

# Zerto

## Zerto Virtual Replication Installation Guide

VMware vSphere Environment

Version 6.0

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ZVR-INV-6.0 Rev01-U2 Jun2018

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Zerto Virtual Replication provides a business continuity (BC) and disaster recovery (DR) solution in a virtual environment, enabling the replication of mission-critical applications and data as quickly as possible, with minimal data loss. When devising a recovery plan, these two objectives, minimum time to recover and maximum data to recover, are assigned target values: the recovery time objective (RTO) and the recovery point objective (RPO). Zerto Virtual Replication enables a virtual-aware recovery with low values for both the RTO and RPO. In addition, Zerto Virtual Replication enables protecting virtual machines for extended, longer term recovery from an offsite backup.

Zerto Virtual Replication is installed in every site with virtual machines to be protected and recovered. The installation includes the following:

- **Zerto Virtual Manager (ZVM)** – A Windows service that manages the replication at the site level. The ZVM monitors the vCenter Server to get the inventory of VMs, disks, networks, hosts, etc. For example, a VMware vMotion operation of a protected VM from one host to another is monitored by the ZVM and the protection and recovery is updated accordingly. For the maximum number of virtual machines, either being protected or recovered to that site, see [Sizing Considerations for Zerto Virtual Replication](#).
- **OVF to enable installing Virtual Replication Appliances (VRAs)** – A virtual machine installed on **each ESX/ESXi hosting virtual machines** to be protected or recovered, to manage the replication of data from protected virtual machines to the recovery site.  
A VRA can manage a maximum of 1500 volumes, whether these are volumes being protected or recovered.
- **Virtual Backup Appliance (VBA)** – A Windows service that manages back-ups within Zerto Virtual Replication.  
The VBA service runs on the same machine as the Zerto Virtual Manager service and manages the repositories where offsite backups are stored. These repositories can be local or on a shared network.
- **Zerto User Interface** – Recovery using Zerto Virtual Replication is managed in a browser or in the VMware Web Client or Client console.

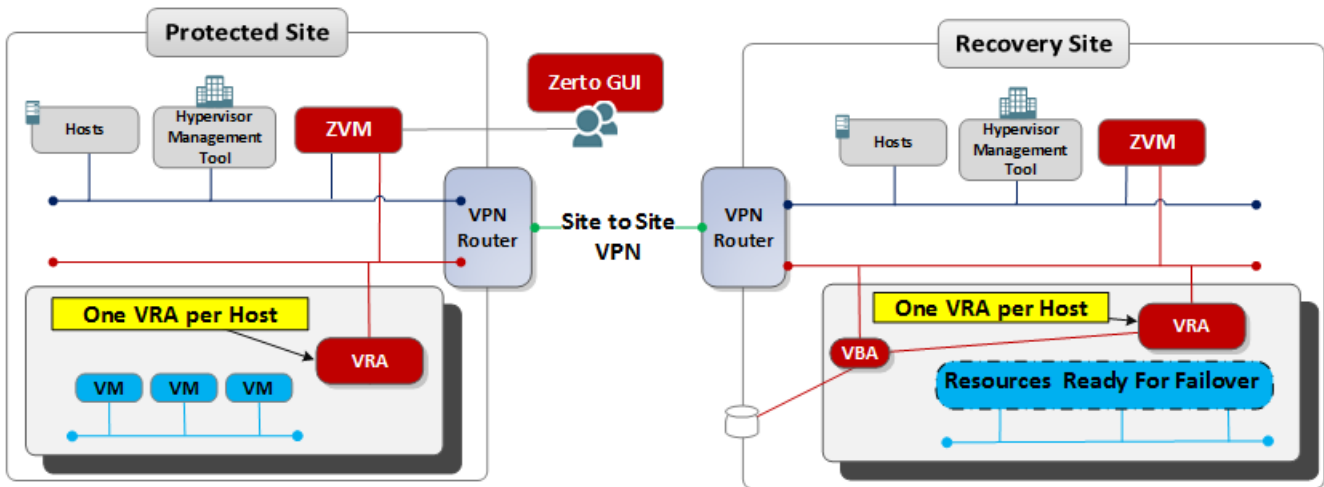
The following topics are described in this section:

- [“Zerto Virtual Replication Architecture”, on page 5](#)
- [“Zerto Virtual Replication Interoperability Matrix”, on page 6](#)
- [“Requirements - VMware vSphere with Zerto Virtual Replication”, on page 6](#)
- [“Considerations - VMware vSphere with Zerto Virtual Replication”, on page 7](#)
- [“The Zerto User Interface in a vSphere Client”, on page 7](#)
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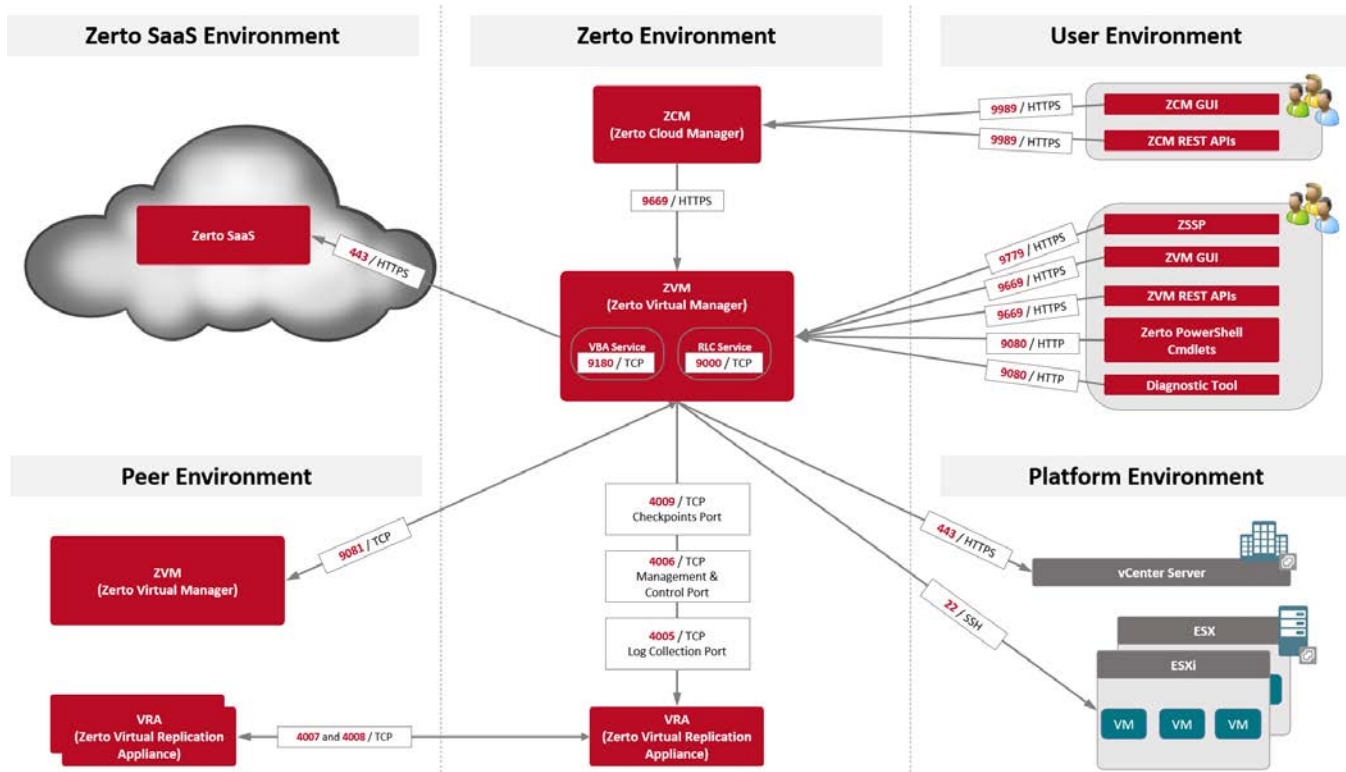
## Zerto Virtual Replication Architecture

The following diagram shows your environment after you have set it up for replication and recovery. The diagram also shows how the main components of Zerto Virtual Replication are deployed across sites to provide disaster recovery across these sites.

**Note:** For details of the architecture and ports used in a cloud-based architecture environment, see *Zerto Cloud Manager Installation Guide*.



The following architecture diagram shows the **ports** that must be opened in the firewalls **on all sites**.



- Zerto Virtual Replication can be installed at multiple sites and each of these sites can be paired to another site enabling protection across sites.
- Zerto Virtual Replication also supports protection and recovery on a site being managed by a single vCenter Server.
- If a **proxy server** is used at the site, specify the IP address of the Zerto Virtual Manager in the **exception list** in the Proxy Server settings.

The following scenarios are examples of protection and recovery with a **single vCenter Server**.

When a single vCenter Server is used, port 9081 shown in the above diagram is not used.

- From one datacenter, a branch office, to another datacenter, the main office, both managed by the same vCenter Server. Zerto recommends installing Zerto Virtual Replication in the main office site where protected machines will be recovered.
- From one host to a second host, both managed by the same vCenter Server.
- To the same host but using a different datastore for recovery.

The following table provides basic information, shown in the above diagram, about the ports used by Zerto Virtual Replication. Consider firewall rules if the services are **not** installed on the same network.

PORT	PURPOSE
22	Required between an ESXi host and the ZVM during installation of a VRA.
443	Required between the ZVM and the vCenter Server.
443	Required between an ESXi host and the ZVM during installation of a VRA.
4005	Log collection between the ZVM and site VRAs.
4006	Communication between the ZVM and local site VRAs and the site VBA.
4007	Control communication between protecting and peer VRAs.
4008	Communication between VRAs to pass data from protected virtual machines to a VRA on a recovery site.
4009	Communication between the ZVM and local site VRAs to handle checkpoints.
5672	TCP communication between the ZVM and vCloud Director for access to AMQP messaging.
9779	Communication between ZVM and ZSSP (Zerto Self Service Portal).
9989	Communication between ZCM, and ZCM GUI and ZCM REST APIs.
9080*	Communication between the ZVM, Zerto Powershell Cmdlets, and Zerto Diagnostic tool.
9081*	Communication between paired ZVMs**
9180*	Communication between the ZVM and the VBA.
9669*	Communication between ZVM and ZVM GUI and ZVM REST APIs, and the ZCM.

