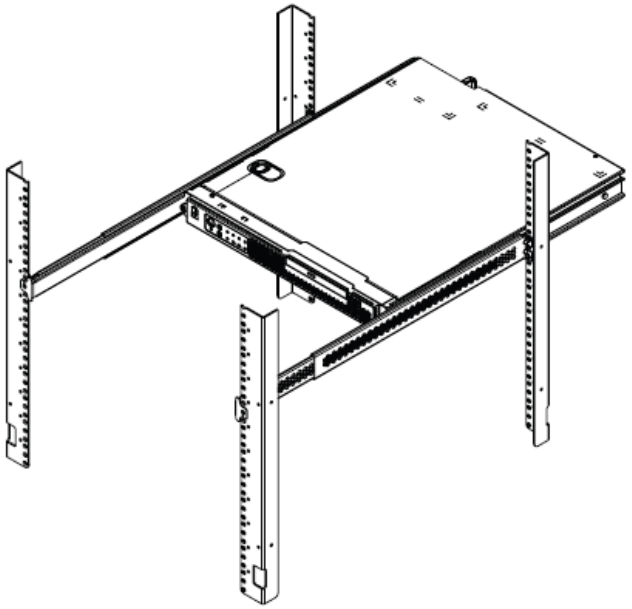


Figure 3. Mounting the RPA in the cabinet

4. All that remains now is to press the bezel into place on the front panel of the RPA.

Once you have successfully racked all of the RPAs, you may proceed to the next chapter.

Chapter 5 Connect RPAs

You will now prepare your environment for the initial configuration of your RPAs.

Make sure that your completed IP & SAN Setup Details Template is handy, and that you have fully familiarized yourself with the designated configuration for your deployment.

RecoverPoint/SE offers several deployment topologies:

- **Dual fabric topology**, in which you must have two fabric switches at each site.

  In such a topology, each physical RPA must be connected to each fabric through separate ports, to assure redundancy and fault-tolerance.

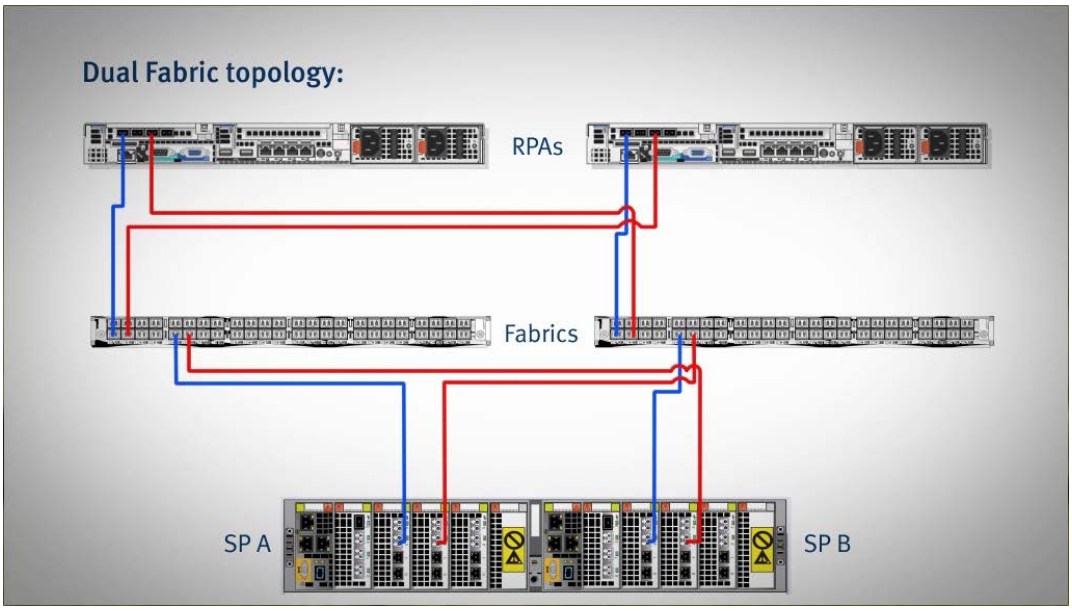


Figure 4. Dual fabric topology

- **Direct attach topology,** where two ports on each RPA are directly connected to the storage system (to storage processors A and B).

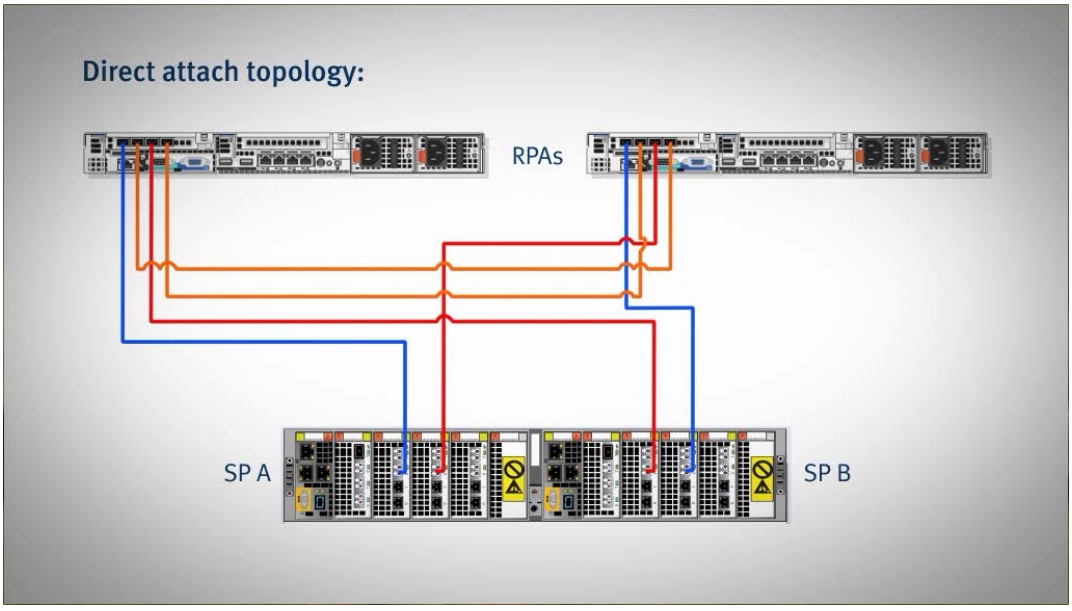


Figure 5. Direct attach topology

Detailed Topology Overview

Dual fabric — In the dual fabric configuration (as shown in Figure 4, on page 17), you must connect the RPA ports to separate fabrics, assuring each fabric has complete visibility of both storage processors in the storage system.

This means that a Fibre Channel port from each SPA and SPB must be connected to each fabric (using a total of four dedicated storage ports).

In most environments where the VNX storage system is already functioning, such connections already exist.

Direct attach — In a direct attach configuration, you must ensure that one RPA port (from each RPA) is directly connected to SPA and another to SPB.

The two additional ports should be used for inter-RPA communication (as shown in Figure 5, on page 18).

Note: With direct attach configuration, replication over Fibre Channel is not supported.

Connecting the RPAs

With this as background, you should now be ready to install the necessary connections, as follows:

1. Connect Fibre Channel ports to each RPA:
   - In dual fabric topology, two RPA ports (per RPA).

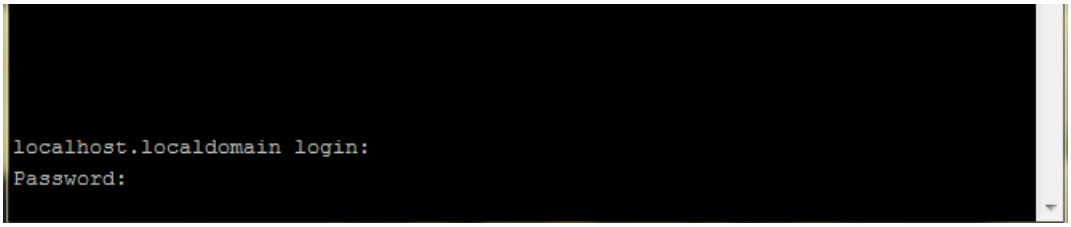
     Note: For Fibre Channel replication, use all RPA ports that are not already in use by the local cluster for inter-site connectivity (see Figure 4).
   - In direct attach topology, four RPA ports (per RPA).

     Note: Fibre Channel replication is not supported.
2. For each RPA, use two Ethernet cables to connect the Management (LAN) interface to eth1 and the WAN interface to eth0.

3. Connect each RPA with two country-specific power cables.
4. Connect each RPA to a monitor and keyboard or functioning KVM.

5. Power on the RPAs.

   You may have to remove the RPA bezel to do so.
6. Once an RPA is fully booted, you should see a login prompt.



If you don't see a login prompt, press **Enter** until you do.

To ensure that the RPAs are functioning properly, log in to each RPA with the username **boxmgmt** and password **boxmgmt**.

7. You will be prompted to enter a temporary IP address. If all RPAs are connected to a DHCP configured network, temporary IPs will not be required.

If DHCP is not available on your network, you are required to enter the appropriate RPA (LAN) IP address, subnet mask, and gateway, as recorded in your IP & SAN Setup Details Template.

Note: The IP address you choose now will follow the RPA throughout the deployment process. You must verify that a single cross-site workstation can access all of the IP addresses assigned to the RPAs.

Alternatively, you may choose to perform the installation one site a time, in which case, only single-site connectivity to the workstation is required.

Chapter 6 Deploy RecoverPoint/SE on Physical RPA Cluster

The chapter presents the procedure for deploying physical RPAs in RecoverPoint clusters.

If, instead, you want to deploy virtual RPAs clusters, go to Chapter 8: "Deploy RecoverPoint/SE on Virtual RPA Cluster," on page 53.

By this point, you should have completed all of the tasks necessary to prepare for installation of your RecoverPoint/SE software. The status should be as follows:

- The RecoverPoint splitter is enabled on the array (that is, with status of Active).
- RPAs are mounted on the racks.
- The RPAs have been assigned with temporary IPs (given that DHCP is not available).
- The RPAs and VNX storage processors are fully cabled.
- The IP & SAN Setup Details Template is completed and available.

If you have not completed all of the prerequisites for installation, you should do so now, before continuing.

The RecoverPoint/SE Installer Wizard installs one RPA cluster at a time. Therefore, if you want to deploy a cluster at a second site, you will need to run the wizard a second time.

Note: This cluster is called an "RPA cluster", regardless of whether it contains physical or virtual RPAs. Mixing physical RPAs and virtual RPAs in the same cluster is not allowed.

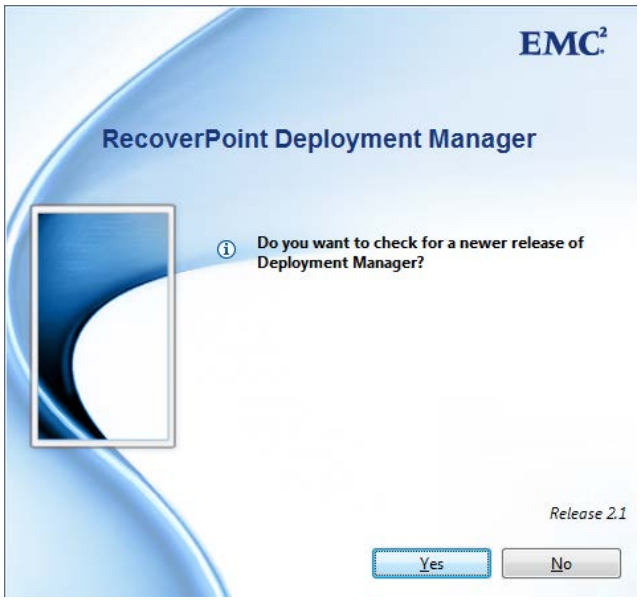
If you install two clusters, you will then need to run the Connect Cluster Wizard to enable replication and communication between them.

Some notes about the RecoverPoint/SE Installer Wizard:

- To improve system performance, enter values in all fields presented by the wizard.
- Java™ 7 (update 13 or higher), 32-bit, must be installed on the local workstation, that is, the machine on which you will be running the wizard. It is highly recommended to have the latest Java 7 update installed.
- Whenever you click **Next**, the system automatically saves configuration settings in the configuration file.

Once all preparations for installation are complete, extract the files from the RecoverPoint Deployment Manager zip file (which you should find in your RecoverPoint/SE Installation Kit) to a local disk, and then open RecoverPoint_DM.exe.

You are prompted to check for a newer release of Deployment Manager.



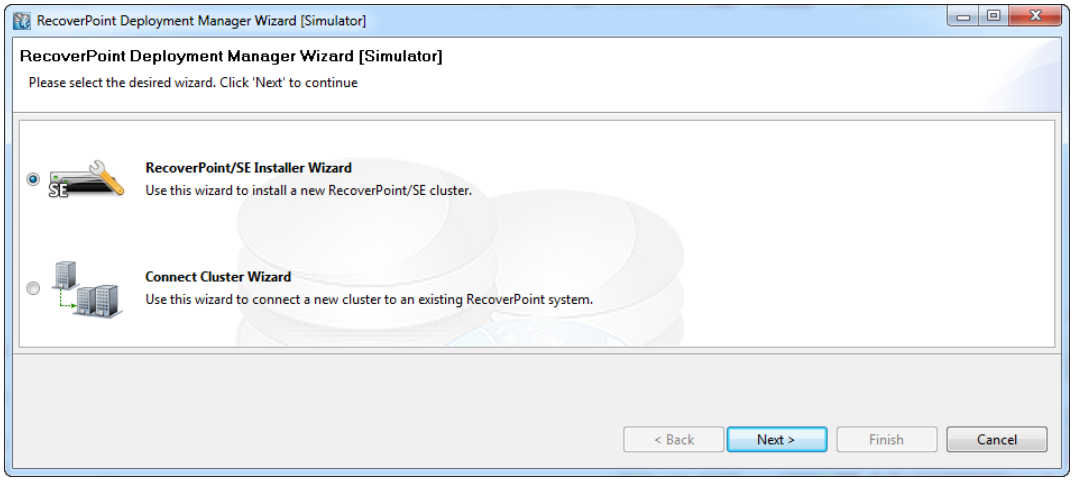
If you are using the Deployment Manager from the RecoverPoint/SE Installation Kit that you just downloaded from EMC Online Support, you can be assured that you have the latest release, so click **No**.

You are prompted to choose which RecoverPoint/SE release you plan to install. Select **RecoverPoint 4.0 or later releases**.

The Login screen appears.

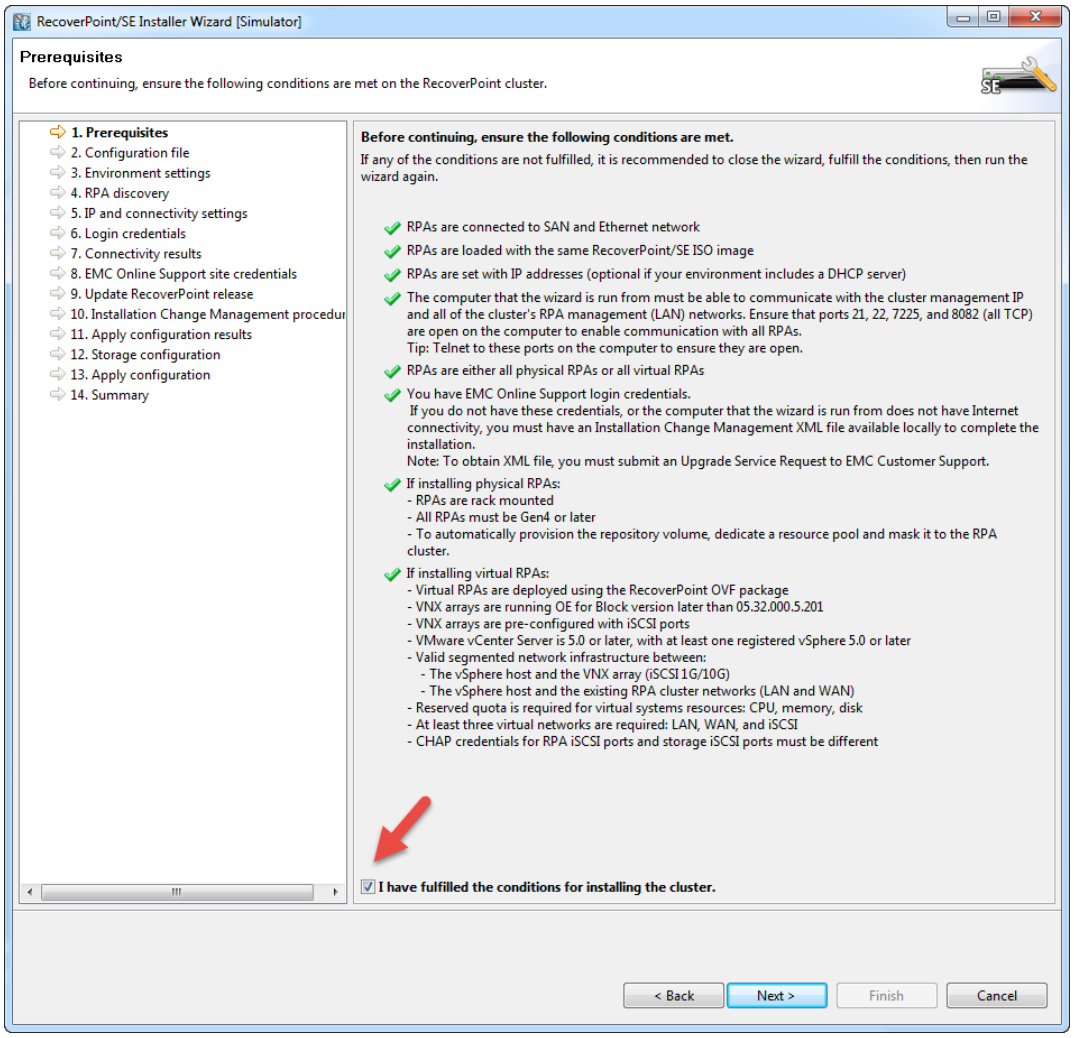
Select **Install RecoverPoint/SE,** and click **Login.**

The RecoverPoint Deployment Manager Wizard screen appears.



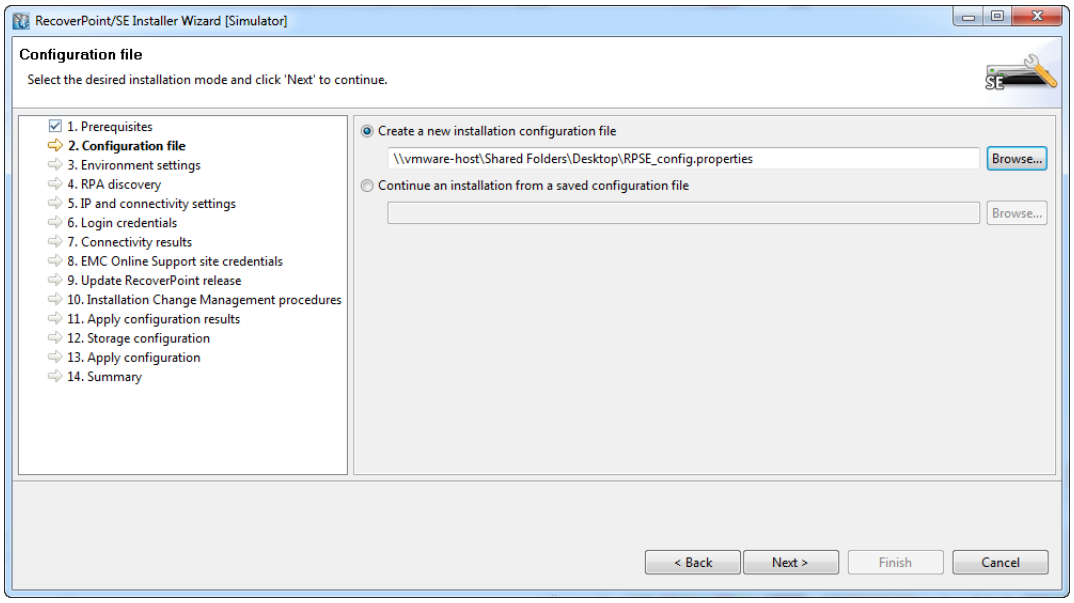
Select **RecoverPoint/SE Installer Wizard.**

The Prerequisites screen appears.



Assuming all of the prerequisites have been completed, select the checkbox, and continue with the installation.

The Configuration file screen appears.

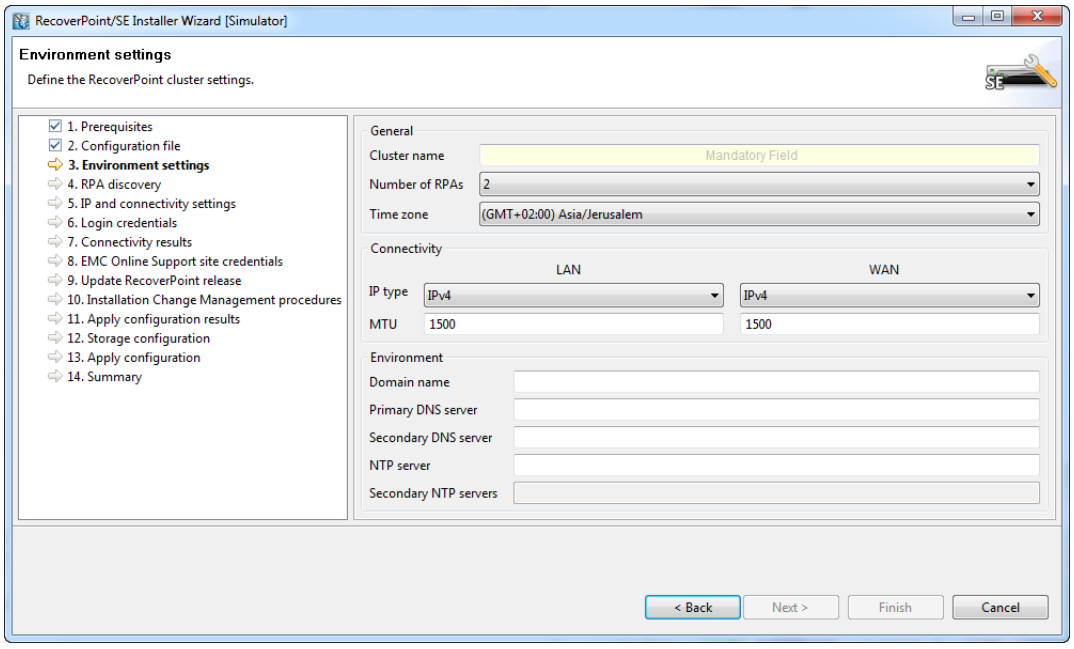


Select the first option, **Create a new installation configuration file**. Then, specify the path for the file, RPSE_config.properties, as your installation configuration file. It will be used to store the installation settings that you specify during this installation for backup purposes.

The same file should be specified when continuing an installation that was interrupted prior to completion. In that case, select the second option, **Create or continue an installation from a saved configuration file**, and enter the filename there.

Note that the RecoverPoint installation process is performed on one cluster at a time.

When you are done, click **Next** to display the Environment settings screen



Begin by entering the general parameters that define the cluster:

- Cluster name
- Number of RPAs
- Time zone

Add connectivity settings:

- LAN IP type (IPv4 or IPv6, or both) and MTU
- WAN IP type (IPv4 or IPv6) and MTU

Note: In the remainder of this guide, it is assumed that your LAN and WAN IPs are IPv4.

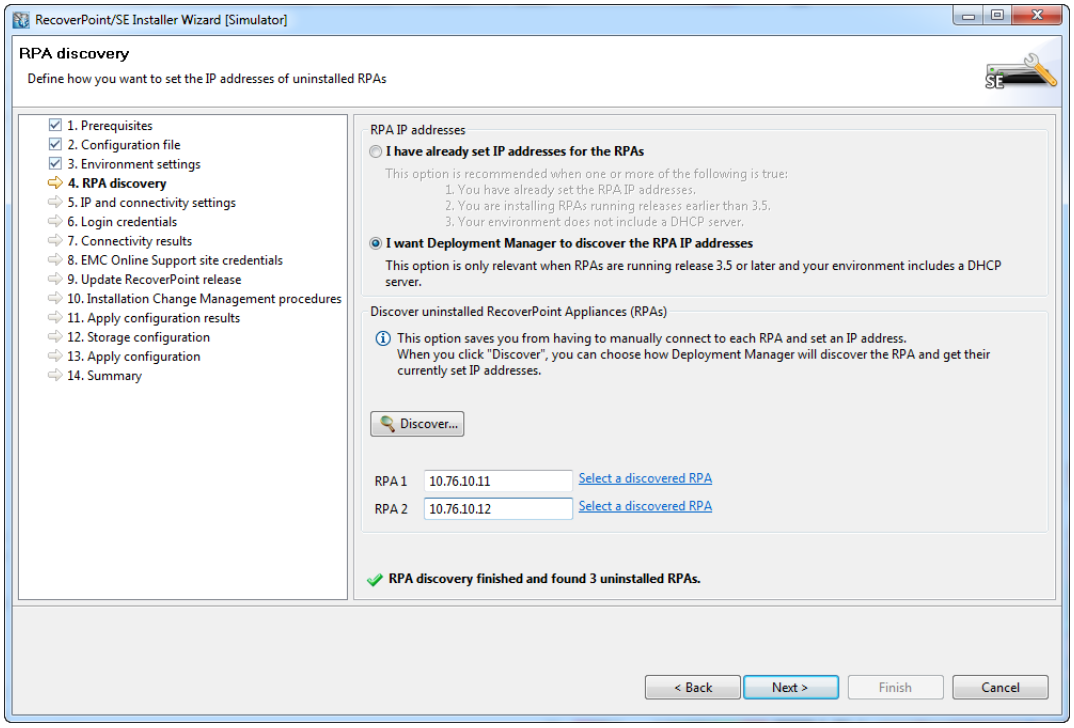
Finally, enter the following environment parameters, *all of which are optional*:

- Domain name
- Primary and, if available, secondary DNS server
- NTP server or servers

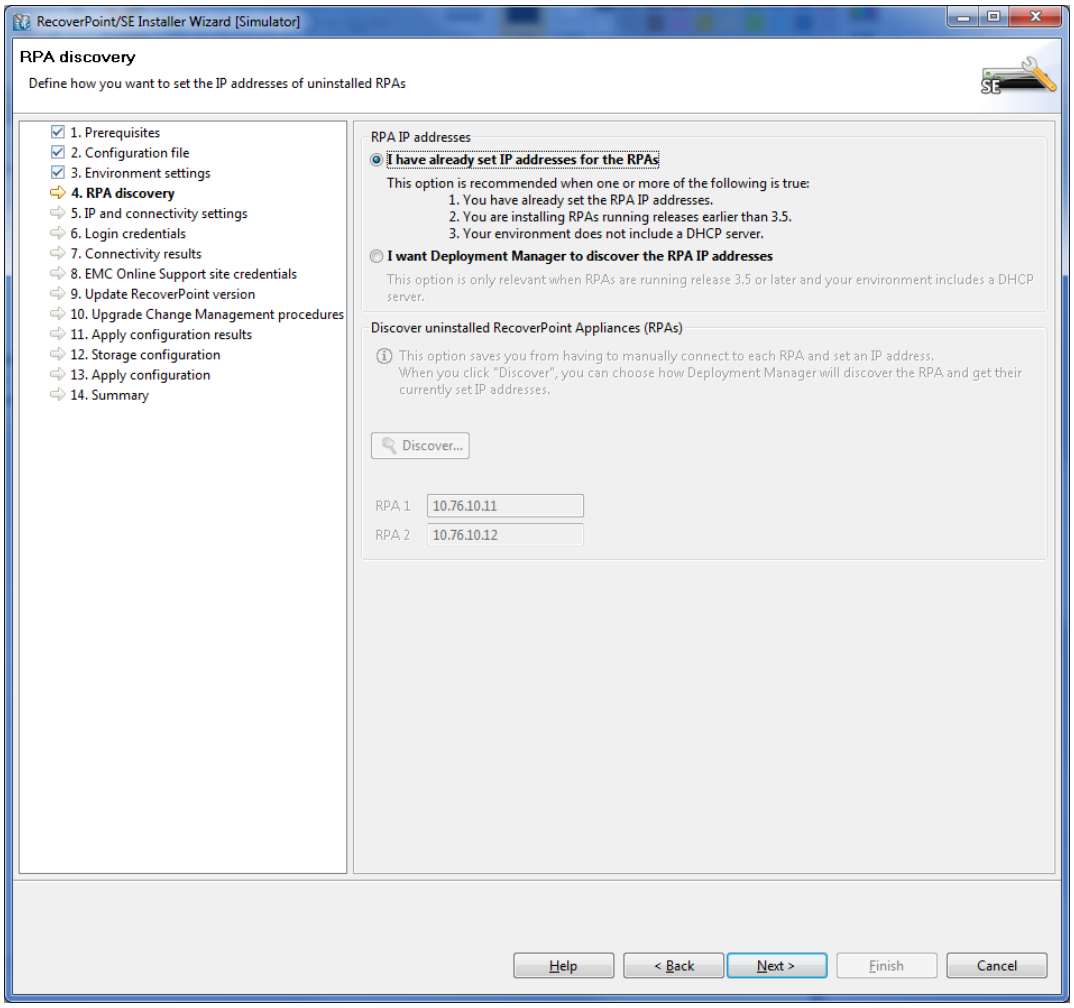
  Note: NTP servers can be defined only in a single site, where the rest of the RPAs are synced with the NTP-defined site.

Once you have completed entering the Environment settings, you are ready to specify the RPA and site IP addresses. Click **Next** to continue.

If your environment includes a DHCP server, and you have not already assigned IP addresses to your RPAs, you can instruct Deployment Manager to auto detect RPAs for which you have not set a temporary IP address. To do so, select the **I want Deployment Manager to discover the RPA IP addresses** option on the RPA Discovery screen. Upon clicking **Discover**, the Deployment Manager discovers the RPAs on your network automatically, based on the IPs assigned by the DHCP sever. Your workstation will use these temporary IP addresses to communicate with the RPAs during installation.



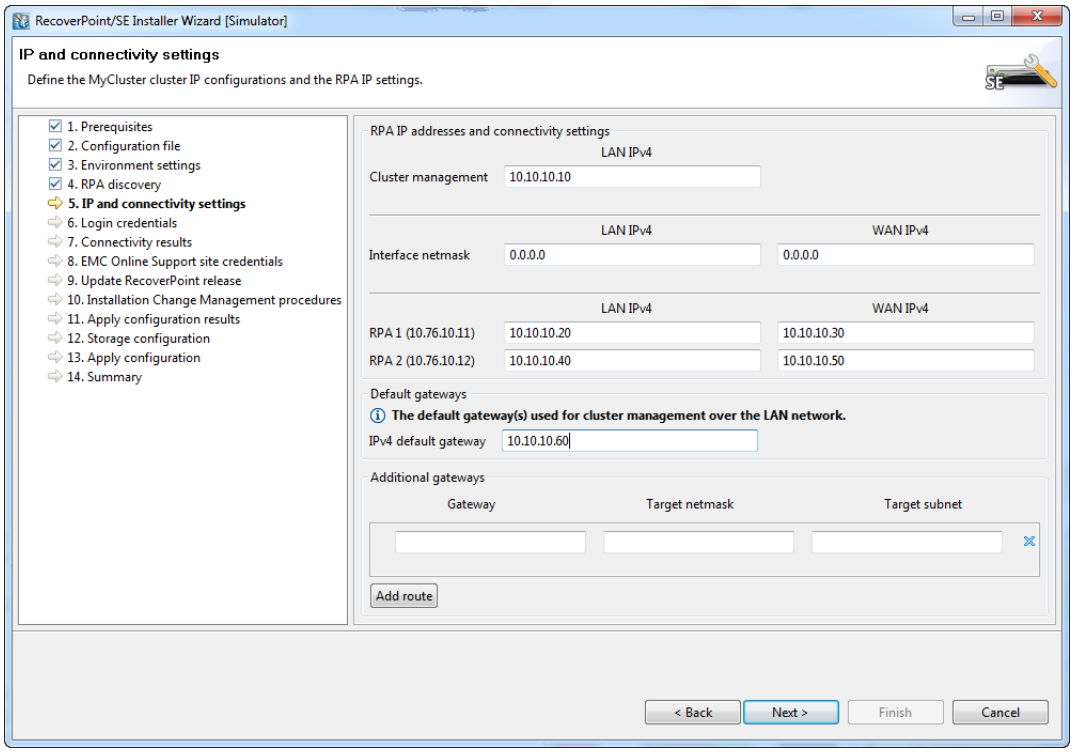
Alternatively, if you have already assigned the IP addresses to your RPAs, choose the first option, **I have already set IP addresses for the RPAs**.



You may now configure the IPs for cluster management and RPAs, and relevant Management (LAN) and WAN subnet and gateway settings.

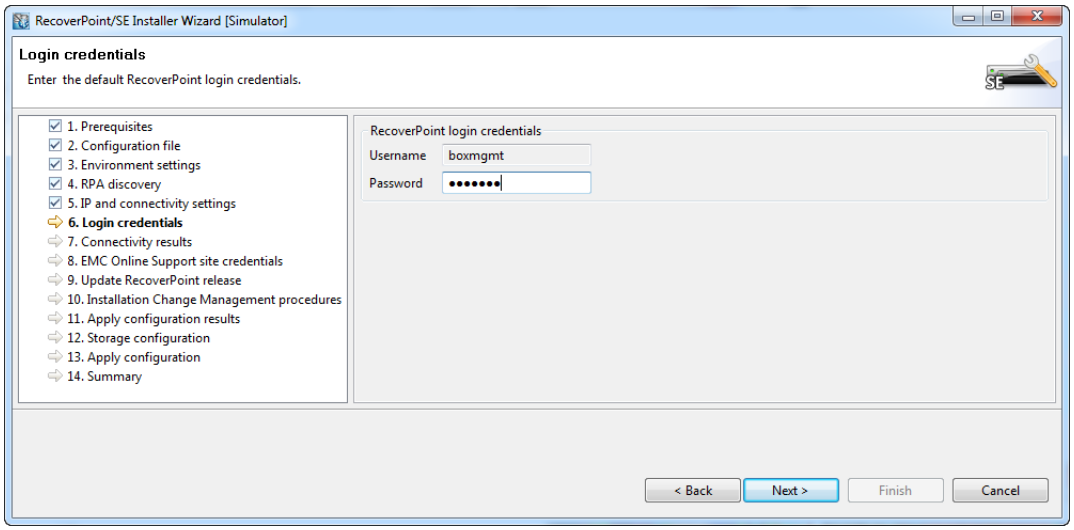
When you are done, click **Next** to display the IP and connectivity settings screen.

Be advised that the cluster management IP should reside on the same network as the LAN interface for the RPAs (labeled as LAN IPv4).



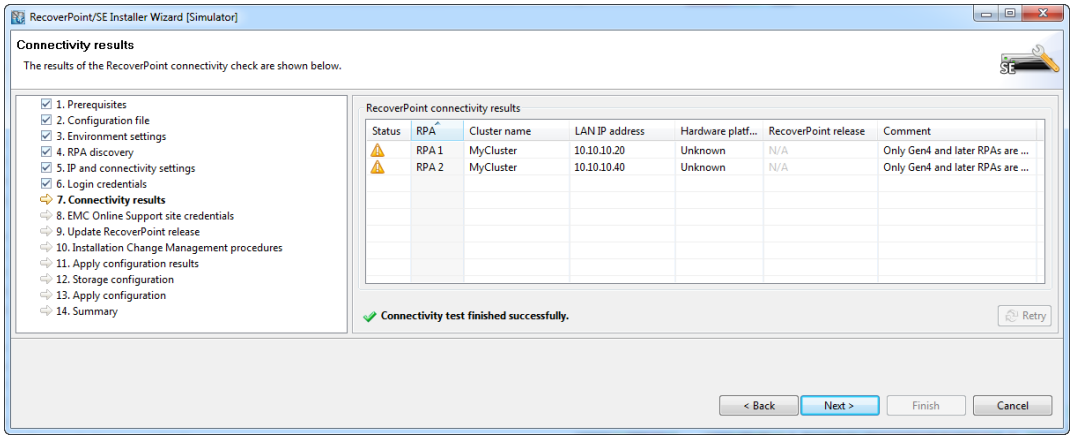
The **Cluster management IP** will serve as a floating IP address (also known as a virtual IP address), and will be used to control the Unisphere for RecoverPoint management application GUI.

