Zerto

Zerto Virtual Replication Installation Guide

Amazon Web Services (AWS)
Environment

Version 5.0 Update 4

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.

You install a Zerto Cloud Appliance (ZCA) in the AWS site that is to be used for recovery. The Zerto Cloud Appliance is comprised of the following:

Zerto Virtual Manager (ZVM) – A Windows service that manages everything required for the replication between the protected site and AWS, except for the actual replication of data. Each Zerto Virtual Manager can manage up to 5000 virtual machines, either being protected or recovered to that site.

Virtual Replication Appliance (VRA) – A Windows service that manages the replication of data from protected virtual machines to AWS. A VRA can manage a maximum of 500 volumes.

Virtual Backup Appliance (VBA) – A Windows service that manages back-ups within Zerto Virtual Replication and is responsible for 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 by the Zerto User Interface in a web browser.

The following topics are described in this chapter:

Zerto Virtual Replication Architecture

The following diagram shows how the main components of Zerto Virtual Replication are deployed across protected sites and AWS to provide disaster recovery.[1]
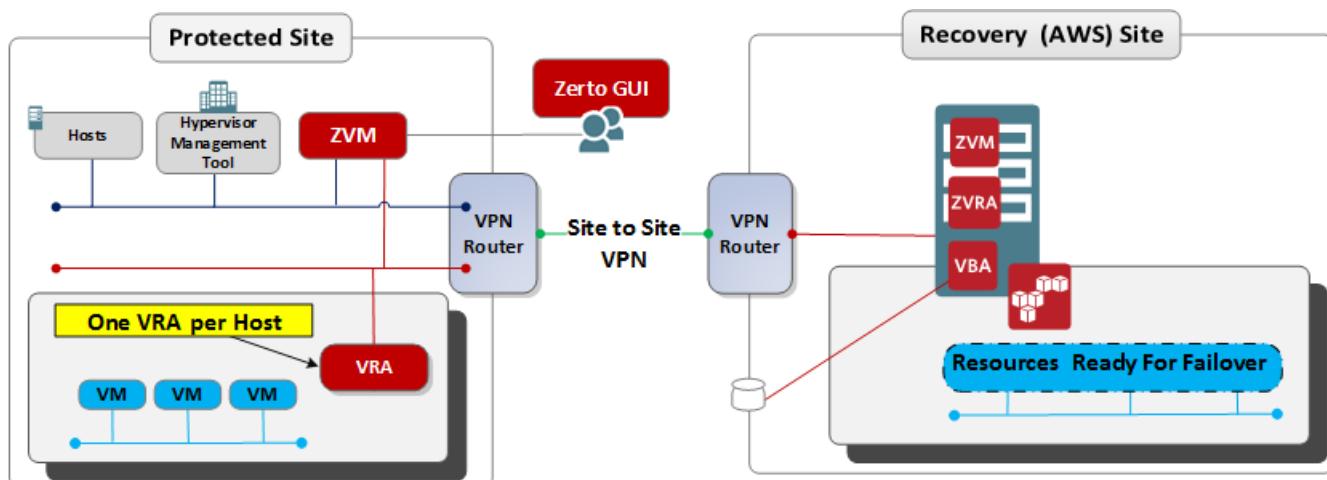
1. For cloud-based architecture diagrams for cloud service providers, see *Zerto Cloud Manager Installation Guide*.

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Zerto Virtual Replication can be installed at multiple sites, all of which can be paired to AWS. For information about the ports used by Zerto Virtual Replication, see "Firewall Considerations", on page 6.

Requirements When Installing AWS

For complete requirements, see Enterprise Guidelines for Amazon Web Services.

The Zerto Cloud Appliance installation must be on an instance on AWS EC2 running a Windows operating system with the following requirements:

■ Windows Server 2008 R2 SP1 with KB3033929 and KB2864202, Windows Server 2012 base, or Windows Server 2012 R2 using a subnet accessible by other Zerto Virtual Replication sites.

Zerto recommends, as the minimum, using an m4.xlarge type instance, except for the Beijing region where either a m3.xlarge or m3.2xlarge type is recommended.

The clocks on the machines where Zerto Virtual Replication is installed must be synchronized with UTC and with each other (the timezones can be different). Zerto recommends synchronizing the clocks using NTP.

Note: The following restriction applies to recovering individual files and folders and **not** to recovering the whole virtual machine: The operating system of the machine on which the Zerto Cloud Appliance is installed determines the types of file systems from which individual files and folders can be recovered. When the Zerto Cloud Appliance virtual machine operating system supports a file system, files and folders can be recovered from this file system in virtual machines that this Zerto Cloud Appliance 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 Zerto Cloud Appliance 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**.

■ At least 4GB of free disk space.
■ Microsoft .NET Framework 4.5.2. The 4.5.2 installation executable is included as part of the Zerto Virtual Replication installation kit and it needs an additional 1.8GB of free disk space. Note that recent Windows operating systems include .NET as part of the operating system. Make sure that you have the latest Windows updates, unless Zerto support warns against a specific update.

Note: If the required version of Microsoft .NET Framework is not installed, you are prompted to install the required version of .NET Framework as part of the Zerto Virtual Replication installation procedure.

Installing the Zerto Cloud Appliance on AWS installs the Zerto Virtual Manager, Virtual Replication Appliance, and a Zerto Backup Appliance as Windows services. There can be multipleZerto Cloud Appliances per AWS account and availability zone. For each account on AWS, there must be:

■ Access to AWS:
    ■ AWS access key ID
    ■ AWS secret access key
■ Permission to use both S3 and EC2, including importing data from S3 to EC2. Specifically, this means the Zerto Cloud Appliance users must have *AmazonS3FullAccess* and *AmazonEC2FullAccess* permissions. These can be set in the AWS Access Management (IAM) service.
■ An AWS Direct Connect or VPN connection between the instance on AWS and the protected site.

Note: For cloud service providers, Zerto recommends one ZCA per account.

Routable Networks

The instance 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.