\*The **default** port provided during the ZVR installation which can be changed during the installation.  
 \*\*When the same vCenter Server is used for both the **protected** and **recovery** sites, ZVR is installed on one site only and this port can be ignored.

## Zerto Virtual Replication Interoperability Matrix

For details about what is supported, refer to the [Zerto Virtual Replication Interoperability Matrix](#).

## Requirements - VMware vSphere with Zerto Virtual Replication

For **VMware vSphere requirements** with Zerto Virtual Replication, see [Zerto Virtual Replication Requirements for vSphere Environments](#).

- Zerto recommends installing the **Zerto Virtual Manager** with the following **profile**:
  - On a dedicated virtual machine.
  - With a dedicated administrator account.
  - No other applications installed on this machine. If additional applications are installed, the Zerto Virtual Manager service must receive enough resources and HA remain enabled.
  - With VMware vSphere High Availability (HA) enabled.
  - With the `VM Restart Policy` set to `High`.

**Note:** If a proxy server is used at the site, specify the IP address of the Zerto Virtual Manager in the exception list in the Proxy Server settings.

## Considerations - VMware vSphere with Zerto Virtual Replication

Review the following considerations:

- The following **restrictions** apply to **recovering individual files and folders**, and not to recovering the whole virtual machine:
  - The operating system of the machine on which the recovery site Zerto Virtual Manager is installed determines the types of file systems from which individual files and folders can be recovered.
  - When the recovery site Zerto Virtual Manager virtual machine operating system supports a file system, files and folders can be recovered from this file system in virtual machines that this Zerto Virtual Manager will manage the recovery of.  
For example, if a protected virtual machine running Windows 2012 has files using the ReFS file system and requires one or more of these files to be recovered and the recovery site Zerto Virtual Manager is on a machine with Windows 2008, which does not support ReFS, the protected virtual machine files and folders cannot be recovered, **but the whole virtual machine can be recovered.**
- You **cannot take snapshots** of the Zerto Virtual Manager **while the Zerto Virtual Manager service is running**. Doing so can cause operational problems for the Zerto Virtual Manager, such as inconsistencies between the Zerto Virtual Manager on the protected site and on the peer site.

### Routable Networks

The Zerto Virtual Replication architecture supports the following network configurations:

- In on-premise environments:
  - Flat LAN networks
  - VLAN networks, including private VLANs and stretched VLANs
  - WAN emulation
  - VPN IPsec
- In Cloud environments:
  - The instance (virtual machine) on which the Zerto Cloud Appliance is installed must use a subnet that is accessible from all Zerto Virtual Managers that may be connected to this instance.

The Zerto Virtual Replication architecture does **not** support NAT (Network Address Translation) firewalls.

### Minimum Bandwidth

- The connectivity between sites must have the bandwidth capacity to handle the data to be replicated between the sites. The **minimum dedicated bandwidth** must be at least **5 Mb/sec**.

### The Zerto User Interface

- Zerto recommends using Chrome, Firefox, Microsoft Edge, or later versions of Internet Explorer.
- Microsoft Internet Explorer 10 and all versions below, are **not** supported.
- The minimum recommended screen resolution is 1024\*768.

## The Zerto User Interface in a vSphere Client

When using either the vSphere Web Client or Client console, you must use Internet Explorer version 10 or higher.

Zerto recommends using an Internet Explorer version later than version 10.

## Database Requirements

During the Zerto Virtual Manager installation, the user is able to select whether to install and use an **embedded** SQL Server (**localdb**) as the database.

Alternatively, and also during the installation, the user is able to choose whether to instead select and use an **external** SQL Server instance. To use an externally managed database, during the installation select the **Custom Installation** option.

The larger the environment protected by Zerto Virtual Manager, the larger the database size required to support it.

Supported **Microsoft SQL Server** versions: **2008, and higher**.

Before installing Zerto Virtual Manager, click to thoroughly review the following guides:

- [Migrating the Zerto Virtual Replication Database to Microsoft SQL Server.](#)
- [Sizing Considerations for Zerto Virtual Replication.](#)

You must have the following **permissions** set:

- **Public** and **dbcreator** server roles.
- Permission to connect to the database engine.
- Login enabled.
- In **User Mapping** choose the **master** database under which to create the Zerto Virtual Replication database and set both **db\_owner** and **public** for database role membership.

## VMware Privileges Required by Zerto Virtual Replication

When Zerto Virtual Replication accesses the **vCenter Server**, it requires the **vSphere privileges** assigned to Administrator roles, which includes the following privileges.

**Note:** The **Zerto** role must also be available. This role is **added** to the **Administrator user** during the Zerto Virtual Replication installation.

CATEGORY	PRIVILEGE	NOTES	DESCRIPTION
<b>ALARM</b>			
	Create alarm	Only during install and uninstall	When Zerto is installed in vSphere environments, all Zerto alerts are propagated as Alarms in vCenter. As such, upon installation, the alarms matching the alerts are created. Zerto controls enabling and disabling the alarms.  See the correlation between alerts and alarms here: <a href="http://s3.amazonaws.com/zertodownload_docs/Latest/Guide%20to%20vSphere%20Alarms,%20Alerts%20and%20Events.pdf">http://s3.amazonaws.com/zertodownload_docs/Latest/Guide%20to%20vSphere%20Alarms,%20Alerts%20and%20Events.pdf</a>
	Remove alarm	Only during install and uninstall	When Zerto is uninstalled, the alarm definitions added above are removed.
<b>AUTHORIZATION</b>			
(from vCenter 5.5 and 6.0) Permissions			
	Modify permission	Only during install and uninstall	When Zerto is installed in vSphere environments, it creates seven different privileges that can be assigned to vCenter users that login to Zerto (or when viewing Zerto UI from within vSphere Client).



CATEGORY	PRIVILEGE	NOTES	DESCRIPTION
<b>DATASTORE</b>			
	Allocate space	For source/target replication of datastores	Needed to allocate datastore space when Zerto creates or reconfigures VMs.
	Browse datastore	For source/target replication of datastores	Needed for in-GUI datastore browser and VPG import.
	Configure datastore	For source/target replication of datastores	Needed to create/remove directories within the Datastore.
	Remove file	For source/target replication of datastores	Used for cleanup of volumes in a number of situations (for example, cleanup of VRAs, journals, folders, etc.).
	Low level file operations	For source/target replication of datastores	Needed to move files managed by Zerto (for example, mirrors, journals, etc.) between folders. Specifically used in recovery operations (for example, Failover), but may be used during other procedures.
	Update virtual machine files	For source/target replication of datastores	
<b>DATASTORE CLUSTER</b>			
	Configure a datastore cluster	For installation of VRAs	Used when installing VRAs to enable/disable storage DRS within datastore clusters
<b>EXTENSION</b>			
	Register extension	Only during install and uninstall	Needed to create the vSphere Client plugin, 'ManagedBy' extension, and other features related to Zerto's integration with vCenter.
	Unregister extension	Only during install and uninstall	Needed to remove the vSphere Client plugin, 'ManagedBy' extension, and other features when removing ZVR.
<b>FOLDER</b>			
	Create folder		Used during recovery operations to create VM folders.
<b>GLOBAL</b>			
	Cancel task		Used to remove tasks created by ZVR to track operations.
	Diagnostics		Used when pulling diagnostic logs from vCenter/ESXi.
	Disable methods		Used to disable methods on protected objects like VRAs and 'Testing Recovery' VMs.
	Enable methods		Used to re-enable methods disabled by Zerto.
	Log event		Used for pushing Zerto events to vSphere for tracking.
<b>Host &gt; Configuration</b>			
	Advanced settings		Not used by Zerto.

CATEGORY	PRIVILEGE	NOTES	DESCRIPTION
	Virtual machine autostart configuration		Used when creating new VRAs/diskboxes.
	Change settings		Used during VRA deployment.
	Security profile and firewall		Used during VRA deployment.
	Query Patch		Used during VRA deployment.
<b>HOST &gt; INVENTORY</b>			
	Modify cluster		Used for settings affinity rules for VRAs, and disabling DRS/HA for recovery VMs before commit.
<b>NETWORK</b>			
	Assign network		Used for assigning VMs to various networks.
<b>RESOURCE</b>			
	Assign vApp to resource pool		Used for moving recovery vApps into the correct resource pools.
	Assign virtual machine to resource pool		Used for moving recovery VMs into the correct resource pool.
	Migrate a powered off virtual machine		Used for migrating VRAs back to the correct host if they've been moved off. Also for migrating recovery VMs back to the correct host when they are migrated by vCD when adding VMs into vCD vApp.
	Migrate a powered on virtual machine		Used for migrating VRAs back to the correct host if they've been moved off. Also for migrating recovery VMs back to the correct host when they are migrated by vCD when adding VMs into vCD vApp.
<b>SESSIONS</b>			
	Validate session		Used for validating the current session between ZVM and vCenter.
<b>TASKS</b>			
	Create task		Used for creating tracking tasks within vCenter.
	Update task		Used for updating tracking tasks created by Zerto.
<b>vApp</b>			
	vApp application configuration		Used for configuring recovery vApps created by ZVR.
	Assign resource pool		Used for moving recovery vApps into the correct resource pool.
	Add virtual machine		Used for moving recovery VMs into the correct vApp.
	Create		Used for creating recovery vApps.
	Delete		Used for deleting recovery vApps (for example, when stopping FOT).
	Import		Used during VRA OVF deployment.