When you have completed assigning IP settings, continue to the Login credentials screen.



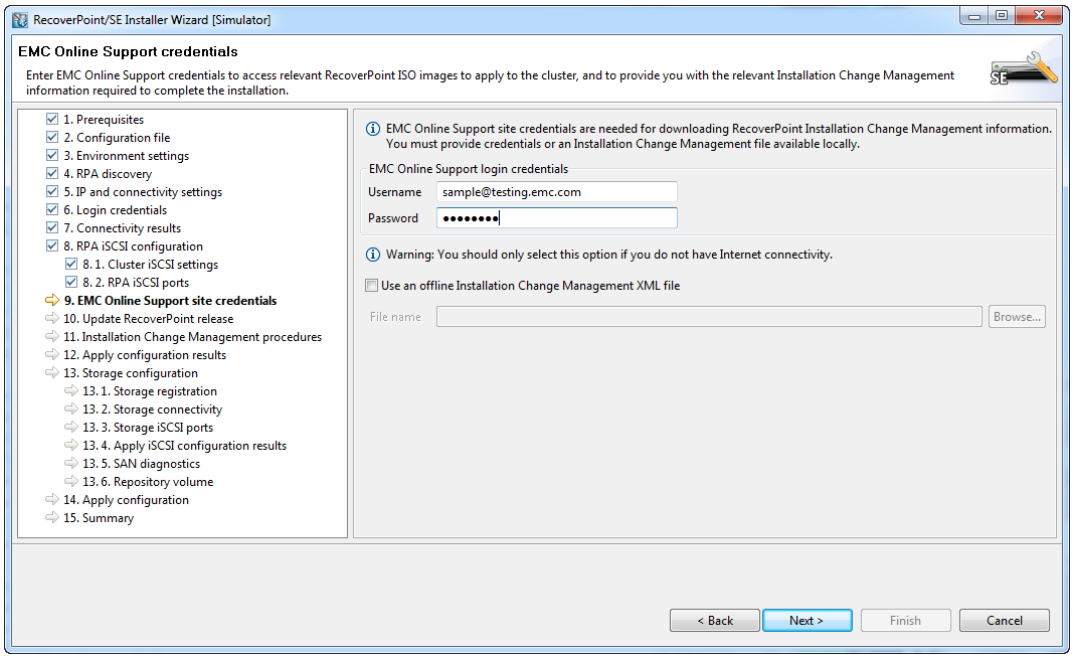
Enter the default password, **boxmgmt**.

Upon clicking **Next**, the system validates connectivity with each of the RPAs in the cluster, and presents the results in the Connectivity results screen.



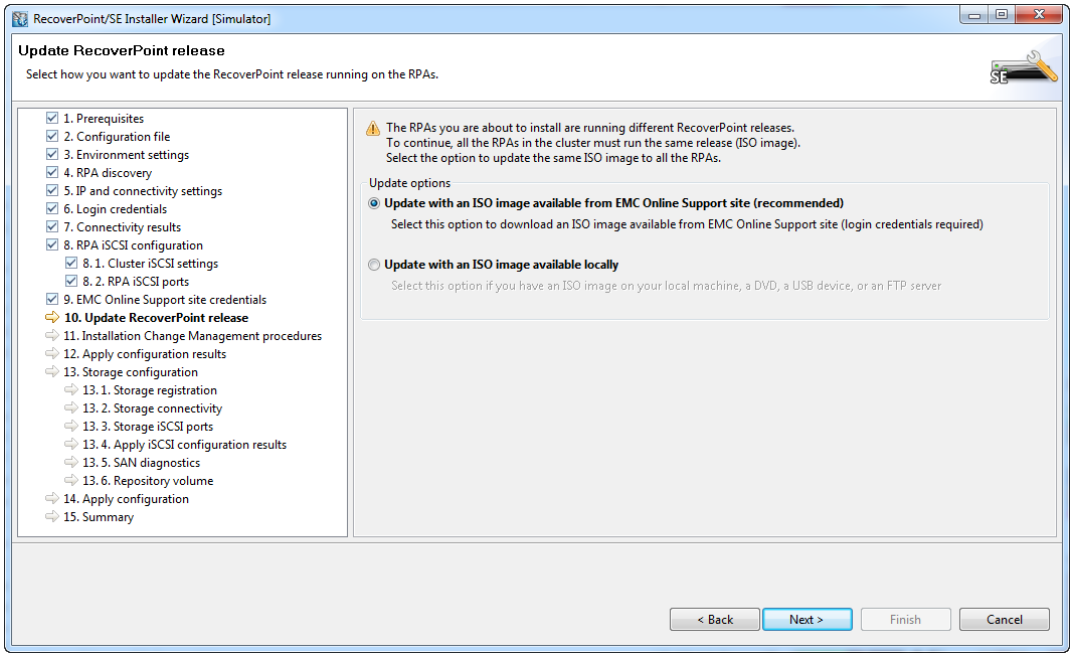
If there are connectivity errors, you must correct them, and then click **Retry** to revalidate the connectivity statuses. When the "Connectivity test finished successfully" message is displayed, click **Next** to continue.

The EMC Online Support credentials screen appears.



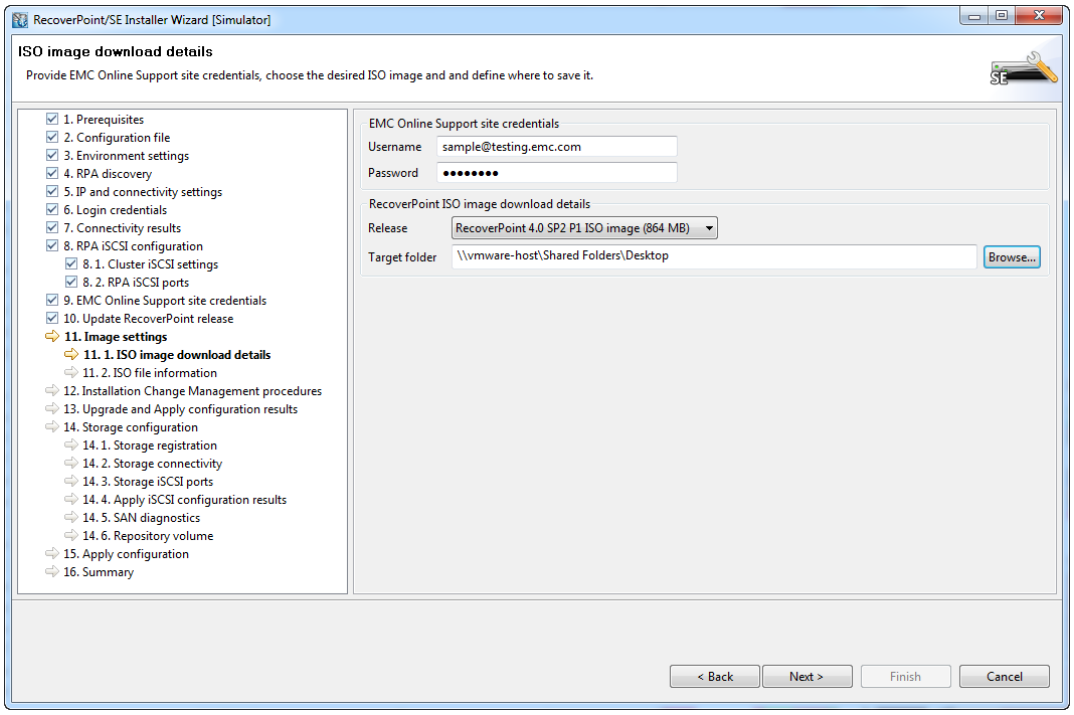
Enter EMC Online Support site credentials (username and password) to access relevant RecoverPoint/SE ISO images to apply to the cluster, and to provide you with the relevant Installation Change Management information required to complete the installation.

The Update RecoverPoint release screen appears.



The message at the top of this screen reports the RecoverPoint release that is currently running on all of the RPAs in your cluster (that is, the ISO image that comes pre-installed), or alternatively notifies you that not all of your RPAs are running the same image. To ensure that all of your RPAs are running the latest image for the current release, select **Update with an ISO image available from EMC Online Support**.

The ISO image download details screen appears.

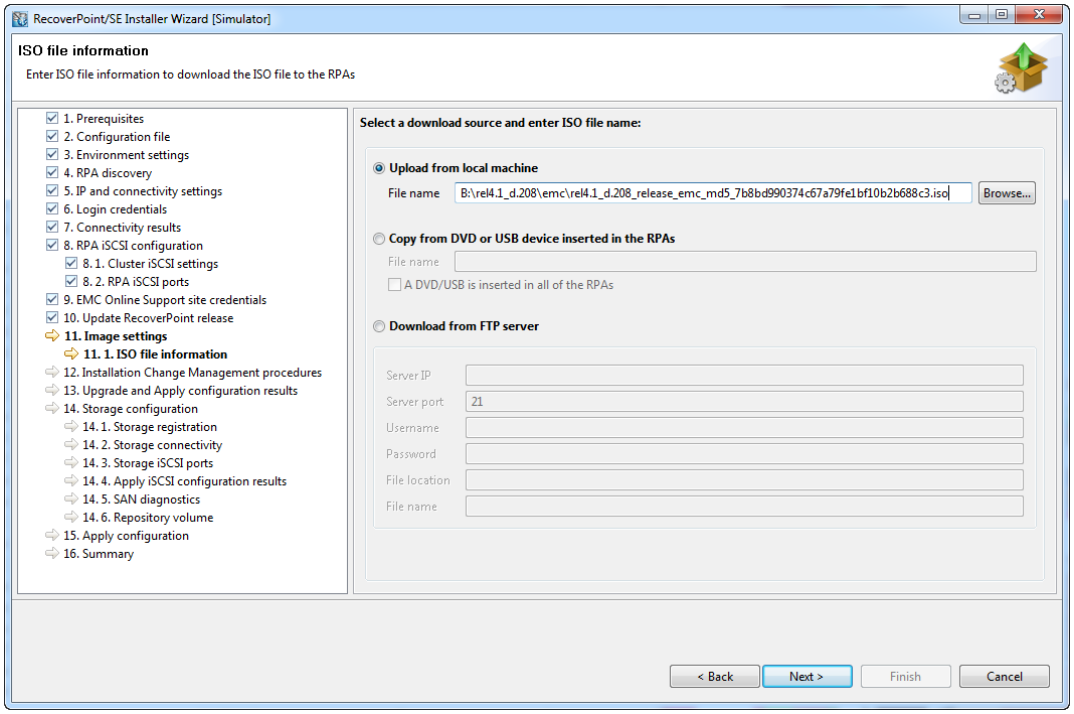


To continue:

- Enter your EMC Online Support credentials.
- Select the RecoverPoint version you wish to download.
- Indicate where you want to save it on your local machine (that is, the machine running Deployment Manager).
- Click **Next**.

The ISO image downloads to your local machine.

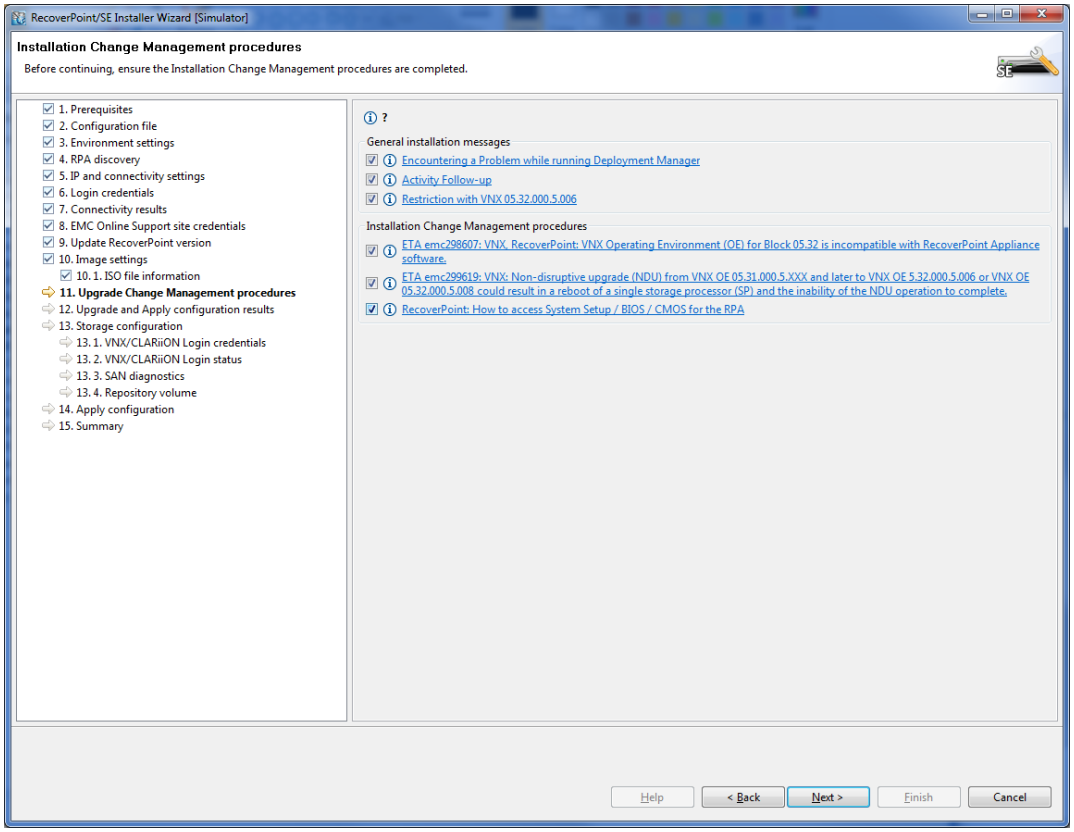
When the download is complete, the ISO file information screen appears.



Deployment Manager offers several methods for delivering the ISO to the RPAs:

- Upload the ISO directly to the RPAs from the workstation.
- Copy the ISO file to a USB drive or burn it on a DVD, and then simply connect or insert the media into the RPA.
- Upload the ISO file to an FTP site, and have the RPAs download the ISO from the FTP site.

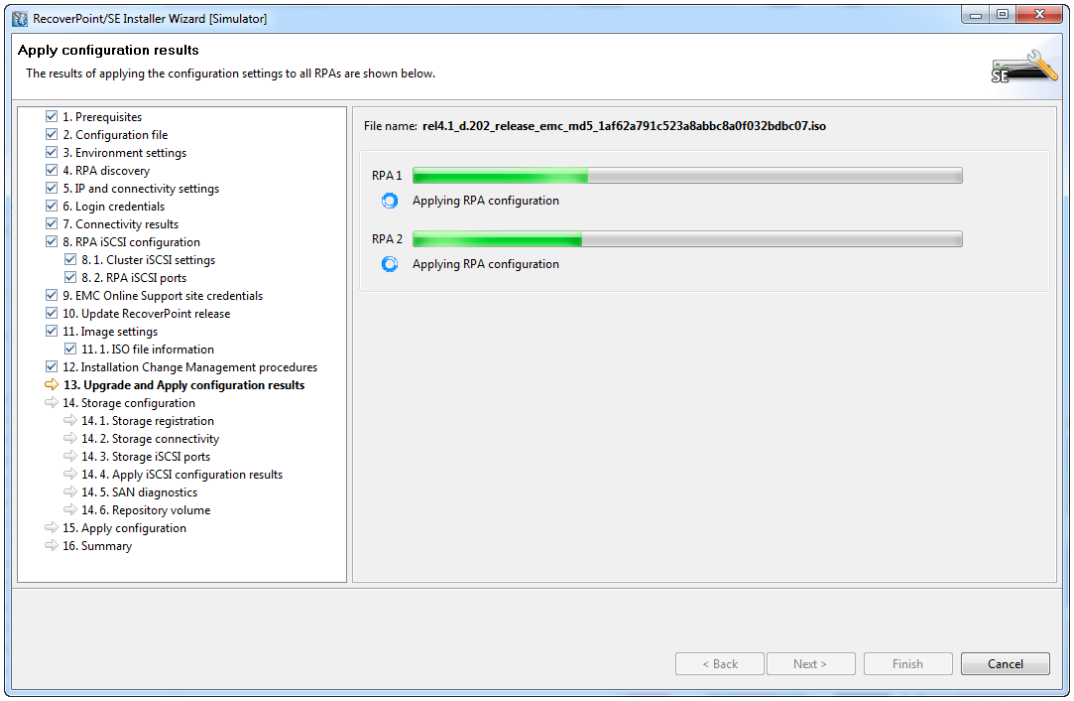
Click **Next**. Regardless of the delivery method, the Installation Change Management procedures screen appears.



Based on the ISO image that you have distributed to the RPAs in your cluster, the wizard presents you with a list of general installation messages and Installation Change Management procedures that must be completed before continuing the installation.

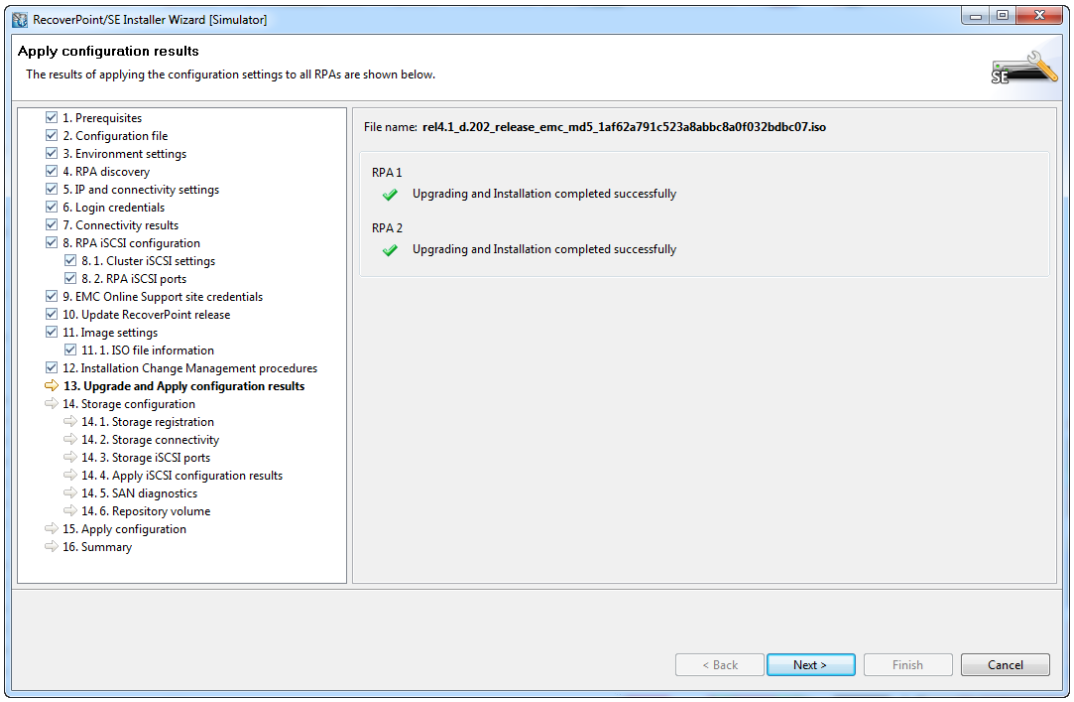
Open each procedure. When you have performed the tasks required to complete the procedure, close the procedure, and mark the checkbox. When you have completed all of the procedures, click **Next**.

The Apply configurations screen appears.



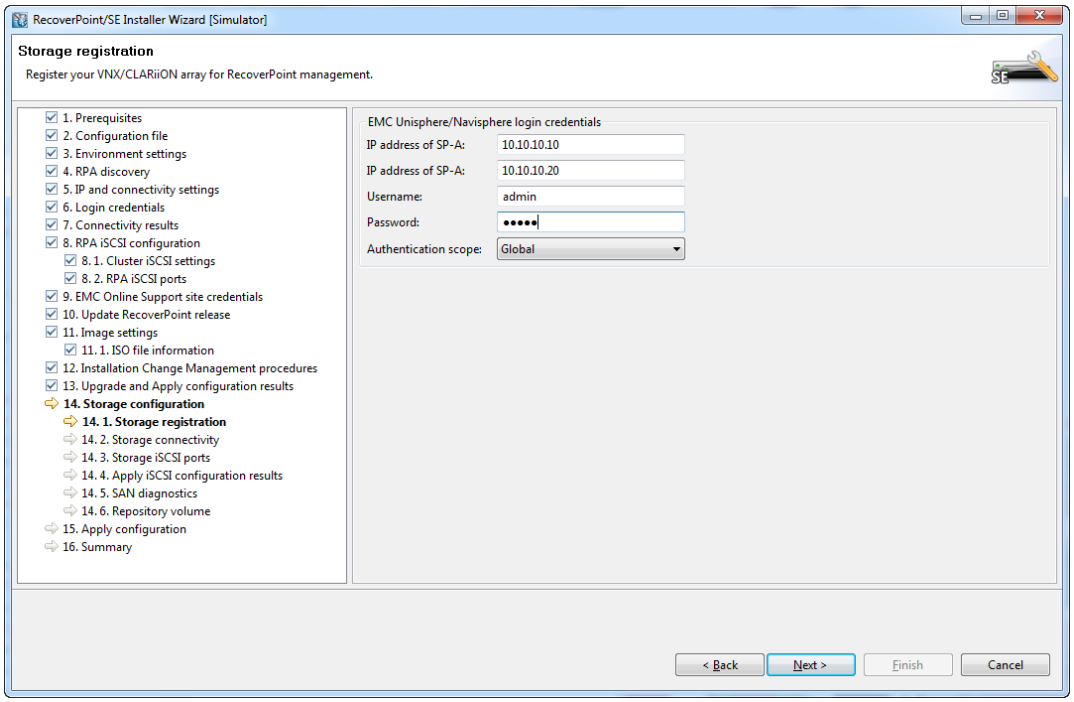
While uploading the ISO file, the Apply configuration results screen shows the progress of the upload for each RPA.

Deployment Manager notifies you when upgrade and installation of the ISO is completed for all the RPAs in the cluster.



You can now progress to the Storage configuration step.

In the storage registration screen, enter the storage processor IP addresses of the array at the RPA cluster you are installing (as recorded on your IP & SAN Setup Details Template), a username and password for the array, and an authentication scope (for LDAP).

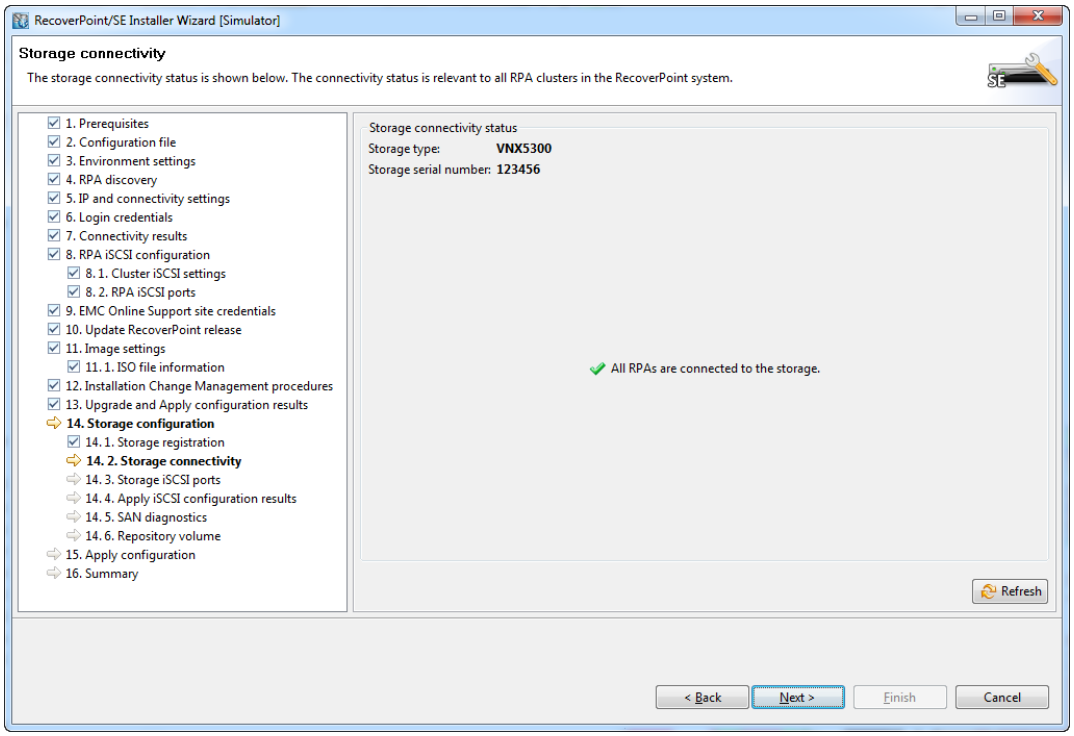


Based on this information, the system attempts to log in to the VNX/CLARiiON and to validate that:

- The RecoverPoint/SE Installer can communicate with VNX/CLARiiON SP A and SP B.
- The login credentials are correct for SP A and SP B.
- SP A and SP B are not already attached to RecoverPoint/SE cluster.
- IP settings were applied successfully.

Click **Next** when you are done to display the Storage connectivity screen.

The Storage connectivity screen notifies you whether or not all of the RPAs in the RPA cluster are connected to the storage



If any errors exist, fix them now and click **Refresh**. When all RPAs are connected to the storage, click **Next**. The specified array is registered for RecoverPoint management.

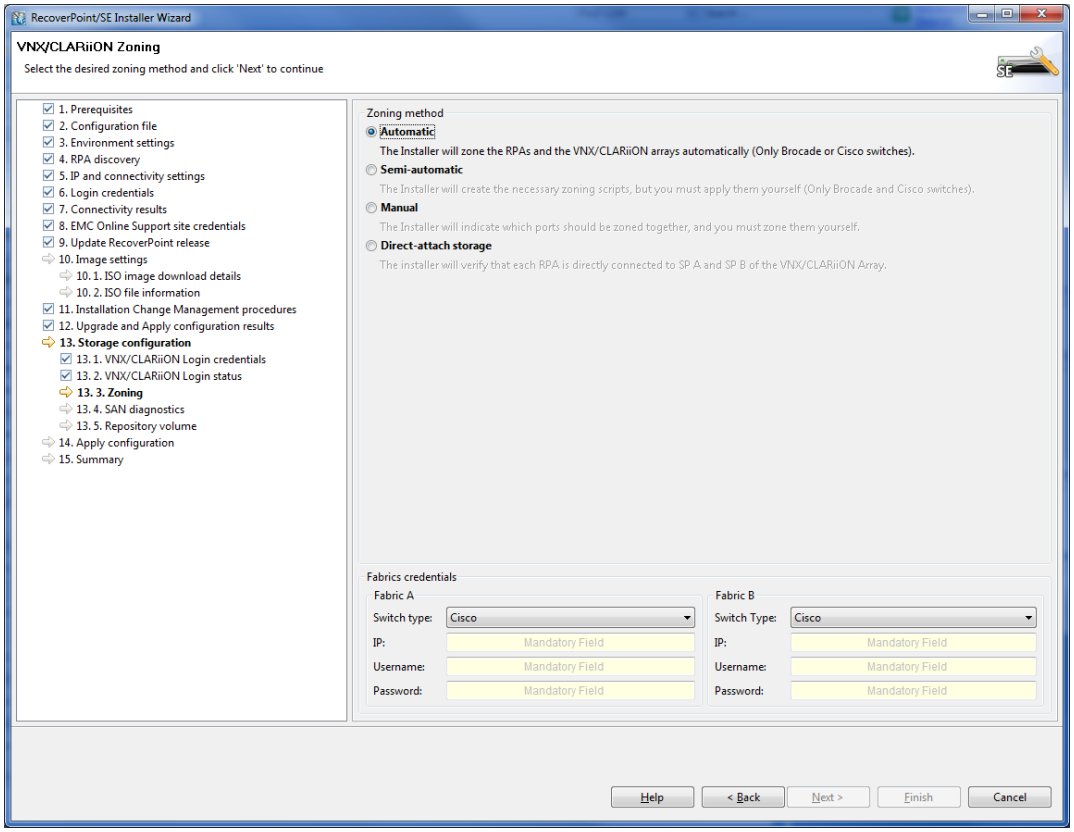
In a direct attach configuration, no zoning is required, as no fabrics are involved.

With any other topology, however, you are now presented with a choice of several methods for zoning the RPAs with the VNX or CLARiiON storage systems.

Regardless of the zoning method, the following zones must be available on each fabric:

- Port from RPA 1 to a port from each storage processor (SP-A, SP-B)
- Port from RPA 2 to a port from each storage processor (SP-A, SP-B)
- Port from RPA 1 to a port from RPA 2 (for use in inter-RPA communication)

For an example of the required zoning, see page 40.



- Zoning in RecoverPoint/SE may be performed automatically, dependent on your fabric vendor.

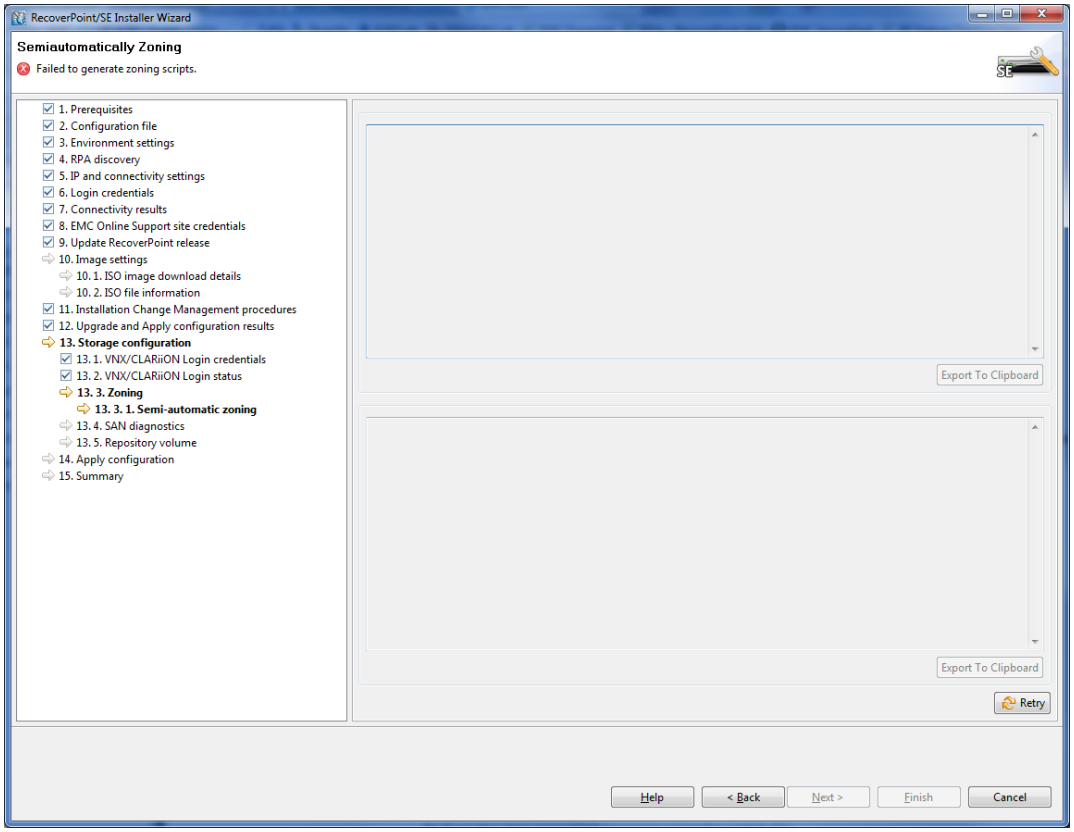
  If you are using Brocade or Cisco fabrics, you may be able to select the Automatic option. Once you enter all of the Fabric credentials (switch type, IP, username, and password), and click **Next**, the Installer implements the zoning automatically.

  Note: In order to use automatic zoning, Telnet connectivity to both Fabrics is mandatory.

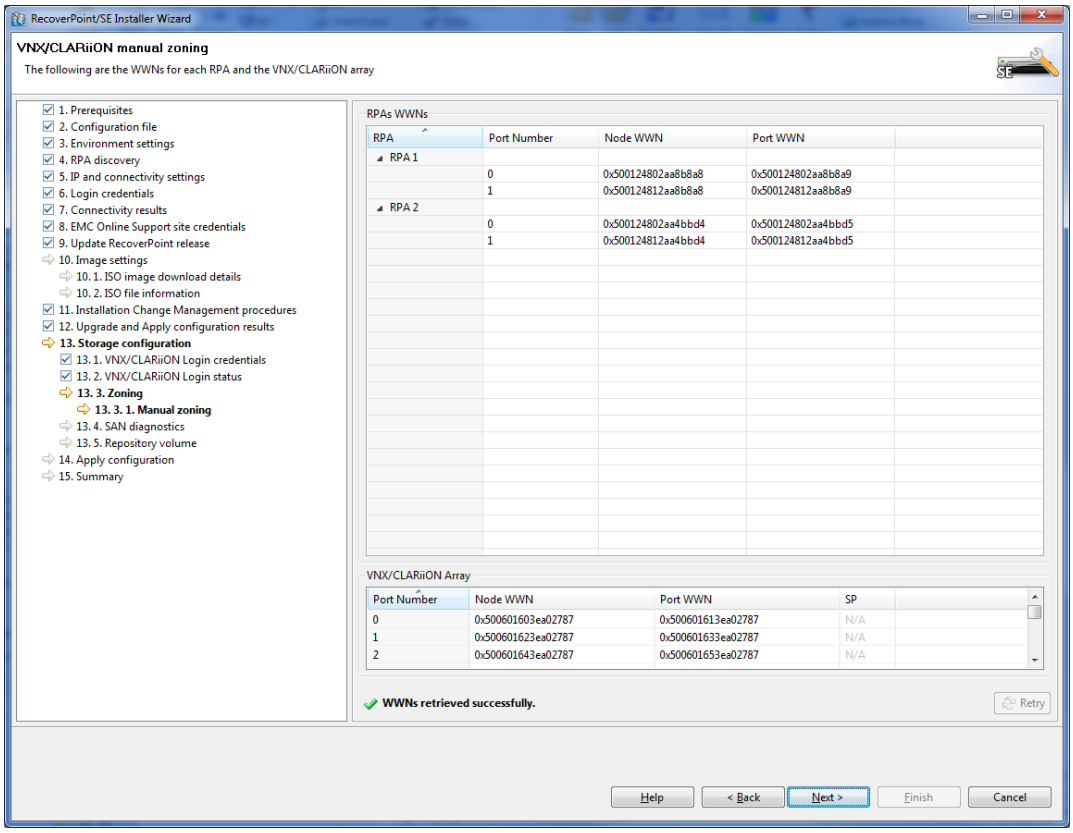
- Alternatively, you may choose the semi-automatic option.

  To use semi-automatic zoning, you must first enter the switch credentials. Upon entering the switch credentials, the RPA connects to the switch to determine which WWNs are connected, and creates a script that can be used to create the zoning accordingly.

  This script is presented onscreen, and can be exported for further use by clicking **Export to Clipboard**.