Zerto Virtual Manager does not support NAT (Network Address Translation) firewalls.

Minimum Bandwidth

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■ 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 Virtual Manager Web Client

■ Microsoft Internet Explorer 9 and all versions below, are not supported.
■ Internet Explorer version 10 does not work well with the user interface.
■ Zerto recommends using Chrome, Firefox, Microsoft Edge, or later versions of Internet Explorer.
■ The minimum recommended screen resolution is 1024*768.
■

Database Requirements

By default, an embedded SQL-based database is used but it is possible to use an externally managed database, Microsoft SQL Server. To use an externally managed database, during the installation choose the `Custom Installation` option.

The following Microsoft SQL Server versions are supported: 2008, 2008R2, 2012, 2014.

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.

Zerto recommends using SQL Server Enterprise Edition if you have 4 or more sites, or 40 or more hosts with virtual machines being protected or recovered, or more than 400 virtual machines to be protected.

Using an externally managed database requires the following configuration for the machine running SQL Server:

■ 4 CPUs or 2 Dual Core CPUs and 16GB RAM.
■ 20GB to accommodate the database and the logs generated by the Zerto Virtual Manager.

Note: If SQL Server is used, it is your responsibility to make sure that database downtime is planned in coordination with your disaster recovery and business continuity requirements. During database downtime, there will be inconsistencies between Zerto Virtual Managers, such as the management of checkpoints, resulting in problems if a recovery is required.

Firewall Considerations

Zerto Cloud Appliance requires the following **ports** to be open in the **AWS site firewall**, set in the **Amazon security group**:

PORT	DESCRIPTION
4005	Log collection
4006	TCP communication between the ZVM and VRA and the VBA on the same site.
4007	TCP control communication between protecting and recovering VRAs.
4008	TCP communication between VRAs to pass data from protected virtual machines to a VRA on a recovery site.
4009	TCP communication between the ZVM and site VRA to handle checkpoints.
9080	HTTP communication between the ZVM and Zerto internal APIs and cmdlets, and a VSS Agent.
9081*	TCP communication between paired ZVMs**.
9180	Communication between the VBA and VRA.
9669	HTTPS communication between the Zerto User Interface and a ZVM, and for invoking Zerto RESTful APIs.

*The default port set during the Zerto Virtual Replication installation. When pairing the ZVM to a Zerto Cloud Connector, this value must not be changed.
** When the same System Center Virtual Machine Manager is used for protection and recovery, Zerto Virtual Replication is installed on one site only and this port is ignored.

Performing an Installation

The process of installing the Zerto Virtual Manager on AWS also installs the Virtual Replication Appliance and the Zerto Backup Appliance. The installation process also creates a bucket with a unique name on S3.

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

- ■ "Performing an Express Installation", below
- ■ "Performing a Custom Installation", on page 8

Performing an Express Installation

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

To perform an express install of Zerto Virtual Replication:

1. Run the Zerto Virtual Replication Installer for Amazon Web Services (AWS).

   Note: 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 dialog for the *Installation Type* and select the `Express Installation` option.

3. Click *NEXT*.

   The *Connectivity and AWS Authentication* dialog is displayed.
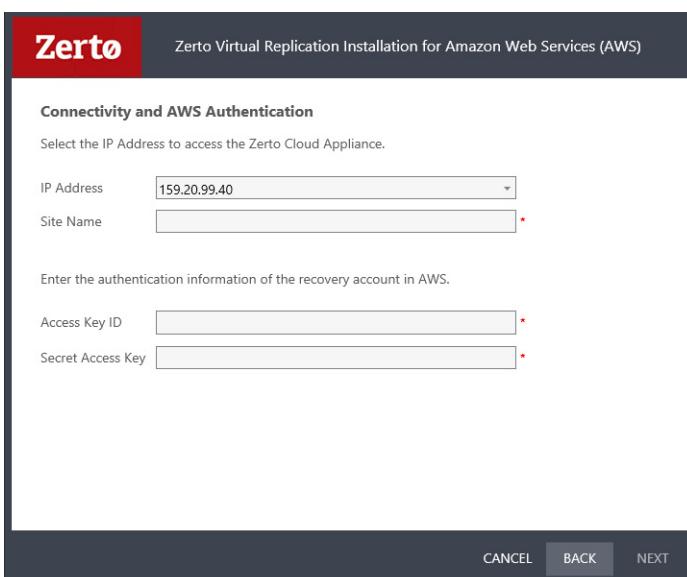
4. Specify the following:

   IP Address – The IP address or host name of the machine on which you are installing the Zerto Cloud Appliance. The protected site accesses the recovery site using this IP.

   Site Name – A name to identify the site.

   Access Key ID – An alphanumeric text string that uniquely identifies the AWS account owner.

   Secret Access Key – A password.

   The Secret Access Key with the Access Key ID forms a secure information set that confirms the user's identity.

5. Click *NEXT*.

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

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6. After the checks complete successfully, click *RUN* and continue to the end of the installation.

    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 AWS instance on which you installed the Zerto Virtual Manager. In this user interface you set up Zerto Virtual Replication, as described in "Initial Configuration", on page 18.

7. 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.

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.

To perform a custom install of Zerto Virtual Replication:

1. Run the Zerto installation executable for Amazon Web.

    Note: 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 dialog for the *Installation Type* and select the `Custom Installation` option.

