

Zerto Virtual Replication is installed in a site with virtual machines to be protected and in a site to be used for recovery.

This document describes the requirements for Microsoft Azure protected and recovery sites.

For the requirements of VMware, Microsoft Hyper-V or AWS protected sites, go to [myZerto > Technical Documentation](#) portal.

You install a Zerto Cloud Appliance (ZCA) in the Azure site to use for recovery. The ZCA is comprised of the following:

- A **Zerto Virtual Manager (ZVM)**: This is a Windows service that manages the replication between the protected site and Azure.
- A **Virtual Replication Appliance (VRA)**: This is a Windows service that manages the replication of data from protected virtual machines to Azure. A Virtual Replication Appliance can manage a maximum of 500 volumes.
- A **Virtual Backup Appliance (VBA)**: This is a Windows service that manages offsite backups within Zerto Virtual Replication on each site. The VBA service runs on the same machine as the Zerto Virtual Manager service.

You can find **Zerto Cloud Appliance** in the **Azure Marketplace** portal, by entering the url: <https://portal.azure.com>. For further details and instructions, see *Zerto Virtual Replication Installation Guide for Microsoft Azure Environments*.

For the Microsoft Azure recovery site requirements, see the following sections:

- ["Requirements for Microsoft Azure Environments"](#), on page 1
- ["Open Firewall Ports for Microsoft Azure Environments"](#), on page 5
- ["Naming Conventions"](#), on page 4

## Requirements for Microsoft Azure Environments

The Zerto Cloud Appliance installation has the following requirements:

- Must be on a virtual machine on Azure running a Windows operating system.
  - Reserve at least **2 CPUs** and **4GB RAM** for the machine using a subnet accessible by other Zerto Virtual Replication sites. Zerto recommends, as the minimum, using an D3\_V2 instance size.
- The following applications are required:
  - **.NET 4.5.2**. The .NET 4.5.2 installation package is included with the Zerto Virtual Replication 6.0 installation package.
  - **Visual C++** Redistributable for Visual Studio 2015 is required. For installation instructions, see: <https://www.microsoft.com/en-us/download/details.aspx?id=48145>
- Azure ZCA can be installed only on Windows Server 2012 R2 and higher.
- Only virtual machines that are supported by Azure can be protected by Zerto Virtual Replication. All Windows operating systems are supported.

**Note:** Microsoft does not support operating systems that are past the **End of Support date**, without a **Custom Support Agreement (CSA)**. For more information about Microsoft operating systems support for Microsoft Azure, refer to <https://support.microsoft.com/en-us/kb/2721672>.

- To replicate between Azure and your site, you must have a virtual machine in Azure with a Zerto Cloud Appliance installed on it. This ZCA **must be paired with your site**.
- For **Linux** distribution, refer to Azure documentation:
  - Linux on Azure-endorsed distributions: <https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-endorsed-distributions/>
  - Information for non-endorsed distributions: <https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-linux-create-upload-vhd-generic/>

### Requirements for Replication From Azure

- For Virtual Machines to be protected from Azure, the VM volumes must reside in the Standard storage account defined during ZCA installation.

A Standard storage account is created or selected upon ZCA installation.

- Type: Standard storage
- Recovery and journal volumes reside on this Zerto Storage Account
- Azure VMs with all disks on this Zerto Storage Account can be protected by Zerto.
- Blob Storage is not supported.
- Managed Disks are not supported.
- VMs which are not deployed via the Azure Resource Manager cannot be protected from Azure.

### Requirements for Replication To Azure

- **Protected volumes** are recovered in Azure as **VHD disks** in a page blob. Virtual machines with disks that are less than 1GB are recovered with disks of 1GB.

**Note:** For some instance sizes, the Azure virtual machine is created with a Local SSD disk which is a temporary disk. This disk is in addition to the disks associated with each protected virtual machine.

- The following **limitations** apply when protecting to Azure
  - Virtual machines with **UEFI Firmware** cannot be protected.
  - You **cannot** protect machines that have a disk **larger than 4 TB**.
  - The **protected** virtual machines needs to have **at least one NIC**.
  - Reserve at least **2 CPUs** and **4GB RAM** for the machine using a subnet accessible by other Zerto Virtual Replication sites.
  - The **supported** number of **data disks and NICs per virtual machine** is dependent on the selected instance size. For example, instance size D3\_v2 allows up to eight data disks per virtual machine.

### Requirements for Replication within Azure

- Azure ZCA on both Azure sites need to be version 6.0 and higher.
- The following limitations apply when protecting within Azure:
  - Self replication is not supported.