RecoverPoint/SE Installer Wizard
Semiautomatically Zoning
Failed to generate zoning scripts.
1. Prerequisites
2. Configuration file
3. Environment settings
4. RPA discovery
5. IP and connectivity settings
6. Login credentials
7. Connectivity results
8. EMC Online Support site credentials
9. Update RecoverPoint release
10. Image settings
10. 1. ISO image download details
10. 2. ISO file information
11. Installation Change Management procedures
12. Upgrade and Apply configuration results
13. Storage configuration
13. 1. VNX/CLARiiON Login credentials
13. 2. VNX/CLARiiON Login status
13. 3. Zoning
13. 3. 1. Semi-automatic zoning
13. 4. SAN diagnostics
13. 5. Repository volume
14. Apply configuration
15. Summary
Export To Clipboard
Export To Clipboard
Retry
Help
< Back
Next >
Finish
Cancel

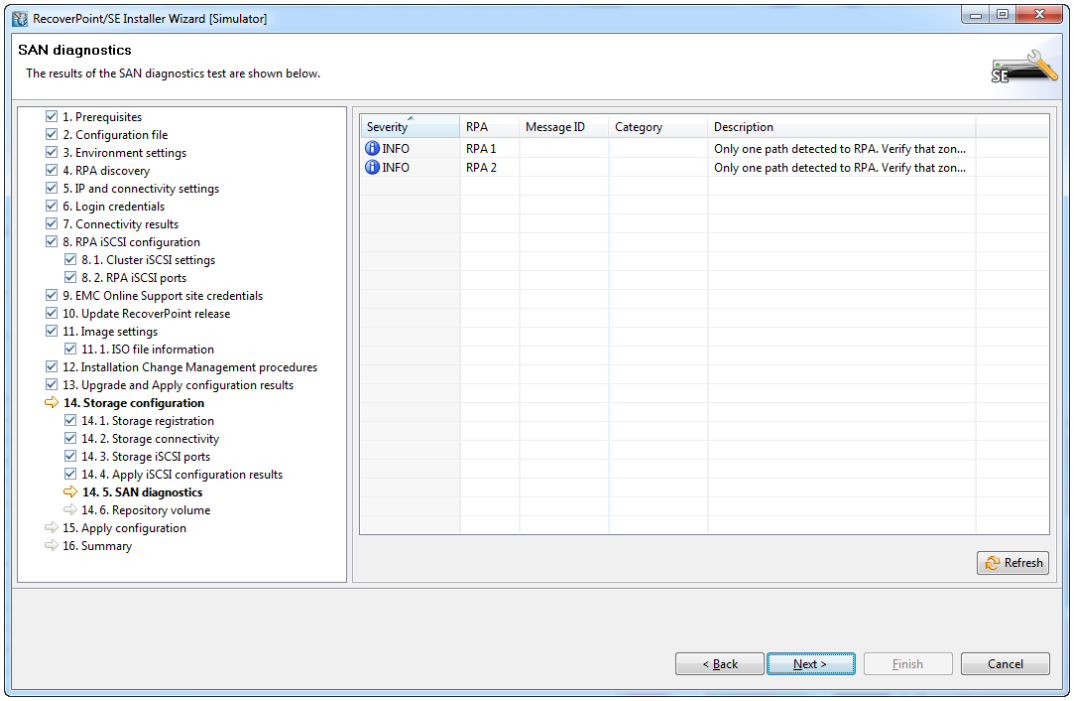
- Finally, you can select the manual zoning option, to perform the zoning yourself.



If you choose to perform zoning manually, use the following example for reference.

Zoning Example	
Fabric A entities:	**Fabric B entities:**
Storage Port (SPA): **[pwwn 50:06:01:64:3d:e0:0a:99]** Storage Port (SPB): **[pwwn 50:06:01:6c:3d:e0:0a:99]** RPA 1, Port 0: **[pwwn 50:01:24:82:00:92:4a:86]** RPA2, Port 2: **[pwwn 50:01:24:82:00:89:9a:c2]**	Storage Port (SPA): **[pwwn 50:06:01:65:3d:e0:0a:99]** Storage Port (SPB): **[pwwn 50:06:01:6d:3d:e0:0a:99]** RPA 1, Port 2: **[pwwn 50:01:24:82:01:b2:4a:86]** RPA2, Port 0: **[pwwn 50:01:24:82:01:a9:9a:c2]**
Zoning	**Zoning:**
RPA 1, Port 0 to Storage Port (SPA, SPB): **zone name RP_London_0_0 vsan 25** **[pwwn 50:01:24:82:00:92:4a:86]** **[pwwn 50:06:01:64:3d:e0:0a:99]** **[pwwn 50:06:01:6c:3d:e0:0a:99]** RPA2, Port 2 to Storage Port (SPA, SPB): **zone name RP_ London _1_0 vsan 25** **[pwwn 50:01:24:82:00:89:9a:c2]** **[pwwn 50:06:01:64:3d:e0:0a:99]** **[pwwn 50:06:01:6c:3d:e0:0a:99]** RPA 1, Port 0 to RPA2, Port 2: **zone name RP_London_COMMON_0 vsan 25** **[pwwn 50:01:24:82:00:89:9a:c2]** **[pwwn 50:01:24:82:00:92:4a:86]**	RPA 1, Port 2 to Storage Port (SPA, SPB): **zone name RP_ London _0_0 vsan 55** **[pwwn 50:01:24:82:01:b2:4a:86]** **[pwwn 50:06:01:65:3d:e0:0a:99]** **[pwwn 50:06:01:6d:3d:e0:0a:99]** RPA2, Port 0 to Storage Port (SPA, SPB): **zone name RP_ London _1_0 vsan 55** **[pwwn 50:01:24:82:01:a9:9a:c2]** **[pwwn 50:06:01:65:3d:e0:0a:99]** **[pwwn 50:06:01:6d:3d:e0:0a:99]** RPA 1, Port 2 to RPA2, Port 0: **zone name RP_London_COMMON_0 vsan 55** **[pwwn 50:01:24:82:01:b2:4a:86]** **[pwwn 50:01:24:82:01:a9:9a:c2]**

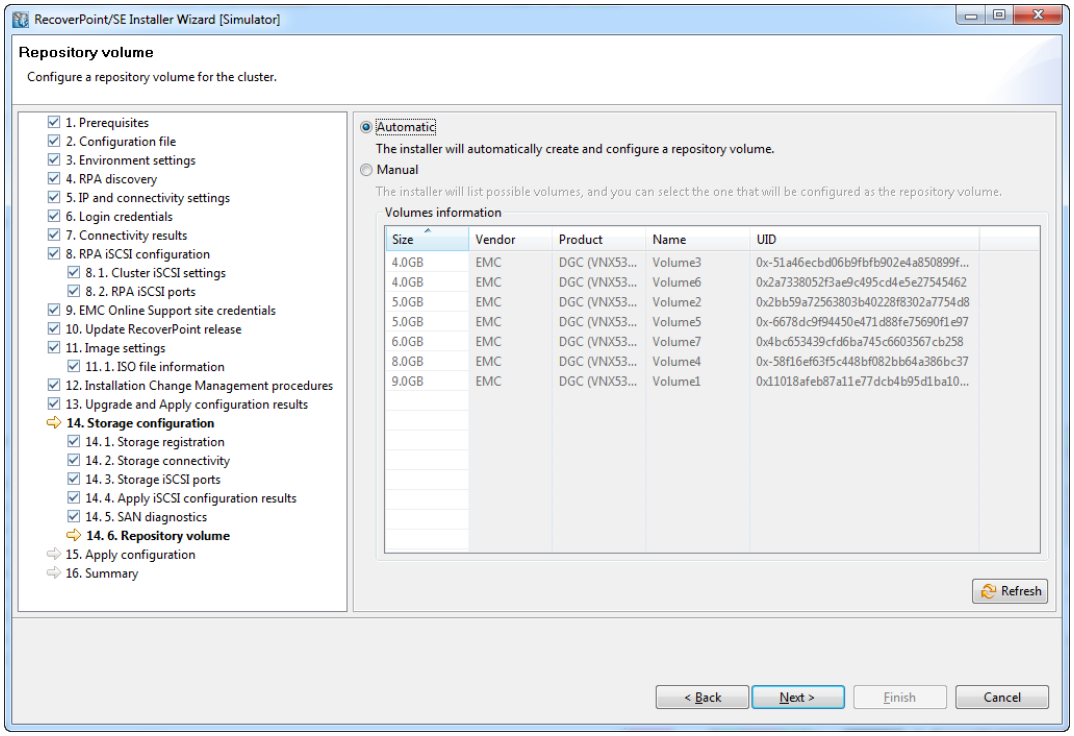
Once you have completed zoning, the SAN diagnostics mechanism informs you whether the components have been successfully identified.



If errors are detected, you can click each error to display additional details about that error. You must correct all SAN discovery errors before proceeding. In addition, it is highly recommended that you resolve all warnings. Click **Refresh** to refresh the list after resolving errors. When all errors are resolved, click **Next**.

Before the storage configuration can be applied at this site, a *repository volume* must be designated. The repository volume is responsible for maintaining the configuration information independently for each RecoverPoint cluster; therefore, you must define a repository volume at both sites.

If you select **Automatic**, the Installer displays a list of all resources mapped to the RPA cluster. Select a resource pool to allow RecoverPoint to automatically provision the repository volume upon it. The minimum size of a repository volume automatically provisioned by RecoverPoint is 5.72 GB.



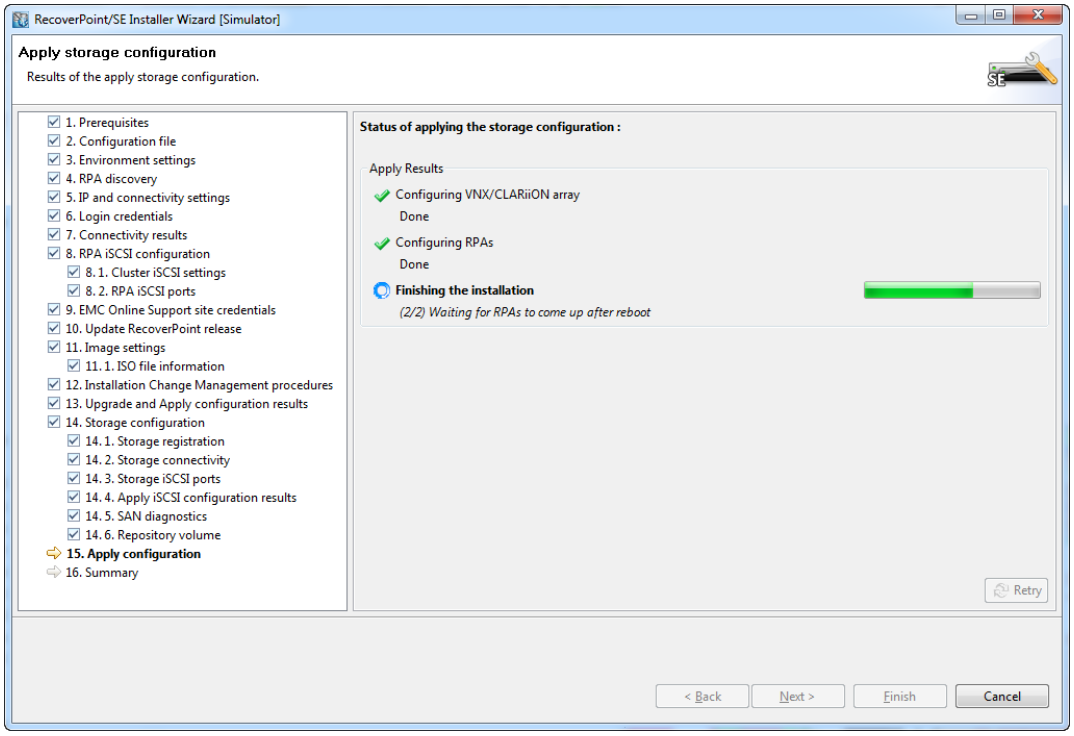
You may also select the **Manual** option to select a volume (i.e. LUN) mapped to the RPA cluster from the list and designate it as the repository volume. In this case the minimum size of the repository volume is 2.86 GB.

In both automatic and manual repository volume provisioning, any capacity beyond the stated minimum capacity is not used. Therefore, best practice is to select resource pools or volumes as close to the minimum size as possible.

Note: Do not change the name of the repository volume after it has been created.

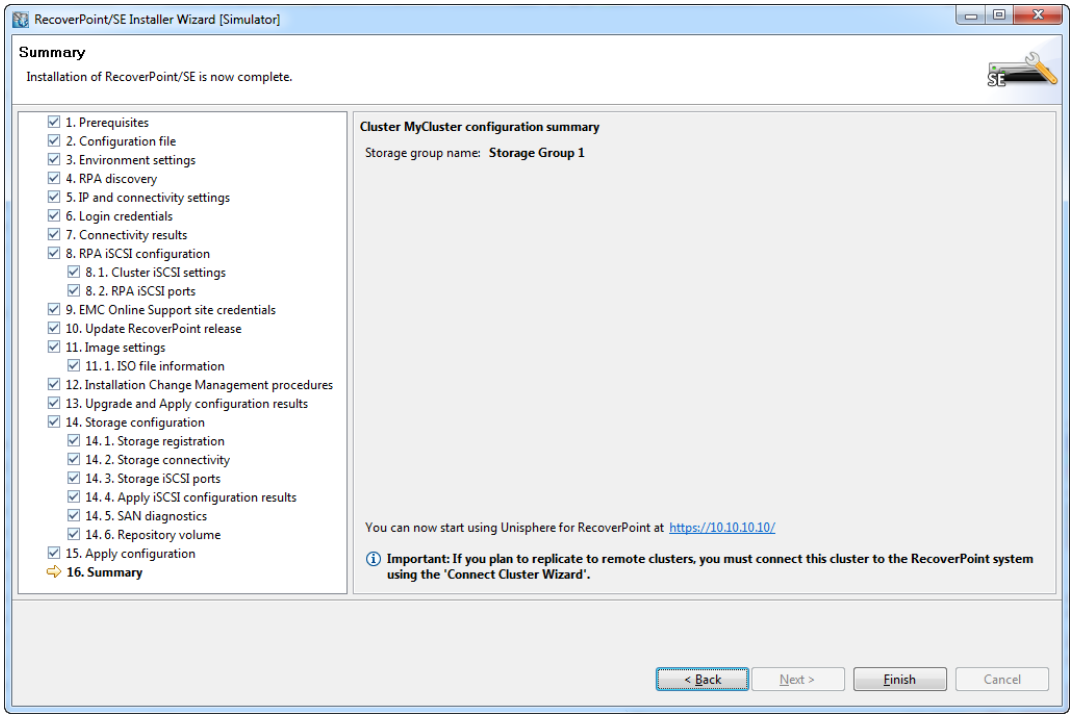
When that process is complete, you are now ready for the Installer to apply the designated configuration (**Apply configuration**) on the RPA cluster and the storage arrays. Click **Next**.

Be aware that the apply storage configuration process may take several minutes. Progress bars indicate that the system is applying settings and completing the installation. Once the progress bars stop, the system will confirm that all components are OK, or that errors are detected. If errors are detected, you can click each error to display additional details about that error.



If you are unable to fix a problem, contact EMC Customer Support.

Once the installation process has been successfully completed, click **Next** to display the Summary screen, including a detailed description of all of the newly created entities in the new cluster.



You may now proceed in any of the following ways:

- If you want to create a second cluster of RPAs, repeat the procedure in this chapter.
- If you want to create a second cluster, but with vRPAs, continue with Create vRPAs, on page 45.
- If you want to connect the two clusters that you have already deployed, go to Connect Cluster, on page 79.
- If you want to proceed directly to Unisphere for RecoverPoint—for instance, to configure your RecoverPoint system over one cluster for continuous local replication—click the cluster management IP address at the bottom of the **Summary** screen, and continue to Chapter 10 on page 87.

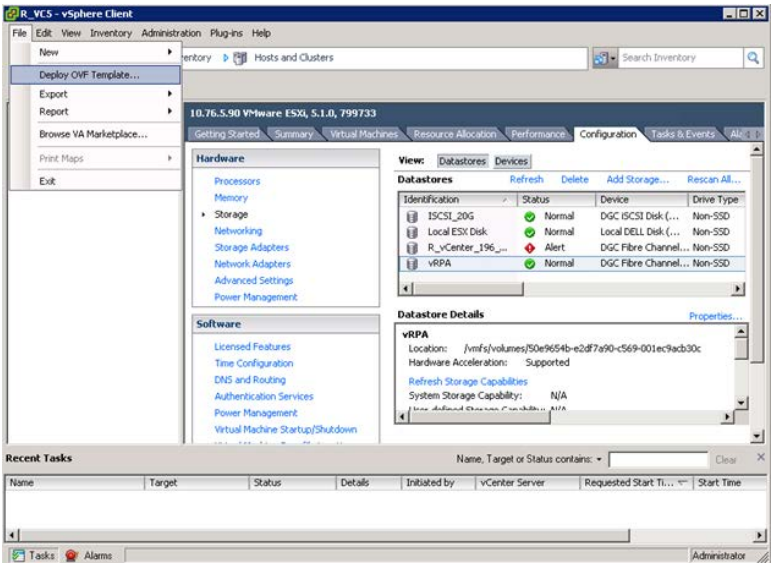
Chapter 7 Create vRPAs

In this chapter, the procedure for creating a virtual RPA (vRPA) is presented.

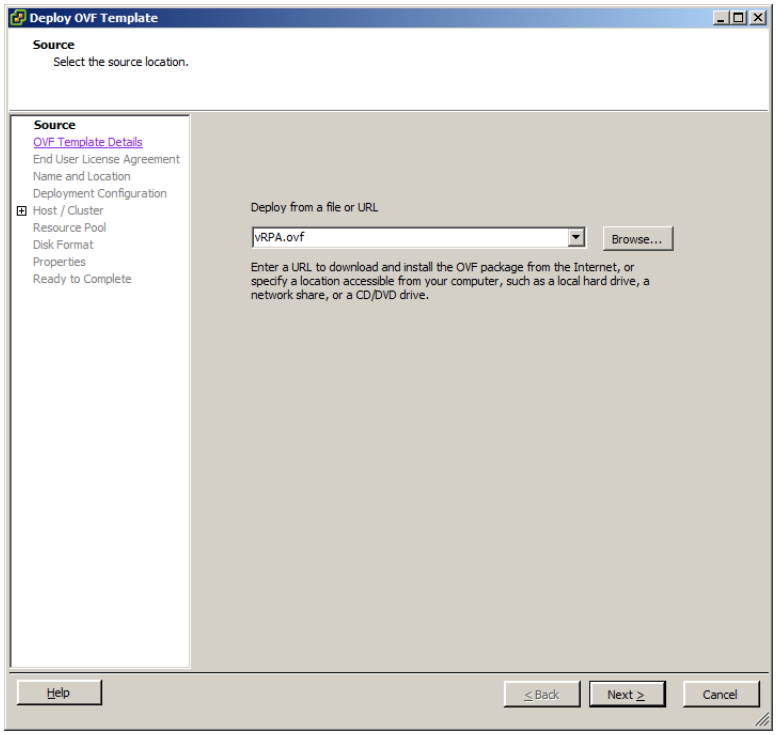
Note the following:

- If possible, all vRPAs should be on separate ESX servers. Minimally, vRPAs 1 and 2 must be on separate ESX servers.
- To download the Virtual RPA Open Virtualization Format (OVF) file from EMC Online Support you must have the requisite permission. EMC grants this permission upon your purchase of the vRPAs that you intend to deploy and your acceptance of the EMC End-User Licensing Agreement.
- You can create each vRPA instance individually from an OVF file. Alternatively, you can create multiple vRPAs by cloning or copying an existing vRPA. If you do, however, you must then enter all configuration information for each cloned vRPA, as per the process presented in “Chapter 8: Deploy RecoverPoint/SE on Virtual RPA Cluster,” on page 53.

At the vCenter management console, from the **File** menu, select **Deploy OVF Template**.

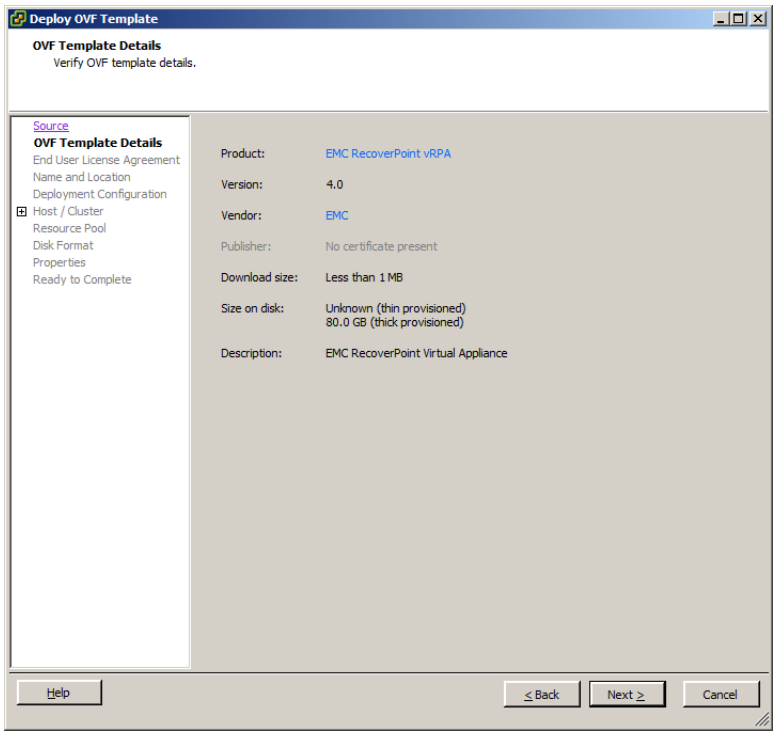


The OVF deployment wizard appears.



Specify the vRPA OVF file location.

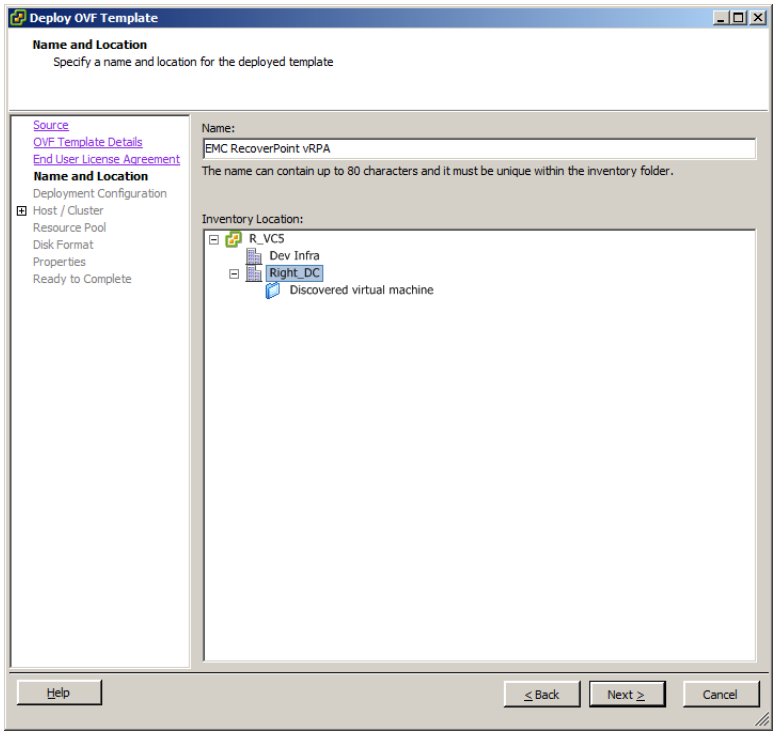
The vRPA **OVF template details** appear, showing the general properties of this OVF template.



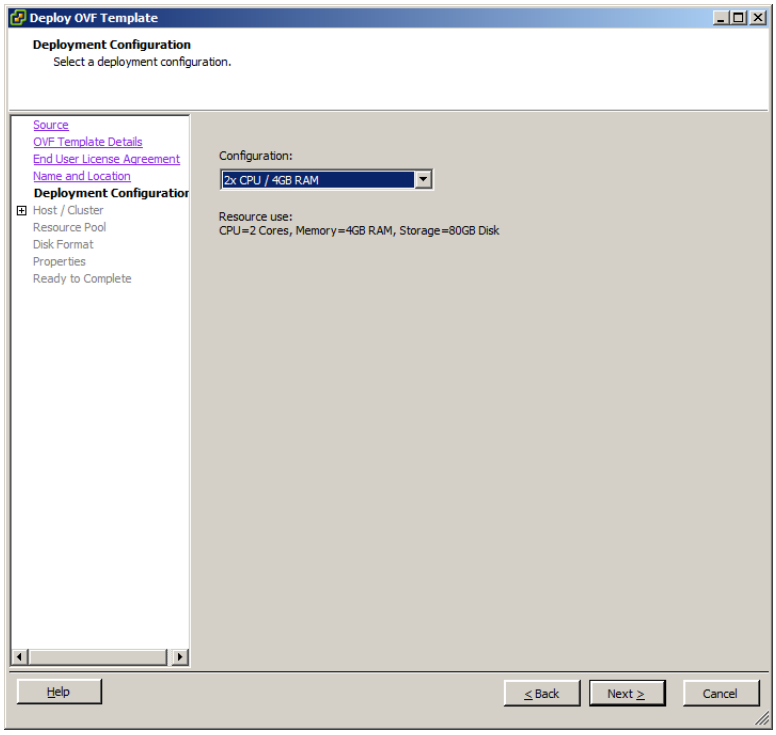
To accept, click **Next**.

The **EMC End-User License Agreement** appears. If you accept the terms, click **Accept** and **Next**.

The **Name and Location** screen appears.

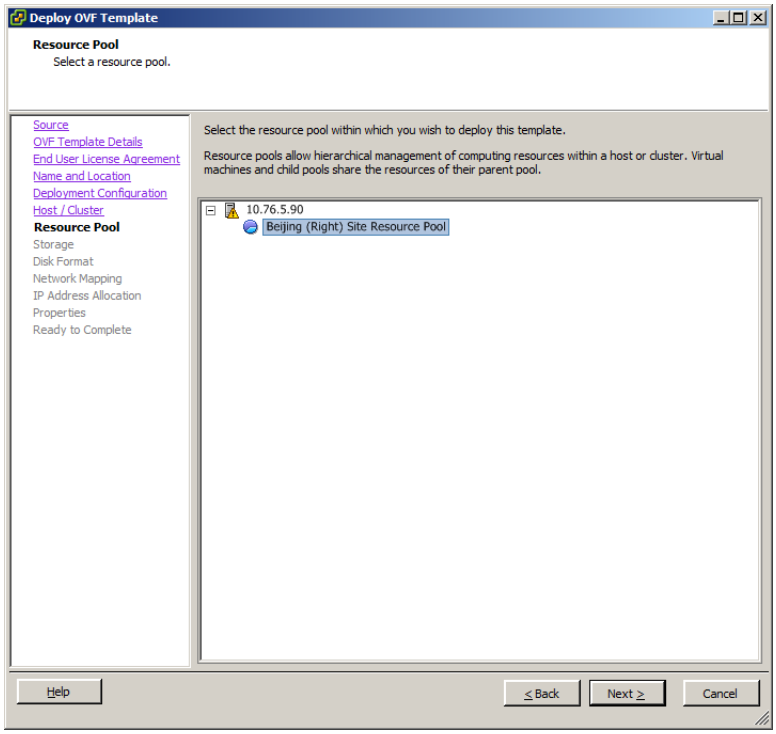


Enter the name you wish to assign to this vRPA. If you enter the name of an existing vRPA, you will not be permitted to continue deployment.



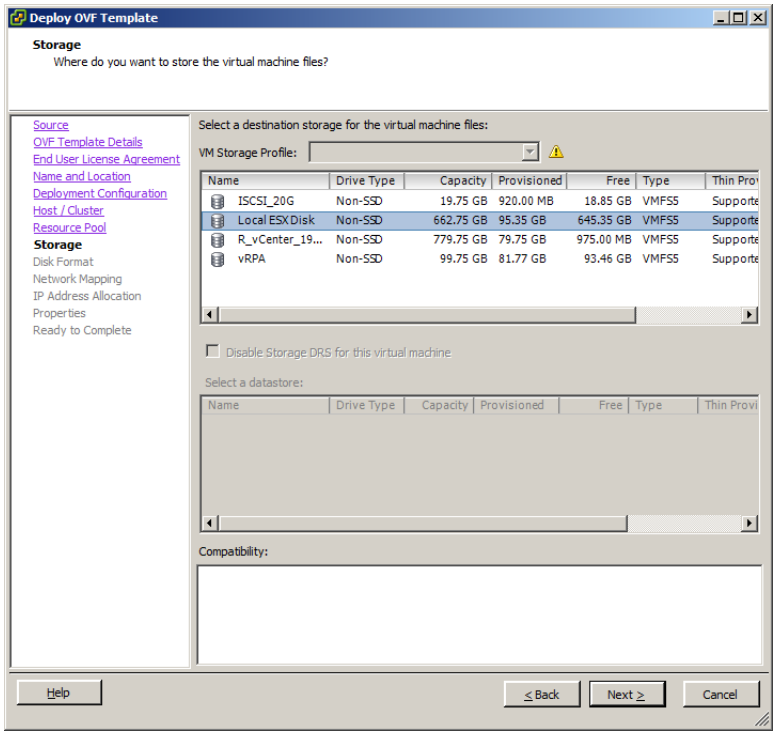
Select the desired configuration profile. The options are as follows:

	2xCPU/4GB	4xCPU/4GB	8xCPU/8GB
virtual CPUs	2	4	8
RAM	4 GB	4 GB	8 GB

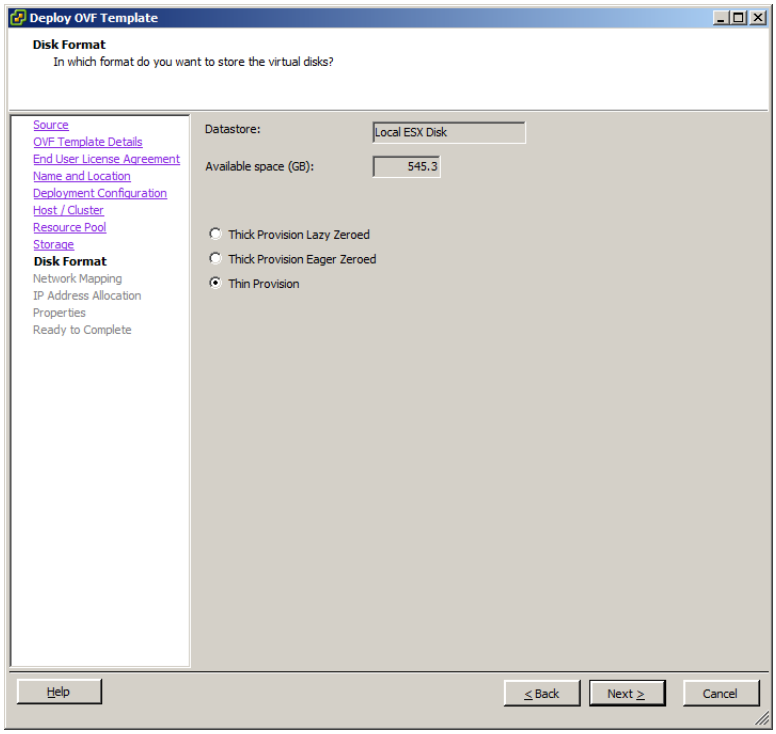


Select the desired vSphere host **resource pool.**

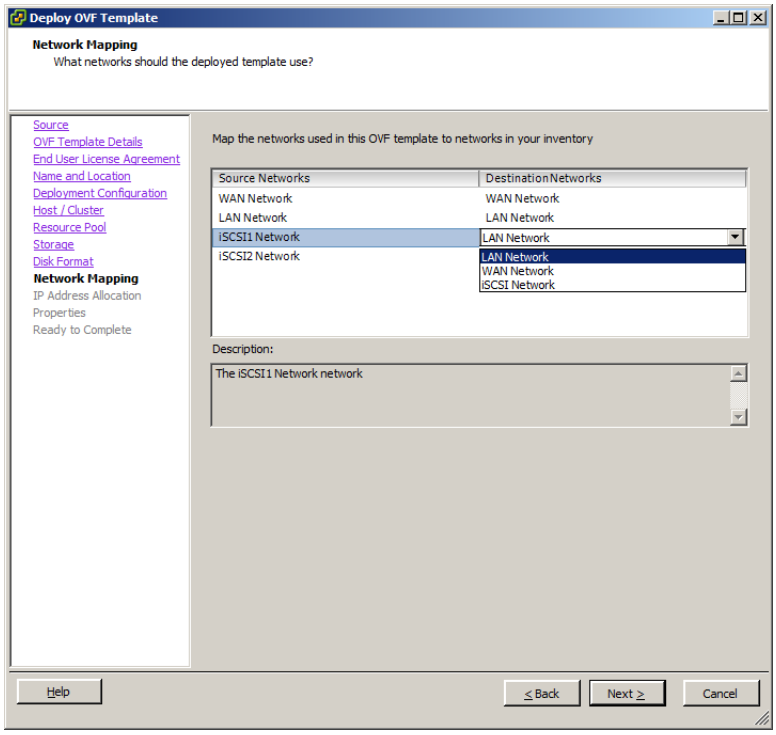
This step is optional because, in the absence of a resource pool, you can choose the vSphere host, which should comply with the minimum resources required by the vRPA.



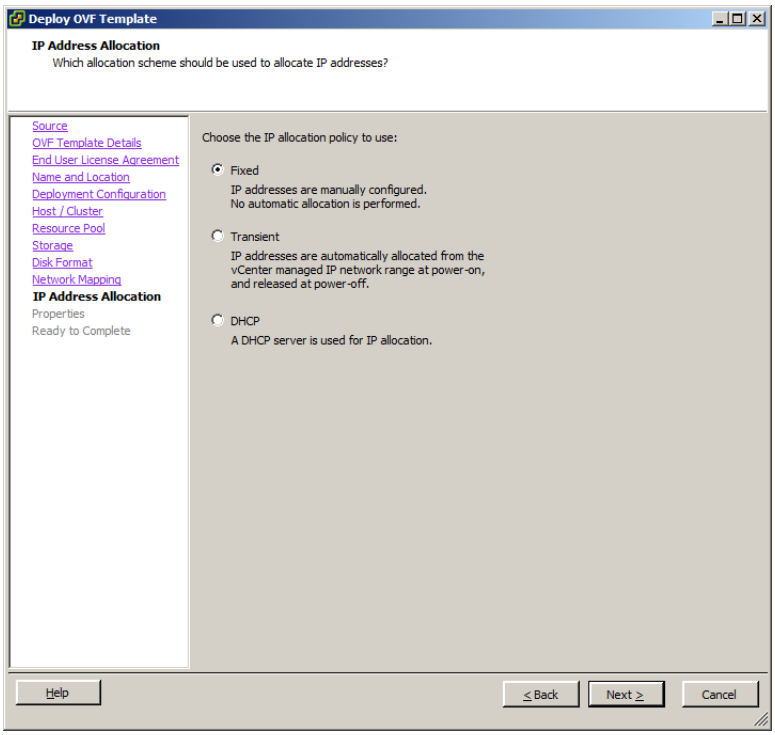
Specify the vRPA **Storage** (datastore) that will be used to host the vRPA virtual machine files. The best practice is to select a high-performance datastore. Do not use a datastore that you intend to replicate with RecoverPoint.



Specify the vRPA datastore virtual **Disk Format.** Select *Thin Provision*.