3. Click *NEXT*.

    The *Windows Service User* dialog is displayed.
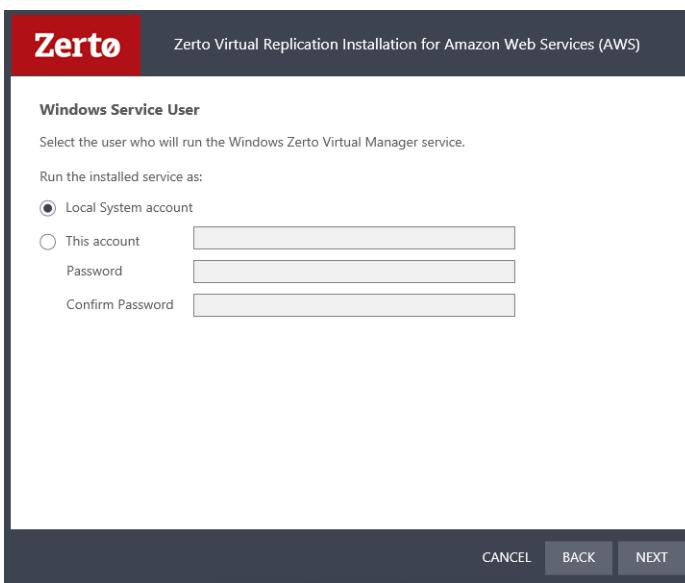
4. Select either `Local System account` or `This account`:

    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*.

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The *Database Type* dialog is displayed.
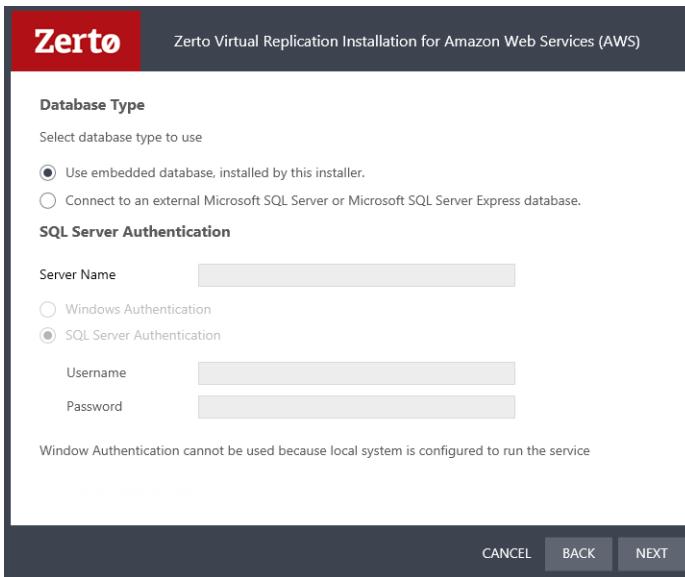
Information required by Zerto Virtual Replication is stored in a database embedded in the Zerto Virtual Manager. This information includes details of the site where the Zerto Virtual Manager is installed, details of the Virtual Replication Appliance and the volumes it uses, and points-in-time recorded for recovery purposes. By default an embedded SQL-based database is used, but you can use an externally managed database, either Microsoft SQL Server or SQL Server Express.

Note: Protection and recovery can only be performed when the database is running. Therefore, if you use an external database and it is down for any reason, protection and the possibility of recovery ceases.

6. To use the embedded database, leave the default, or select the option to connect to an external Microsoft SQL Server database.

    Zerto recommends using SQL Server when a site has more than 40 hosts that have virtual machines that need protecting, and the site has more than 400 virtual machines that need protecting.

    If you select the external database option, the SQL Server Authentication section is enabled.
    a) Enter the following details to enable access to the SQL Server database:
        Server Name – The domain name and server instance to connect to, with the format
        `<server_name>\<instance_name> or <Server_IP>\<instance_name>`.
        Specify one of the following authentication options:
        Windows Authentication – Use Windows authentication. This option is only enabled if a specific service user account was specified in the previous *Windows Service User* dialog, in which case the service account name and password are used.
        SQL Server Authentication – Use SQL Server authentication.
            Username – The user name for the SQL Server database.
            Password – A valid password for the given user name.
    b) When you select SQL Server authentication and enter a user name and password, click *TEST AUTHENTICATION*, which is displayed.
        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.

7. Click *NEXT*.
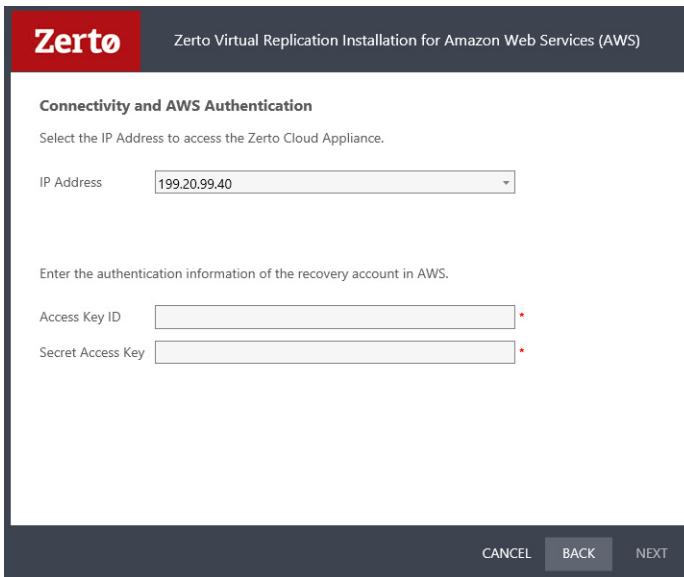
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The *Connectivity and AWS Authentication* dialog is displayed.

8. Specify the following:

   IP Address – The IP address or host name of the machine on which you are installing the Zerto Cloud Appliance. The protected site accesses the recovery site using this IP.

   Access Key ID – A unique identifier that is associated with a secret access key.

   Secret Access Key – A key that is used with the access key ID.

   AWS uses the access key ID and secret access key to identify the sender, ensure that the sender is authorized to make the request, and to prevent the request from being altered.

9. Click *NEXT*.

   The *Zerto Virtual Manager Site Details* dialog is displayed.

10. 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. Optional.

    Contact Information – The name of the person to contact if a need arises. Optional.

    Contact Email – The email address to contact if a need arises. Optional.

Contact Phone – The phone number to contact if a need arises. Optional.