CATEGORY	PRIVILEGE	NOTES	DESCRIPTION
	Power off		Used for powering off recovery vApps (for example, when stopping FOT).
	Power on		Used for powering on recovery vApps.
<b>VIRTUAL MACHINE &gt; CONFIGURATION</b>			
	Add existing disk	TempDatafile placement is required to restore an offsite backup.	Used to attach disks to VRAs/recovery VMs.
	Add new disk	TempDatafile placement is required to restore an offsite backup.	Used to create new journal/mirror disks on VRAs.
	Add or remove device	TempDatafile placement is required to restore an offsite backup.	Used for adding various devices (NIC, SCSI adapter, etc.) to recovery VMs.
	Advanced	TempDatafile placement is required to restore an offsite backup.	Used to set ExtraConfig on Zerto appliances (ZCC/VRAs/Diskbox).
	Change CPU count	TempDatafile placement is required to restore an offsite backup.	Used to set number of CPUs on VRA deployment.
	Extend virtual disk	TempDatafile placement is required to restore an offsite backup.	Used to resize mirror disks when disk resize occurs on protected site.
	Modify device settings	TempDatafile placement is required to restore an offsite backup.	Used to change settings of existing devices, such as NICs or SCSI adapters, on VRAs.
	Configure managedBy	TempDatafile placement is required to restore an offsite backup.	Used for setting the 'ManagedBy' property on VMs, such as the Zerto appliances and 'Testing Recovery' VMs.
	Memory	TempDatafile placement is required to restore an offsite backup.	Used to configure memory for VRA VMs.
	Raw device	TempDatafile placement is required to restore an offsite backup.	Used to assign RDM LUNs to VRAs and recovery VMs.
	Remove disk	TempDatafile placement is required to restore an offsite backup.	Used to detach disks from VMs during recovery operations/rollbacks.
	Change resource	TempDatafile placement is required to restore an offsite backup.	Used for configuring the resource allocation of a VM within a Resource Pool - specifically when creating a recovery vApp.
	Settings	TempDatafile placement is required to restore an offsite backup.	Used to change VM settings not covered by other permissions.
	Swapfile placement	TempDatafile placement is required to restore an offsite backup.	Used to set swapfile placement on recovery VMs where the protected VM has a custom setting.
	Upgrade virtual machine compatibility	TempDatafile placement is required to restore an offsite backup.	Used to upgrade VRA VM hardware version when upgrading VRA version.

CATEGORY	PRIVILEGE	NOTES	DESCRIPTION
<b>VIRTUAL MACHINE &gt; INTERACTION</b>			
	Power off		Used for powering off VMs, such as when stopping/rolling back a Failover, or when shutting down protected VMs during a Failover/Move.
	Power on		Used for powering on VMs during recovery operations.
<b>VIRTUAL MACHINE &gt; INVENTORY</b>			
	Create from existing		Used to deploy Zerto appliances.
	Create new		Used to create recovery VMs.
	Register		Used to move VMs into VM folders during recovery operations.
	Remove		Used to remove existing VMs (uninstall Zerto appliance, remove recovery VMs when stopping FOT, rolling back FOL, or on protected site when committing FOL or Move with reverse protection).
	Unregister		Used to remove VMs from inventory. Only used as part of Undo events, after failed task.

## Installing Zerto Virtual Replication in VMware vSphere Environments

The Zerto Virtual Replication installation deploys the Zerto Virtual Manager (ZVM) and copies the installation software for the Virtual Replication Appliance (VRA).

A complete installation includes installing Zerto Virtual Replication on the protected and peer, recovery, sites. When both these sites are managed by a single vCenter Server, Zerto Virtual Replication is installed on only one site. In this case, Zerto recommends the following:

- Install Zerto Virtual Replication in the site where protected machines will be recovered.
- Make sure that the machine running the vCenter Server is also in the datacenter used for the recovery and not protection.

In all cases, Zerto recommends that you do not install Zerto Virtual Replication on the machine running the vCenter Server service.

You can install Zerto Virtual Replication using the defaults provided by Zerto or perform a custom install, in which you can determine the ports that will be used by Zerto Virtual Replication.

- [“Performing an Express Installation”, below](#)
- [“Performing a Custom Installation”, on page 14](#)

## Performing an Express Installation

You can install Zerto Virtual Replication using the defaults provided by Zerto. Site information and information to connect to vCloud Director can be provided, if required, after the installation in the Zerto User Interface.

**Note:** You cannot install Zerto Virtual Replication on the same machine where another version of Zerto Virtual Replication has been installed, for example, if the Zerto Virtual Replication for Microsoft Hyper-V version has been installed on the machine.

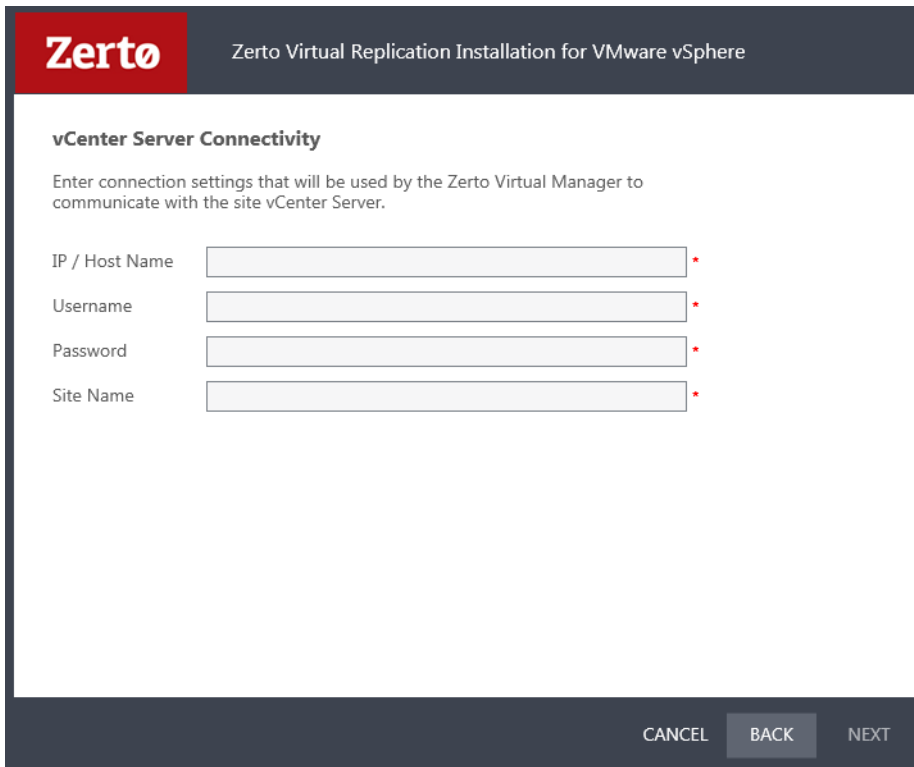
### Before you Begin:

- Make sure you reviewed “[Database Requirements](#)” on page 8.

### To perform an express install of Zerto Virtual Replication:

1. Run the Zerto Virtual Replication installer for VMware.
  - If the required version of **Microsoft .NET Framework** is not installed, you are prompted to install the required version of .NET Framework, which is **included** as part of the Zerto Virtual Replication installation package. After .NET is installed, the machine **automatically restarts** and the Zerto Virtual Replication installation begins.
2. Follow the wizard through the installation until the Choose Installation Type dialog and select the **Express installation** option.
3. Click **NEXT**.

The vCenter Server Connectivity window appears.



The screenshot shows the 'vCenter Server Connectivity' window of the Zerto Virtual Replication installer. The window title is 'Zerto Virtual Replication Installation for VMware vSphere'. Below the title bar, the text reads: 'vCenter Server Connectivity' and 'Enter connection settings that will be used by the Zerto Virtual Manager to communicate with the site vCenter Server.' There are four input fields: 'IP / Host Name', 'Username', 'Password', and 'Site Name', each with a red asterisk to its right. At the bottom of the window, there are three buttons: 'CANCEL', 'BACK', and 'NEXT'.

4. Specify the following:
  - **IP / Host Name:** The IP address or host name of the machine where the vCenter Server runs.
  - **Username:** The user name of a user with **administrator level privileges** in the vCenter Server. The name can be entered using either of the following formats:
    - **username**
    - **domain\username**
  - **Password:** A valid password for the given user name.
  - **Site Name:** A name to identify the site.

5. Click **NEXT**.

The Validation window appears.

The installation performs checks to make sure that the installation can proceed successfully.

6. If you intend **managing** your disaster recovery **from this machine**, you can select to open the Zerto Virtual Manager (ZVM) Interface at the end of the installation, logging in with the user name and password for the vCenter Server connected to the Zerto Virtual Manager. In this user interface you set up Zerto Virtual Replication, as described in “[Initial Configuration](#)”, on page 29.
7. You **must exclude** the Zerto Virtual Replication folder **from antivirus scanning**. Failure to do so may lead to the ZVR folder being incorrectly identified as a threat and in some circumstances corrupt the ZVR folder.
8. Add the machine to the relevant **host boot configuration**, so that on starting up the host, this machine, running the Zerto Virtual Manager, is also powered on automatically.
9. Install Zerto Virtual Replication on the peer sites.