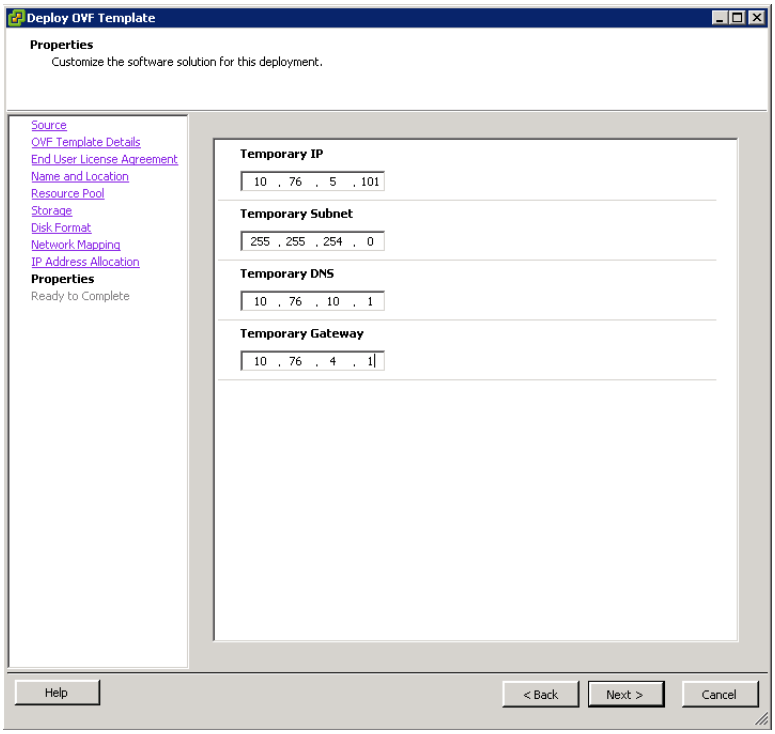


Create the **Network Mapping** to map the four required vRPA Ethernet ports (Source Networks) to the available vSphere virtual networks (Destination Networks). Do not select the internal VMware iSCSI network (*iSCSI Network* option).

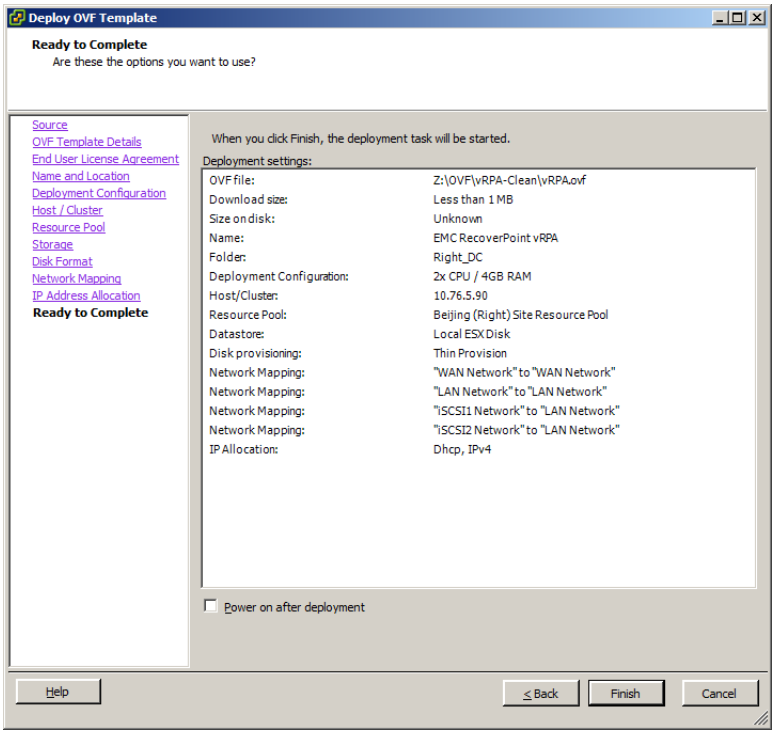


Specify the desired **IP address allocation** policy for the vRPA temporary IP, which will later be used to connect to the Deployment Manager.

If you selected the fixed IP policy, enter the required IP **Properties**.

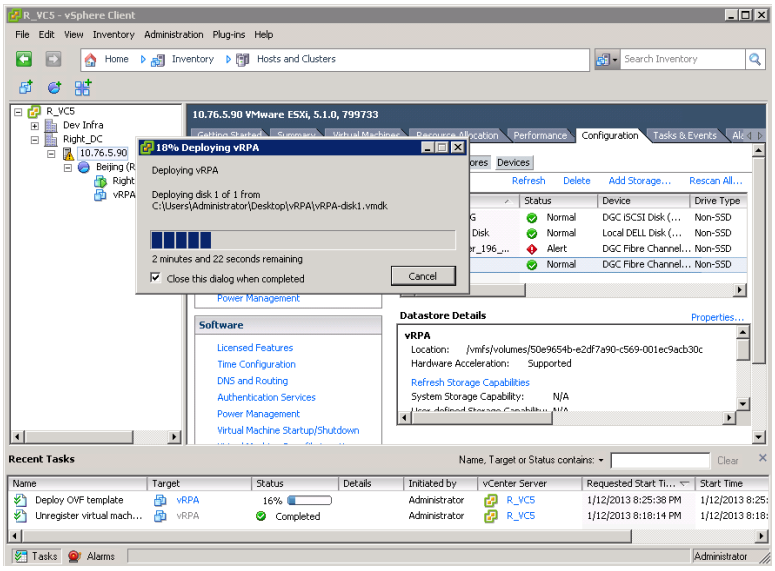


The **Ready to Complete** screen summarizes all your selections.

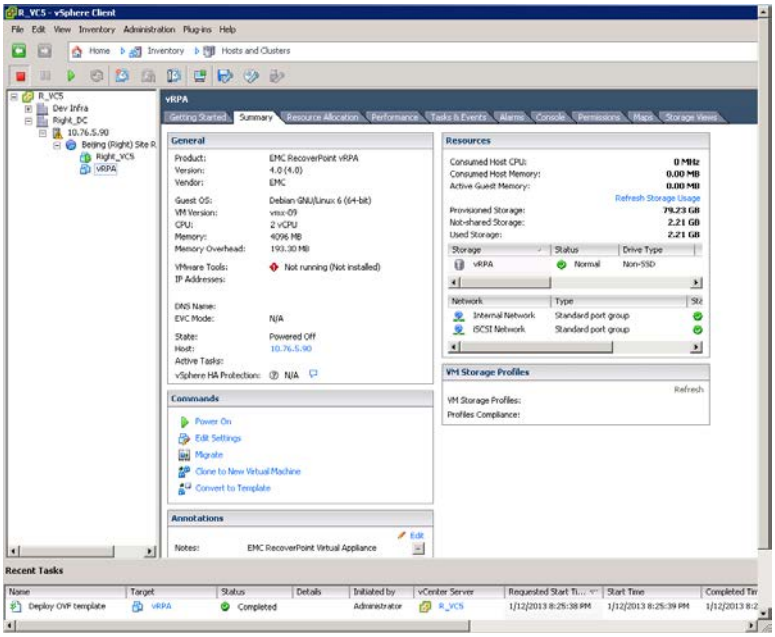


Click **Finish**.

The **Deploying vRPA** box appears, showing the progress of vRPA creation.



When completed, the vRPA **Summary** tab shows the vRPA package contents as specified.



The new vRPA virtual machine is ready to be powered on. The selected IP policy will be implemented automatically when the vRPA is powered up.

Chapter 8 Deploy RecoverPoint/SE on Virtual RPA Cluster

The chapter presents the procedure for deploying virtual RPAs in RecoverPoint clusters.

By this point, you should have completed all of the tasks necessary to prepare for installation of your RecoverPoint/SE software. The status should be as follows:

- The RecoverPoint splitter is enabled on the array (that is, with status of Active).
- The virtual RPAs have been assigned with temporary IPs (given that DHCP is not available).
- The VNX storage processors are fully cabled.
- VNX arrays are running OE for Block version later than 05.32.000.5.201.
- VNX arrays are pre-configured with iSCSI ports.
- Virtual RPAs have been created, on ESXi 5.0 (or later) servers, using the RecoverPoint OVF file (see Chapter 7: “Create vRPAs,” on page 45).
- VMware vCenter Server is 5.0 or later, with at least one registered vSphere 5.0 or later.
- Valid segmented network infrastructure between:
  - The vSphere host and the VNX array (iSCSI 1G/10G)
  - The vSphere host and the existing RPA cluster networks (LAN and WAN)
- Reserved quota for virtual system resources: CPU, memory, disk.
- Four virtual networks: LAN, WAN, iSCSI1, iSCSI2.
- The IP & SAN Setup Details Templates are completed and available.
- Java™ 7 (update 13 or higher), 32-bit, must be installed on your workstation, that is, the machine on which you will be running the Deployment Manager software. It is highly recommended to have the latest Java 7 update installed.

If you have not completed all of the prerequisites for installation, you should do so now, before continuing.

The RecoverPoint/SE Installer Wizard installs one RPA cluster at a time. Therefore, if you want to deploy a cluster at a second site, run the wizard a second time.

Note: This cluster is called an "RPA cluster", regardless of whether it contains physical or virtual RPAs. Mixing physical RPAs and virtual RPAs in the same cluster is not allowed.

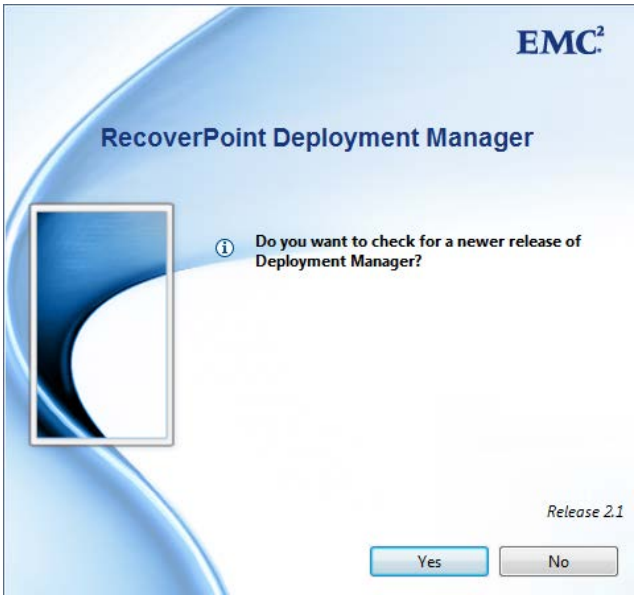
If you install two clusters, you will then need to run the Connect Cluster Wizard to enable replication and communication between them.

Some notes about the RecoverPoint/SE Installer Wizard:

- To improve system performance, enter values in all fields presented by the wizard.
- Java™ 7 (update 13 or higher), 32-bit, must be installed on the local workstation, that is, the machine on which you will be running the wizard. It is highly recommended to have the latest Java 7 update installed.
- Whenever you click **Next**, the system automatically saves configuration settings in the configuration file.

Once all preparations for installation are complete, extract the files from the RecoverPoint Deployment Manager zip file (which you should find in your RecoverPoint/SE Installation Kit) to a local disk, and then open RecoverPoint_DM.exe.

You are prompted to check for a newer release of Deployment Manager.



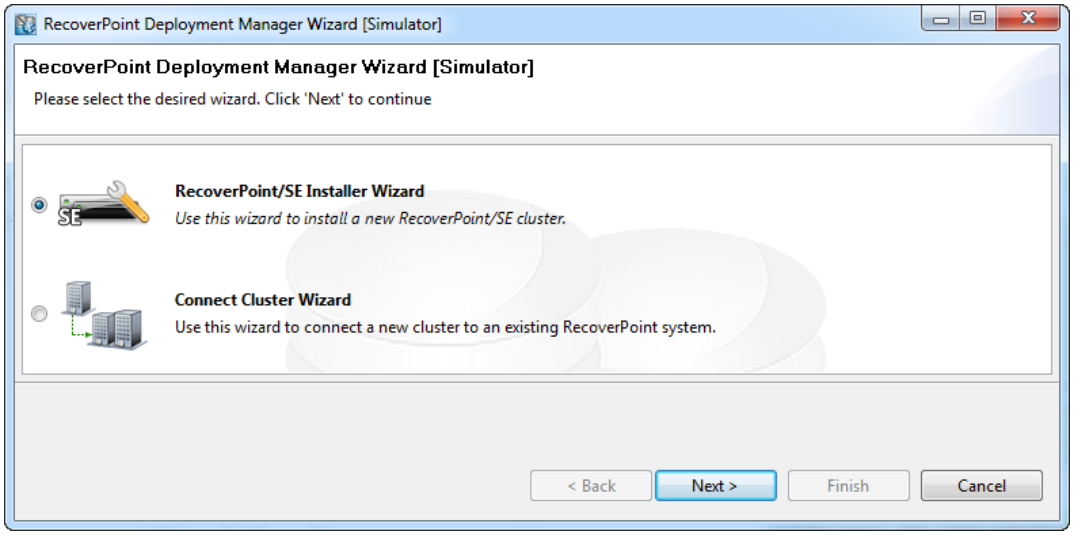
If you are using the Deployment Manager from the RecoverPoint/SE Installation Kit that you just downloaded from EMC Online Support, you can be assured that you have the latest release, so click **No**.

You are prompted to choose which RecoverPoint/SE release you plan to install. Select **RecoverPoint 4.0 or later releases**.

The Login screen appears.

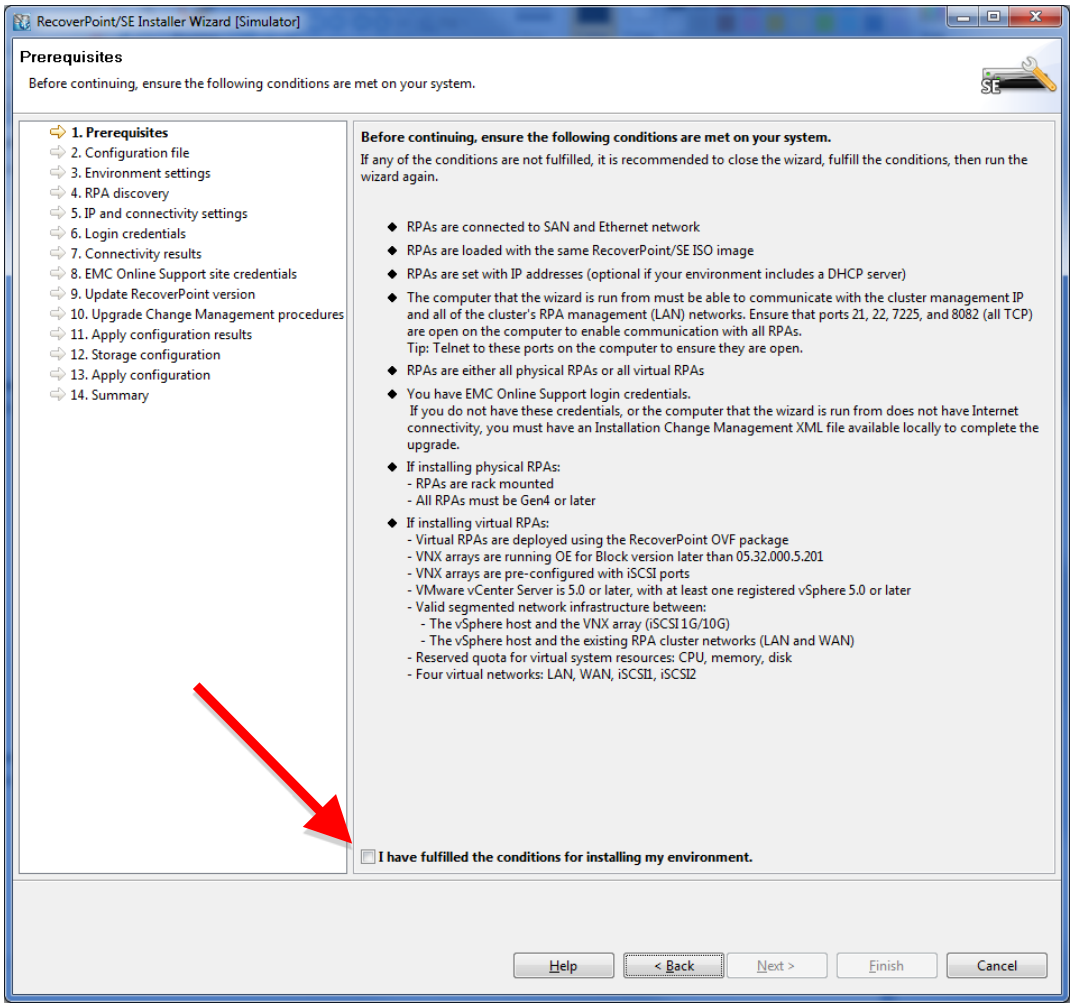
Select **Install RecoverPoint/SE**, and click **Login**.

The RecoverPoint Deployment Manager Wizard screen appears.



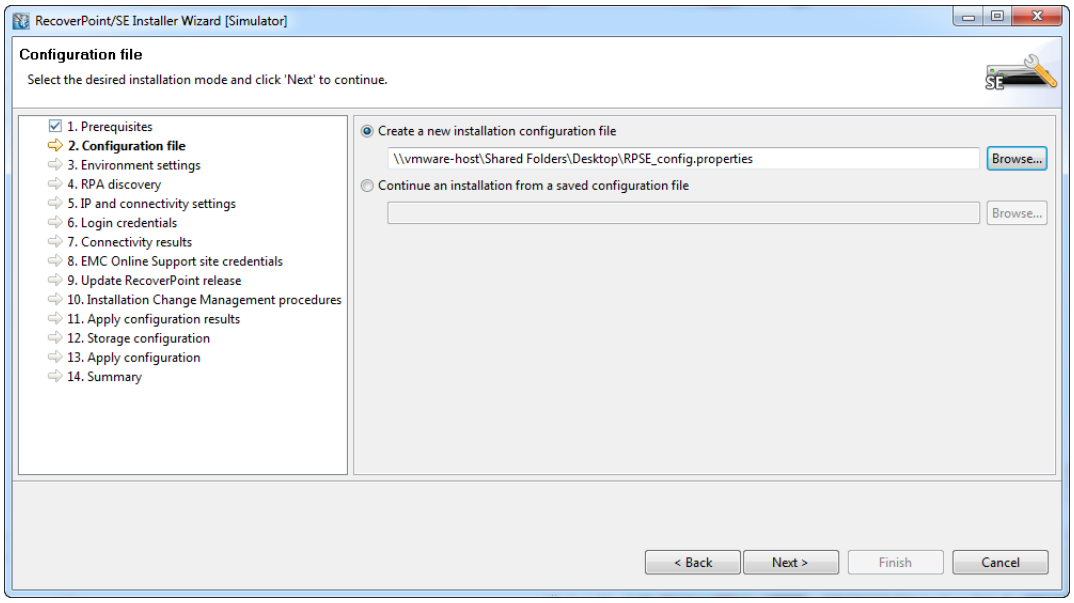
Select **RecoverPoint/SE Installer Wizard.**

The Prerequisites screen appears.



Assuming all of the prerequisites have been completed, select the checkbox, and continue with the installation.

The Configuration file screen appears.

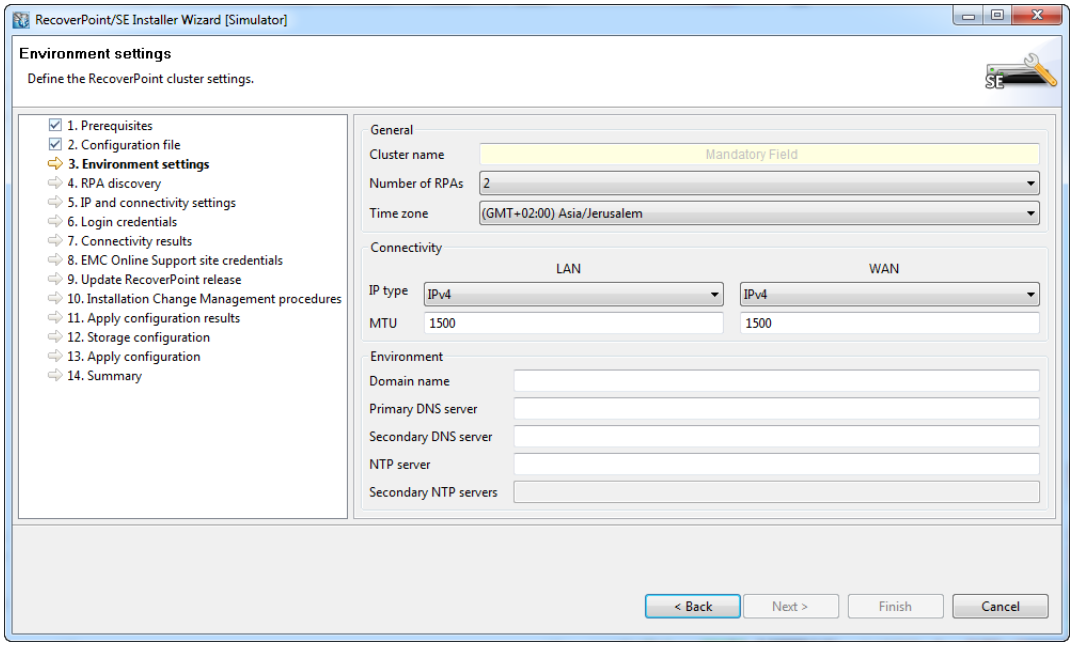


Select the first option, **Create a new installation configuration file**. Then, specify the path for the file, RPSE_config.properties, as your installation configuration file. It will be used to store the installation settings that you specify during this installation for backup purposes.

The same file should be specified when continuing an installation that was interrupted prior to completion. In that case, select the second option, **Create or continue an installation from a saved configuration file**, and enter the filename there.

Note that the RecoverPoint installation process is performed on one cluster at a time.

When you are done, click Next to display the Environment settings screen.



Begin by entering the general parameters that define the cluster:

- Cluster name
- Number of vRPAs
- Time zone

Add connectivity settings:

- LAN IP type (IPv4 or IPv6, or both) and MTU (for which the default value is 1500, and should not be changed)
- WAN IP type (IPv4 or IPv6) and MTU (for which the default value is 1500, and should not be changed)

Note: In the remainder of this guide, the default assumption is that your LAN and WAN IPs use IPv4.

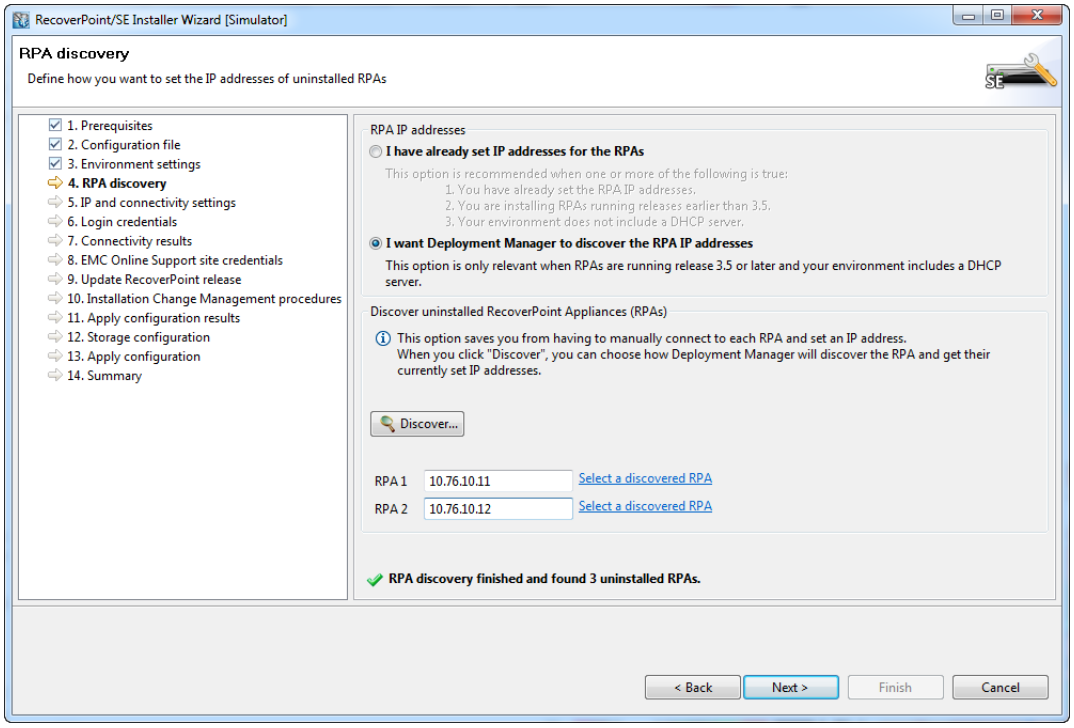
Finally, enter the following environment parameters, *all of which are optional*:

- Domain name
- Primary and, if available, secondary DNS server
- NTP server or servers

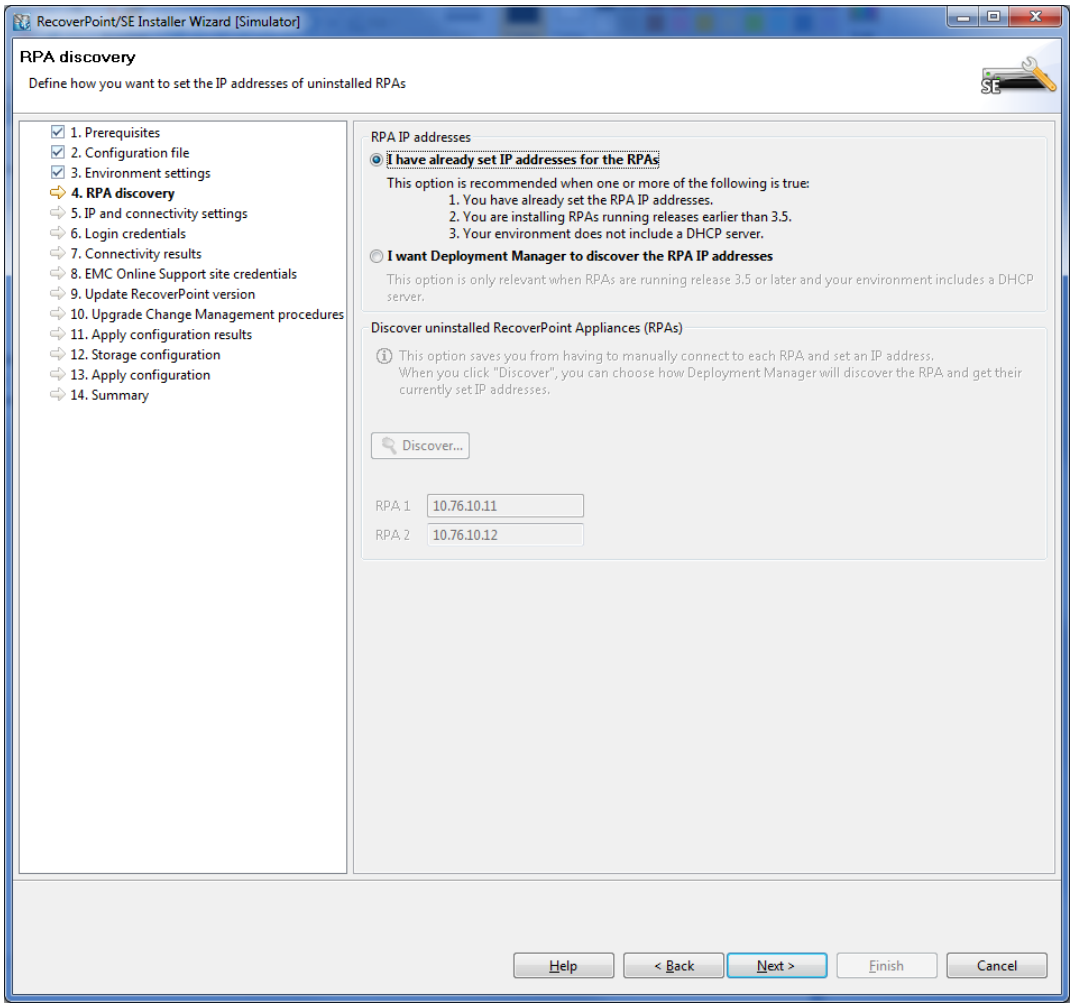
  Note: NTP servers can be defined only in a single site, where the rest of the vRPAs are synced with the NTP-defined site.

Once you have completed entering the Environment settings, you are ready to specify the vRPA and site IP addresses. Click **Next** to continue.

If your environment includes a DHCP server, and you have not already assigned IP addresses to your vRPAs, you can instruct Deployment Manager to auto detect vRPAs for which you have not set a temporary IP address. To do so, select the **I want Deployment Manager to discover the RPA IP addresses** option on the RPA Discovery screen. Upon clicking **Discover**, the Deployment Manager discovers the vRPAs on your network automatically, based on the IPs assigned by the DHCP server. Your workstation will use these temporary IP addresses to communicate with the vRPAs during installation.



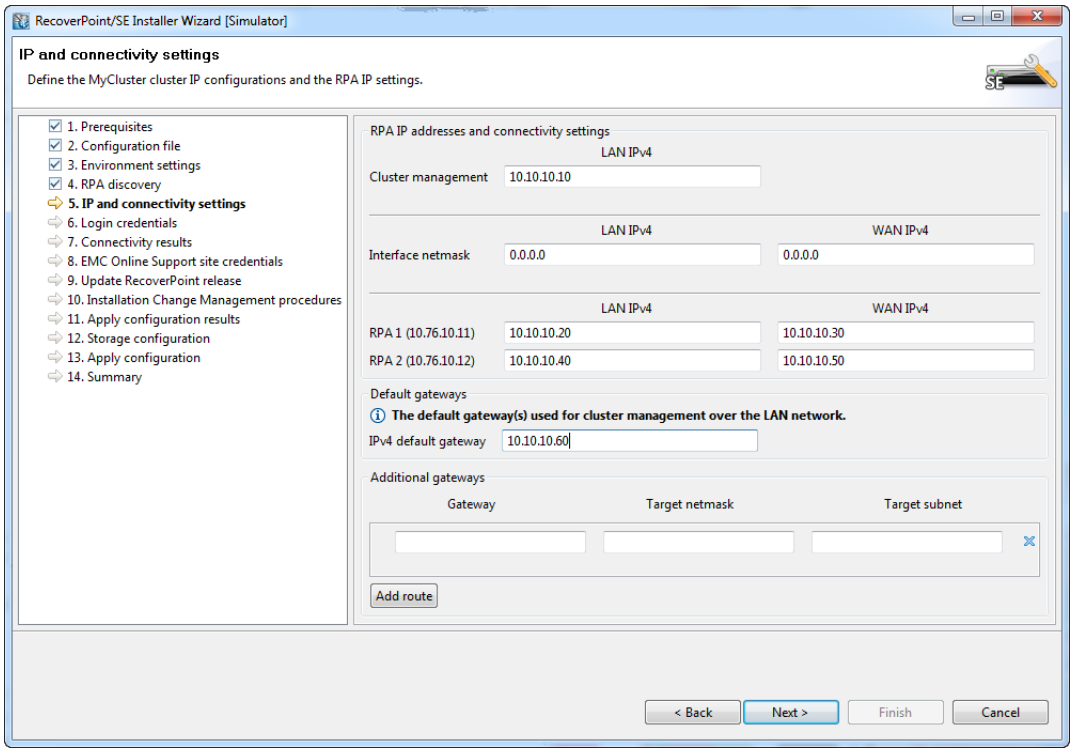
Alternatively, if you have already assigned the IP addresses to your vRPAs, choose the first option, **I have already set IP addresses for the vRPAs**.



You may now continue and configure the IPs for cluster management and vRPAs, and relevant Management (LAN) and WAN subnet and gateway settings.

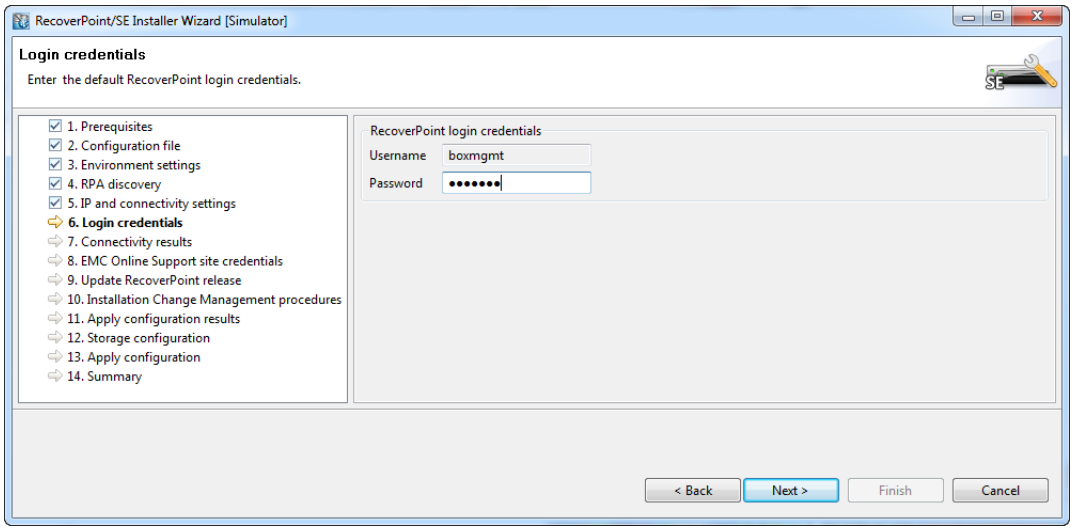
When you are done, click **Next** to display the IP and connectivity settings screen.

Be advised that the cluster management IP should reside on the same network as the LAN interface for the RPAs (labeled as LAN IPv4).

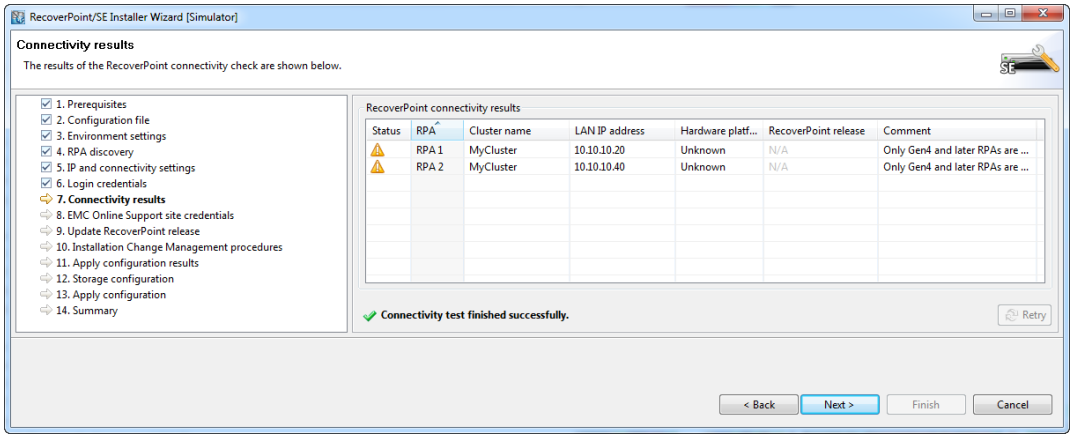


The **Cluster management IP** will serve as a floating IP address (also known as a virtual IP address), and will be used to control the Unisphere for RecoverPoint management application GUI.

When you have completed assigning these IP settings, continue to the Login credentials screen.