11. Click *NEXT*.

The *Online Services and Zerto Mobile Application* dialog is displayed.
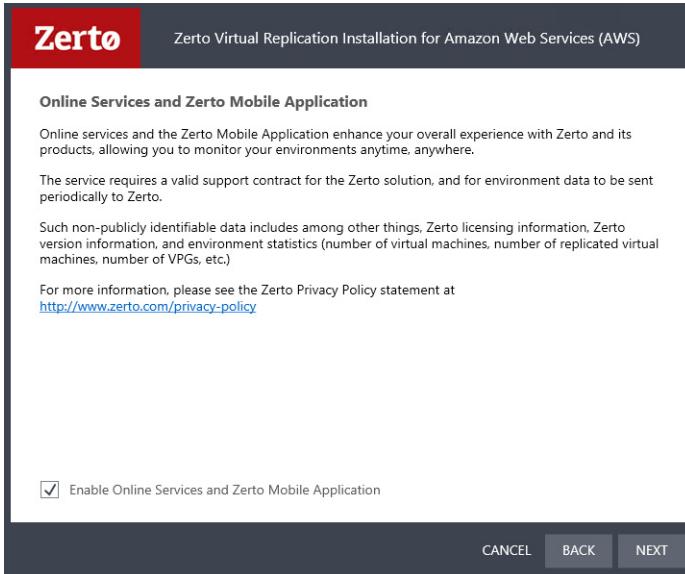
The Online Services and Zerto Mobile Application are enabled by default. These services can be disabled by unchecking
`Enable Online Services and Zerto Mobile Application`.

12. Click *NEXT.*

The *Zerto Virtual Manager Communication* dialog is displayed.
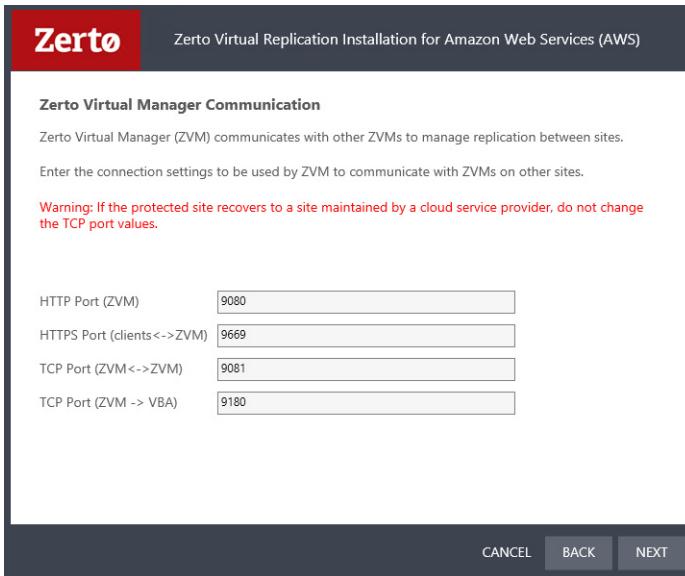
HTTP Port (ZVM) – The port used for inbound communication between the Zerto Virtual Manager and Zerto internal APIs, Cmdlets and a VSS Agent.

HTTPS Port (clients <->ZVM) – The port used for inbound communication between the Zerto User Interface and the Zerto Virtual Manager.

TCP Port (ZVM <-> ZVMs) – The port used for communication between Zerto Virtual Managers. If you change the value, when pairing sites, use the TCP port value you specify here. Pairing the sites is described in "Pairing an AWS Site", on page 18.

TCP Port (ZVM -> VBA) – The port used for communication between the Zerto Virtual Manager and the Virtual Backup Appliance.

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13. Click *NEXT*.

    The *Validation* dialog is displayed. The installation checks that the installation can proceed successfully.

14. After you see that Zerto Virtual Replication can be installed successfully, click *RUN* and continue to the end of the installation.

    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 AWS instance on which you installed the Zerto Virtual Manager. In this user interface you set up Zerto Virtual Replication, as described in "Initial Configuration", on page 18.

15. 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 installation creates a bucket on S3 with a name like "zerto-*<GUID>*".

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.
PROPERY=VALUE – sets the property PROPERTY to VALUE. The PROPERTY can be any of the following:

PROPERTY	DESCRIPTION	MANDATORY
AwsAccessKeyId	A unique identifier that is associated with a secret access key.	Yes
AwsSecretAccessKey	A key that is used with the access key ID	Yes
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
AwsBucketName	The name of the S3 bucket.	No
AwsRegionEndPoint	The AWS region.	No
AwsSaveBucket	Default is false	No
DBType	Either the default internal database, `DBType=ssce`, or a Microsoft SQL Server, `DBType=sqlserver`. Default is to use the internal database.	No
IsWindowsAuthentication	Use Windows authentication.	No
ServiceAccount	The user account to run the Zerto Virtual Manager service. Default is '.\LocalSystem'	No
ServicePassword	The password to use to run the service under the specified account.	No
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
SiteExternallp	The AWS external IP.	No

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PROPERTY	DESCRIPTION	MANDATORY
SiteHttpPort	The port used for inbound communication between the Zerto Virtual Manager and Zerto internal APIs, Cmdlets and a VSS Agent. 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
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 `domain\instance`.	No
SqlUserName	The user name for the SQL Server database.	No

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

```
Zerto.Zvm.Zca.Installer.exe -s AwsAccessKeyId=AFAIKAK AwsSecretAccessKey=MDWTUAVSK
```

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:

■ 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.