### Additional Azure Considerations

For additional considerations, see **Azure subscription and service limits, quotas and constraints:** <https://docs.microsoft.com/en-us/azure/azure-subscription-service-limits>.

For example from the link, see the following default values:

- There can be multiple Zerto Cloud Appliances per Azure subscription and region.
- 20 cores per subscription
- 200 Storage accounts per subscription
- 20 VMs per region per subscription
- 20 VMs per series (Dv2, F, etc.) cores per subscription per Region

Additionally, see the following example for **maximum** values:

- A Standard storage account has a maximum total request rate of 20,000 IOPS. The total IOPS across all of your virtual machine disks in a Standard storage account should not exceed this limit.

VM TIER	BASIC TIER VM	STANDARD TIER VM
Disk size	4 TB	4 TB
Max 8 KB IOPS per persistent disk	300	500
Max number of disks performing max IOPS	66	50

See also "[Azure Limitations Which Affect Installation and Recoverability](#)", on page 2.

### Azure Limitations Which Affect Installation and Recoverability

Below are the default Azure limitations which affect installation and recovery.

#### Default Azure limitations which Affect Installation

- **Storage Limitations:**
  - Number of storage accounts: **200 per subscription** (note: max is 250)

## Default Azure Limitations which Affect Recovery

<b>Virtual Machines Limitations</b>	VMs per subscription per region:	<b>20</b> (max: 10K)
	VM total cores per subscription per region:	<b>20</b>
	Instance sizes:	Limited per region. Many of them are 20 cores per region per subscription
	Resource groups per subscription:	<b>800</b>
<b>Networking</b>	Network interfaces per region:	<b>350</b>
	NICs per instance:	Depends on instance size: <ul style="list-style-type: none"> <li>■ <b>Windows:</b> <a href="https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-windows-sizes">https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-windows-sizes</a></li> <li>■ <b>Linux:</b> <a href="https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-linux-sizes?toc=%2fazure%2fvirtual-machines%2flinux%2ftoc.json">https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-linux-sizes?toc=%2fazure%2fvirtual-machines%2flinux%2ftoc.json</a></li> </ul>
	Private IP Addresses per VNET per subscription per region:	<b>4096</b>
	Cloning of IP addresses during recovery operations:	Due to an Azure limitation, failing over Linux VMs with <b>static IP</b> is <b>not</b> supported.
<b>Storage</b>	Storage account total size limitation:	<b>500 TB</b> (# of entities (blobs, containers etc) within a storage account: unlimited)
	Max size of a page blob (vhd):	<b>4 TB</b>
	Min size of a page blob (vhd):	<b>20 MB</b>
	Max number of data disks:	Depends on instance size <ul style="list-style-type: none"> <li>■ <b>Windows:</b> <a href="https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-windows-sizes">https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-windows-sizes</a></li> <li>■ <b>Linux:</b> <a href="https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-linux-sizes?toc=%2fazure%2fvirtual-machines%2flinux%2ftoc.json">https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-linux-sizes?toc=%2fazure%2fvirtual-machines%2flinux%2ftoc.json</a></li> </ul>

- **Authentication:**
  - The **Azure user credentials** used during the installation must be linked to a **subscription's User Access Administrator role**. For instructions on how to add a user to the subscription's User Access Administrator role, see <https://azure.microsoft.com/en-us/documentation/articles/role-based-access-built-in-roles/>.
- **Zerto Cloud Appliance:**
  - The **Zerto Cloud Appliance** installation must be installed on an **Azure virtual machine** running a **Windows** operating system with:
    - 64-bit Operating System
    - The Operating system version number must be 6.1 or higher
    - The Windows operating system must be Server Edition
    - Supported Operating Systems: Windows Server 2012 R2 or higher
  - Microsoft **.NET Framework 4.5.2. or higher**
    - 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**
    - If you install .NET Framework 4.5.2 as part of the Zerto Virtual Replication installation, you will be prompted to restart

- Make sure that you have the latest .NET and Windows updates, unless Zerto support warns against a specific update.
  - Reserve at least **2 CPUs** and **4GB RAM** for the machine using a subnet accessible by other Zerto Virtual Replication sites. Zerto recommends, as the minimum, using a **D3\_v2 instance size**.
- **Zerto Virtual Replication:**
  - At least **4GB of free disk space**.
  - 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 **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.
  - A **connection** between the instance on Azure and the protected site is required.