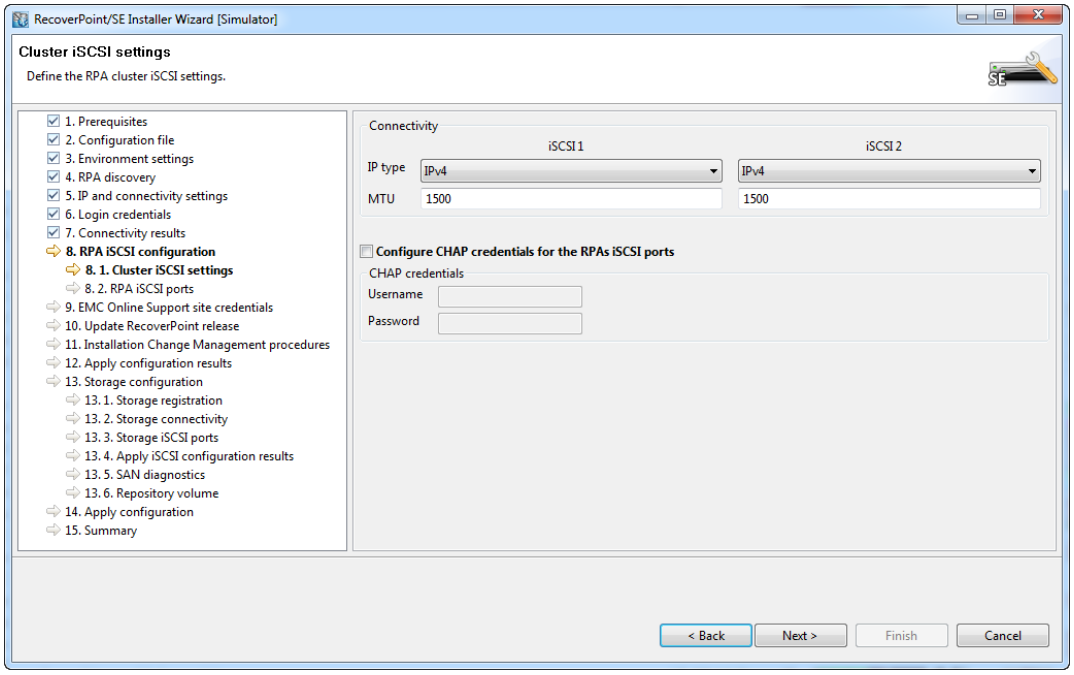


Enter the default password, **boxmgmt**. Upon clicking **Next**, the system validates connectivity with each of the RPAs in the cluster, and presents the results in the Connectivity results screen.



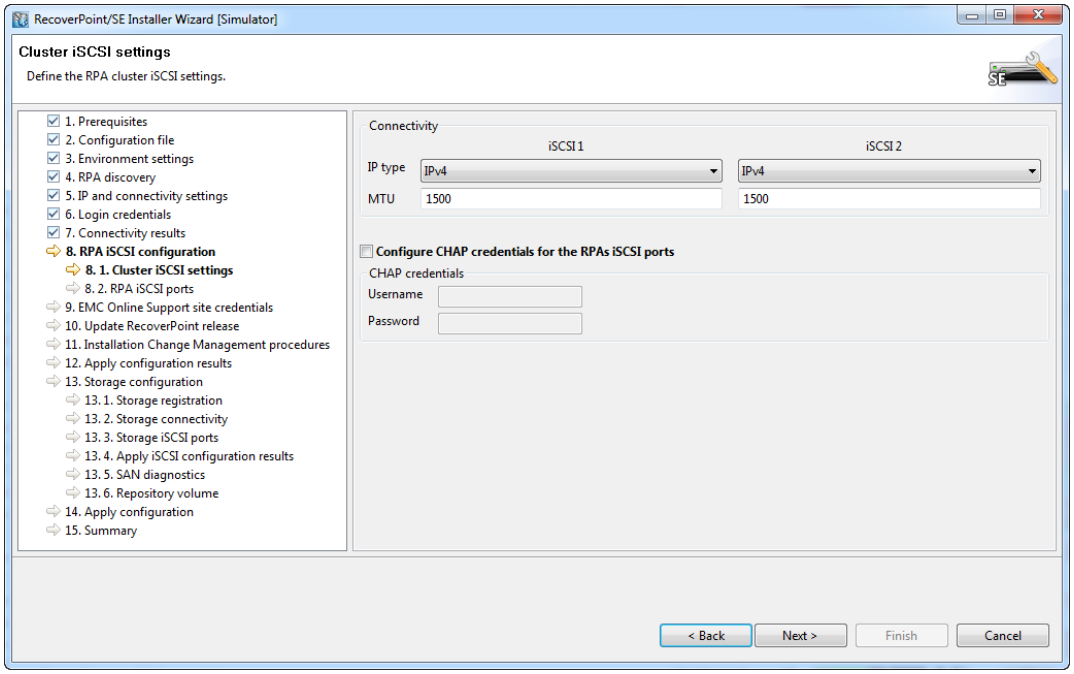
If there are connectivity errors, you must correct them, and then click **Retry** to revalidate the connectivity statuses. When the "Connectivity test finished successfully" message is displayed, click **Next** to continue.

You must also define the iSCSI settings for your vRPA cluster, in the Cluster iSCSI settings screen, which now appears.



Once again, the default value for MTUs is 1500, and should not be changed. If relevant, select the **I want to configure CHAP credentials for the RPAs iSCSI ports** checkbox, and modify the CHAP username and password.

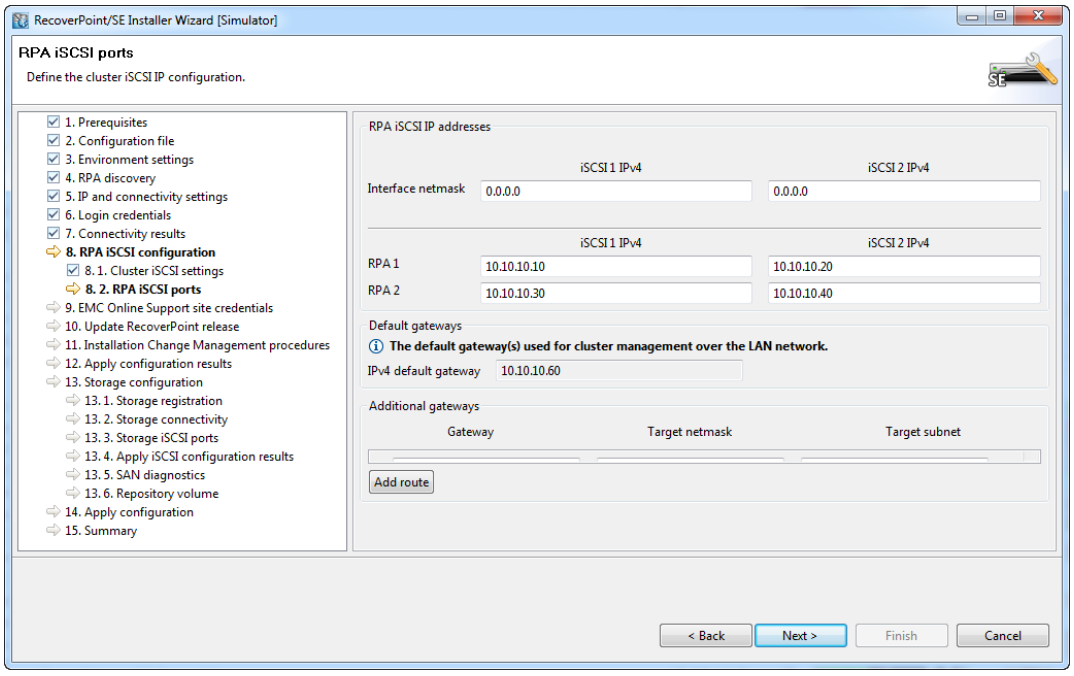
When you press **Next**, the RPA iSCSI ports screen appears.



As with the WAN and LAN, you must define the RPA IP and gateway settings for the iSCSI networks.

It is strongly recommended to place the iSCSI interface on a different subnet than the LAN and WAN interface, to avoid iSCSI communication errors. Click **Next**.

The RPA iSCSI ports screen appears.

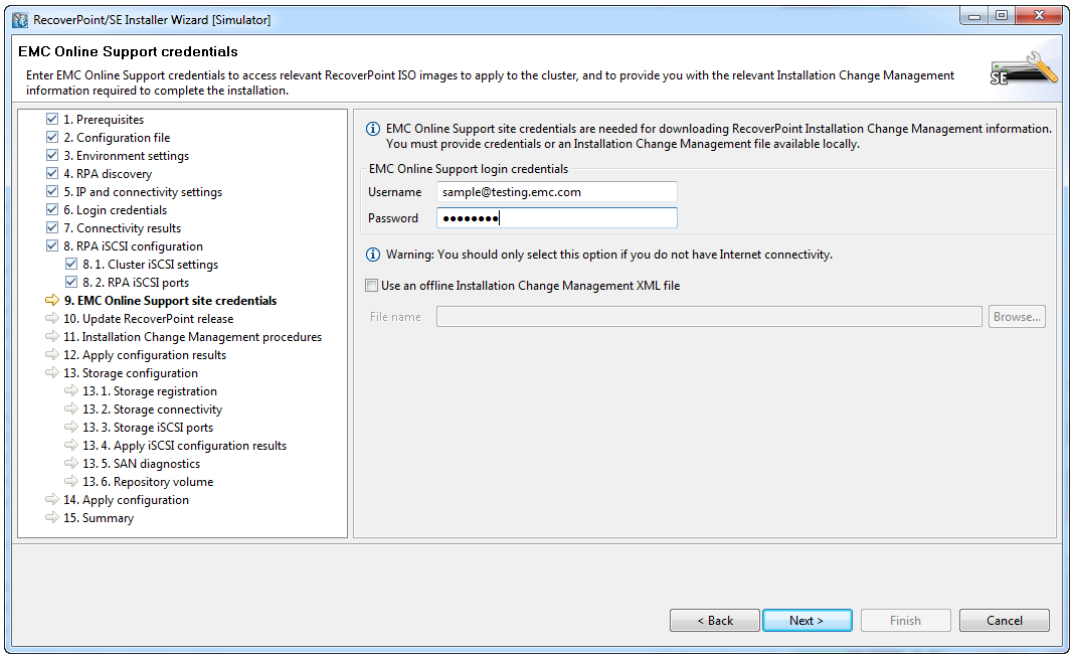


The current cluster iSCSI IP configurations and RPA iSCSI IP settings are displayed. Enter the iSCSI settings for the new RPAs.

- Interface netmask — LAN and WAN, based on IP type (IPv4 or IPv6)
- RPA — iSCSI 1 and iSCSI 2 IP addresses of the existing RPAs in the cluster, and the addresses of the new RPAs you are adding to the cluster.
- Default gateway — which cannot be modified.
- Additional gateways — as defined by Gateway, Target netmask, and Target subnet

Click **Add route** to add additional gateways, and then click **Next**.

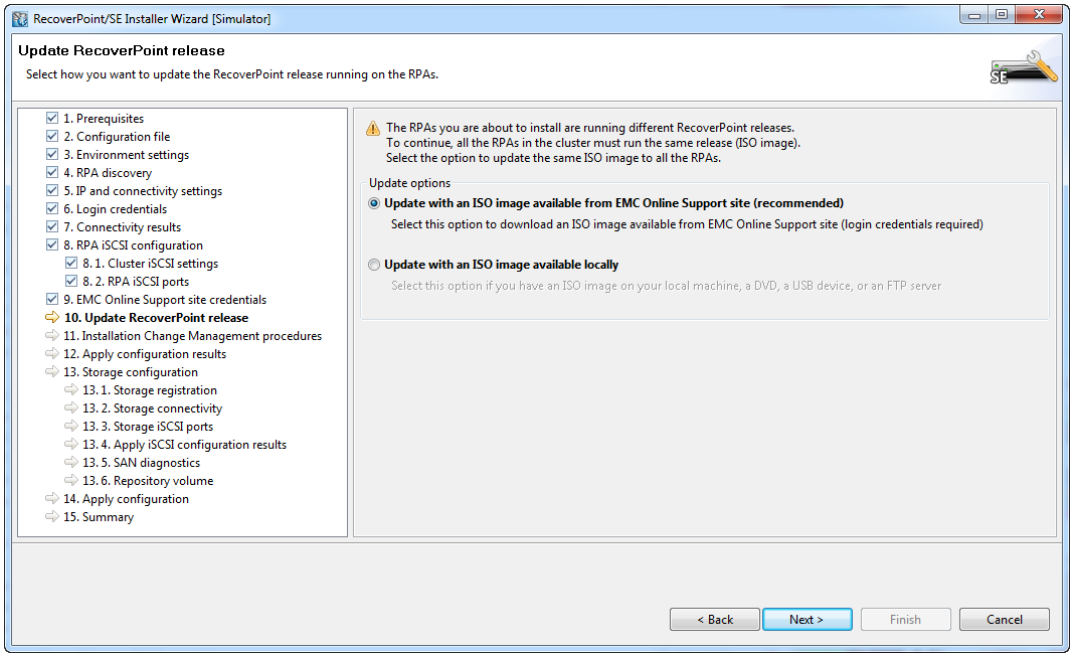
The EMC Online Support credentials screen appears.



Enter EMC Online Support site credentials (username and password) to access relevant RecoverPoint/SE ISO images to apply to the cluster, and to provide you with the relevant Installation Change Management information required to complete the installation.

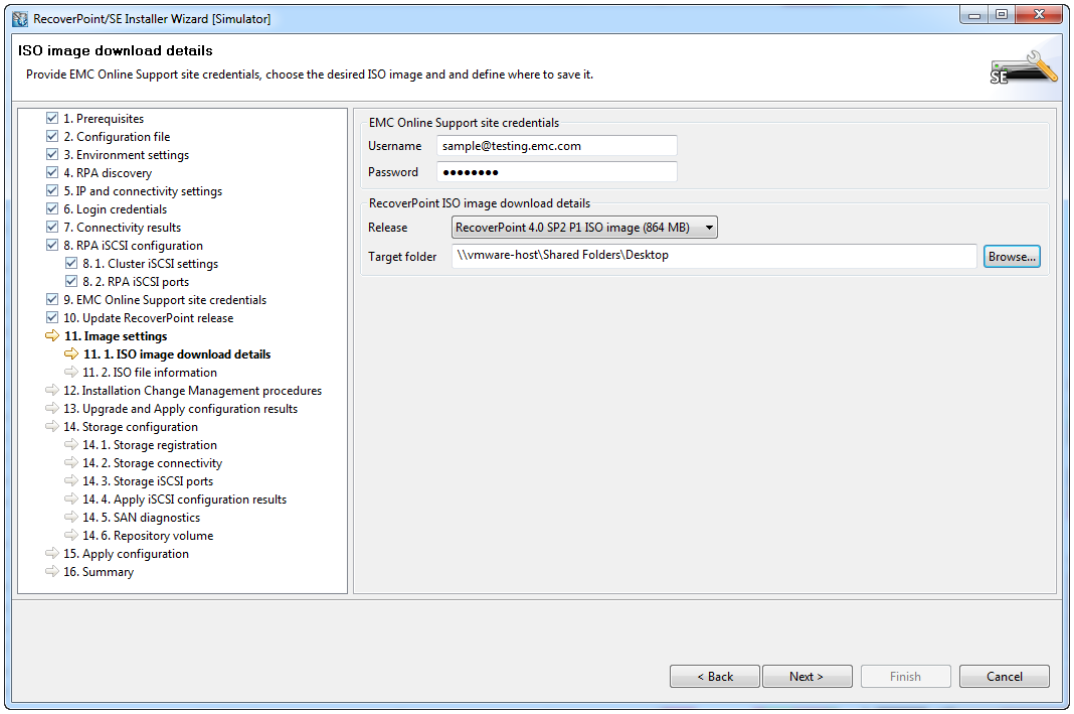
If you are in a "dark site"—that is, where you do not have Internet connectivity—select the **Use an offline Upgrade Change Management XML file** checkbox, and enter the desired filename.

The Update RecoverPoint release screen appears.



The message at the top of this screen reports the RecoverPoint release that is currently running on all of the RPAs in your cluster (that is, the ISO image that comes pre-installed), or alternatively notifies you that not all of your RPAs are running the same image. To ensure that all of your RPAs are running the latest image for the current release, it is recommended that you select **Update with an ISO image available from EMC Online Support**.

The ISO image download details screen appears.

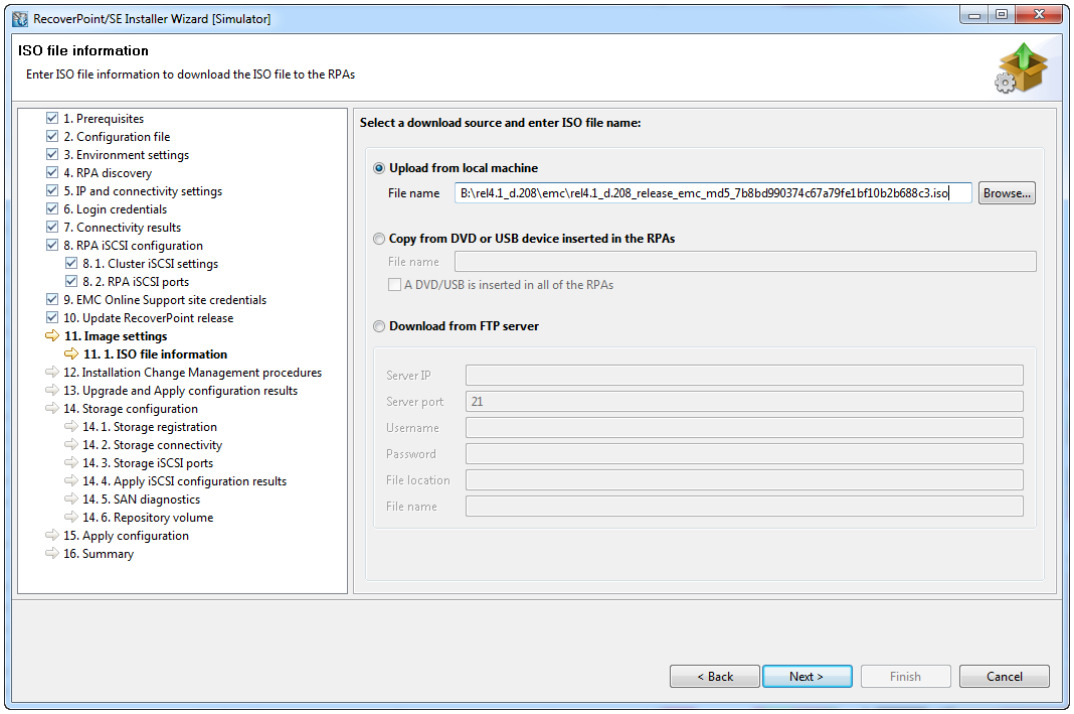


To continue:

- Enter your EMC Online Support credentials.
- Select the RecoverPoint version you wish to download.
- Indicate where you want to save it on your local machine (that is, the machine running Deployment Manager).
- Click **Next**.

The ISO image downloads to your local machine.

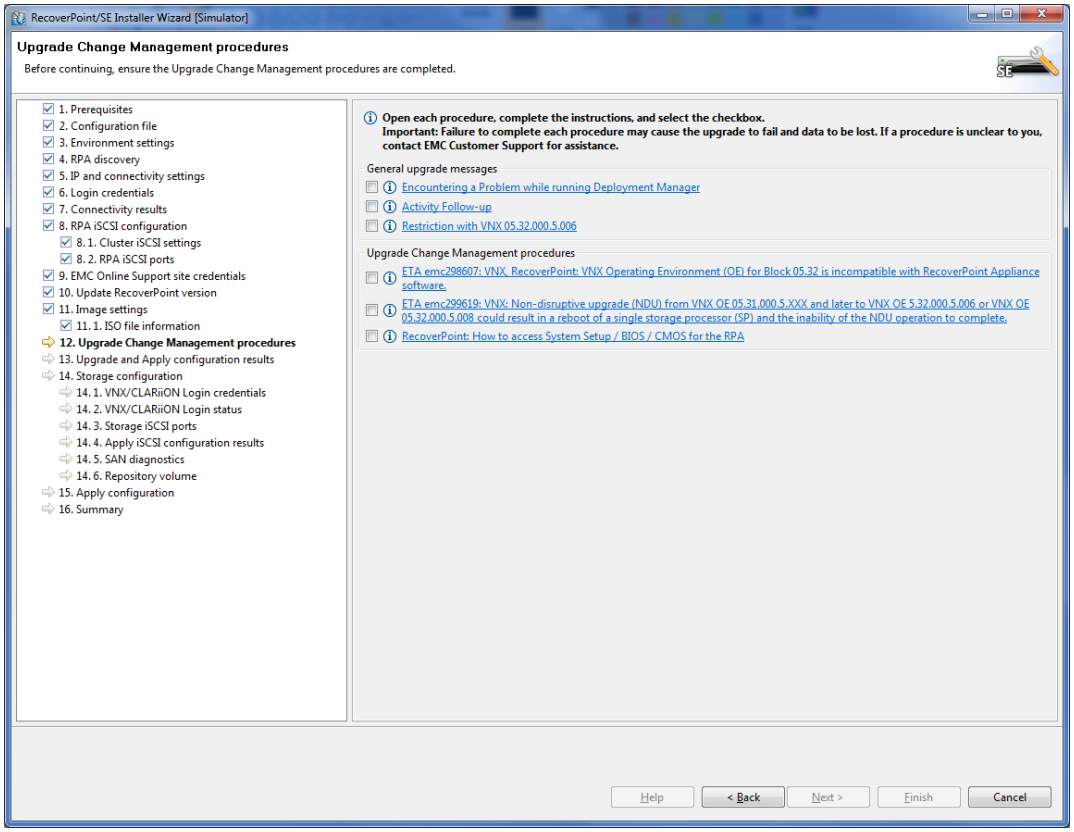
When the download is complete, the ISO file information screen appears.



Deployment Manager offers several methods for delivering the ISO to the RPAs:

- Upload the ISO directly to the RPAs from your workstation (that is, the “local machine”).
- Copy the ISO file to a USB device or burn it on a DVD, and then simply connect or insert the media into the RPA.
- Upload the ISO file to an FTP site, and have the RPAs download the ISO from the FTP site.

Regardless of the delivery method, the Installation Change Management procedures screen appears.

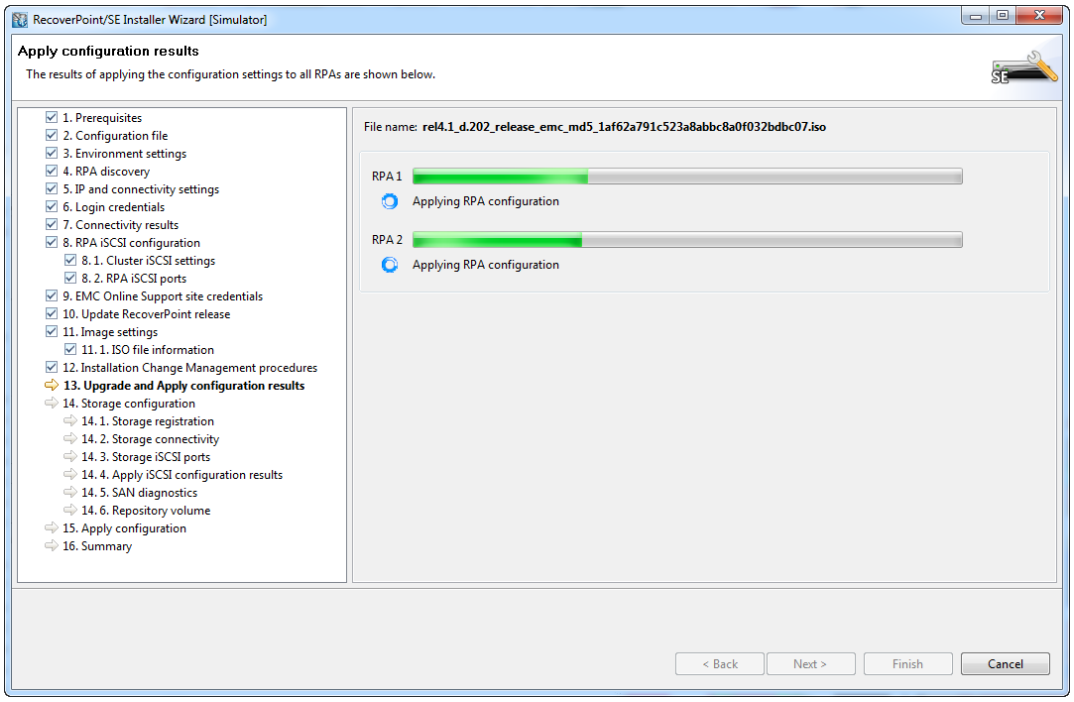


Based on the ISO image that you have distributed to the RPAs in your cluster, the wizard presents you with a list of general installation messages and Installation Change Management procedures that must be completed before continuing the installation.

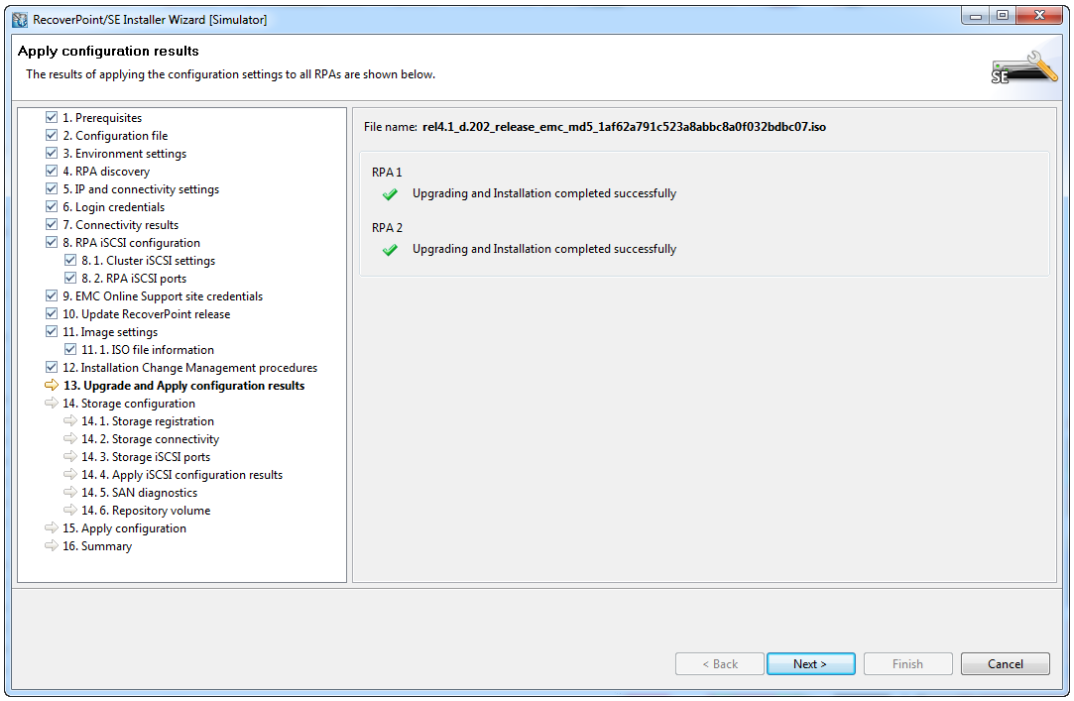
Open each procedure. When you have performed the tasks required to complete the procedure, close the procedure, and mark the checkbox. When you have completed all of the procedures, click **Next**.

The Apply configurations results screen appears.

While uploading the ISO file, the Apply configuration results screen shows the progress of the upload for each RPA.

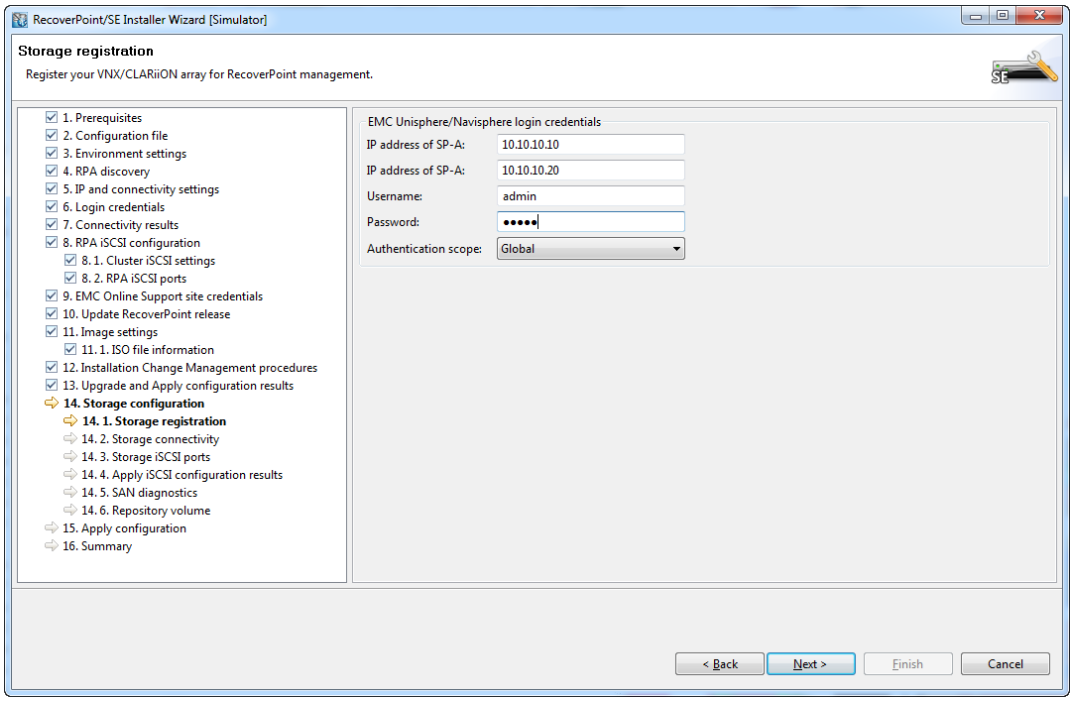


Deployment Manager notifies you when upgrade and installation of the ISO is completed for all the RPAs in the cluster.



You can now progress to the Storage configuration step.

In the storage registration screen, enter the storage processor IP addresses of the array at the RPA cluster you are installing (as recorded on your IP & SAN Setup Details Template), a username and password, and an authentication scope (for LDAP).

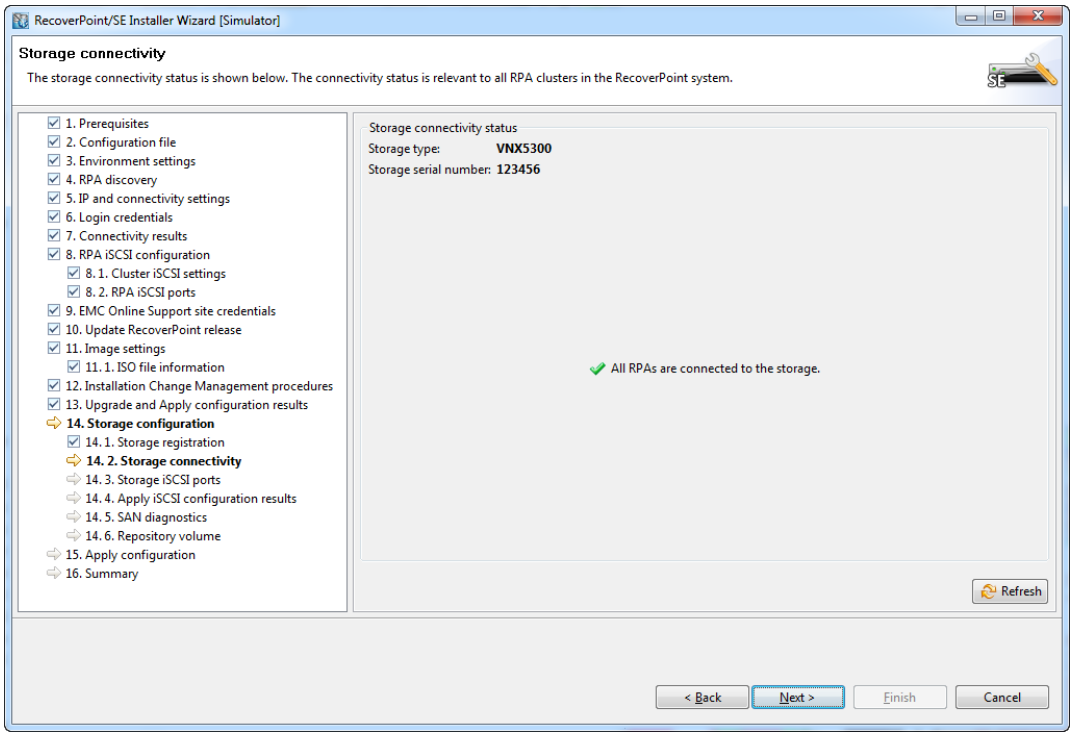


Based on this information, the system attempts to log into the VNX/CLARiiON and validate that:

- The RecoverPoint/SE Installer can communicate with VNX/CLARiiON SP A and SP B.
- The login credentials are correct for SP A and SP B.
- SP A and SP B are not already attached to RecoverPoint/SE cluster.
- IP settings were applied successfully.

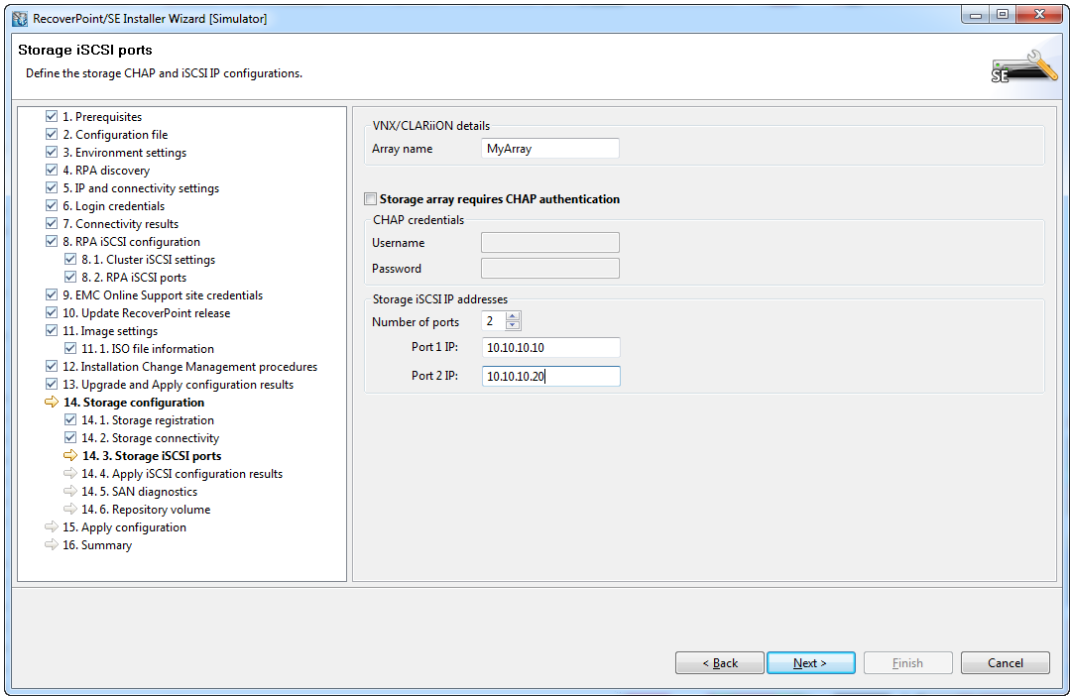
Click **Next** when you are done to display the Storage connectivity screen.

The Storage connectivity screen notifies you whether or not all of the RPAs in the RPA cluster are connected to the storage.