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
```

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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.*

Installing the VSS Agent

The Microsoft Volume Shadow Copy Service (VSS) enables taking manual or automatic backup copies or snapshots of data, even if it has a lock, on a specific volume at a specific point-in-time over regular intervals. This ensures not just that the data is crash consistent but also application consistency if recovery is needed.

Zerto Virtual Replication enables adding checkpoints to the journal that are synchronized with VSS snapshots.

To use Zerto Virtual Replication with VSS to ensure application consistency you must install the *ZertoVssAgent* on every virtual machine that uses VSS and that you want to protect with Zerto Virtual Replication.

You can install the *ZertoVssAgent* on the following supported Windows operating systems:

| OPERATING SYSTEMS |
| --- |
| Windows Server 2008, all versions (SPs and R2) |
| Windows Server 2012, all versions (SPs and R2) |

To install the ZertoVssAgent:

1. Download the ZertoVssAgent, *ZertoVss64Agent.msi*, from the Zerto Support Portal downloads page, on the virtual machines that use VSS and that you want to protect with Zerto Virtual Replication.
2. Run the ZertoVssAgent on the virtual machines that use VSS and that you want to protect.

    Note: Only a single virtual machine in a VPG can have application consistent checkpoints and the VSS checkpoint is only applied to the virtual machine where the ZertoVssAgent is installed. Thus, even if more than one virtual machine runs VSS, you only install the Zerto VssAgent on one of the virtual machines in the VPG. Also, the virtual machine where the ZertoVssAgent is installed must have network connectivity to the local Zerto Virtual Manager in order to be able to add VSS checkpoints successfully.
3. Enter the license key and click *Validate*.
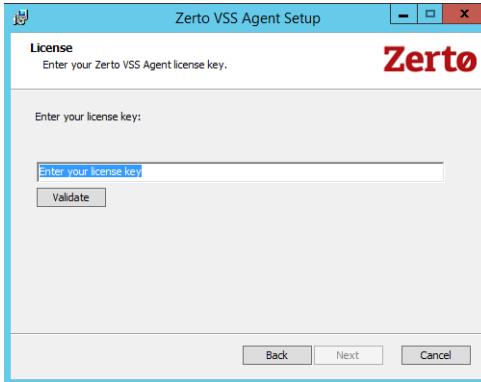
4. Follow the wizard through the installation.

The `Zerto Virtual Manager Connections Settings` dialog is displayed.
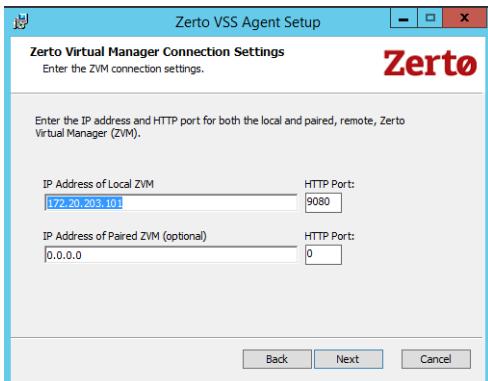
5. Specify the IP address and HTTP port number for the Zerto Virtual Managers managing the protection of the virtual machines, both for the local site and optionally, for the paired, remote site. If the same hypervisor manager is used both for protecting and recovering virtual machines, specify the IP address and HTTP port number for the single Zerto Virtual Manager installed.

    Note: The default HTTP port number when Zerto Virtual Replication is installed is 9080.

    If you enter a wrong IP address or port you can correct the address or port after the installation completes by editing the `ZertoVssAgentGUI.exe.conf` file in the `ZertoVssAgent` folder under the folder where the *ZertoVssAgent* is installed, for example, `C:\Program Files\Zerto`.

6. Click *OK*.

The ZertoVssAgent is installed and the *Add VSS Checkpoint* icon is placed on the desktop. The agent runs as a Windows service, *ZertoVssprovider*.

For more details about the ZertoVssAgent, see the *Zerto Virtual Manager Administration Guide*.

You manage the protection and replication of virtual machines 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, as described in "Adding a Security Certificate for the Zerto User Interface", below. Zerto also provides a set of RESTful APIs and PowerShell cmdlets to enable incorporating some of the disaster recovery functionality within scripts or programs.

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.

To use the Zerto Virtual Manager Web Client:

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 AWS site. Ensure that port 9669 is open and set as an inbound rule in the security group of the instance where Zerto Virtual Replication is installed.
2. Log in using the user name and password of the instance on AWS on which you installed the Zerto Cloud Appliance.

Adding a Security Certificate for the Zerto User Interface

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.
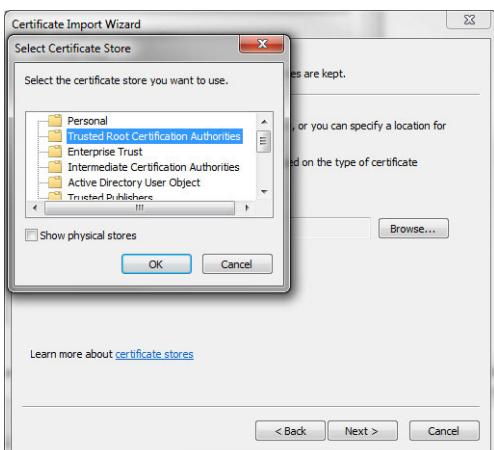
4.   Continue to the end of the wizard. Click *Yes* when the Security Warning is displayed.
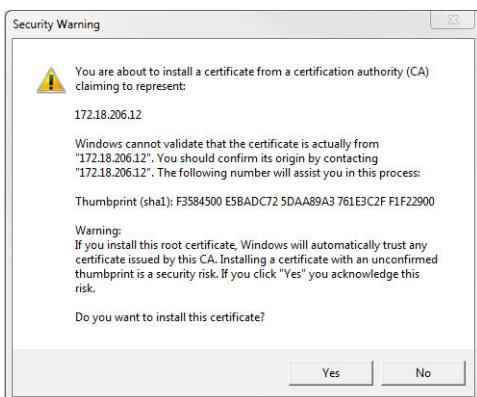
5.   Click *OK* that the installation was successful.

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 chapter describes the initial configuration required after installing Zerto Virtual Replication.

The following topics are described in this chapter:

- ■ "Registering the Zerto Virtual Replication License", below
- ■ "Pairing an AWS Site", on page 18