## Performing a Custom Installation

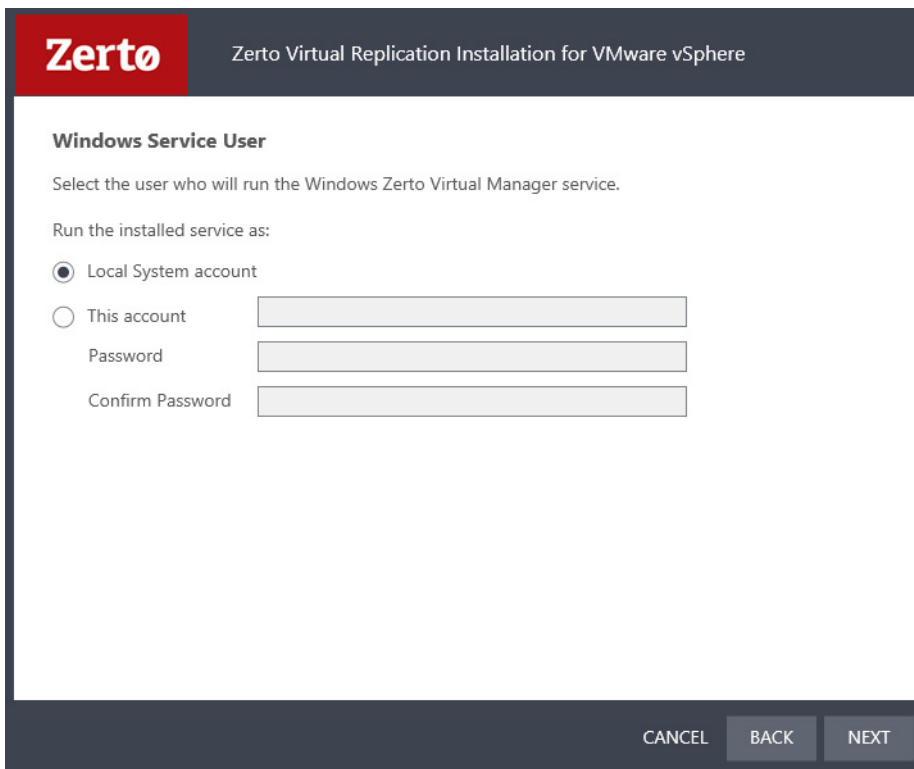
You can install Zerto Virtual Replication providing specific details including the ports that will be used by Zerto Virtual Replication and full contact details. In addition, when performing a custom install, you can provide information to connect to vCloud Director.

### Before you Begin:

- Make sure you reviewed “[Database Requirements](#)” on page 8.

### To perform a custom install of Zerto Virtual Replication:

1. Run the Zerto Virtual Replication installer for VMware.
  - If the required version of **Microsoft .NET Framework** is not installed, you are prompted to install the required version of .NET Framework, which is **included** as part of the Zerto Virtual Replication installation package. After .NET is installed, the machine **automatically restarts** and the Zerto Virtual Replication installation begins.
2. Follow the wizard until the Installation Type window appears, then select the option, **Custom Installation**.
3. Click **NEXT**. The Windows Service User window appears.



The screenshot shows the 'Windows Service User' window in the Zerto Virtual Replication installation wizard. The window title is 'Zerto Virtual Replication Installation for VMware vSphere'. The main heading is 'Windows Service User'. Below the heading, it says 'Select the user who will run the Windows Zerto Virtual Manager service.' and 'Run the installed service as:'. There are three radio button options: 'Local System account' (which is selected), 'This account', and 'Password'. To the right of 'This account' and 'Password' are input fields. Below 'Password' is a 'Confirm Password' label and another input field. At the bottom right of the window are three buttons: 'CANCEL', 'BACK', and 'NEXT'.

4. Select either **Local System account** or **This account**:

- **Local System account:** Use the Local System account to run the Zerto Virtual Manager service, which is installed as part of Zerto Virtual Replication. The Local System account has unrestricted access to local resources.
  - **This account:** Use a **specific account** as the user account to run the Zerto Virtual Manager service, which is installed as part of Zerto Virtual Replication. The account must have **unrestricted access to local resources**.
    - **Password:** The password to use to run the service under the specified account.
    - **Confirm Password:** Confirmation of the password.
5. Click **NEXT**.

The Database Type window appears.

**Zerto** Zerto Virtual Replication Installation for VMware vSphere

**Database Type**

Select database type to use

Use embedded database, installed by this installer.

Connect to an external Microsoft SQL Server or Microsoft SQL Server Express database.

**SQL Server Authentication**

Server Name

Windows Authentication

SQL Server Authentication

Username

Password

Window Authentication cannot be used because local system is configured to run the service

CANCEL BACK NEXT

- Information required by Zerto Virtual Replication is stored by default in a database embedded in the Zerto Virtual Manager. This information includes details of the site where the Zerto Virtual Manager is installed, details of the Virtual Replication Appliances and the volumes they use, and points-in-time recorded for recovery purposes.
  - By default an **embedded SQL-based database** is installed, but you can use an **externally managed database**, either Microsoft SQL Server or SQL Server Express.
  - Protection and recovery can only be performed when the **database is running**.
  - If you use an **external database** and it is down for any reason, **protection ceases**.
6. To use the **embedded database**, leave the **default** which is installed with this installation, then continue with 9.
7. To use an **external database**, select the option, **Connect to an external Microsoft SQL Server or Microsoft SQL Server Express database**.
8. If you selected an **external database**, the SQL Server Authentication area is enabled. Enter the following authentication details to enable access to the SQL Server database:
- a) **Server Name:** The domain name and server instance to connect to, with the format:  
**<server\_name>\<instance\_name>** or **<Server\_IP>\<instance\_name>**
  - b) You must specify an authentication method. Select one of the following:
    - **Windows Authentication**  
- or -
    - **SQL Server Authentication**
  - c) If you selected **Windows Authentication:** This option is enabled only if a specific service user account was specified in Windows Service User, in 3. In this case, the service account name and password are used.

- d) If you selected **SQL Server Authentication**, the Test Authentication button is also displayed. After you define the following, click **Test Authentication**:
- **Username:** The user name for the SQL Server database.
  - **Password:** A valid password for the given user name.
- The installer checks whether it can connect to the specified database with the specified username and password. **You can only continue when the authentication is successful.**
9. Click **NEXT**. The vCenter Server Connectivity dialog is displayed.

**Zerto** Zerto Virtual Replication Installation for VMware vSphere

**vCenter Server Connectivity**

Enter connection settings that will be used by the Zerto Virtual Manager to communicate with the site vCenter Server.

IP / Host Name  \*

Username  \*

Password  \*

CANCEL BACK NEXT

10. Enter connection settings that the **Zerto Virtual Manager** uses to communicate with the **vCenter Server**:
- **IP / Host name:** The IP address or host name of the machine where the vCenter Server runs.
  - **Username:** The user name of a user with administrator level privileges in the vCenter Server. The name can be entered using either of the following formats:
    - **username**
    - **domain\username**
  - **Password:** A valid password for the user name.
11. Click **NEXT**.



The vCloud Director Connectivity dialog is displayed.

**Zerto** Zerto Virtual Replication Installation for VMware vSphere

**vCloud Director (vCD) Connectivity**

Optionally, the Zerto Virtual Manager can communicate with vCD.

If the site uses vCD, enter the connection settings to be used by Zerto Virtual Manager to communicate with vCD.

Enable vCD BC/DR

IP / Host Name

Username

Password

AMQP Username

AMQP Password

CANCEL BACK NEXT

12. When using vCloud Director and you have installed an AMQP server, click the **Enable vCD BC/DR** checkbox and enter the VMware vCloud Director access details:

- **IP / Host name:** The IP address or host name of the machine where vCD runs. When connecting to vCD with multiple cells, enter the virtual IP for the network load balancing used by the cells.
- **Username:** The user name for an administrator to vCD.
- **Password:** A valid password for the given user name.
- **AMQP Username:** The user name for the AMQP server.
- **AMQP Password:** A valid password for the given AMQP user name.

If the vCD connection settings are not specified, for example, when you do not have an AMQP server installed, they can be set in the **Advanced Settings** dialog in the **Site Configuration** panel, in the Zerto User Interface after installation, as described in the *Zerto Cloud Manager Administration Guide*.

**TIP:**

Zerto provides an AMQP installation kit if you do not have one installed for vCD.

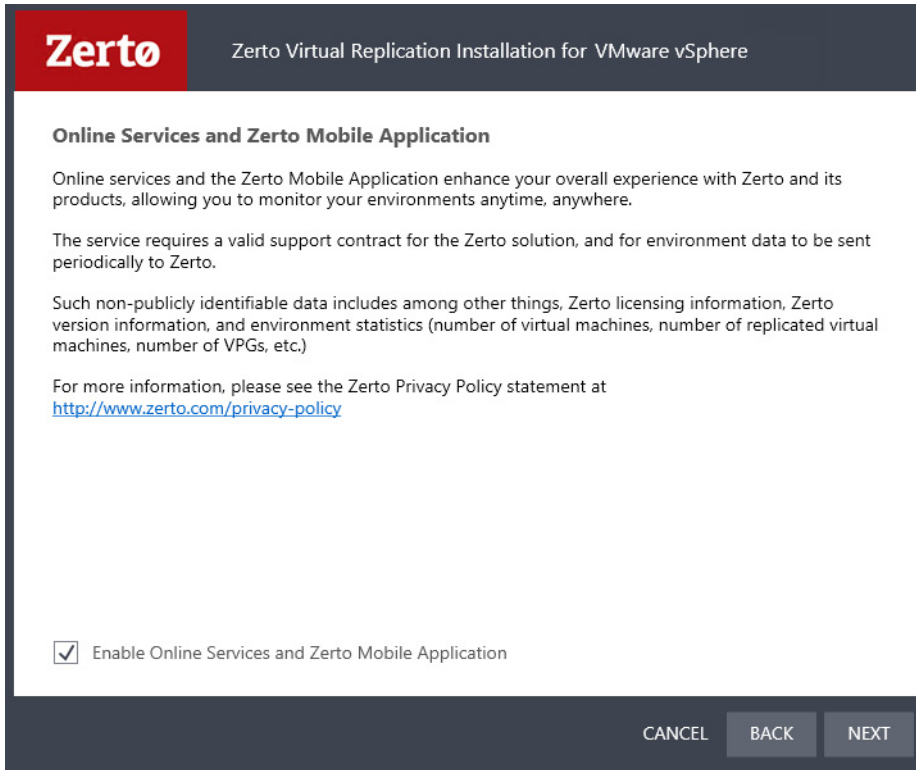
- Run **ZertoAMQPInstallWizard.exe** as described in the *Zerto Cloud Manager Administration Guide*, and enter the following credentials:
- **Username:** The AMQP user account Zerto will use. RabbitMQ prior to version 3.3 installs with a default administrator user: guest. In RabbitMQ version 3.3 and higher, specify a user with administrator privileges.
- **Password:** The password for the user. RabbitMQ prior to version 3.3 installs with a default password of guest.