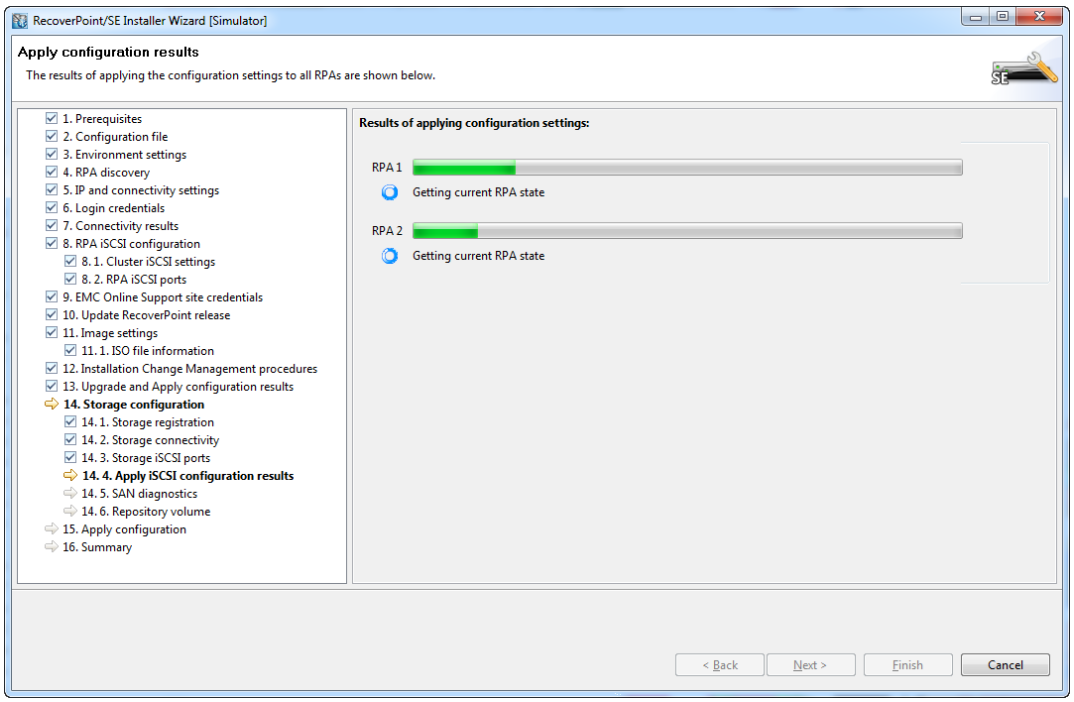
If any errors exist, fix them now and click **Refresh**. When all RPAs are connected to the storage, click **Next**. The specified storage is registered for RecoverPoint management.

The Storage iSCSI ports screen appears.



The current storage CHAP and iSCSI IP configurations are displayed. Modify any values you want to change, and press **Next**.

The Apply iSCSI configuration results screen appears.



The results of applying the configuration settings to all RPAs are displayed.

If you receive an error, use the following commands to troubleshoot the problem:

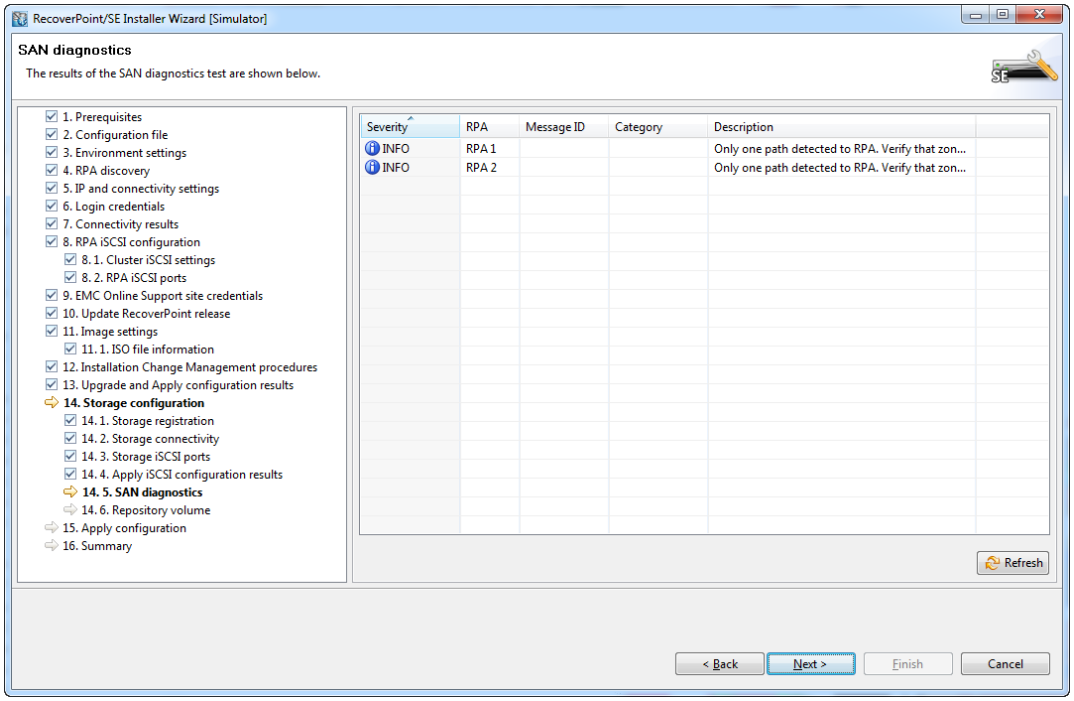
```
ping -I eth2 <IP address>
```

```
ping -I eth2 <IP address>
```

Where, for example, the IP address may be your iSCSI target, default gateway, etc.

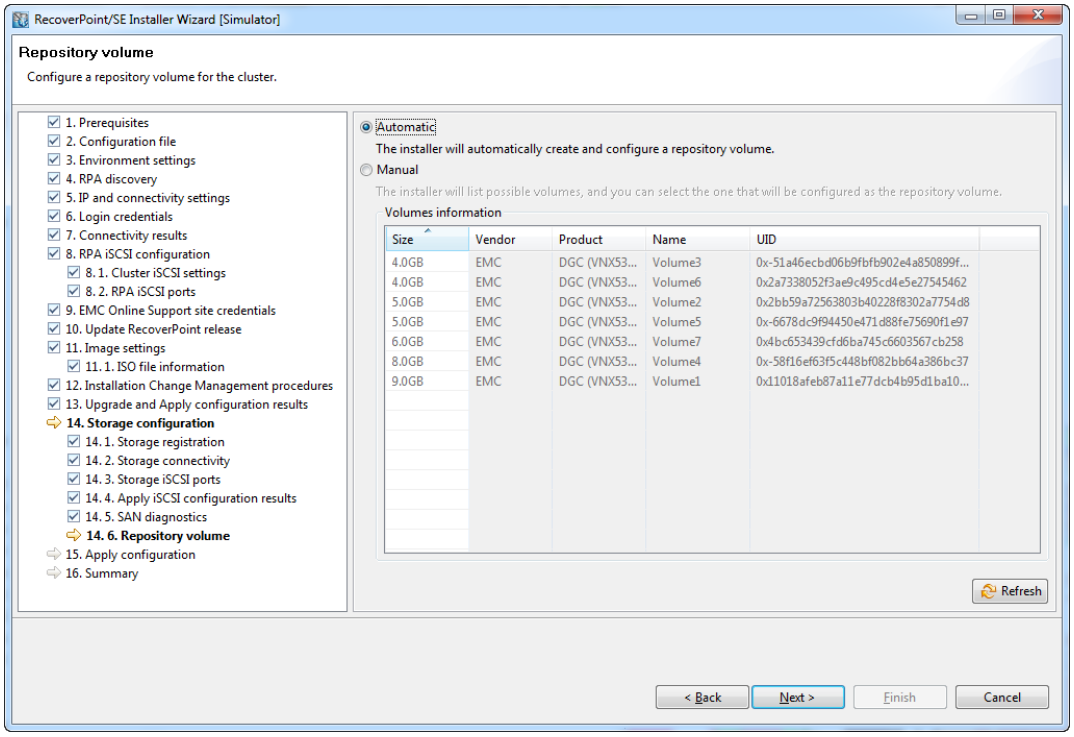
Once installation has completed successfully, click **Next**.

At this point, the SAN diagnostics mechanism informs you whether the components have been successfully identified.



If errors are detected, you can click each error to display additional details about that error. You must correct all SAN discovery errors before proceeding. In addition, it is highly recommended that you resolve all warnings. Click **Refresh** to refresh the list after resolving errors. When all errors are resolved, click **Next**.

Before the storage configuration can be applied at this site, a *repository volume* must be designated.



The repository volume is responsible for maintaining the configuration information independently for each RecoverPoint cluster; therefore, you must define a repository volume at both sites.

If you select **Automatic**, the Installer displays a list of all resource mapped to the RPA cluster. Select a resource pool to allow RecoverPoint to automatically provision the repository volume upon it. The minimum size of a repository volume that is automatically provisioned by RecoverPoint is 5.72 GB.

You may also select the **Manual** option to select a volume (i.e. LUN) mapped to the RPA cluster from the list and designate it as the repository volume. The minimum size of a repository volume that is manually provisioned is 2.86 GB.

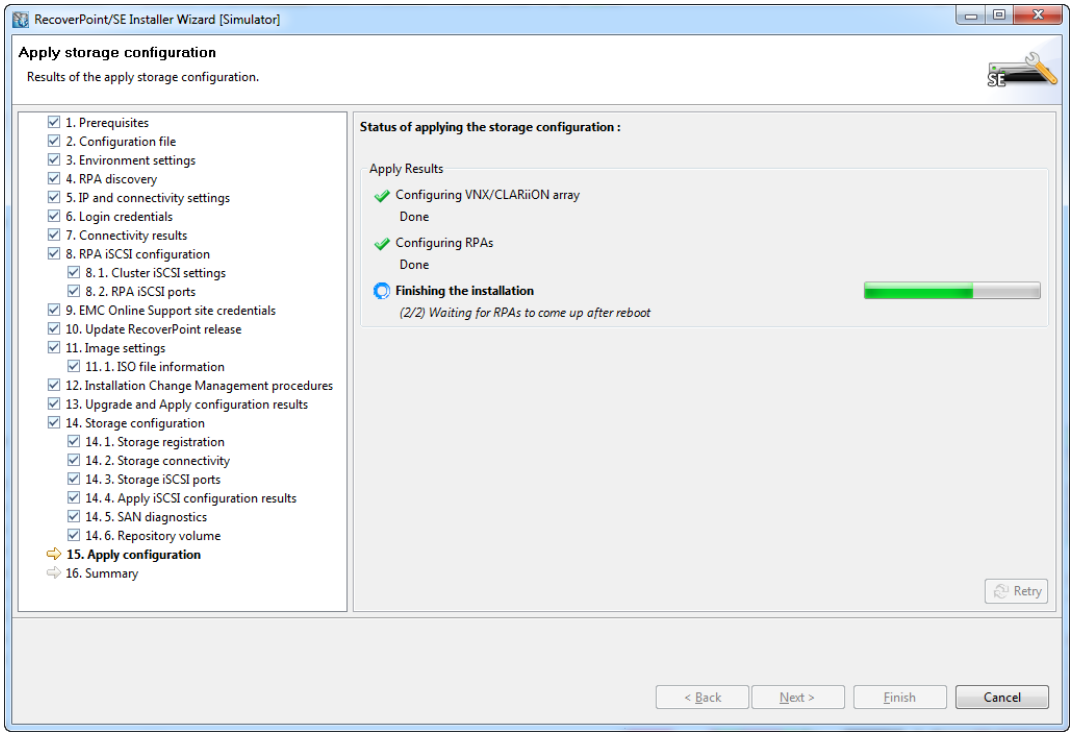
In both automatic and manual repository volume provisioning, any capacity beyond the stated minimum capacity is not used. Therefore, best practice is to select resource pools or volumes as close to the minimum size as possible.

Note: Do not change the name of the repository volume after it has been created.

When that process is complete, you are now ready for the Installer to apply the designated configuration (**Apply configuration**) on the RPA cluster and the storage. Click **Next**.

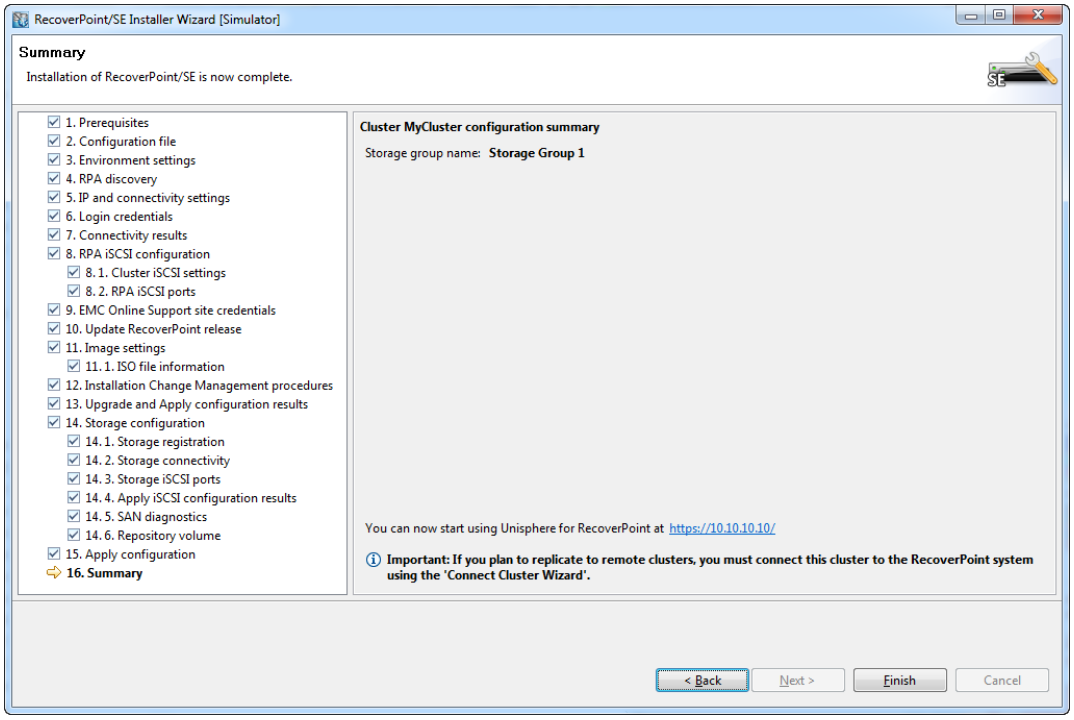
Be aware that the apply storage configuration process may take several minutes. Progress bars indicate that the system is applying settings and completing the installation. Once the progress bars stop, the system will confirm that all components

are OK, or that errors are detected. If errors are detected, you can click each error to display additional details about that error.



If you are unable to fix a problem, contact EMC Customer Support.

Once the installation process has been successfully completed, click **Next** to display the Summary screen, including a detailed description of all of the newly created entities in the new cluster.



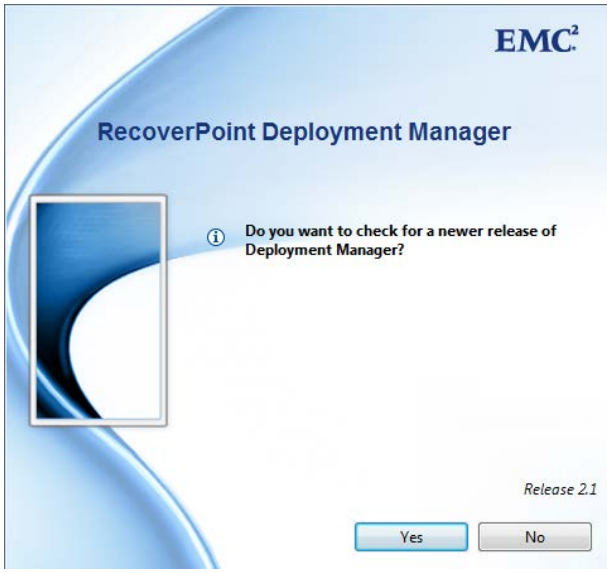
You may now proceed in any of the following ways:

- If you want to create a second cluster of vRPAs, return to “Create vRPAs,” on page 45.
- If you want to create a second cluster, but with RPAs, go to **“Deploy RecoverPoint/SE on Physical RPA Cluster,” on page 21**.
- If you want to connect the two clusters that you have already deployed, continue with “Connect Cluster,” on page 79
- If you want to proceed directly to Unisphere for—for instance, to configure your RecoverPoint system over one cluster, for continuous local replication—click the cluster-management IP address at the bottom of the Summary window.

Chapter 9 Connect Cluster

This chapter explains how to connect RPA clusters from a single management point using the Connect Cluster Wizard that is in EMC RecoverPoint Deployment Manager 2.0 SP1.

Launch the Deployment Manager by opening the **RecoverPoint_DM.exe** application file.



If you just finished creating your RPAs clusters, click **No** when prompted to check for a newer release of Deployment Manager.

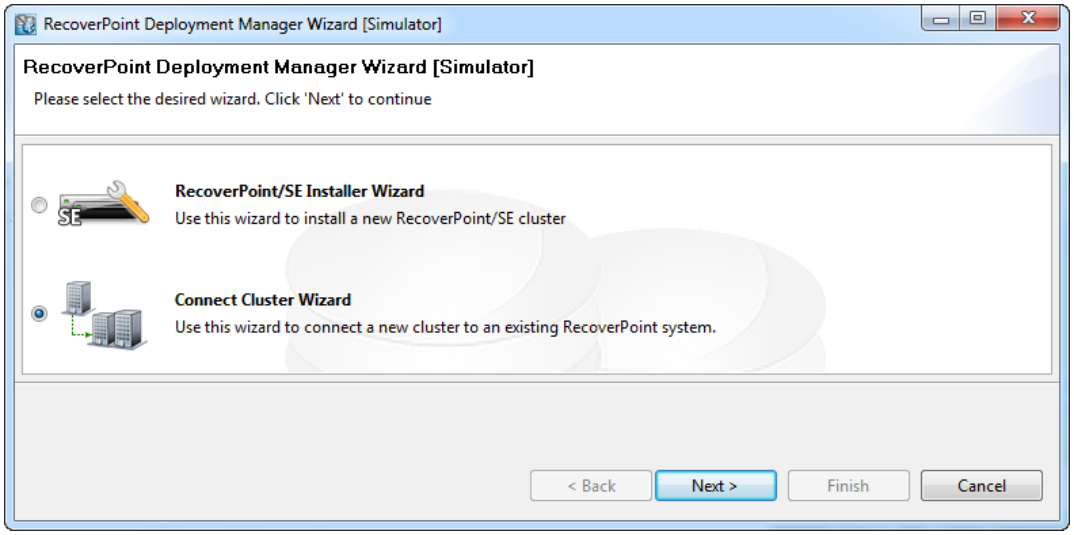
If you want to download a newer release of Deployment Manager, click **Yes**, and follow the subsequent instructions until you have successfully downloaded the new release.

Select **RecoverPoint 4.0 or later releases** in the next screen.

The Login screen appears.

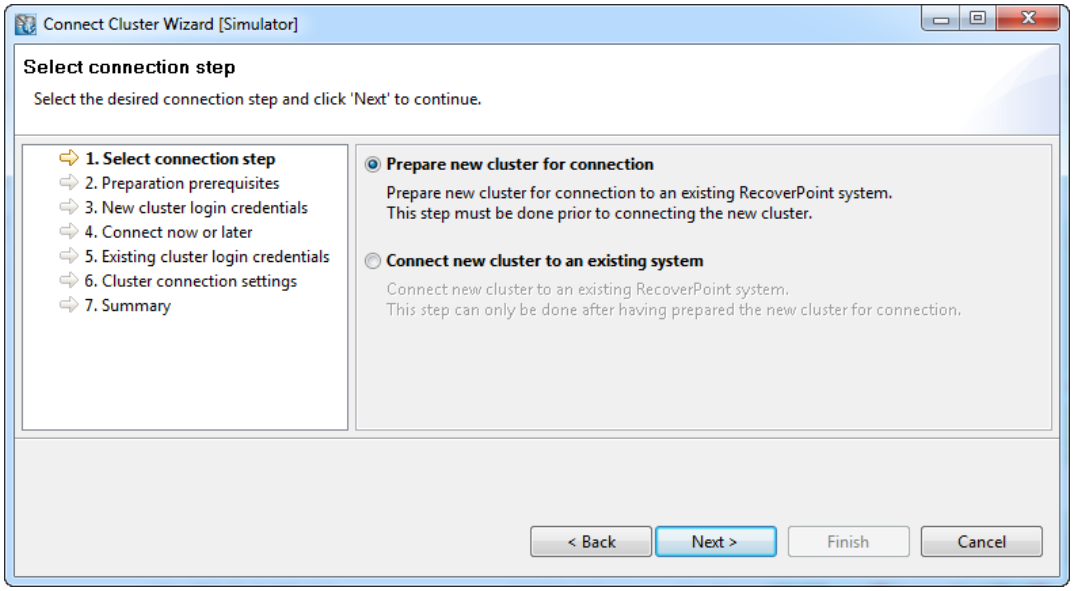
Select **Install RecoverPoint/SE,** and click **Login.**

The RecoverPoint Deployment Manager Wizard screen appears.



Select **Connect Cluster Wizard**, and click **Next**.

The Select connection step appears.

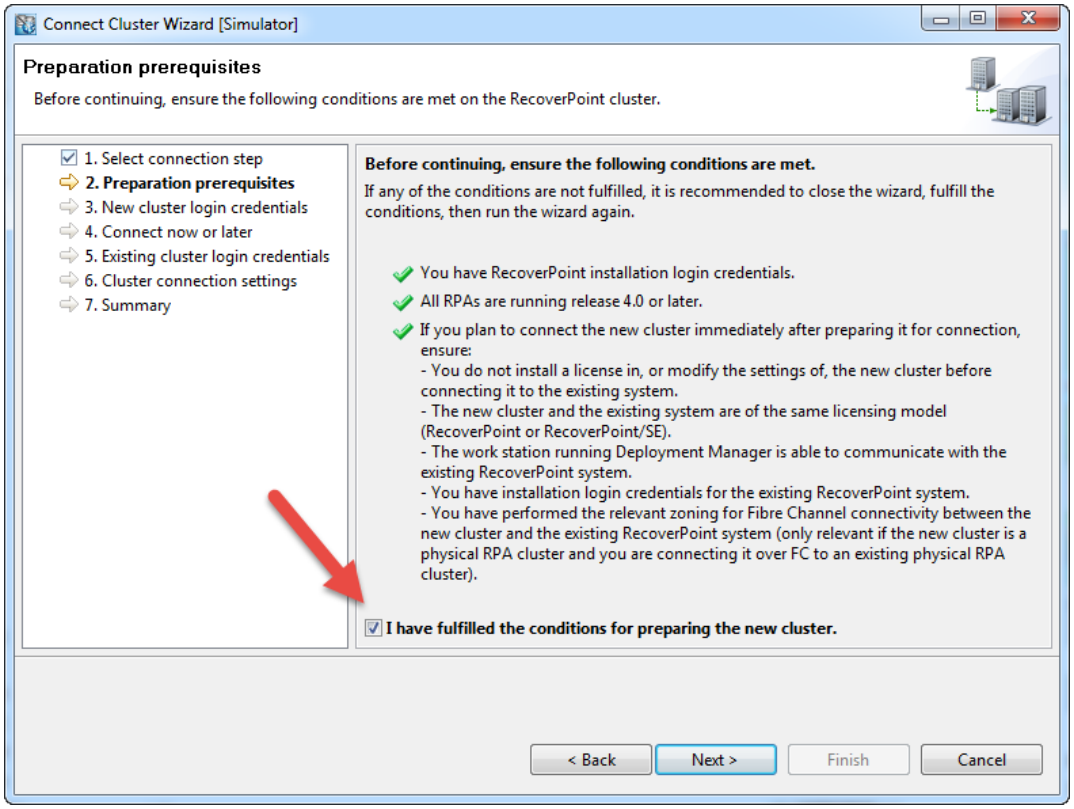


The main steps in connecting clusters are:

- Prepare new cluster for connection.
- Connect new cluster to an existing system.

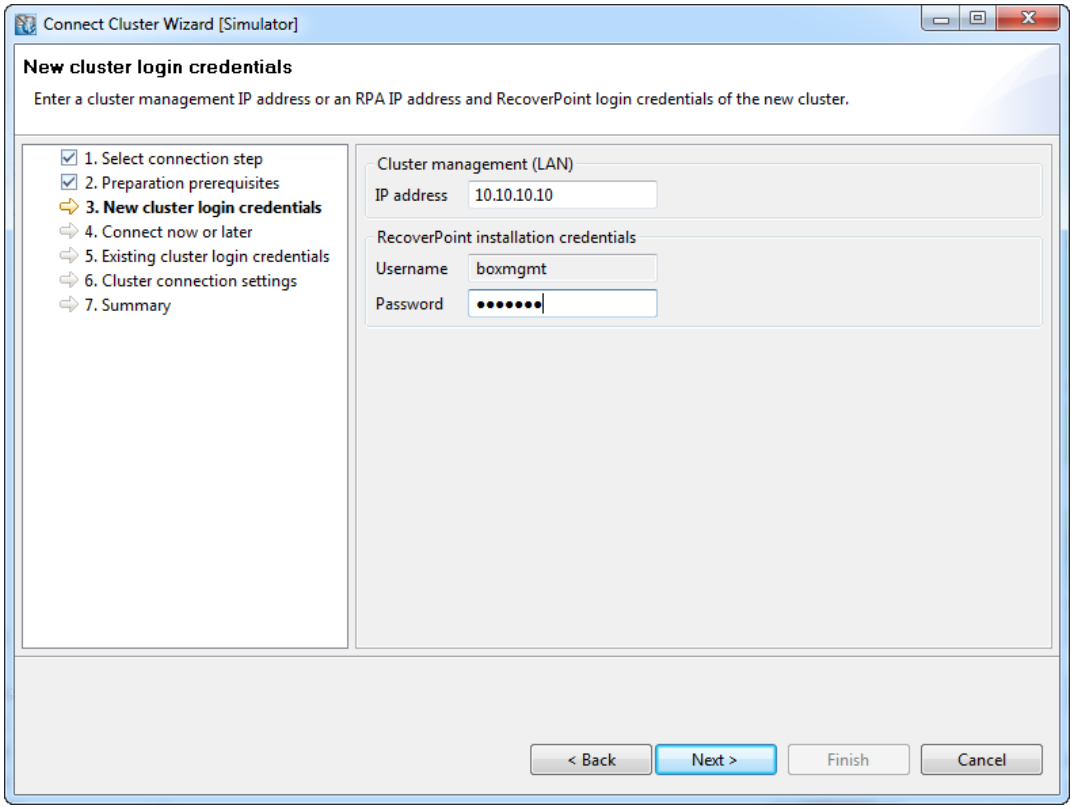
When connecting a two-cluster RecoverPoint/SE system, you will prepare one of the clusters for connection, and then connect it to the other cluster, which will serve as the “existing system”.

When you choose to prepare the new cluster for connection, the Preparation prerequisites screen appears.



When all of the prerequisites have been completed, select the checkbox, and click **Next** to continue.

The New cluster login credentials screen appears.

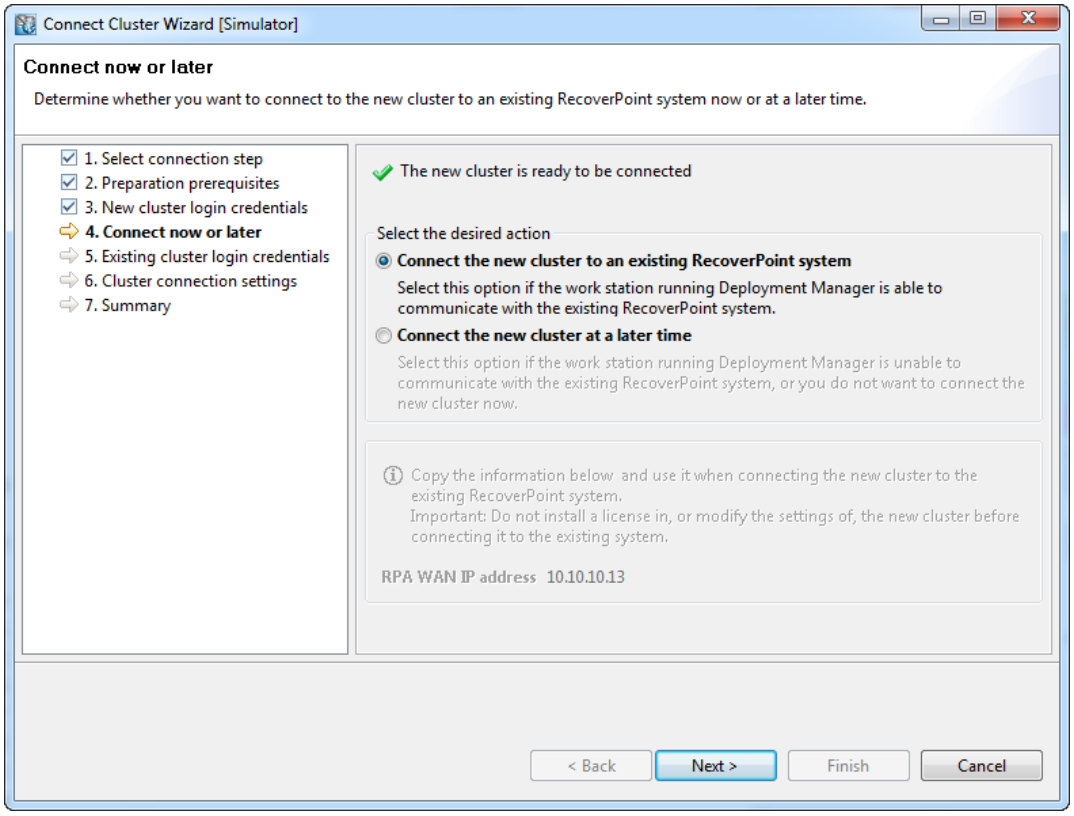


Enter the cluster management IP address (or an IP address of any RPA) of the new cluster, and the RecoverPoint login credentials.

For username **boxmgmt**, the default password is **boxmgmt**.

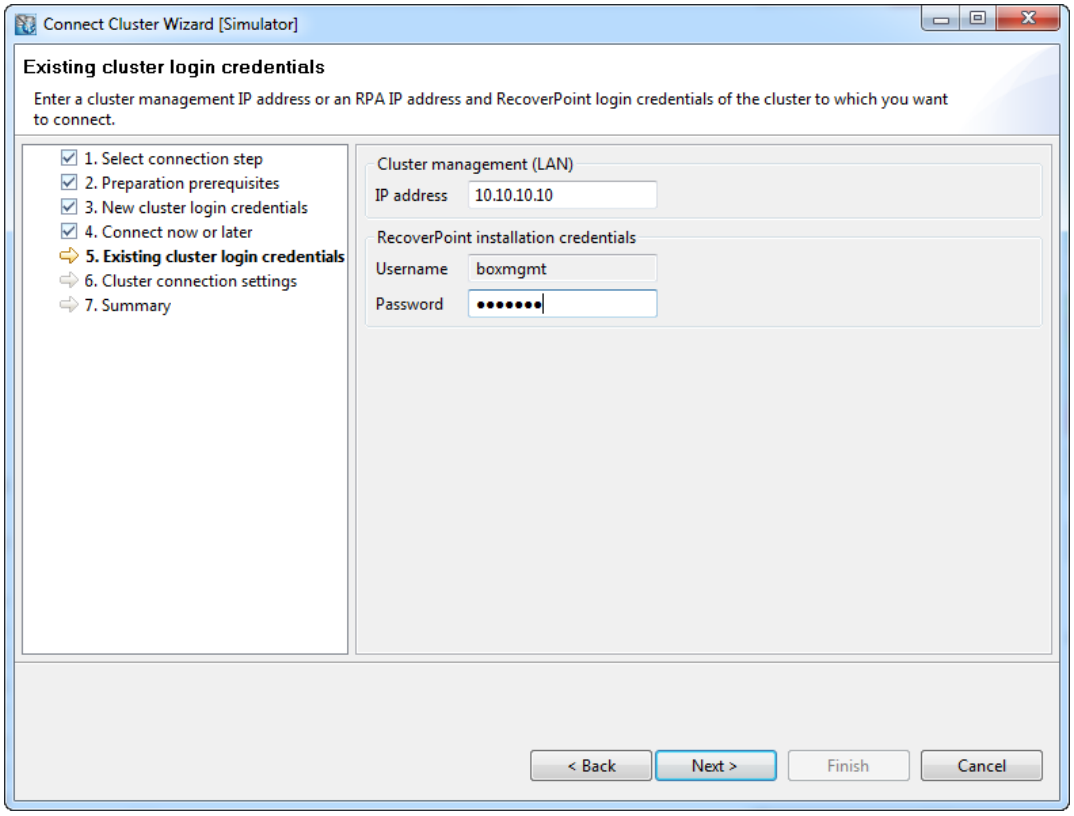
Connect Cluster

After logging in to the new cluster, the Connect now or later screen appears.



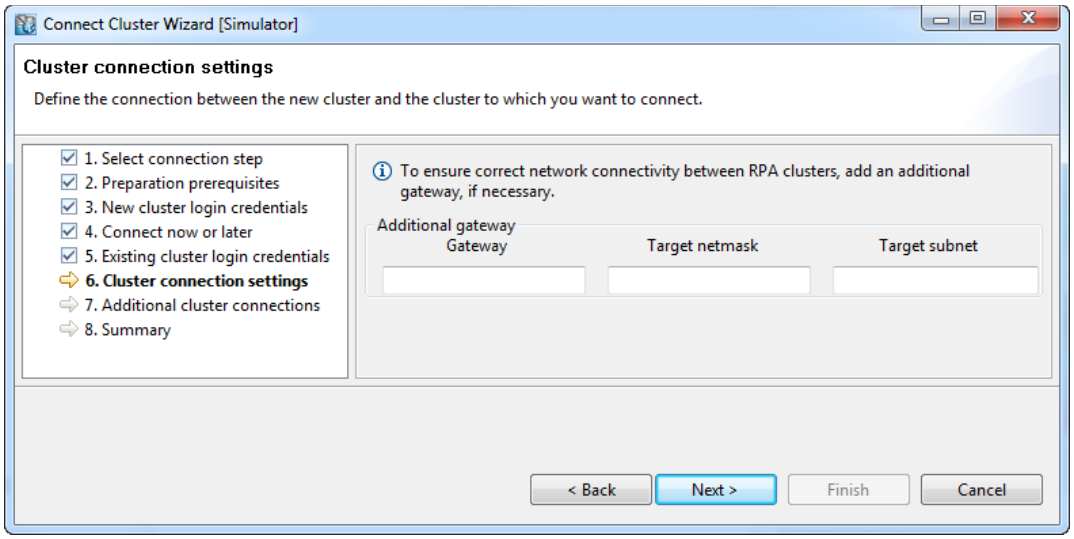
Select **Connect the new cluster to an existing RecoverPoint system**. In this case, the "existing system" is the cluster at the other site, so your local machine must be able to communicate with that cluster.

The Existing cluster login credentials screen appears.



Enter the cluster management IP address (or an IP address of any RPA) of the second cluster; that is, the cluster to which you want to connect.

The Cluster connection settings screen appears.