Registering the Zerto Virtual Replication License

When you first access the Zerto User Interface, you must register your use of Zerto Virtual Replication by entering the ZCA license supplied by Zerto.

Note: The license is different from the license you use for your protected site.
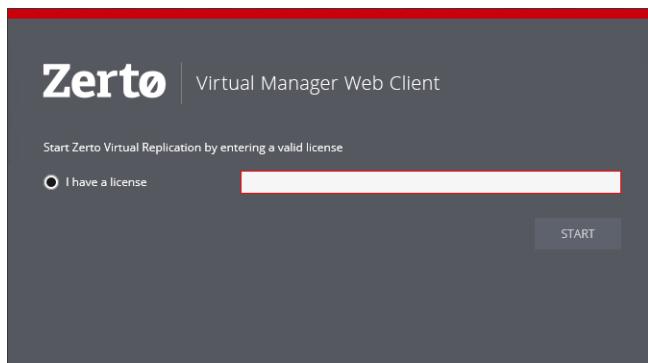
After entering a valid license, the *DASHBOARD* tab is displayed with a summary of the site.

In order to protect virtual machines to AWS, you must first pair the protected site containing the virtual machines that you want to protect with the AWS site on which you installed the Zerto Cloud Appliance. This is described in "Pairing an AWS Site", below.

Pairing an AWS Site

Zerto Virtual Replication is installed on both the protected and AWS sites and these two sites are paired to enable disaster recovery across the sites.

To pair sites:

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

   The `Add Site` dialog is displayed.

You cannot pair to another AWS site nor to an Azure site.

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 on the protected site is connected to - paired with - the Zerto Virtual Manager on the AWS site.

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

CHAPTER 4: UNINSTALLING ZERTO VIRTUAL REPLICATION

This chapter describes how to uninstall Zerto Virtual Replication.

Uninstalling Zerto Virtual Replication

You uninstall Zerto Virtual Replication via the *Uninstall a program* in the Windows Control Panel.

When you uninstall Zerto Virtual Replication the following are also removed:

■ The Zerto Cloud Appliance.
■ All the virtual protection groups defined to protect virtual machines, including all the target disks managed by the Zerto Cloud Appliance for the virtual machines that were being protected.

The uninstall process asks whether you want to save the S3 bucket that was created by this installation.

If, for any reason, a Zerto Cloud Appliance cannot be removed, contact Zerto support.

Note: You can uninstall Zerto Virtual Replication silently, by running the silent installation with the `-uninstall` switch, as described in "Performing a Silent Installation", on page 12.

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

The following topics are described in this chapter:

Note: You can upgrade Zerto Virtual Replication silently, by running the silent installation, as described in "Performing a Silent Installation", on page 12.

Guidelines to Upgrading Zerto Virtual Replication

- Zerto recommends upgrading to the **latest version** of Zerto Virtual Replication that supports the environment you are using. Refer to the Zerto Virtual Replication Interoperability Matrix for the list of environments supported by this version of Zerto Virtual Replication.
- The **order** you upgrade the sites, protected or recovery, is not relevant as long as **paired sites** remain only one version apart, that is, only **one version higher or lower**.

  Note: Upgrade releases are considered to be upgrades of the same version. Releases 4.5, 4.5U1, etc., are the *same* version.
- The following table shows what version you can **upgrade to**, based on the **current version** running at the site.

CURRENT VERSION:	CAN UPGRADE TO:
4.0, 4.0Ux	4.5Ux
4.5, 4.5Ux	5.0Ux

- A Zerto Virtual Manager can be used with a **different version on another site**, as long as the other version is only **one version higher or lower**.
- You can upgrade from version n to the next version (n+1) of Zerto Virtual Replication including to any update *within* the current version. You cannot do an n+2 upgrade directly.

  The following table shows what versions can be used on a **peer site**, based on the version on the **current site**.

VERSION N (THIS VERSION)	VERSION (N-1)	VERSION (N+1)
4.0Ux	3.5Ux	4.5Ux
4.5Ux	4.0Ux	5.0Ux
5.0Ux	4.5Ux	N/A

See the following sections:

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Upgrading Environments Using Zerto Cloud Manager

For environments using the Zerto Cloud Manager you must:

- Upgrade the **Zerto Cloud Manager** to be **consistent** with the latest version of **Zerto Virtual Replication** run by the **CSP**.
- Upgrade the version of **Zerto Virtual Replication** run by the **CSP** before Zerto Cloud Manager, so that they are **never** more than one version separated from each other.

In other words, the **Zerto Cloud Manager** version should be: N or N+1, where N is the ZVM version.

For details about upgrading Zerto Cloud Manager, see *Zerto Cloud Manager Installation Guide*.