13. Click **NEXT**.

The Zerto Virtual Manager Site Details dialog is displayed.

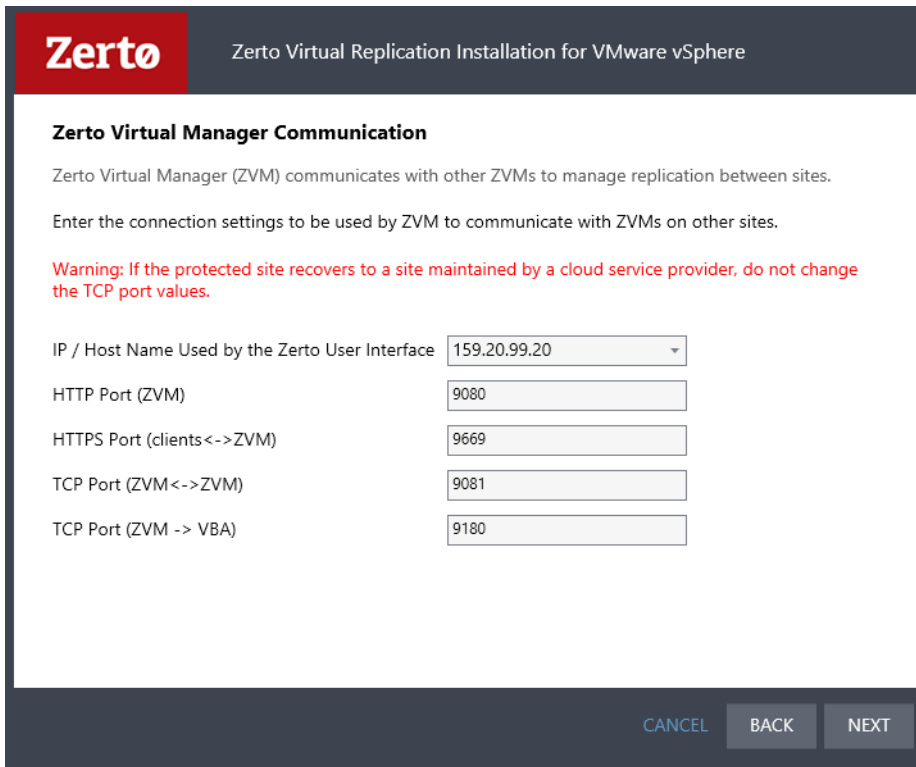
14. Enter the site details:
  - **Site Name:** A name to identify the site. This name is displayed in the Zerto User Interface. **This field is mandatory.**
  - **Location:** Information such as the address, or name of the site to identify it. This field is optional.
  - **Contact Information:** The name of the person to contact if a need arises. This field is optional.
  - **Contact Email:** The email address to contact if a need arises. This field is optional.
  - **Contact Phone:** The phone number to contact if a need arises. This field is optional.
15. Click **NEXT**.

The Online Services and Zerto Mobile Application dialog is displayed.



- The checkbox to **Enable Online Services and Zerto Mobile Application** is selected by **default**.
  - You can **disable** these services by deselecting **Enable Online Services and Zerto Mobile Application**.
16. Click **NEXT**.

The Zerto Virtual Manager Communication dialog is displayed.



17. Enter the connection setting as follows:

PORT DESCRIPTION PARAMETER	DEFAULT PORT NUMBER	COMMUNICATION DIRECTION	BETWEEN...	COMMENTS
<b>IP/Host Name Used by the Zerto User Interface</b>	NA		Zerto User Interface - and - Zerto Virtual Manager	IP to access the Zerto Virtual Manager from the Zerto User Interface.  If the machine has more than one NIC, select the appropriate IP from the list.  Otherwise, the IP that is displayed is the only option.
<b>HTTP Port (ZVM)</b>	9080	Inbound	Zerto Virtual Manager - and - Zerto internal APIs and Cmdlets	
<b>HTTPS Port (clients&lt;-&gt;ZVM)</b>	9669	Inbound	Zerto User Interface - and - Zerto Virtual Manager	
<b>TCP Port (ZVM&lt;-&gt;ZVM)</b>	9081	Inbound and outbound	Zerto Virtual Manager - and - Zerto Virtual Manager	<ul style="list-style-type: none"> <li>■ When <b>both</b> the protected <b>and</b> recovery sites <b>belong to the same enterprise</b>:                             <ul style="list-style-type: none"> <li>■ If you change this value, when pairing sites, use the TCP port value specified here. Pairing the sites is described in <a href="#">"Pairing Sites"</a>, on page 33.</li> </ul> </li> <li>■ When an enterprise <b>uses a cloud service provider to supply</b> disaster recovery services:                             <ul style="list-style-type: none"> <li>■ Do not change this value</li> </ul> </li> </ul>
<b>TCP Port (ZVM-&gt;VBA)</b>	9180	Inbound and outbound	Zerto Virtual Manager - and - Virtual Backup Appliance (VBA)	

18. Click **NEXT**.

The installation performs checks to verify that the installation can proceed successfully.

19. If you intend **managing** your disaster recovery **from this machine**, you can select to open the Zerto Virtual Manager (ZVM) Interface at the end of the installation, logging in with the user name and password for the vCenter Server connected to the Zerto Virtual Manager. In this user interface you set up Zerto Virtual Replication, as described in ["Initial Configuration"](#), on page 29.
20. You **must exclude** the Zerto Virtual Replication folder **from antivirus scanning**. Failure to do so may lead to the ZVR folder being incorrectly identified as a threat and in some circumstances corrupt the ZVR folder.

21. Add the machine to the relevant **host boot configuration**, so that on starting up the host, this machine, running the Zerto Virtual Manager, is also powered on automatically.
22. Install Zerto Virtual Replication on the peer sites.
  - The installation creates the Zerto Virtual Manager and Virtual Backup Appliance as services, and the installation package to enable installing Virtual Replication Appliances on hosts.

**Note:** If the vSphere Client console was open during the installation, close it and reopen it to ensure you have the Zerto Virtual Replication user interface loaded.

## Performing a Silent Installation

You can perform a silent installation of Zerto Virtual Replication, by running the installation executable in a script with the **-s** option.

```
<installation>.exe [-s] [-uninstall] [-l <logfile>] [[PROPERTY=VALUE] ...]
```

Where:

- **uninstall** Runs the uninstall procedure.
- **l <logfile>** Writes log entries to the specified file.
- **s** Runs the installation, uninstall, repair or upgrade silently.
  - If Zerto Virtual Replication does **not exist** on the machine, an installation is performed.
  - If the **same version** of Zerto Virtual Replication exists on the machine, a repair is performed.
  - If a **previous version** of Zerto Virtual Replication exists on the machine, an upgrade is performed.
- **PROPERTY=VALUE** Sets the property PROPERTY to VALUE. The PROPERTY can be any in the table below.

**NOTE:**

VRA upgrade is **enabled** by default during the upgrade (`-ShouldUpgradeVra=True`).

To **disable** the VRA upgrade when running the silent installation, enter the following example command:

```
<installation>.exe [-s] [-upgrade] [-l bundle.log -ShouldUpgradeVra=False]
```

PROPERTY	DESCRIPTION	MANDATORY
VCenterHostName	The host name of the machine on which Zerto Virtual Replication is installed.	Yes
VCenterPassword	A valid password for the given user name.	Yes
VCenterUserName	The user name for an administrator to vCD.	Yes
AmqpPassword	The password to access AMQP.	No
AmqpUserName	The username to access AMQP.	No
AutoRestart	When running on Windows 2012 platforms a restart to the computer might be required to complete the installation. Set this value to 1 to automatically restart the computer after the installation, if it is required.	No
DBType	Either the default embedded database, <b>DBType=ssce</b> , or a Microsoft SQL Server, <b>DBType=sqlserver</b> . Default is to use the embedded database.	No
IsWindowsAuthentication	Use Windows authentication.	No
ServiceAccount	The user account to run the Zerto Virtual Manager service. Default = <code>'\LocalSystem'</code>	No
ServicePassword	The password to use to run the service under the specified account.	No

PROPERTY	DESCRIPTION	MANDATORY
SiteCertificatePassword	The default is taken from Zerto.	No
SiteContactEmail	The email address to contact if a need arises.	No
SiteContactInfo	The name of the person to contact if a need arises.	No
SiteContactPhone	The phone number to contact if a need arises.	No
SiteExternalIP	The IP address used by vCenter Server get the Zerto UI plug-in to incorporate in the vCenter UI.	No
SiteHttpPort	The port used for inbound communication between the Zerto Virtual Manager and Zerto internal APIs, and Cmdlets. Default is 9080.	No
SiteHttpsPort	The port used for inbound communication between the Zerto User Interface and the Zerto Virtual Manager. Default is 9669.	No
SiteIpAddress	The IP address or host name of the machine where the vCenter Server runs.	No
SiteExternalIp	The IP address used by vCenter Server to get the Zerto User Interface plug-in to incorporate in the vCenter UI.	
SiteKeepPreviousIdentifier	The default is true.	No
SiteLocation	Information to identify the site location.	No
SiteName	A name to identify the site. This name is displayed in the Zerto User Interface.	No
SiteTcpPort	The port used for communication between Zerto Virtual Managers. Default is 9081.	No
SiteTcpPortVba	The port used for communication between the Zerto Virtual Manager and the Virtual Backup Appliance. Default is 9180.	No
SqlPassword	A valid password for the given user name.	No
SqlServerName	The domain name and server instance to connect to, with the format <b>domain\instance</b> .	No
SqlUserName	The user name for the SQL Server database.	No
VcdHost	The IP address or host name of the machine where vCD runs. When connecting to vCD with multiple cells, enter the virtual IP for the network load balancing used by the cells.	No
VcdPassword	The password to access vCloud Director.	No
VcdUserName	The username to access vCloud Director.	No

The following is an example command line to run a silent installation:

```
"Zerto Virtual Replication VMware Installer.exe" -s vCenterHostName=199.10.10.20  
vCenterUserName=Administrator vCenterPassword=mypassword
```

## Installing Zerto Virtual Replication Cmdlets

Windows PowerShell is a command-line shell running under Windows for system administrators. The Windows PowerShell includes both an interactive command line prompt and a scripting environment. Each can be used independently or they can be used together.