To define the connection between the new cluster and the cluster to which you want to connect:

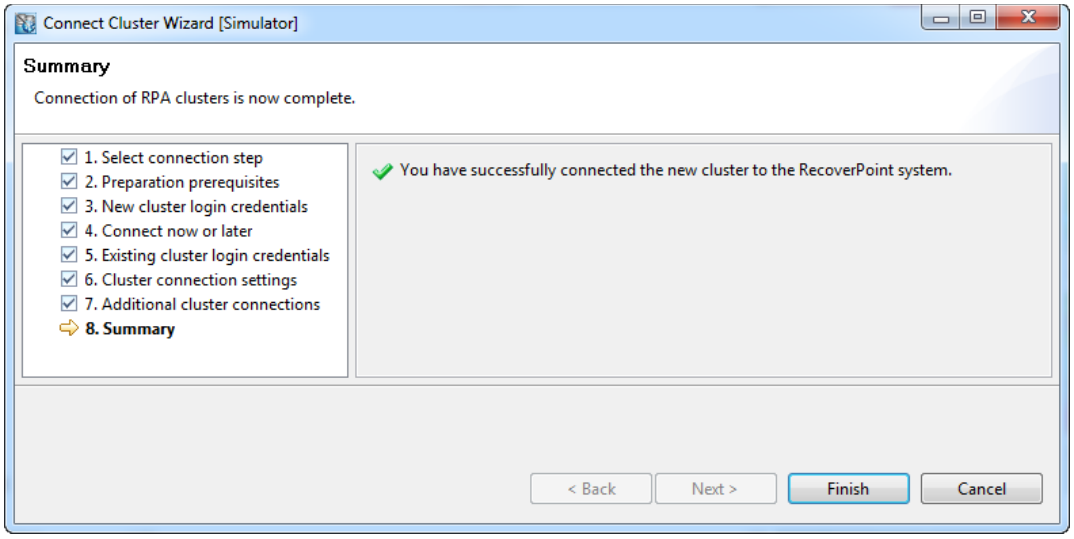
- When connecting two clusters made up of physical RPAs, set the desired connection type, **IP** or **Fibre Channel**.

  The Fibre Channel connection is only an option when connecting two physical RPA clusters. When connecting a cluster of vRPAs, the connection is always IP (and, hence, this selection box does not appear).

- If you select **IP**, and if the gateway specified during cluster installation is not suitable for connectivity between clusters in this environment, you can add an additional WAN gateway (gateway IP, target netmask, and target subnet).

When complete, click **Next**. The clusters are connected, creating a *RecoverPoint system*.

After that, the Summary screen appears.



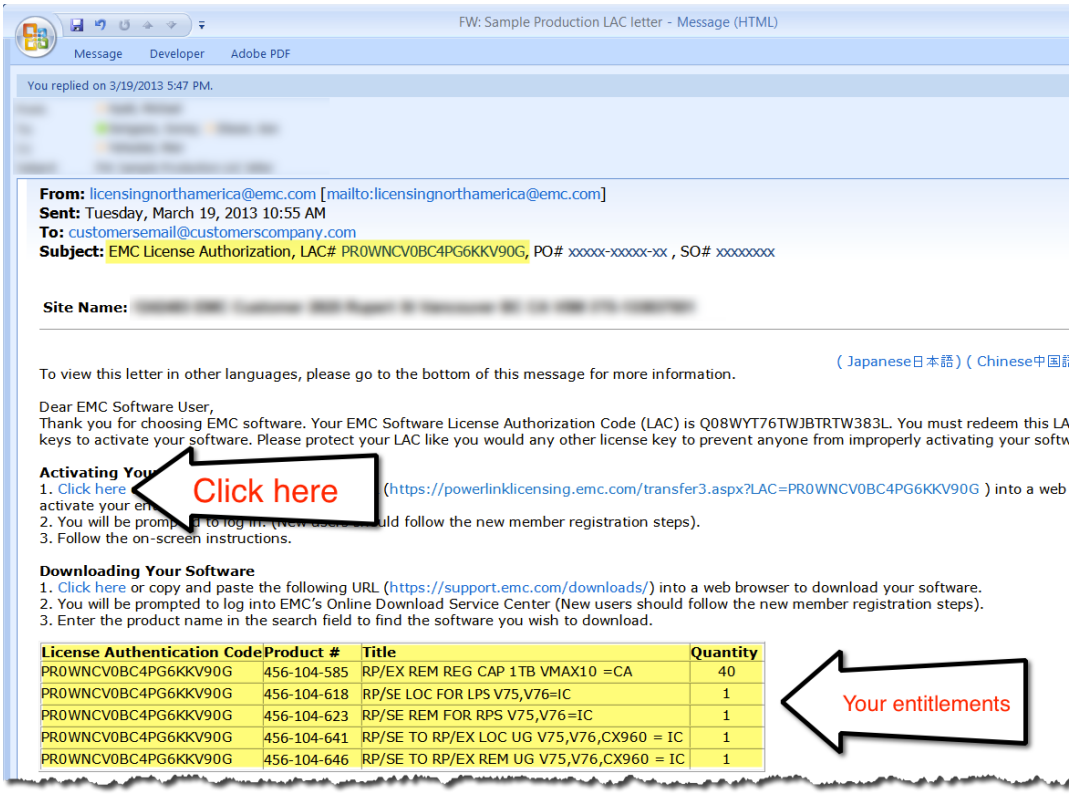
You are now ready to install your RecoverPoint/SE licenses, enable support, and register RecoverPoint as presented in the next chapter.

Chapter 10 License and Register System, and Enable Support

This process includes the following major steps:

1. Access your entitlements, from your LAC emails.
2. Activate those entitlements, from EMC Online Support.
3. From the Getting Started screen of the Unisphere for RecoverPoint management GUI:
   a. Install your license files in RecoverPoint.
   b. Enable support.
   c. Register your RecoverPoint system.

As soon as your sales order is approved, a LAC email is automatically sent to the email addresses provided during order entry. The LAC email contains the LAC (*License Authorization Code*) issued to you, validating your purchase and your entitlement(s). If you have multiple purchases on more than one sales order, you may receive multiple LAC letters.

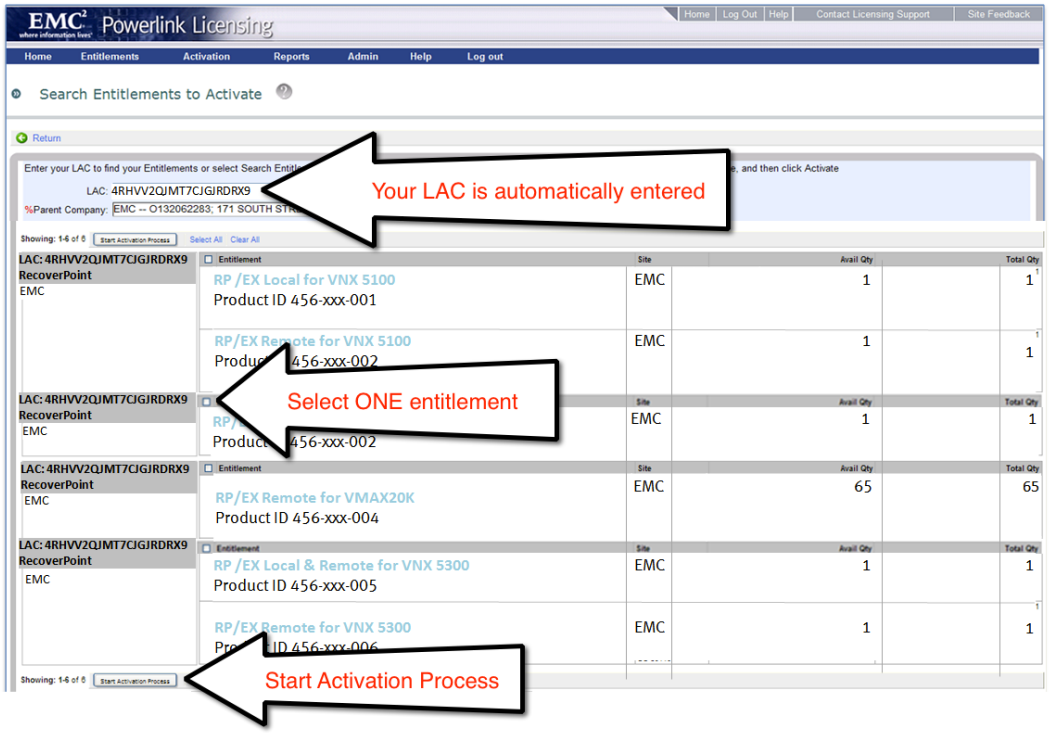


Start the licensing process by accessing your entitlements. For each LAC, click the "Click here" link in the LAC email to automatically access the Powerlink licensing area of EMC Online Support, and display all entitlements associated with the LAC.

If you can't find your LAC email(s), contact EMC Worldwide Licensing Support at: https://powerlinklicensing.emc.com/poeticWeb/session/license_request_emc.jsp

You must now activate your entitlements.

Log in to EMC Online Support. The Search Entitlements to Activate screen is displayed.

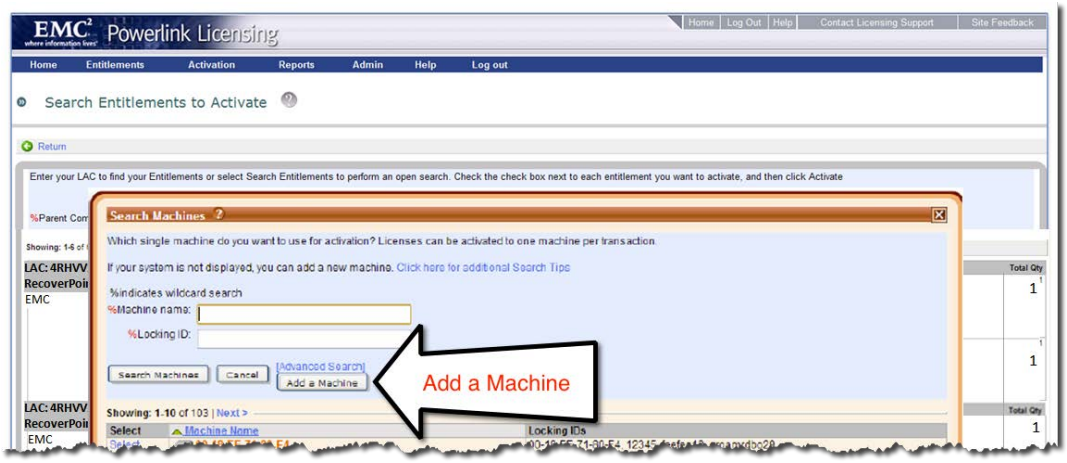


This the first screen of a five-screen wizard that guides you step-by-step, through the process of turning your LACs into license files, thereby activating your entitlements.

The link in the LAC email pre-populates the LAC field and searches for all entitlements associated with the specified LAC. All relevant entitlements are displayed.

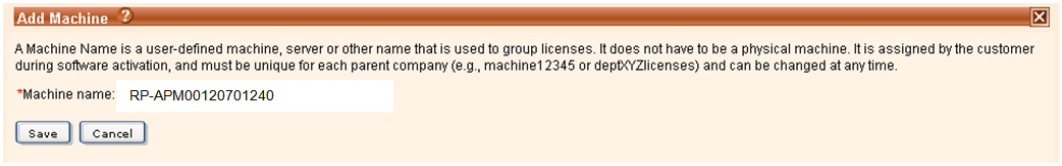
In the Search Entitlements to Activate screen, select ONE entitlement to activate. Each entitlement must be selected and activated separately. There can be multiple RecoverPoint models listed under each entitlement.

Then, click **Start Activation Process**. The Search Machines box is displayed.



In the Search Machines box, click **Add a Machine**.

The Add Machine box is displayed.

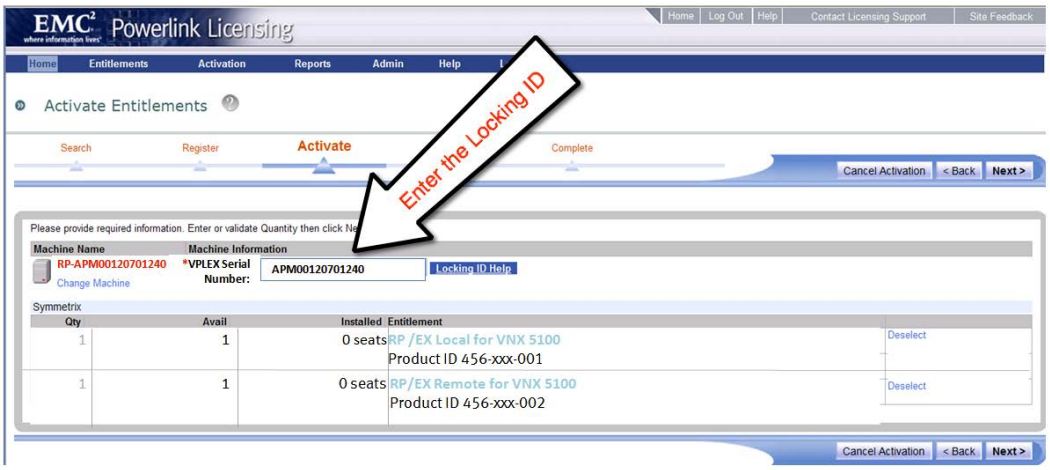


A machine name, like a folder, is used to group items together logically. A unique machine name must be specified for each entitlement. It is best practice to relate the machine name to the Locking ID, which, for RecoverPoint/SE, is an array serial number. Therefore, the machine name should be RP-APM00120701240 if APM00120701240 is the array serial number used for the Locking ID.

In the Add Machine box, enter a new machine name, and click **Save**.

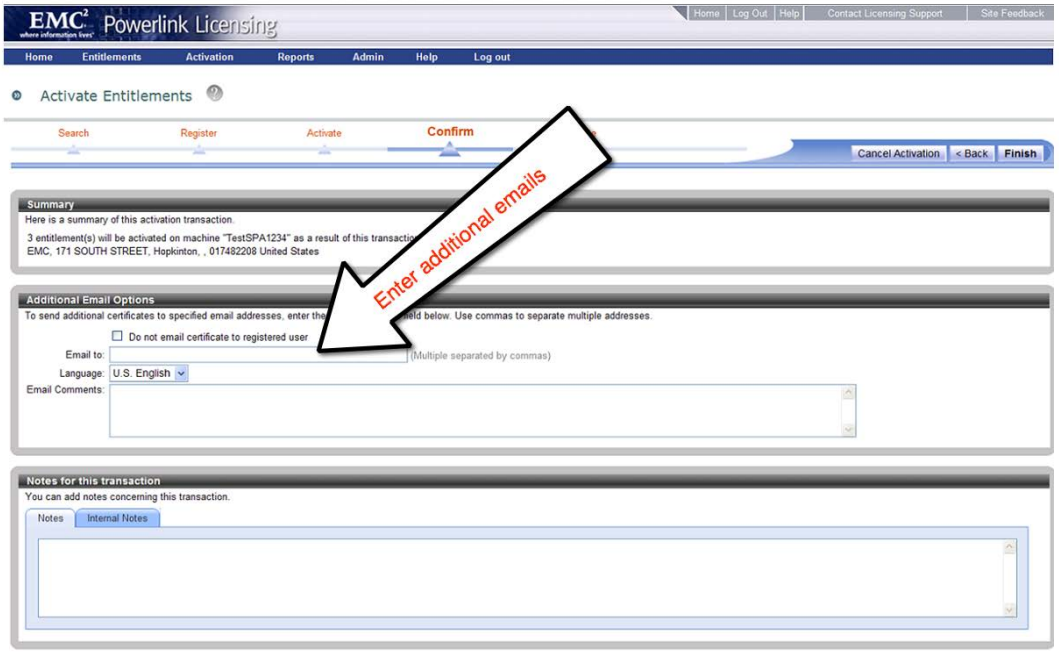
In the Register screen, verify the machine name, and click **Next**.

The Activate screen appears.



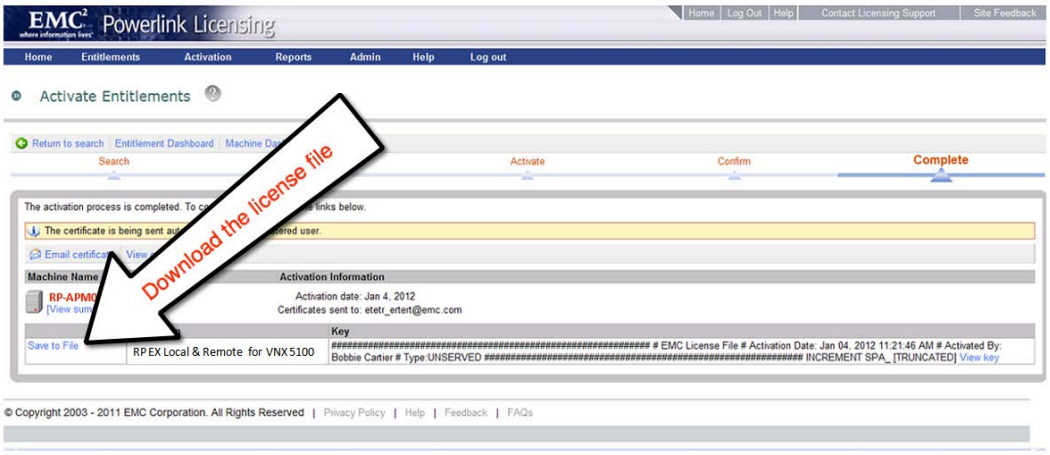
In the Activate screen, for each licensed array, enter the array serial number in the VNX Serial Number field. This is the Locking ID, that is, the ID to which each license is enforced. To display instructions for finding your array serial numbers, click the Locking ID help link.

Click **Next**. The Confirm screen appears.



In the Confirm screen, enter the email addresses of the recipients of the license file in the Email to field of the Additional Email Options section, and click **Finish**.

The Complete screen appears.

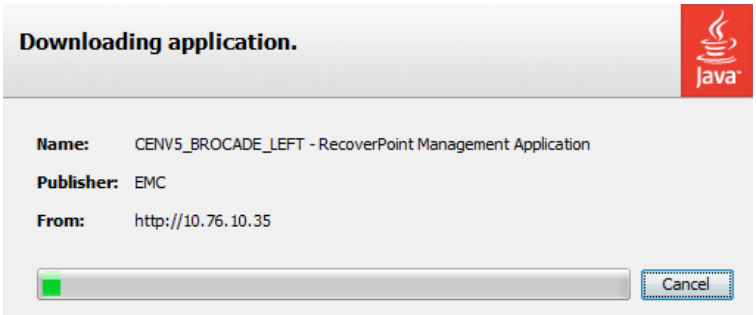


In the Complete screen, click **Save to File** to download the license file and save the file locally. The resulting license file has a *.lic extension and is in plain text format (can be opened in any text editor).

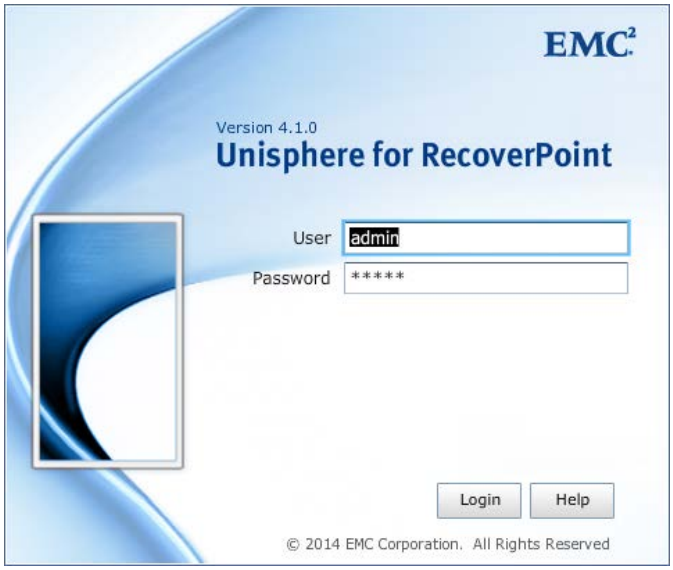
Repeat this procedure for each entitlement in each LAC email or sales order. Start at the Search Entitlements to Activate screen, on page 88. Once you are done, you should be ready to install your license file(s) in RecoverPoint and enable support.

After you have turned all of your entitlements into license files, physically transfer the license file(s) to the computer from which you will be running Unisphere for RecoverPoint, so you can install them in the RecoverPoint system in the next step.

To begin installing the license files in your RecoverPoint system, enter the cluster management IP address in a browser (or click the cluster management IP link in the Installer wizard). The Unisphere for RecoverPoint management application begins loading.

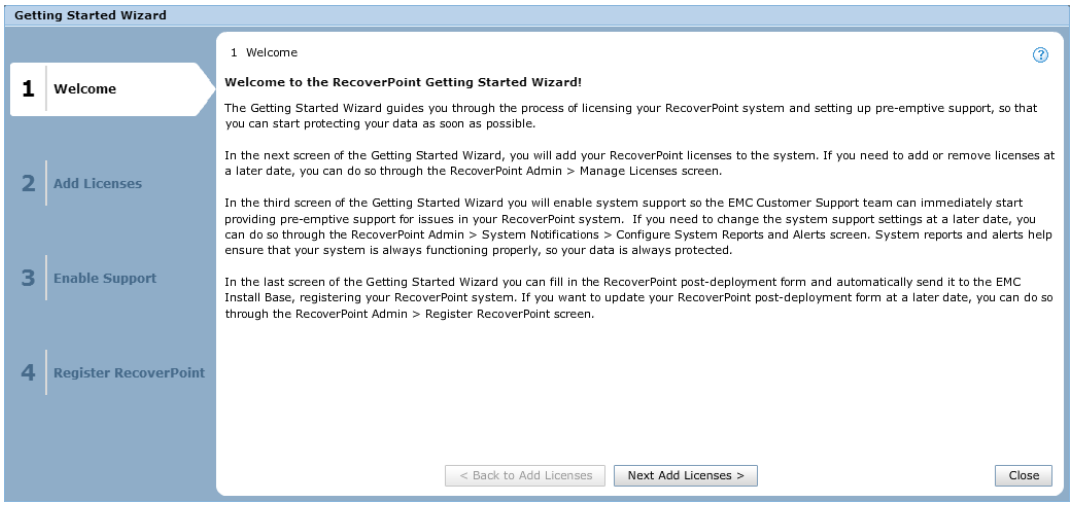


When the loading process is complete, a login screen prompts you for your username and password.

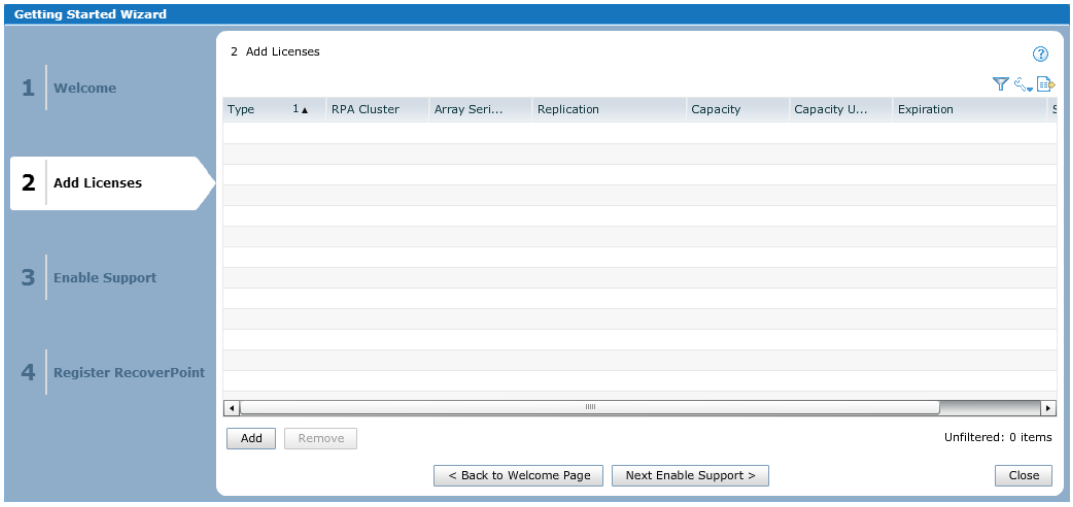


Enter username **admin** and password **admin**.

The first time you access Unisphere for RecoverPoint, the Getting Started Wizard is invoked, and the Welcome screen appears.

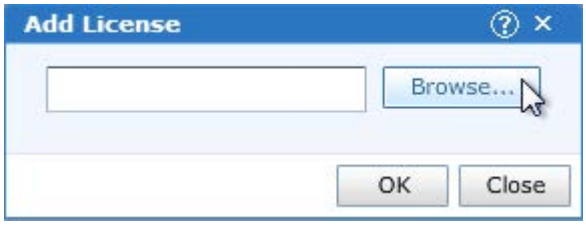


To start protecting your data, in the Welcome screen, click **Next Add Licenses** to go on to the “Add Licenses screen”.



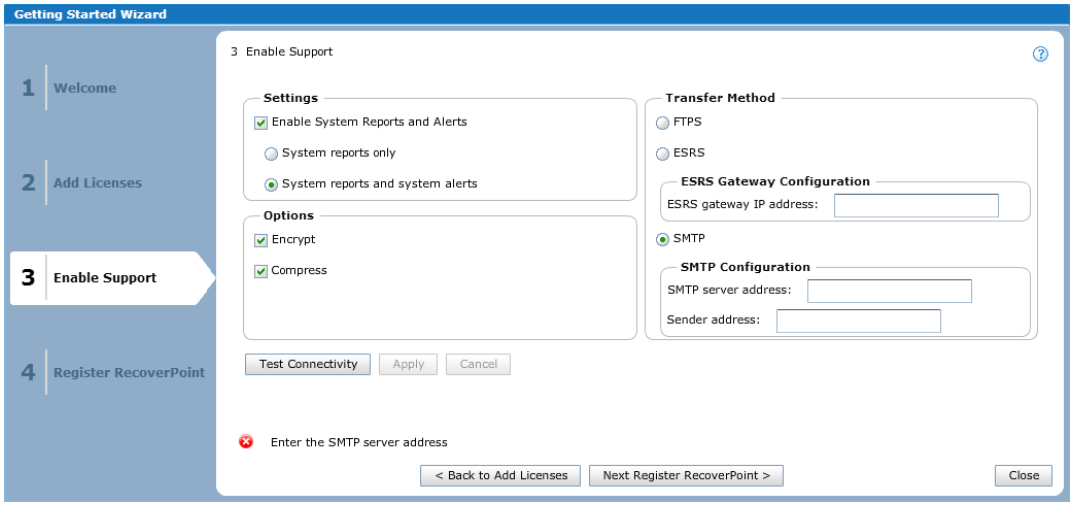
The Add Licenses screen allows you to install your RecoverPoint license(s) and display your license information.

For each license file, click **Add** to display the Add License dialog box.



Click **Browse**, and select a license file. Then, click **OK** to add the license file to the RecoverPoint system.

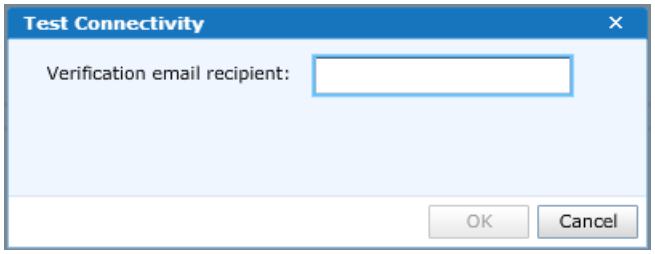
After installing your licenses, click **Next Enable Support** to go to the Enable Support screen.



The Enable Support screen allows you to configure the RecoverPoint system reports mechanism (SyR) and provide one-way communication between a RecoverPoint installation and the EMC System Reports database (ESRS).

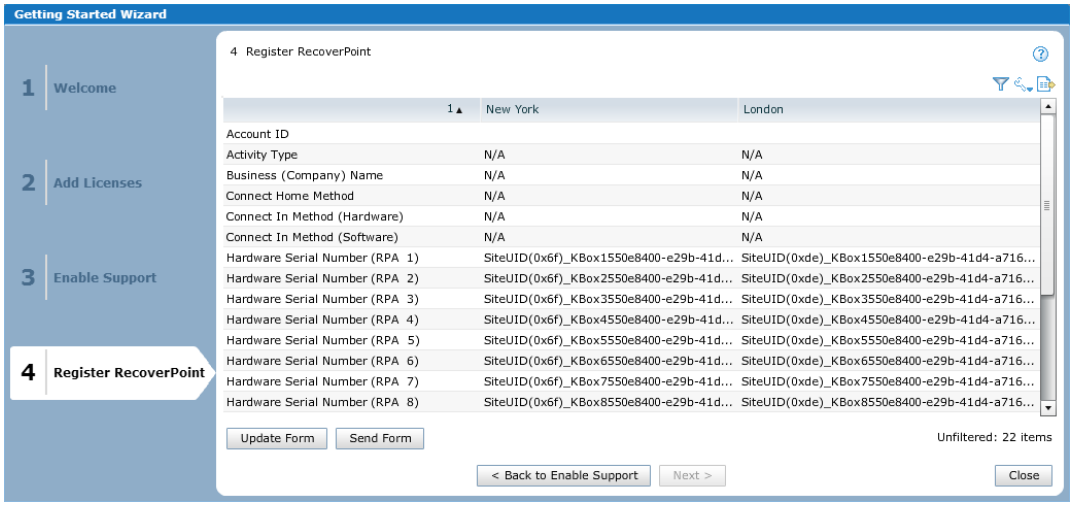
1. Ensure that the **Enable System Reports and Alerts** checkbox is selected, and the radio button is set to System reports and system alerts.
2. Ensure that the **Compression** and **Encryption** checkboxes are selected.
3. Define the transfer method.
   a. In the **Transfer Method** section, ensure the **SMTP** radio button is selected.
   b. In the **SMTP server address** field, specify the IP address or DNS name of your dedicated SMTP server, in IPv4 or IPv6 format.
   c. In the **Sender email** field, specify the email address from which the system notifications will be sent.

After enabling support, click **Test Connectivity**. In the **Test Connectivity** dialog box, enter the email address to which EMC Customer Support can send a verification email.



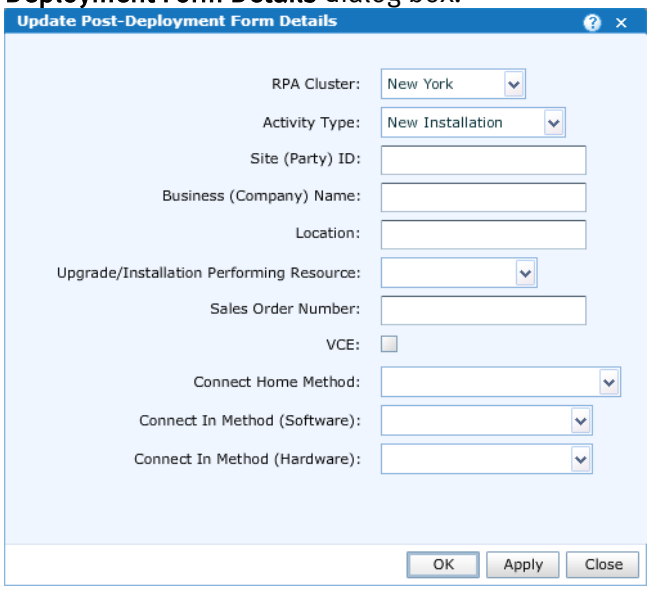
The connectivity test, if successful, opens a service request containing call home event number 30999 and sends an email to the specified verification email address from EMC Customer Support to verify that the system reports mechanism (SyR) has been successfully configured.

Click **Next Register RecoverPoint** to open the Register RecoverPoint screen.



	1 ▲	New York	London
Account ID			
Activity Type		N/A	N/A
Business (Company) Name		N/A	N/A
Connect Home Method		N/A	N/A
Connect In Method (Hardware)		N/A	N/A
Connect In Method (Software)		N/A	N/A
Hardware Serial Number (RPA 1)		SiteUID(0x6f)_KBox1550e8400-e29b-41d...	SiteUID(0xde)_KBox1550e8400-e29b-41d4-a716...
Hardware Serial Number (RPA 2)		SiteUID(0x6f)_KBox2550e8400-e29b-41d...	SiteUID(0xde)_KBox2550e8400-e29b-41d4-a716...
Hardware Serial Number (RPA 3)		SiteUID(0x6f)_KBox3550e8400-e29b-41d...	SiteUID(0xde)_KBox3550e8400-e29b-41d4-a716...
Hardware Serial Number (RPA 4)		SiteUID(0x6f)_KBox4550e8400-e29b-41d...	SiteUID(0xde)_KBox4550e8400-e29b-41d4-a716...
Hardware Serial Number (RPA 5)		SiteUID(0x6f)_KBox5550e8400-e29b-41d...	SiteUID(0xde)_KBox5550e8400-e29b-41d4-a716...
Hardware Serial Number (RPA 6)		SiteUID(0x6f)_KBox6550e8400-e29b-41d...	SiteUID(0xde)_KBox6550e8400-e29b-41d4-a716...
Hardware Serial Number (RPA 7)		SiteUID(0x6f)_KBox7550e8400-e29b-41d...	SiteUID(0xde)_KBox7550e8400-e29b-41d4-a716...
Hardware Serial Number (RPA 8)		SiteUID(0x6f)_KBox8550e8400-e29b-41d...	SiteUID(0xde)_KBox8550e8400-e29b-41d4-a716...

In the Register RecoverPoint screen, click **Update Form** to display the **Update Post-Deployment Form Details** dialog box.



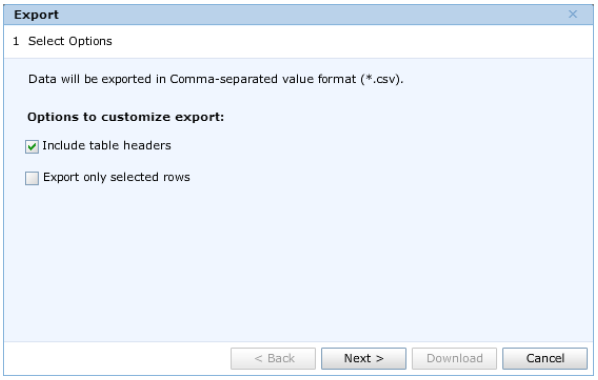
In the **Update Post-Deployment Form Details** dialog box, select the relevant RPA cluster from the RPA Cluster drop-down, and update the information. Note the following:

- In the VCE field, indicate if this RecoverPoint implementation is operating within a VCE (Vblock) environment.
  VCE = VMware+Cisco+EMC
- It is recommended to enable Connect Home and Connect In. ESRS is the preferred method for both.

Click **Apply** to commit the changes to the post-deployment form without closing the dialog box, or click **OK** to commit the changes to the post-deployment form and close the dialog box.

If the connectivity test in the **Enable Support** screen did not complete successfully, and/or you do not have SyR connectivity (for example, because you are in a dark site), register your RecoverPoint system by email. To do so:

1. Export the post-deployment form to a CSV file.
   a. Click the **Export** button at the top-right corner of the RecoverPoint registration screen to display the **Export** wizard.



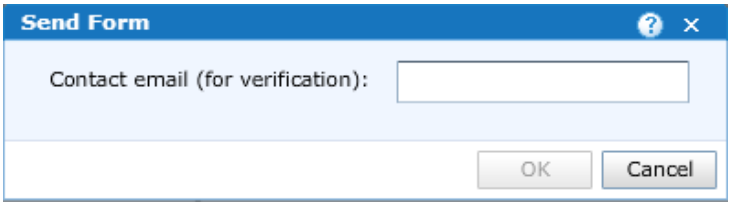
b. In the **Export** wizard, select the desired export options and click **Next**. Then click **Download** to download the file to your computer, select a location on your computer to store the file, and click **Save**.

c. Open the exported file; Open MS Excel. Open the *.csv file from the location you selected in the previous step. The **Excel Text Import Wizard** is displayed to help you set the import options. In the Excel dialog box, select **Delimited**, and click **Next**. In the **Delimiters** field, select **Comma**, and click **Next**. Click **Finish**.

2. Fill out the form.

3. Email the form to the Install Base group at MGT_Team_IBG@emc.com.

If the connectivity test in the **Enable Support** screen completed successfully, click **Send Form** to transmit the post-deployment form electronically to the EMC Install Base group. The **Send Form** dialog box is displayed.