## 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.

## Naming Conventions

When creating a new resource in Azure, it is necessary to adhere to certain naming conventions. These naming conventions apply to the following resources: virtual machines, resource groups, storage accounts, page blobs and blob containers.

To view **Microsoft Azure's recommended naming conventions**, see the following links:

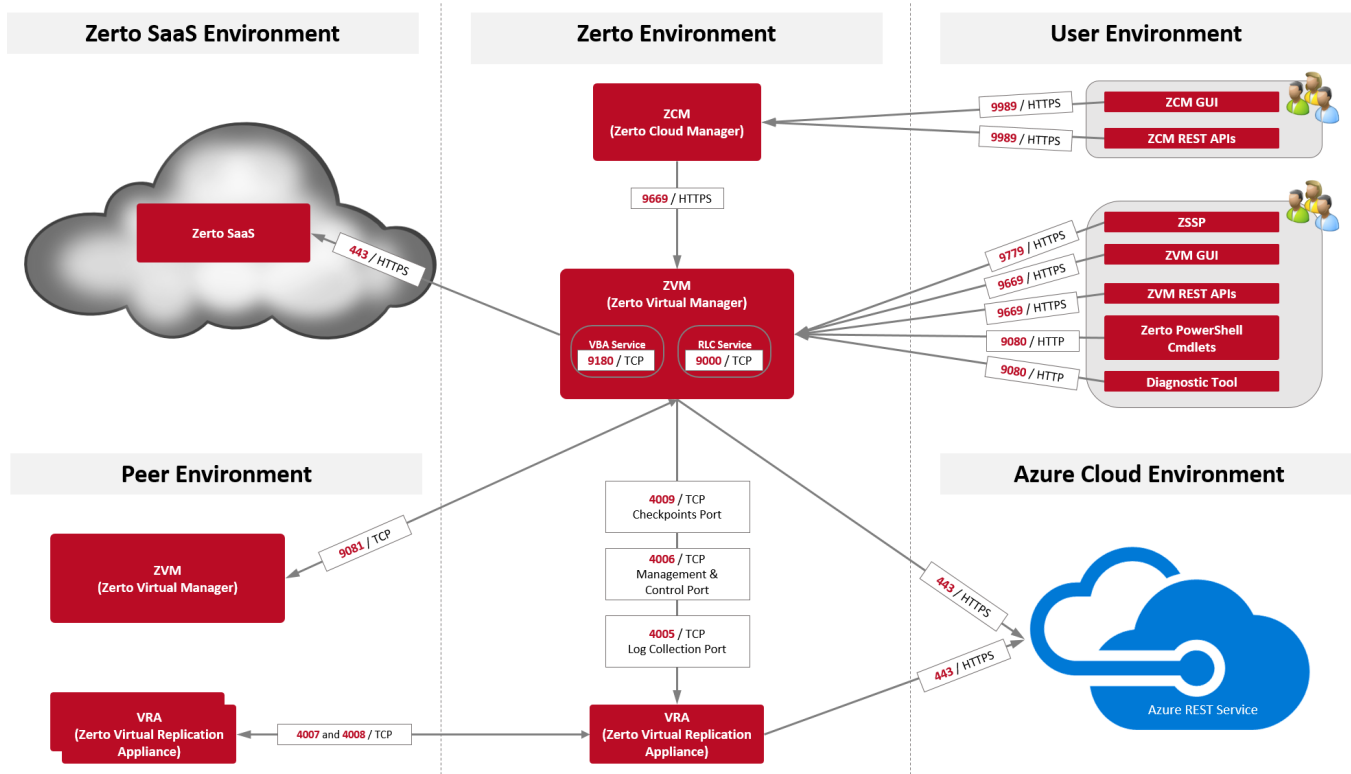
- <https://azure.microsoft.com/en-us/documentation/articles/guidance-naming-conventions/>
- <https://msdn.microsoft.com/library/azure/dd135715.aspx>
- <https://blogs.msdn.microsoft.com/jmstall/2014/06/12/azure-storage-naming-rules/>

### Note:

- The name of **virtual machines** can include **up to 64 characters**
- The name of **disks** can include up to **80 characters**

## Open Firewall Ports for Microsoft Azure Environments

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



The following table provides basic information about the ports shown in the above diagram by Zerto Virtual Replication. Zerto Cloud Appliance (ZCA) requires the following **ports** to be open in the **Azure site firewall**, set in the **Azure network security group**:

PORT	DESCRIPTION
443	Required between the ZVM and the Azure Cloud environment.
443	Required between the Azure REST Service 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.
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.

See also ["Requirements for Microsoft Azure Environments"](#), on page 1.