Windows PowerShell is built on top of the .NET Framework common language runtime (CLR), enabling it to accept and return .NET Framework objects.

To run the Zerto Virtual Replication cmdlets you must first run the installation package supplied by Zerto.

**Note:** You must have both Microsoft .NET Framework 4 and Windows PowerShell installed.

### To install the Zerto Virtual Replication cmdlets:

1. Make sure that Windows PowerShell is closed.
2. Run the installation file.

After installing the Zerto Virtual Replication cmdlets, either add the cmdlets each time you open the Windows PowerShell or create a Windows PowerShell profile.

The following procedure describes how to add the Zerto Virtual Replication cmdlets to every Windows PowerShell session.

### To add the Zerto Virtual Replication cmdlets to the current session:

1. Open Windows PowerShell with the following arguments:

```
-NoExit -Command Add-PSSnapIn Zerto.PS.Commands
```

The Add-PSSnapin cmdlet adds registered Windows PowerShell snap-ins to the current session.

2. To add the Zerto Virtual Replication cmdlets to every session, in the **Properties** dialog for a PowerShell shortcut specify a Target value similar to the following:

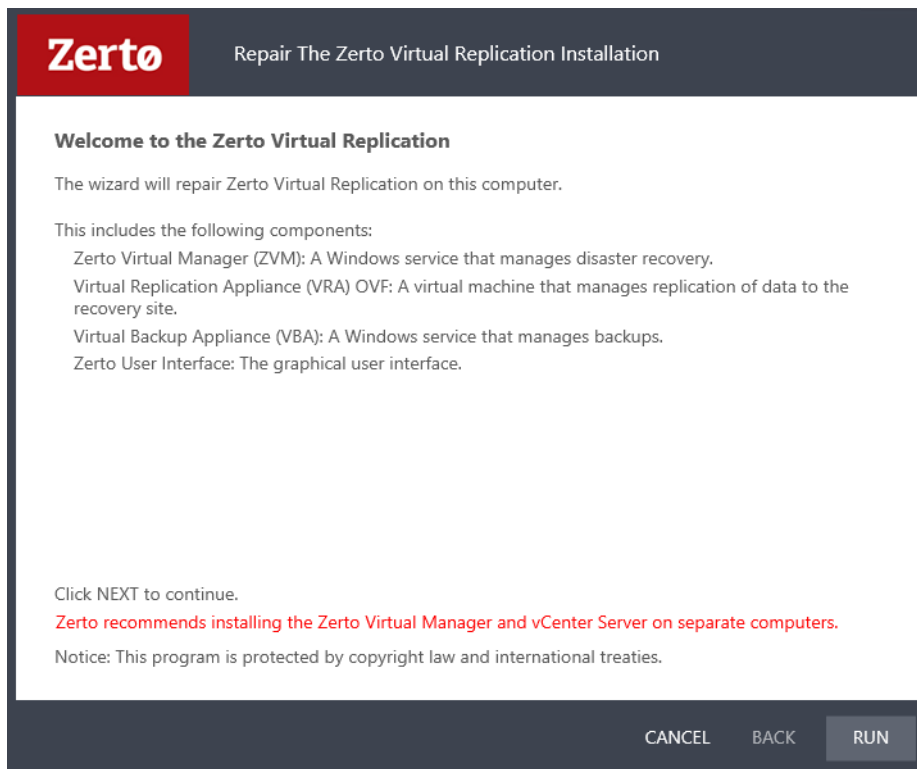
```
C:\Windows\SysWOW64\WindowsPowerShell\v1.0\powershell.exe -NoExit  
-Command Add-PSSnapIn Zerto.PS.Commands
```

**Note:** You can create a Windows PowerShell profile, as described in the Windows PowerShell Help, to add the snap-in to all future Windows PowerShell sessions.

For more details, see *Zerto Virtual Replication PowerShell Cmdlets Guide*.

## Repairing the Current Installation

If a new installation is the same version as the installed version, the *Repair the Zerto Virtual Replication Installation* dialog is displayed.



When repairing the version, all pairing, VRAs and VPGs defined for the site are removed. Use the Zerto Diagnostics utility options **Export** and **Import** to save the settings, as described in the section Upgrading To More Than One Version Higher, in the guide [Upgrading the Zerto Virtual Replication Environment](#).

If the vSphere Client console was open during the repair, close it and reopen it to ensure you use the upgraded Zerto User Interface

## Upgrading Zerto Virtual Replication

Zerto Virtual Replication releases regular updates. VMware and Microsoft also release new versions of their products which can impact Zerto Virtual Replication. The upgrade document describes different options for different upgrade scenarios.

For details, see [Upgrading the Zerto Virtual Replication Environment](#).



You manage the protection and replication of virtual machines in vSphere, between the protected and recovery sites, using the Zerto User Interface. On first access to the user interface, you might have to add a security certificate to set up secure communication. Zerto also provides a set of RESTful APIs and PowerShell cmdlets to enable incorporating some of the disaster recovery functionality within scripts or programs.

You manage the protection and replication of virtual machines between the protected and recovery sites, using one of the following:

- The Zerto Virtual Manager Web Client.
- The vSphere Web Client.
- The vSphere Client console.

**Note:** Microsoft Windows Explorer 9 is not supported and version 10 does not work well with the user interface. Zerto recommends using Chrome, Firefox, or later versions of Internet Explorer.

**Note:** It is required to **exclude** the Zerto Virtual Replication folder from **antivirus scanning**. Failure to do so may lead to the ZVR folder being incorrectly identified as a threat and in some circumstances corrupt the ZVR folder.

The following topics are described in this chapter:

- [“Using the Zerto User Interface From a Browser”, below](#)
- [“Using the Zerto User Interface Within vSphere”, on page 25](#)
- [“Adding a Security Certificate”, on page 27](#)

### Using the Zerto User Interface From a Browser

1. In a browser, enter the following URL:  
**https://zvm\_IP:9669**  
where **zvm\_IP** is the IP address of the Zerto Virtual Manager for the site you want to manage.
2. Login using the user name and password for the vCenter Server connected to the Zerto Virtual Manager.

### Using the Zerto User Interface Within vSphere

The Zerto User Interface is embedded in both the vSphere Web Client and Client console as a plug-in. When accessing the Zerto User Interface from within vSphere the interface is available via a tab in the vSphere user interface. When using the Zerto User Interface via vSphere you have the following additional feature:

- You can protect a virtual machine, that is not already included in a VPG, directly via the *Zerto* tab for the virtual machine in vSphere Client console.

See also:

- [“Using the vSphere Web Client”, on page 26](#)
- [“Using the vSphere Client Console”, on page 27](#)

## Using the vSphere Web Client

You can use the VMware Web Client to manage Zerto Virtual Replication.

The vSphere Web Client is a service that when installed enables a browser-based interface for configuring and administering virtual machines enabling you to connect to a vCenter Server system to manage an ESXi host through a browser. The following procedure describes how to configure the vSphere Web Client to display Zerto Virtual Replication dialogs.

This procedure is valid for vSphere Web Client version 5.1 communicating with vCenter Server from version 5.0 and higher.

**Note:** The following procedure assumes that the vSphere Web Client version 5.1 has been installed. Although you can run the vSphere Web Client version 5.1 with vSphere Server 5.0 and 5.1, when installing the vSphere Web Client you need access to a vSphere Server version 5.1 which includes an option for single sign on, required by the vSphere Web Client installation.

**Note:** Setting up Zerto Virtual Replication to be used via the vSphere Web Client disables the use of other VMware plug-ins, such as VDP and VSA, causing them to disappear from the web client. This is a known VMware problem, see [http://kb.vmware.com/selfservice/microsites/search.do?language=en\\_US&cmd=displayKC&externalId=2042455](http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2042455). To resolve this issue, set up two web clients, on different servers. On one run Zerto Virtual Replication and on the other run the VMware plug-ins.

### To set up the vSphere Web Client to work with Zerto Virtual Replication:

1. When the vSphere Web Client service is installed on a **Microsoft Windows platform**:
  - a) Copy and run **VsphereWebClientPluginEnabler.exe** to the machine where you run the web client service. This file is located in the Zerto Virtual Replication folder under the folder where Zerto Virtual Replication was installed. You can copy VsphereWebClientPluginEnabler.exe to any folder on the relevant machine.
  - b) Run **VsphereWebClientPluginEnabler.exe** as an **administrator**.
2. When the vSphere Web Client is installed on a **Linux platform**, via the **vCenter Server Linux Virtual Appliance (vCSA)**:
  - a) Depending on your vCenter Server version, navigate to:
    - Up to vCenter Server **5.5.x**, navigate to: `/var/lib/vmware/vsphere-client`
    - From vCenter Server **6.0.x**, navigate to: `/etc/vmware/vsphere-client/`
  - b) Open the **webclient.properties** file in a text editor and add the following to the file:

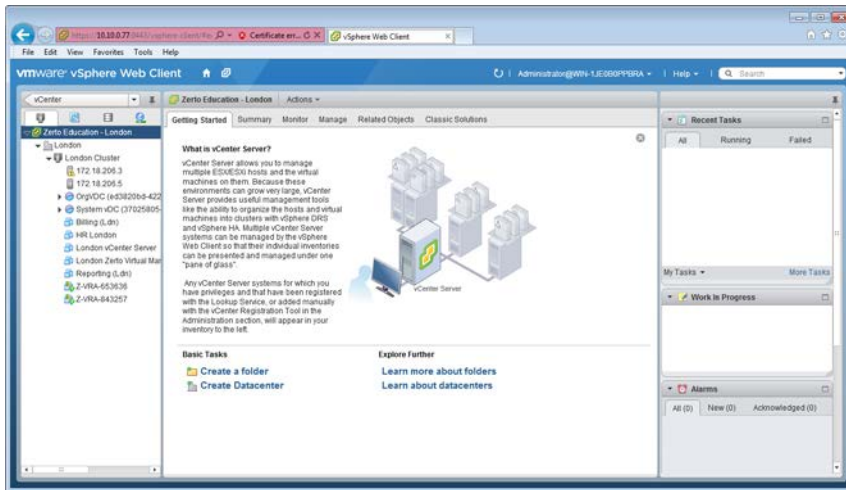
```
scriptPlugin.enabled = true
```
3. Restart the vSphere Web Client service.