Enter the email address of the person at your company who is in charge of RecoverPoint maintenance and operation.

A service request is opened, which causes an email to be sent from EMC Customer Support to the specified verification email address, to verify that your registration details were updated successfully in the EMC Install Base.

When you are done, click **Close** to close the Getting Started Wizard.

A dialog box queries whether or not you would like to display the Getting Started Wizard in subsequent RecoverPoint launches.

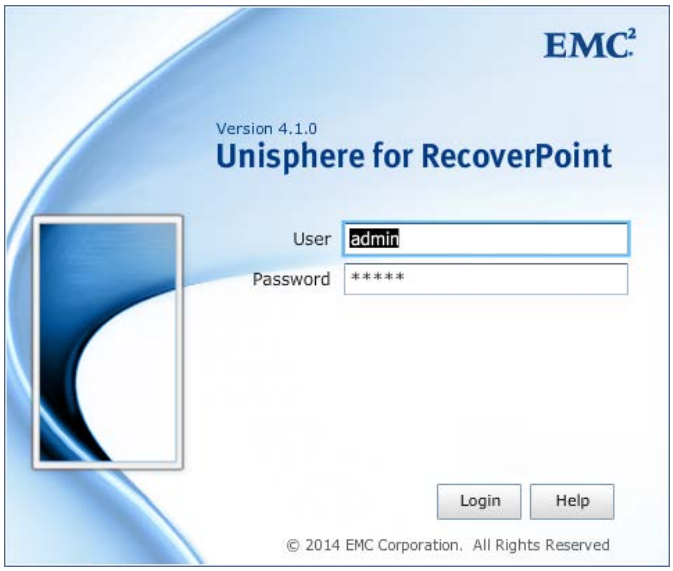
Note: It is not recommended to select the checkbox in the pop-up until you have completed the tasks of adding your licenses and enabling RecoverPoint support.

You are now ready to configure your replication environment.

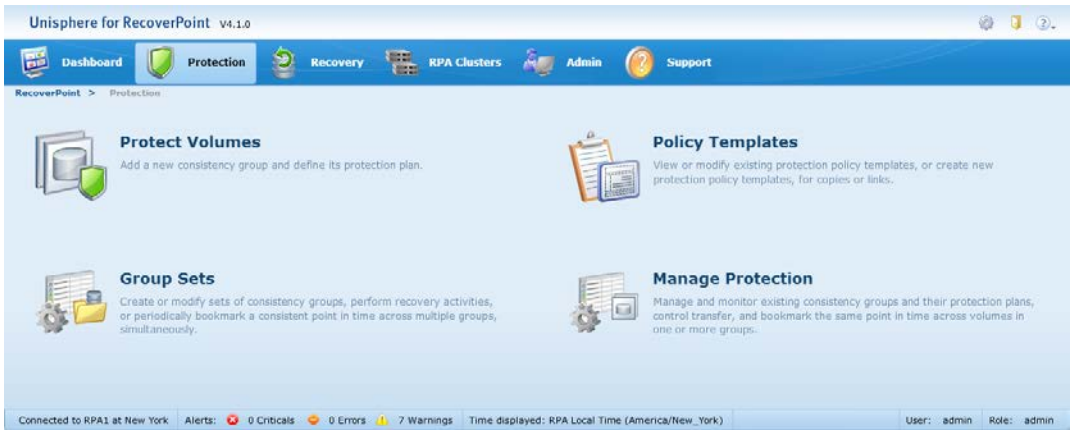
Chapter 11 Configure Replication Environment

In this section we will demonstrate how to create a basic RecoverPoint replication configuration in Unisphere for RecoverPoint.

Log in to Unisphere for RecoverPoint (if you don't already have it open) with the default username and password: **admin**.



In Unisphere for RecoverPoint, data protection is guided by wizards, and performed through the Protection menu.



We will now create a RecoverPoint *consistency group*.

A consistency group is a logical entity used to configure protection policies, and set RPO and RTO policies according to a list of specific resource allocations and prioritizations.

Each consistency group in RecoverPoint/SE includes a production copy, together with a local copy or a remote replica copy, or both.

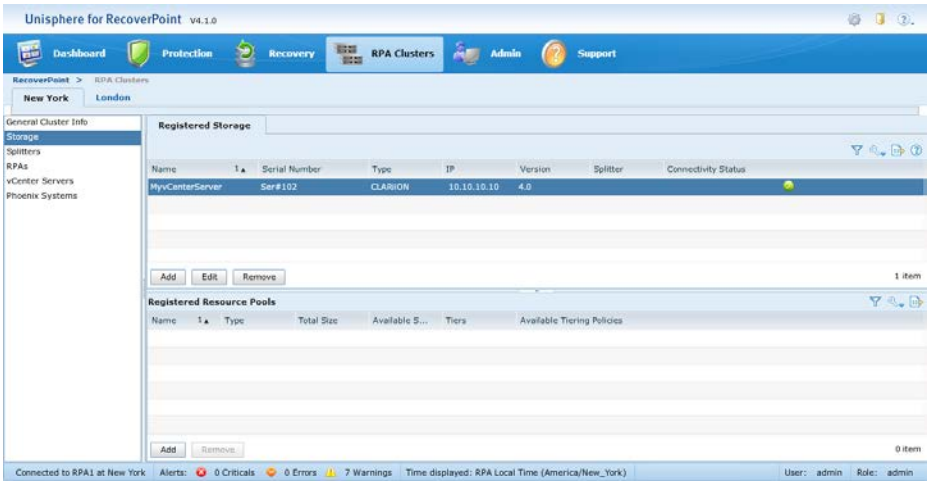
The parallel volumes assigned to each copy (one volume per copy) are grouped together in what is called a *replication set*, which is a logical unit on which the consistency group is built. A single consistency group can contain many replication sets.

In addition, each copy of a consistency group contains a journal. The precise function of the journal changes, according to whether it belongs to a production or replica copy. In all cases, however, the journal plays an integral role in maintaining data consistency between production and replica, during normal replication, and for disaster recovery.

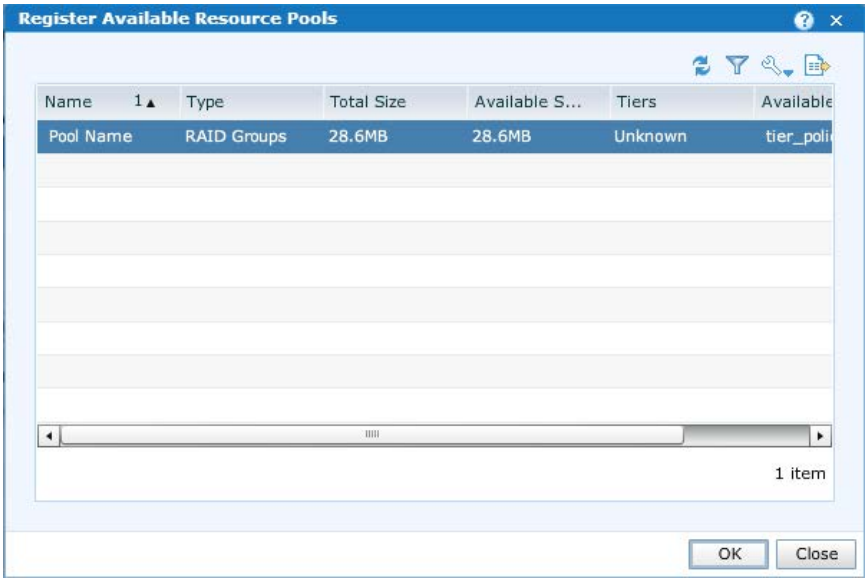
Consistency groups monitor all the volumes assigned to them, to ensure consistency and write-order fidelity. If two data sets are dependent on one another (for instance, a database and a database log), they should be part of the same consistency group.

Note that In RecoverPoint/SE:

- Journal volumes can be automatically provisioned. To do so, ensure that you have dedicated resource pools on the VNX/CLARiiON array, and have registered them in RecoverPoint, at each RPA cluster, as follows:
  a. Select RPA Clusters, and select the tab of the relevant RPA cluster.
  b. In the left pane, select **Storage**.
  c. In the right pane, select your array in the **Registered Storage** table to display the **Registered Resource Pools** table.



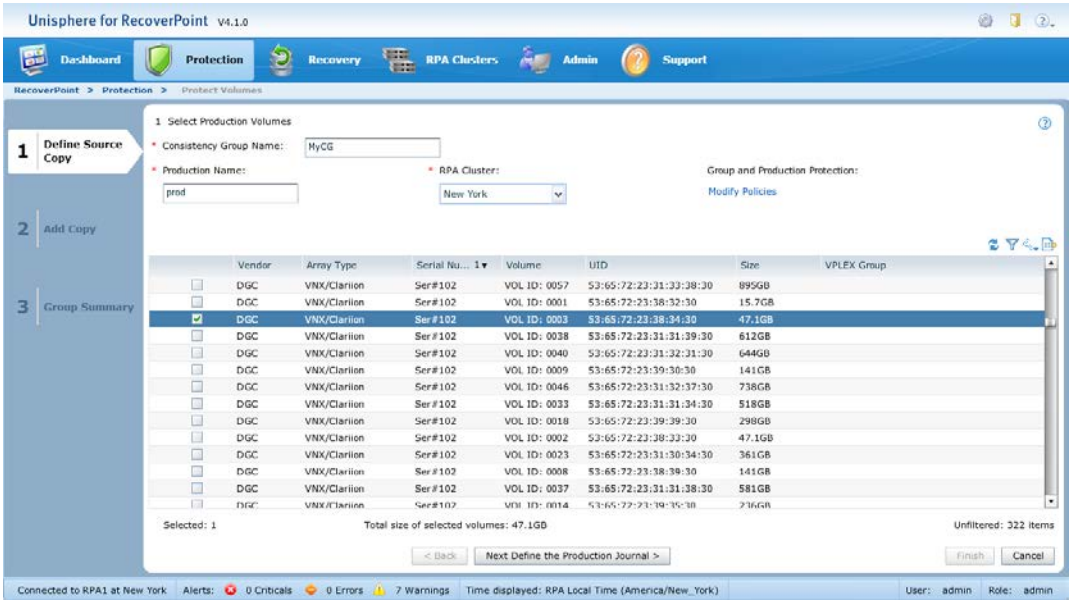
  d. Under the **Registered Resource Pools** table, click **Add**.
  The **Register Available Resource Pools** dialog box is displayed.



e. In the **Register Available Resource Pools** dialog box, select the resource pool that you want to register, and click **OK**. The resource pool is now registered for RecoverPoint management, and RecoverPoint can automatically provision volumes upon it.

- Because there is a limitation of one array per side, if you have more than one non-production copy in the group, make sure the local copy is stored on the same VNX/CLARiiON array as the production copy.

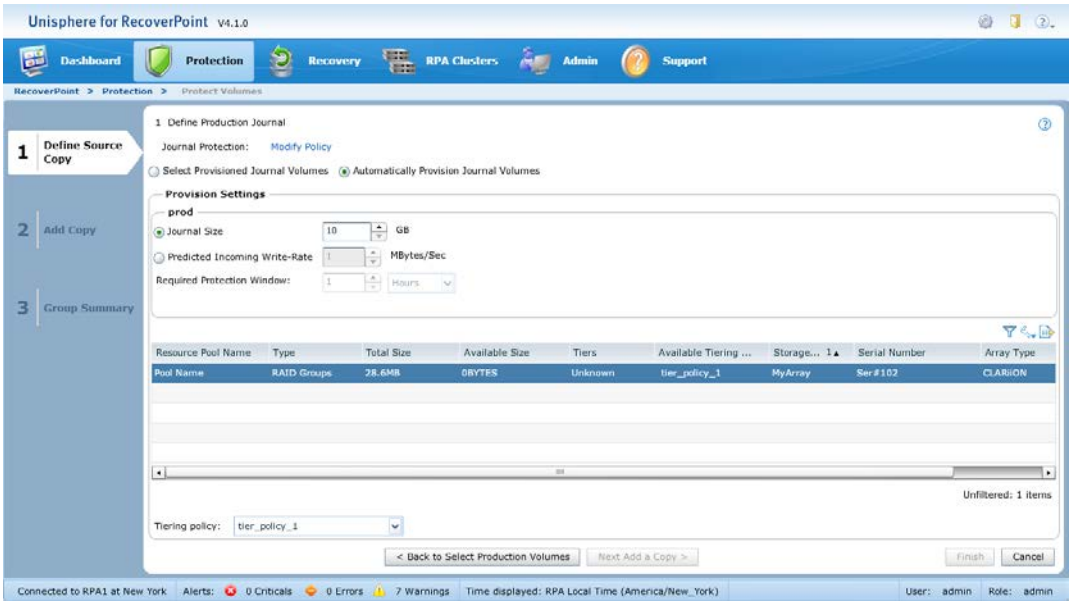
To begin creating a consistency group, select **Protection** from the main menu, and then **Protect Volumes** to open the Protect Volumes wizard. The Select Production Volumes screen appears.



Define the consistency group name, the production name, and the RPA cluster that will manage the production.

Then, select your production volumes from the volumes list.

Click **Next Define the Production Journal** to continue. The Journal Provisioning Method screen appears.

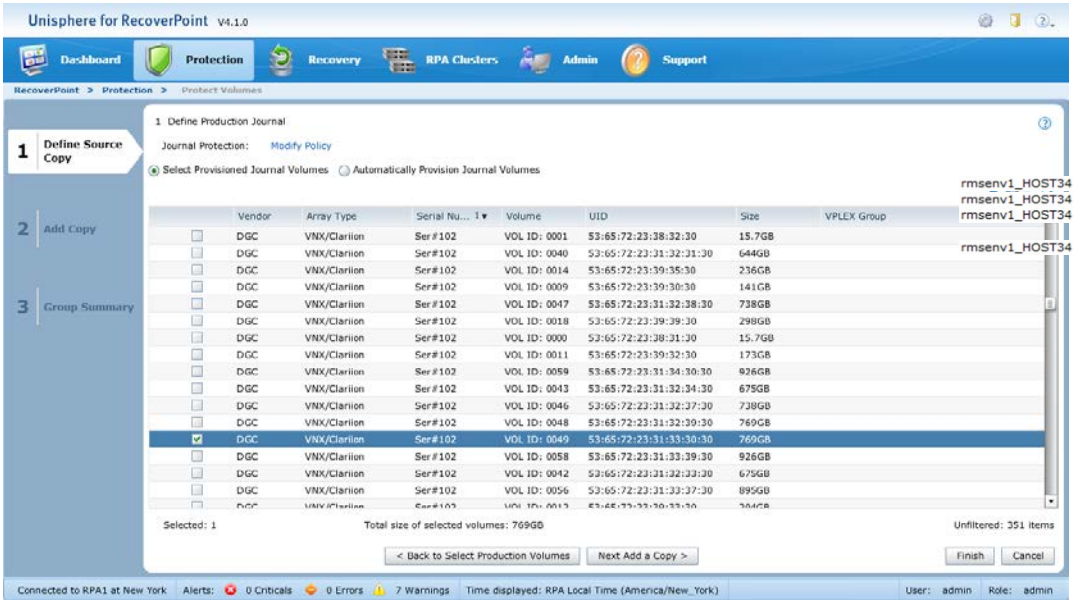


It is recommended that you allow RecoverPoint/SE to automatically provision your journal volumes. To automatically provision journal volumes, keep the **Automatically Provision Journal Volumes** option selected, select the relevant resource pool, and specify one of the following:

- **Journal size** (in GB), in which case the journal of that size will be created.
- **Predicted Incoming** Write **Rate** for the set of volumes that belong to the newly created consistency group, and the **Required Protection Window**, which is the application's rollback window. Based on these estimates, RecoverPoint will recommend a **Calculated Journal Size**. Optionally, select a Tiering policy from the drop-down at the bottom of the resource pool table to automatically apply it to the selected volumes.

Then, click **Next Add a Copy**, and continue defining your consistency group, as described on page 103.

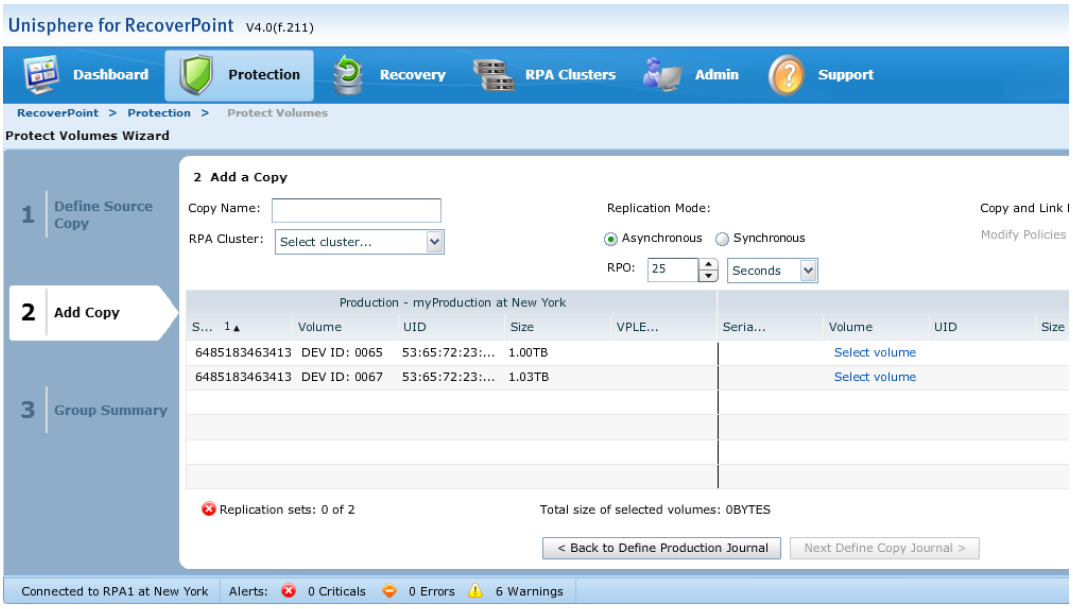
Alternatively, you may use the **Select Provisioned Journal Volumes** option to select from a list of volumes (LUNs) that have already been provisioned on storage. The **Define Production Journal** screen is displayed.



Select the volumes to add to the journal.

For best performance, select volumes that are identical in size. If identically sized volumes are not available, select volumes that are similar in size.

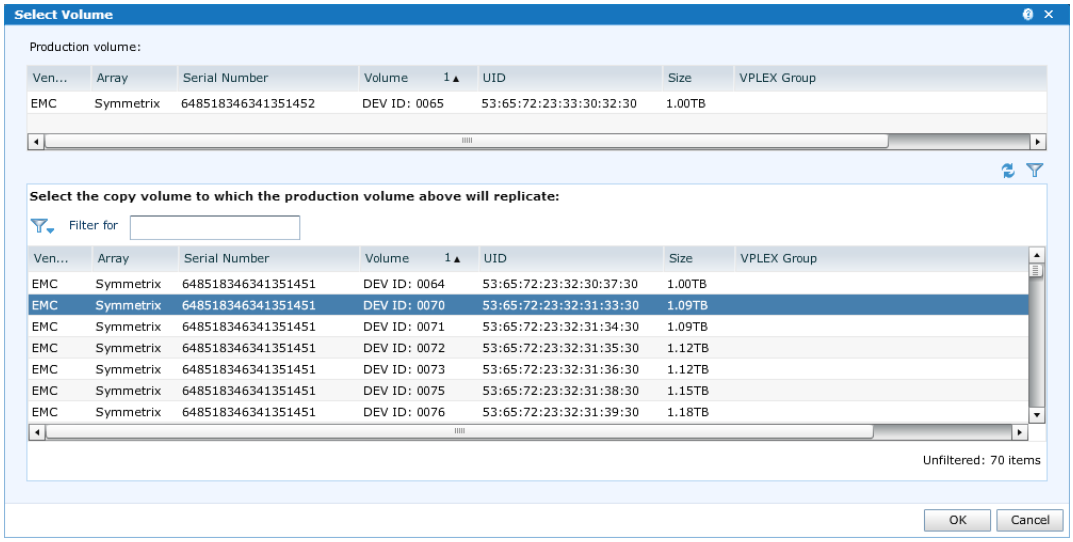
Then, click **Next Add a Copy** to continue. The Add a Copy screen appears.



Define the copy name, the RPA cluster that will manage the copy volumes, and the replication mode.

For each production volume, click the **Select volume** link to add a volume to the copy. The selected volume is the volume to which the production volume shall be replicated.

The volumes list is displayed.

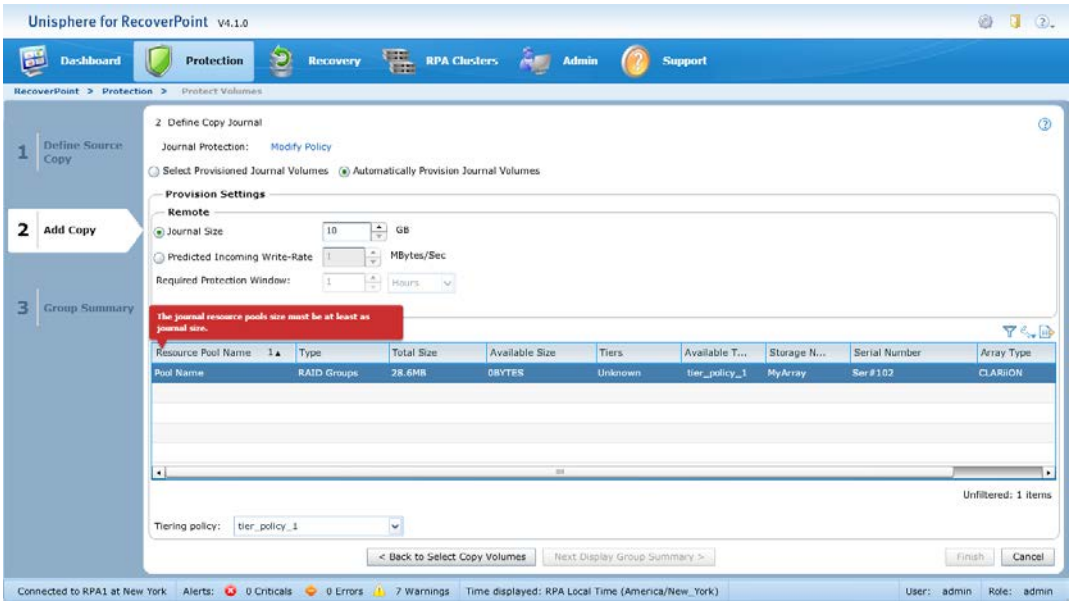


The volumes list contains only volumes of sizes that are equal to, or greater than, the specified production volume.

For best performance during failover, select a volume that is the same size as the production volume. If a volume of the same size is not available, select a volume that is as similar in size as possible.

You can proceed to the next step only when the replication sets icon under the volume list shows a green check mark to indicate that the number of replication sets is equal to the number of production volumes.

To continue, click **Next Define Copy Journal**. The Journal Provisioning Method screen appears.

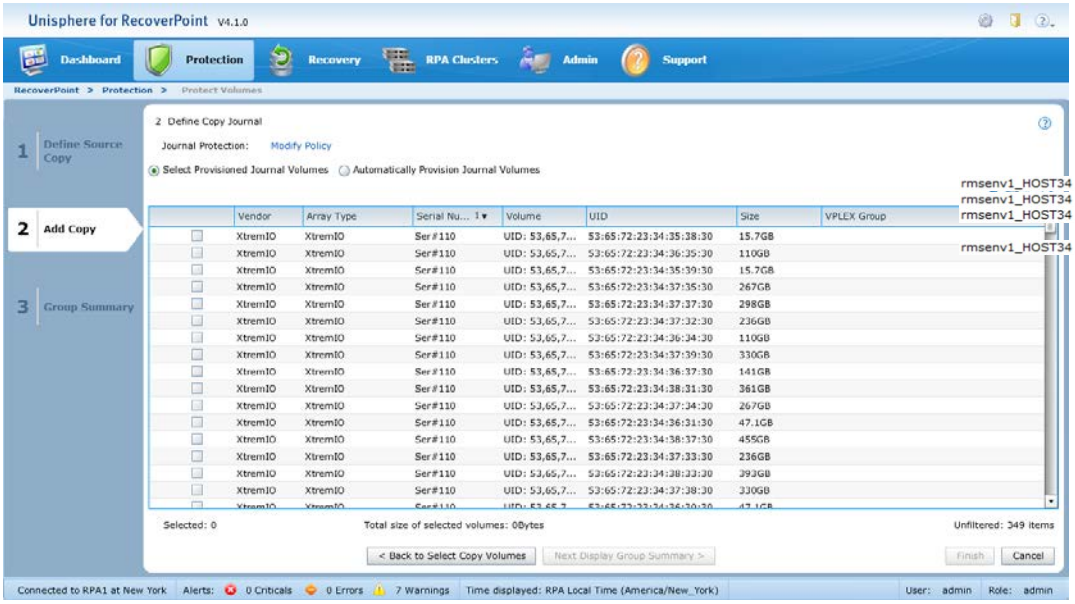


It is recommended that you allow RecoverPoint/SE to automatically provision your journal volumes. To automatically provision journal volumes, keep the **Automatically Provision Journal Volumes** option selected, select the relevant resource pool, and specify one of the following:

- **Journal size** (in GB), in which case the journal of that size will be created.
- **Predicted incoming data** (write) **rate** for the set of volumes that belong to the newly created consistency group, and the **Desired protection window**, which is the application's rollback window. Based on these estimates, RecoverPoint will recommend a **Calculated Journal Size**.

Optionally, select a **Tiering policy** from the drop-down at the bottom of the resource pool table to automatically apply it to the selected volumes.

Alternatively, you may use the **Select Provisioned Journal Volumes** option to select from a list of volumes (LUNs) that have already been provisioned on storage. The **Define Copy Journal** screen is displayed.

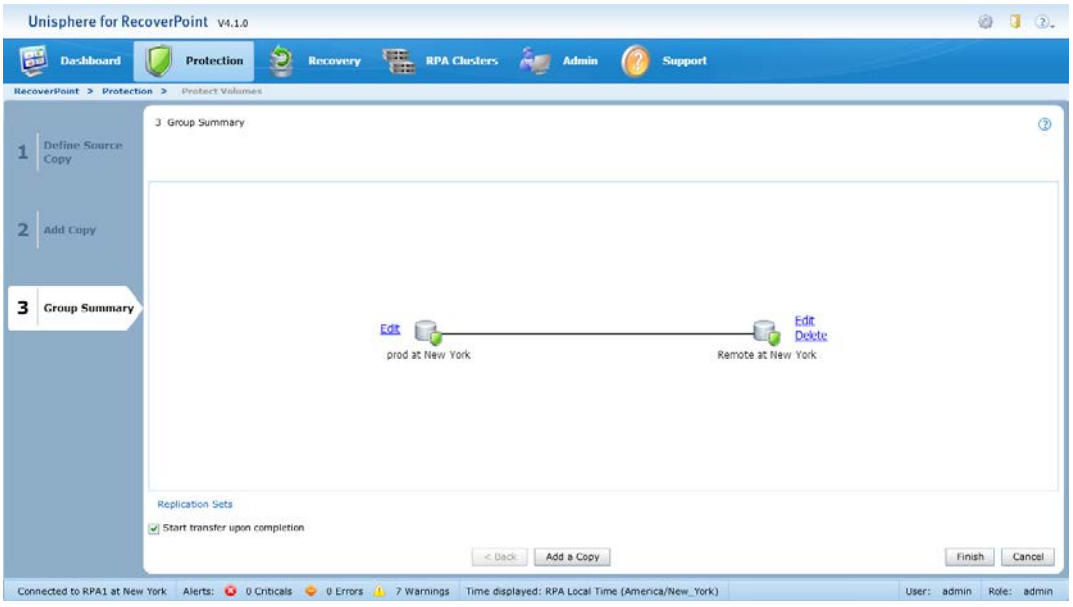


Select the volumes to add to the journal.

For best performance, select volumes that are identical in size. If identically sized volumes are not available, select volumes that are similar in size.

When you are done configuring your journal settings, click **Next Display Group Summary**.

The **Group Summary** screen appears.



You should ensure that the consistency group diagram reflects your anticipated group configuration. If not, you can edit the copy settings, delete the copy, or edit the replication sets.

If you want to add another copy, select **Add a Copy**, and create the new copy in the same way as you created the previous one (see page 103).

Note: Before clicking **Finish**, ensure that the copy volumes are unmounted from any hosts and any volume groups are deported from the logical volume manager (AIX, HP-UX, Windows, and Solaris have volume managers built into the operating system; Veritas Volume Manager can be used with any of these operating systems).

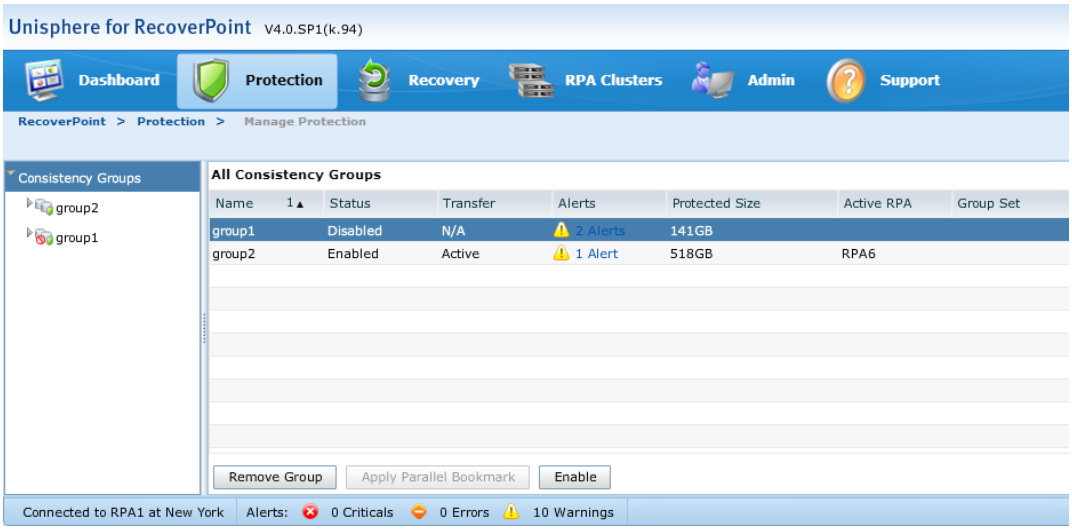
If you want to start replication for this group after it is created, check the **Start transfer upon completion** checkbox under the group diagram.

When you are ready, click **Finish** to create the consistency group, apply all of the specified settings, and start a first-time initialization process to synchronize the production volumes to the copy volumes.

Unisphere for RecoverPoint provides a full set of tools for monitoring the status and managing the consistency group that you have created.

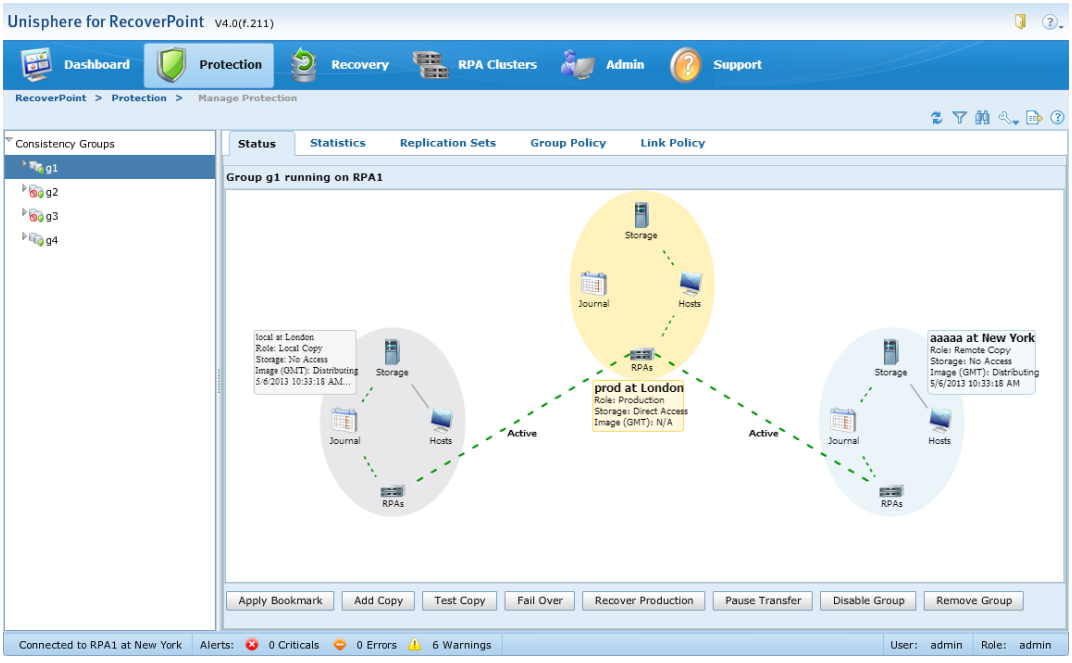
To access these tools, select **Protection** from the main menu, and then **Manage Protection**.

The **Manage Protection** screen appears.



When the Manage Protection screen is first displayed, the Consistency Groups node is selected in the left pane, and the list of all consistency groups in the system is displayed in the right pane along with the status of every consistency group in the RecoverPoint system.

To monitor the status of replication for a specific group, select the group in the left pane, and then select the Status tab in the right pane.



To monitor performance for that group, select the Statistics tab.

These are just a couple of the monitoring tools available.

Congratulations! You have successfully completed the installation and configuration of RecoverPoint/SE, and have gotten started using RecoverPoint/SE replication.

Appendix A IP & SAN Setup Details Templates

Use the IP & SAN Setup Details Template for physical RPA clusters (page 112) and for virtual RPA clusters (page 113) to collect relevant infrastructure data prior to installation.

Note: With regard to the data for the IP & SAN Setup Details Templates:

- A RecoverPoint installation requires at least two designated IP addresses per RecoverPoint appliance, one for Management (LAN) and the other for WAN, for physical and virtual RPAs. Two additional IP addresses are required for iSCSI for each virtual RPA. Finally, an additional floating IP is required per cluster, for use by one of the RPAs for management activities.

  When replicating over Fibre Channel, WAN IPs are not mandatory, but recommended to enable intra-cluster RPA communication.
- A RecoverPoint installation requires Management (LAN) and WAN default gateways and subnet masks.
- Use of NTP, DNS, SMTP, and SNMP services, is optional according to your preference.

	IP & SAN Setup Details Physical RPA Clusters	Cluster #1	Cluster #2
	Cluster Name		
	Time Zone		
	Local Domain		
	Primary DNS Server (Optional)		
	Secondary DNS Server (Optional)		
	NTP Server (Optional)		
	Cluster Management IPv4		
	Management Default Gateway IPv4		
	Management Subnet Mask IPv4		
	WAN Default Gateway		
	WAN Subnet Mask		
	SMTP (Optional)		
RPA 1:	*RPA Management IP*		
	RPA WAN IP		
RPA 2:	*RPA Management IP*		
	RPA WAN IP		
RPA 3:	*RPA Management IP*		
	RPA WAN IP		
RPA 4:	*RPA Management IP*		
	RPA WAN IP		
RPA 5:	*RPA Management IP*		
	RPA WAN IP		
RPA 6:	*RPA Management IP*		
	RPA WAN IP		
RPA 7:	*RPA Management IP*		
	RPA WAN IP		
RPA 8:	*RPA Management IP*		
	RPA WAN IP		
Array SPA	*Array SPA Mgmt IP*		
Array SPB	*Array SPB Mgmt IP*		
Fabric A	*Switch IP Address*		
Fabric B	*Switch IP Address*		
Fabric A:	*SPA Storage port*		
	SPB Storage port		
Fabric B:	*SPA Storage port*		
	SPB Storage port		