Note: Zerto no longer supports vCenter Server vApps. Any VPG protecting a vAPP should be recreated using the virtual machines in the vApp. When upgrading to 5.0Ux, if there is a VPG protecting a vCenter Server vApp, the following error appears, and the upgrade is stopped: *Zerto no longer supports protection of vCenter Server vApps. Create a new VPG with the virtual machines from the vApp added separately to the VPG*.

Before Upgrading Zerto Virtual Replication

Before upgrading to a new version, either by installing the new version over the existing version or by uninstalling the existing version and then installing the new version, Zerto recommends doing the following:

- **Clear the Microsoft Internet Explorer cache** of temporary Internet files. Not clearing the cache of temporary files can result in problems when accessing the Zerto Virtual Manager.
- Make sure that all VPGs are in the **state Protecting**, and not in a sync state, such as `Delta Sync`, or in an error state, such as `Needs Configuration`.
- **Complete any recovery operation** before starting the upgrade.
- **Stop** the **Zerto Virtual Manager service**.
- Create a **backup** of the **machine where the Zerto Virtual Manager runs**, which you will use if the upgrade fails. Zerto recommends taking a snapshot of the machine after stopping the Zerto Virtual Manager service.

   Note: The snapshot should only be used to rollback to the pre-upgrade state immediately after the upgrade has completed. The snapshot should not be used after the protection of virtual machines has restarted.

The installation procedure checks for an existing installation that is either one version lower than the new version or is the same version. If an installation is found you can upgrade the installation.

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Upgrading the Current Installation

The **existing** Virtual Replication Appliances and protected virtual machines, together with all other information, such as checkpoints, journals, sites, and pairing details, are **retained and are available in the upgraded installation**.

The upgrade is performed **without disrupting the protection**, but **no new checkpoints** are written to the journal during the actual upgrade.

This may temporarily cause alerts to be issued, even if only a single site was affected, stating that the journal history and RPO do not meet their specified target settings.

Note:
- **VRAs** from the **existing** installation are **not automatically upgraded** when upgrading Zerto Virtual Replication.
- Zerto recommends that you always upgrade the VRAs on your site to the latest version.
- If a newer version of the installed VRAs exists, you can **continue to use the current VRAs** with the new version of Zerto Virtual Replication, **or upgrade** these VRAs from within the Zerto User Interface.

To upgrade the version:

1. Run the Zerto Virtual Replication installation executable for AWS.

   The Zerto Replication Installation Wizard is displayed.

2. Select *Upgrade* and click *Next*.

   The upgrade proceeds automatically.

Proceed to **completion**.

Upgrading Multiple Sites Running Different Versions

A Zerto Virtual Manager can be installed on a site running a different version, as long as each version is **only one version higher or lower** than the other.

When you have **multiple sites**, make sure that the version of Zerto Virtual Manager is never more than one version higher or lower than any of the versions running on the **paired sites**.

To upgrade Zerto Virtual Replication installed on multiple sites:

1. Upgrade a site whose version is lower than the required version. Start the upgrades with the site whose version is **lowest**.

   Make sure, at all times, that **no site is more or less than one version** higher or lower than any of the **paired sites**.

2. If the VRAs on the site need upgrading, upgrade these VRAs to ensure that they are no less than one version higher or lower than any of the VRAs on any of the paired sites.

3. Repeat the above step for **all sites**.

For Example:
- You have sites running versions 4.0U3, which are paired to a site running 4.5U4.
- You are planning to upgrade to 5.0U2.
- Upgrade first, the 4.0U3 site to a 4.5U4 version, and then both of the sites to 5.0U2.

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## Upgrading To More Than One Version Higher

Before upgrading to a new version, make sure that all VPGs are in `Protecting` state and not in a sync state, such as `Delta Sync`, or an error state, such as `Needs Configuration`.

If you need to upgrade **more than one version higher**, do one of the following:

1. Upgrade versions stepwise, one version at a time, as described above in **Upgrading Multiple Sites Running Different Versions**, until you reach the required version.

2. Then, use the *Zerto Diagnostics* utility's export option to *export* the existing VPG definitions, then uninstall the old version of Zerto Virtual Replication. Install the new version, then use the *Zerto Diagnostics* utility's *import* option to re-create the VPGs. Use the following procedure.

To upgrade Zerto Virtual Replication using the Zerto Diagnostics utility:

1. Click *Start > Programs > Zerto Virtual Replication > Zerto Diagnostics*.

   The *Zerto Virtual Replication Diagnostics* menu dialog is displayed.
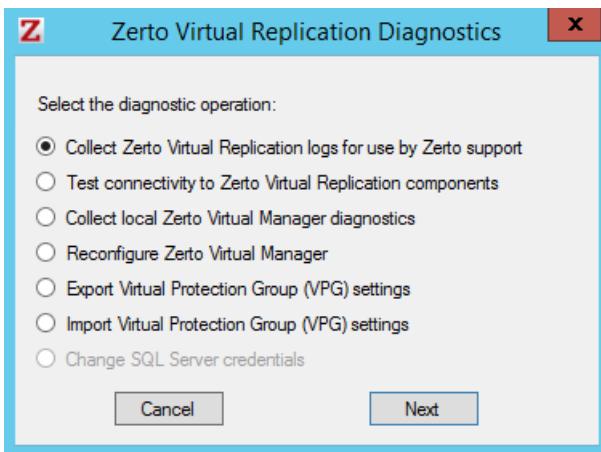

2. Select the *Export Virtual Protection Group (VPG) settings* option and click *Next*.

   Note: Zerto Virtual Replication regularly exports settings to the *Zerto_Installation_Folder*\\`Zerto Virtual Replication\ExportedSettings` folder. You can use the last exported file. The default location of *Zerto_Installation_Folder* is `C:\Program Files\Zerto`.
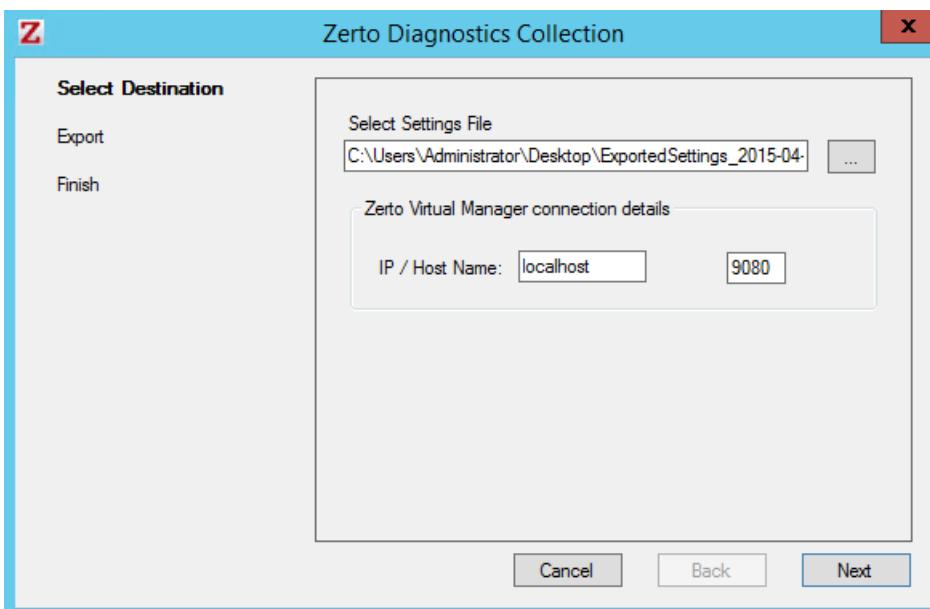
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3. Select the destination for the file that will contain the exported settings and enter the Zerto Virtual Manager IP address and port for the protected site.

4. Click *Next*.

   The list of exported VPGs is displayed.

5. Click *Done*.

6. In the Zerto User Interface delete the VPGs, and keep their target disks.

   Note: If you did not export the settings, Zerto Virtual Replication regularly exports settings to the *Zerto_Installation_Folder*\Zerto Virtual Replication\ExportedSettings folder. You can use the last exported file as input to recreate the VPGs to this point in time. The default location of *Zerto_Installation_Folder* is C:\Program Files\Zerto.

7. Uninstall the existing Zerto Virtual Replication version.

8. Install the new Zerto Virtual Replication version, as described in the *Zerto Virtual Replication Installation Guide*.

9. Install the VRAs on the hosts in the site and pair the sites, as described in *Zerto Virtual Replication Installation Guide*.

   Note: If the protected site and recovery site are the same for any of the VPGs that were exported, set Enable replication to self in the Advanced Settings dialog, as described in *Zerto Virtual Manager Administration Guide for the VMware vSphere Environment*.

10. Click *Start > Programs > Zerto Virtual Replication > Zerto Diagnostics*.

    The *Zerto Virtual Replication Diagnostics* menu dialog is displayed.

11. Select *Import Virtual Protection Group (VPG) settings*.

12. Click *Next*.
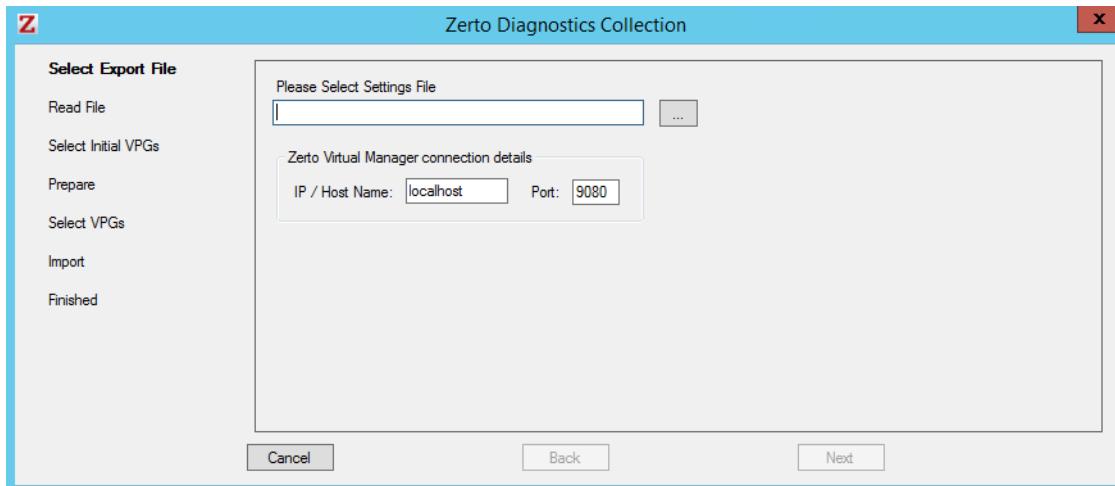
13. Select the file previously exported and enter the Zerto Virtual Manager IP address and port for the protected site.

14. Click *Next*.

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The list of exported VPGs is displayed.

15. Select the VPGs to import. You cannot import VPGs that have the same name as a VPG that is already defined in current installation. If a VPG in the import file has the same name as an existing VPG, it is disabled and is grayed-out.

16. Click *Next*.

The list of imported VPGs is displayed. If the VPG cannot not be imported, the reason is specified.

17. Click *Done*.

Upgrading Zerto Virtual Replication PowerShell Cmdlets

When upgrading Zerto Virtual Replication PowerShell cmdlets, make sure that **Windows PowerShell** is **closed** before installing the new version.

Upgrading Zerto Cloud Manager

An upgrade of the Zerto Cloud Manager moves all configuration definitions from the old version to the new version.

The installation checks for an existing installation and if an existing installation is identified, that is one version lower than the new version, you can upgrade or uninstall the existing version.
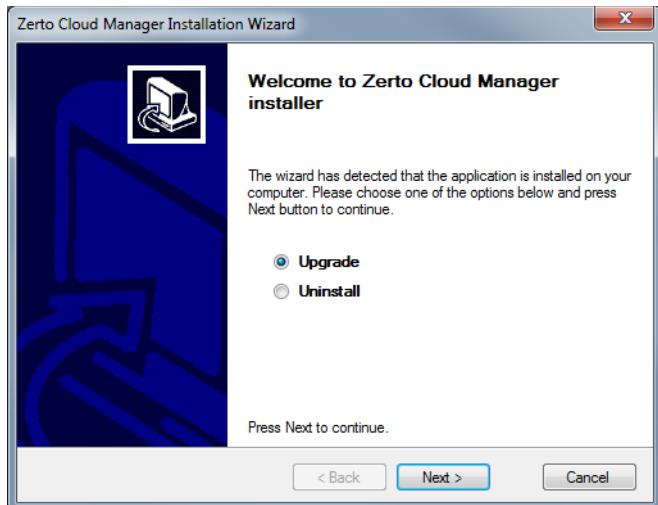
You must upgrade Zerto Virtual Replication and Zerto Cloud Manager in parallel, making sure that you **upgrade** the version of **Zerto Virtual Replication** which is run by the **CSP**, **before** you upgrade the version of Zerto Cloud Manager. This is done so that they are never more than one version apart.

To upgrade the version:

1. Run `Zerto Cloud Manager Installer.exe`.

    The Zerto Cloud Manager Installation Wizard is displayed.

2. Select *Upgrade* and click *Next*.

    The upgrade proceeds automatically.

Upgrading Zerto Cloud Connectors

Zerto Cloud Connectors do not require upgrading when a new Zerto Virtual Replication version is released.