After the service has started you might have to **wait a few minutes** before you can open the vSphere Web Client in your browser.

### To use the vSphere Web Client:

1. Log in using the vCenter Server access credentials (user name and password) for the vCenter Server connected to the Zerto Virtual Manager.
2. In the browser, navigate to a vSphere node supported by Zerto Virtual Replication, such as the root node or a virtual machine, and select the **Classic Solutions** tab, which is now displayed after the Related Objects tab.

**Note:** With Chrome and Firefox browsers, you must load the script plug-in page in an external tab at least once before it appears inside the vSphere Web Client. The Classic Solutions tab is displayed when there is a plug-in installed, in this case the Zerto Virtual Replication user interface plug-in.
3. If prompted, allow blocked content to be displayed.



4. If more than one plug-in is installed, click Zerto to display the Zerto Virtual Replication user interface.

## Using the vSphere Client Console

### To use the vSphere Client console:

1. Login using the user name and password for the vCenter Server connected to the Zerto Virtual Manager.
2. Access the Zerto tab, displayed for the root node.

**Note:** The Zerto tab is also displayed for a datacenter node showing the same information as for the root node. For a virtual machine the Zerto tab displays information specific to the virtual machine.

## Adding a Security Certificate

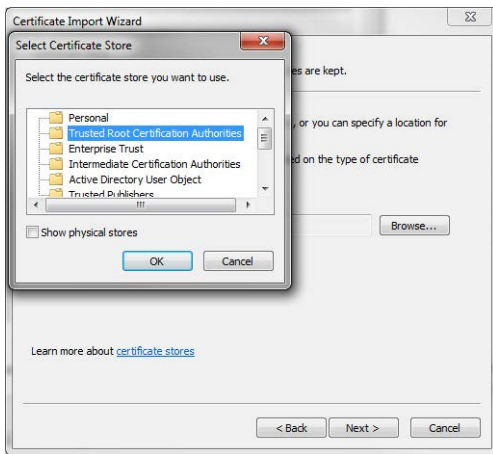
Communication between the Zerto Virtual Manager and the user interface uses HTTPS. On the first login to the Zerto User Interface, you must install a security certificate in order to be able to continue working without each login requiring acceptance of the security.

### To install a security certificate for the Zerto User Interface:

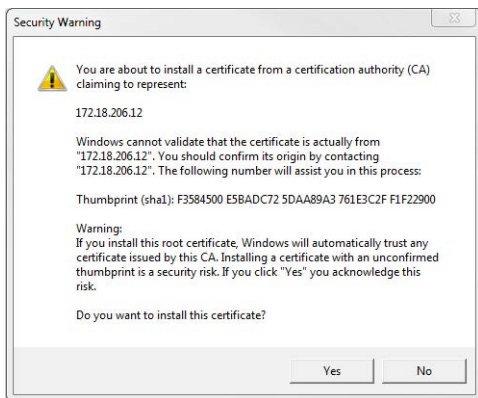
On first access to the Zerto User Interface, if you haven't installed the security certificate, a security alert is issued.

Note the following:

- To run this procedure run Microsoft Internet Explorer as administrator. The procedure is similar for Google Chrome and for Mozilla Firefox.
  - Access the Zerto User Interface using the IP and not the name of the machine where Zerto Virtual Replication is installed.
1. Click **View Certificate**.  
The Certificate dialog is displayed.
  2. Click **Install Certificate**.  
The Certificate Import wizard dialog is displayed.
  3. Follow the wizard: Place all the certificates in the **Trusted Root Certification Authorities store**: Select the **Place all certificates in the following store** option and browse to select the **Trusted Root Certification Authorities store**.



4. Continue to the end of the wizard. Click **Yes** when the Security Warning is displayed.



5. Click **OK** that the installation was successful.
6. Click **OK** when prompted and then **Yes** in the **Security Alert** dialog to continue.

After installing Zerto Virtual Replication, you configure the site. Zerto Virtual Replication is configured and managed from within the Zerto User Interface. This section describes the initial configuration required after installing Zerto Virtual Replication.

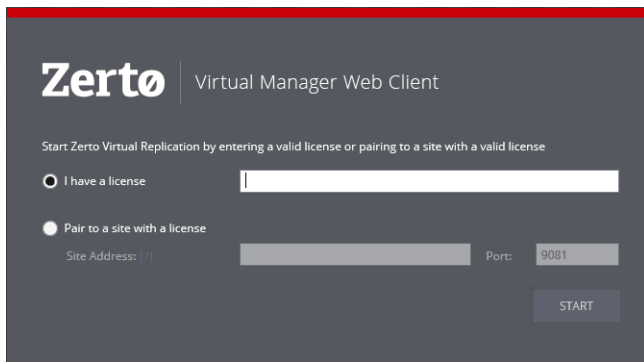
The following topics are described in this section:

- [“Registering the Zerto Virtual Replication License”, below](#)
- [“Installing Virtual Replication Appliances”, on page 29](#)
- [“Pairing Sites”, on page 33](#)
- [“Setting Up a Remote Site”, on page 33](#)

Cloud service providers must configure both Zerto Virtual Manager and a Zerto Cloud Manager as described in *Zerto Cloud Manager Installation Guide* and *Zerto Cloud Manager Administration Guide*.

## Registering the Zerto Virtual Replication License

On the very first access to the Zerto User Interface, you must either register your use of Zerto Virtual Replication, by entering the license key supplied by Zerto or pair to a site where a license has already been entered.

The screenshot shows the Zerto Virtual Manager Web Client registration interface. At the top left is the Zerto logo and the text 'Virtual Manager Web Client'. Below this is the instruction: 'Start Zerto Virtual Replication by entering a valid license or pairing to a site with a valid license'. There are two radio button options: 'I have a license' (selected) and 'Pair to a site with a license'. The 'I have a license' option has a text input field for the license key. The 'Pair to a site with a license' option has two input fields: 'Site Address: [?]' and 'Port: 9081'. A 'START' button is located at the bottom right of the form.

**Note:** A customer using a Cloud Service Provider (CSP) to manage the disaster recovery, pairs to the CSP using the IP address supplied by the CSP and does not enter a license key. A CSP with more than one cloud site must enter a license at each cloud site instead of pairing to a licensed cloud site. The license can be the same license used in another cloud site. The CSP can then pair the sites as described in [“Pairing Sites”, on page 33](#). If the CSP registers Zerto Virtual Replication by pairing to another site with a license, instead of registering by entering a license, the registration works and the CSP can use both sites but customers cannot successfully pair to the site without a license.

After entering a valid license, the *DASHBOARD* tab is displayed with a summary of the site. Before you can start protecting virtual machines in this site, you must install Virtual Replication Appliances on the hosts in the site and pair the protected and recovery sites, as described in the following sections.

## Installing Virtual Replication Appliances

The Zerto Virtual Replication installation includes the OVF template for Virtual Replication Appliances (VRAs). A VRA is a Zerto Virtual Replication virtual machine that manages the replication of virtual machines across sites. A VRA must be installed on every host that manages virtual machines that require protecting in the protected site and on every host that

manages virtual machines in the recovery site. The VRA compresses the data that is passed across the WAN from the protected site to the recovery site. The VRA automatically adjusts the compression level according to CPU usage, including totally disabling it if needed.

A VRA can manage a maximum of 1500 volumes, whether these volumes are being protected or recovered.

The VRA is a custom, very thin, Linux-based virtual machine with a small footprint, disk – memory and CPU – and increased security since there are a minimum number of services installed.

Zerto recommends installing a VRA on every hypervisor host so that if protected virtual machines are moved from one host in the cluster to another host in the cluster there is always a VRA to protect the moved virtual machines.

## VRA Installation Requirements

To install a VRA you require the following:

- 12.5GB datastore space.
- At least 1GB of reserved memory.
- The ESX/ESXi version must be in accordance with supported ESX/ESXi versions in the [Interoperability Matrix](#), and Ports 22 and 443 must be enabled on the host during the installation.

You must also know the following information to install a VRA:

- If the ESXi version is 5.5 or higher and the VRA should connect to the host with user credentials, or if the ESXi version is lower than 5.5 (4.x or 5.x), the password to access the host root account.

**Note:** For ESXi versions 5.5 or higher, by default the VRA connects to the host with a vSphere Installation Bundle, VIB. Therefore, it is not necessary to enter the password used to access the host root account.

- The storage the VRA will use and the local network used by the host.
- The network settings to access the peer site; either the default gateway or the IP address, subnet mask, and gateway.

**Note:** When the gateway is not required, you can specify 0.0.0.0 as the gateway, for example when performing self replication.

- If a static IP is used, which is the Zerto recommendation, instead of DHCP, the IP address, subnet mask, and default gateway to be used by the VRA.

**Note:** In a non-production environment it is often convenient to use DHCP to allocate an IP to the VRA. In a production environment this is not recommended. For example, if the DHCP server changes the IP allocation on a reboot, the VRA does not handle the change.

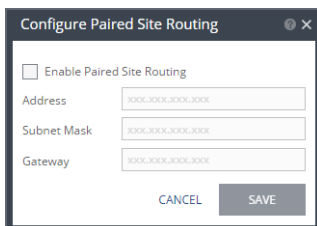
**Note:** For the duration of the installation of the VRA, the Zerto Virtual Manager enables SSH in the vCenter Server.

If the peer site VRAs are not on the default gateway, you must set up routing to enable the VRAs on this site to communicate with the peer site VRAs before defining the VRAs. Setting up routing after defining VRAs only applies to VRAs installed after the routing is set. Any existing VRA is not affected and access to these VRAs continues via the default gateway. If the default gateway stops being used, you must reinstall the VRAs that were installed before setting up paired site routing.

### To set up routing:

1. In the SETUP > VRAs tab, select **MORE > Paired Site Routing**.

The Configure Paired Site Routing dialog is displayed.



2. Click **Enable Paired Site Routing**.
3. Specify the following, and then click **SAVE**:
  - **Address:** The IP address of the *next hop* at the local site, the router or gateway address, that is used to access the peer site network.

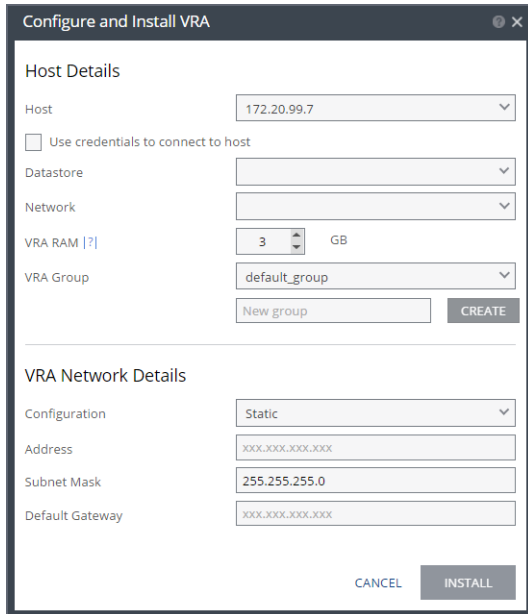
- **Subnet Mask:** The subnet mask for the peer site network.
- **Gateway:** The gateway for the peer site network.

These access details are used to access all VRAs installed on the peer site after the information is saved.

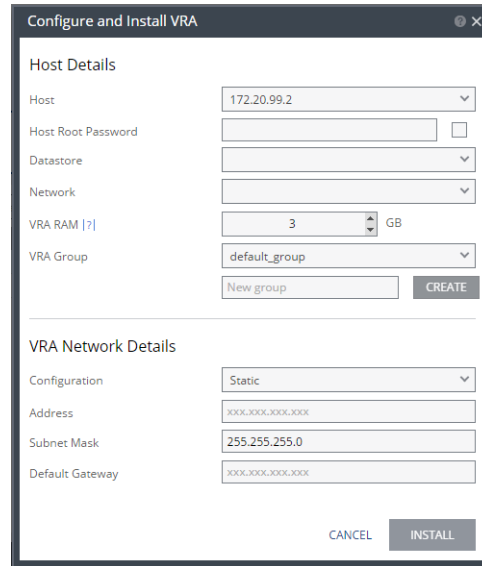
**To install Zerto Virtual Replication Appliances (VRAs) on ESX/ESXi hosts:**

1. In the Zerto User Interface, click *SETUP* > *VRAs*.
2. Select a host which requires a VRA and click *NEW VRA*.

The *Configure and Install VRA* dialog is displayed. The dialog displayed depends on the ESX/i version:



ESXi versions from 5.5



ESXi versions before version 5.5

**Note:** If you selected a cluster or multiple hosts, the VRA is installed on the first host in the displayed list.

3. Specify the following **Host Details**:
  - **Host:** The host on which the VRA is installed. The drop-down displays the hosts that do not have a VRA installed, with the selected host displayed by default.

From ESXi 5.5, by default, Zerto Virtual Manager uses a vSphere Installation Bundle, VIB, to connect to the host. When using VIB:

- The user does not enter a password.
- Once a day, Zerto Virtual Manager checks that the VRA and host can connect. If the connection fails, Zerto Virtual Manager re-initiates the connection automatically and logs it.

For ESX/i versions earlier than 5.5, when using a password, root access is required. Once a day, Zerto Virtual Manager checks that the password is valid. If the password was changed, an alert is issued, requesting the user enter the new password.

**Use credentials to connect to host** - When unchecked, the Zerto Virtual Manager uses VIB to connect to the host. This field is only relevant for ESXi 5.5 and later.

**Host Root Password** - When the VRA should connect to the host with a password, check *Use credential to connect to host* and enter the root user password used to access the host. When the box on the right side is checked, the password is displayed in plain text. This field is only relevant for ESXi 4.x and 5.x hosts. This field is disabled for ESX 4.x hosts.

- **Datastore:** The datastore that the VRA will use for protected virtual machine data on the recovery site, including the journals. You can install more than one VRA on the same datastore.
- **Network:** The network used to access the VRA.

- VRA RAM:** The amount of memory to allocate to the VRA. The amount determines the maximum buffer size for the VRA for buffering IOs written by the protected virtual machines, before the writes are sent over the network to the recovery VRA. The recovery VRA also buffers the incoming IOs until they are written to the journal. If a buffer becomes full, a Bitmap Sync is performed after space is freed up in the buffer.

AMOUNT OF VRA RAM	VRA BUFFER POOL SIZE
1GB	450MB
2GB	1450MB
3GB	2300MB
4GB	3,300MB
5GB	4,300MB
6GB	5,300MB
7GB	6,300MB
8GB	7,300MB
9GB	8,300MB
10GB	9,300MB
11GB	10,300MB
12GB	11,300MB
13GB	12,300MB
14GB	13,300MB
15GB	14,300MB
16GB	15,300MB

The protecting VRA can use 90% of the buffer for IOs to send over the network and the recovery VRA can use 75% of the buffer.

For Example: A protecting VRA defined with 2GB of RAM can buffer approximately 1305MB before the buffer is full and a Bitmap Sync is required.

**Note:** The number of virtual machines that a VRA can support is not dependent on the amount of VRA RAM.

- VRA Group** - Choose the VRA Group from the dropdown list. To create a new VRA group, type in the name of the new group and click **CREATE**. You can then choose the new group from the dropdown list. You group VRAs together when VRAs use different networks so they can be grouped by network, for example when the protected and recovery sites are managed by the same vCenter Server and you want to replicate from the branch site to the main site. Within a group the priority assigned to a VPG dictates the bandwidth used and is applicable within a group and not between groups. Thus, a VPG with a high priority is allocated bandwidth before VPGs with lower priorities. VPGs that are on VRAs with different VRA groups, for example, VPG1 on VRA1 in group1 and VPG2 on VRA2 in group2, do not affect each other, as the priority is relevant only within each group.
- Specify the following VRA Network Details:
    - Configuration:** Either have the IP address allocated via a static IP address or a DHCP server. If you select the `static` option, which is the recommended option, enter the following:
      - Address:** The IP address for the VRA.
      - Subnet Mask:** The subnet mask for the network. The default value is `255 . 255 . 255 . 0`.
      - Default Gateway:** The default gateway for the network.

- Click **INSTALL**.

The VRA installation starts and the status is displayed in the TASKS popup dialog in the status bar and under MONITORING > TASKS.

The VRA displayed name, and DNS name, is Z-VRA-hostname. If a virtual machine with this name exists, for example when a previous VRA was not deleted, the VRA name has a number appended to it.

Add a VRA to every host that hosts virtual machines that you want replicated. Zerto recommends installing a VRA on every listed host. An alert is issued after the first VRA is installed in a cluster that tells you to install a VRA on the other hosts in the cluster. The alert is automatically removed when all the hosts in the cluster have VRAs installed.

A VRA can manage a maximum of 1500 volumes, whether these are volumes being protected or recovered.



**Note:** VRAs are configured and managed by the Zerto Virtual Manager. You cannot take snapshots of VRAs as snapshots cause operational problems for the VRAs.

## Pairing Sites

Zerto Virtual Replication can be installed at multiple sites and each of these sites can be paired to any other site on which Zerto Virtual Replication has been installed. Virtual machines that are protected on one site can be recovered to any paired site.

### To pair sites:

1. In the Zerto User Interface, in the SITES tab click **PAIR**.

The Add Site dialog is displayed.



2. Specify the following:
  - **Remote Site ZVM IP Address:** IP address or fully qualified DNS host name of the remote site Zerto Virtual Manager to pair to.
  - **Port:** The TCP port communication between the sites. Enter the port that was specified during installation. The default port during the installation is 9081.

3. Click **PAIR**.

The sites are paired meaning that the Zerto Virtual Manager for the local vCenter site is connected to the Zerto Virtual Manager on the remote vCenter site.

After the pairing completes the content of the SITES tab updates, to include summary information about the paired site.

## Setting Up a Remote Site

When you are recovering to a remote site, and not the same site, you set up a remote site by pairing to the site as described in [“Pairing Sites”, on page 33](#) and then installing VRAs in the site.

### To install VRAs on hosts in the remote site:

- Repeat the procedure, [“Installing Virtual Replication Appliances”, on page 29](#), via the Zerto User Interface for the remote site.

If you install a VRA on a remote site before pairing the site, you have to enter the license to use Zerto Virtual Replication, as described in [“Registering the Zerto Virtual Replication License”, on page 29](#).

**Note:** You can install VRAs on all the sites from within the Zerto Cloud Manager user interface.

### Pairing Sites

Zerto helps customers accelerate IT transformation by eliminating the risk and complexity of modernization and cloud adoption. Replacing multiple legacy solutions with a single IT Resilience Platform, Zerto is changing the way disaster recovery, data protection and cloud are managed. With unmatched scale, Zerto's software platform delivers continuous availability for an always-on customer experience while simplifying workload mobility to protect, recover and move applications freely across hybrid and multi-clouds. Zerto is trusted by over 6,000 enterprise customers globally, and is powering resiliency offerings for Microsoft Azure, IBM Cloud, AWS, Sungard and more than 350 cloud services providers.

For assistance using Zerto Virtual Replication, contact: [@Zerto Support](#).